

LING

Molva molva

GENERAL INFORMATION

The common ling is one of the largest fish of the Gadiformes order reaching a maximum length of 200 cm, with a mean length of about 70-90 cm according to data from the annual Icelandic spring groundfish survey. It is a demersal fish that preys on fish and invertebrates and can be found at depths 10 and 1300 meters but is most commonly caught at depths between 100 and 400 meters. It reaches sexual maturity at the age of 5-8 years and 60-80 cm total length. Ling spawns in May and June mostly along the edges of the south, southwest and west of the Icelandic continental shelf.

THE FISHERY

LANDINGS TRENDS

In 1947 to 1971, landings of ling from Icelandic waters ranged between 7000 to more than 15000 tonnes. Landings decreased between 1972 and 2000 to as little as 3000 tonnes as a result of most foreign vessels being excluded from the Icelandic EEZ. In 2001-2010, catches increased constantly and reached 11000 tonnes in 2010 and remained at that level for the most part until 2014, when the catches increased to 14000 tonnes. Since 2014, ling catches have reduced and were slightly above 7000 tonnes in 2021 (Table 1 and Figure 1).

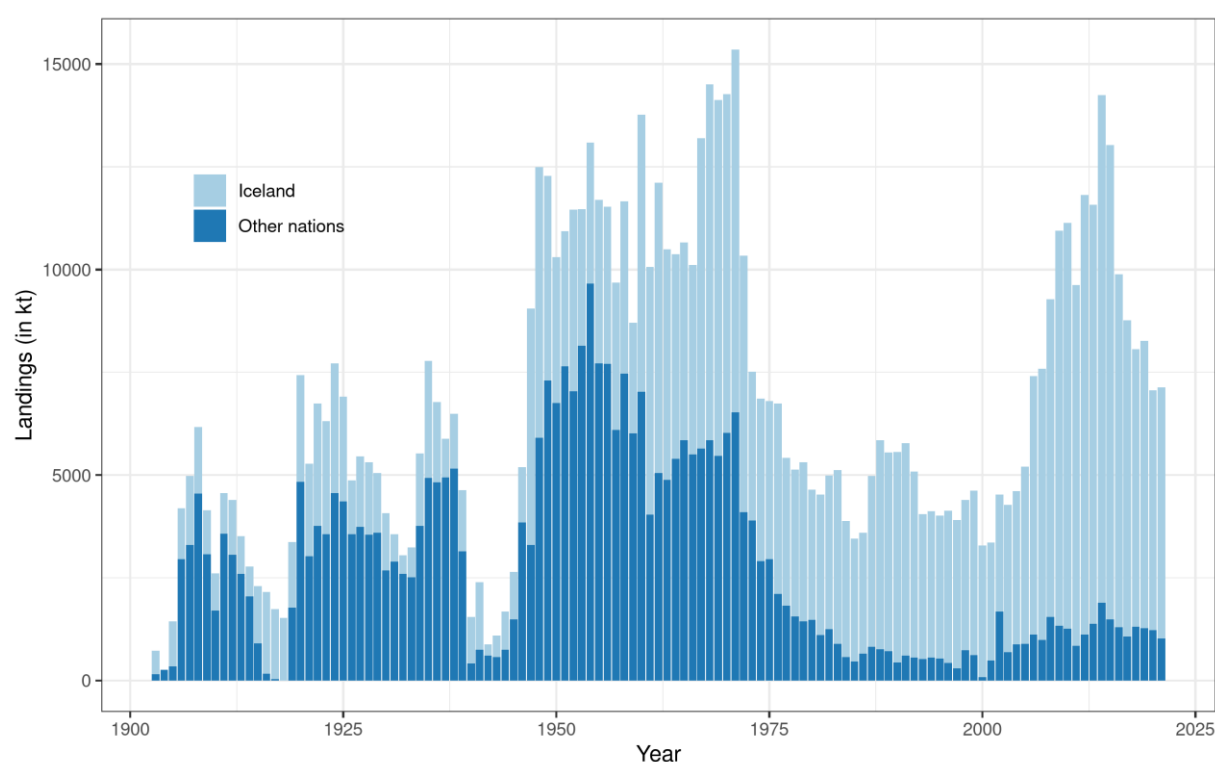


Figure 1. Ling. Nominal landings from Icelandic waters.

The fishery for ling in Icelandic waters has not changed substantially in recent years. Around 100-300 longliners annually report catches of ling, around 30-200 gillnetters and around 60-140 trawlers. Most of ling is caught on longlines (Figure 2, Table 1) which has increased since 2000 to around 68% in 2021. At the same time the proportion caught by gillnets has decreased from 20–30% in 2000–2007 to less than 2% in 2021. Catches in trawls have varied less and have been at around 20% of Icelandic catches (Figure 2, Table 1).

Most of the ling caught by Icelandic longliners is caught at depths less than 300 m, and by trawlers at less than 400 m (Figure 3). The main fishing grounds for ling as observed from logbooks are in the south, southwestern and western part of the Icelandic shelf (Figure 4). The main trend in the spatial distribution of catches according to logbook entries is the decreased proportion of catches in the southeast and increased catches on the western part of the shelf two decades ago. Around 40% of ling catches are caught on the southwestern part of the shelf (Figure 5). In recent years, the main fishing pressure has shifted towards shallower waters (Figure 3).

Table 1. Ling. Number of Icelandic boats and catches by fleet segment participating in the ling fishery from logbooks.

YEAR	NUMBER OF BOATS			CATCHES IN TONNES				SUM
	Longliners	Gillnetters	Trawlers	Longline	Gillnet	Trawl	Others	
2000	287	184	140	1540	704	892	83	3284
2001	252	232	130	1101	1061	640	491	3362
2002	234	203	122	1283	648	853	1682	4519
2003	243	172	119	2215	454	850	687	4270
2004	234	165	116	2017	545	977	893	4606
2005	260	127	115	2046	501	1500	899	5198
2006	258	99	106	3734	629	1697	1133	7405
2007	251	86	105	4042	633	1642	1035	7591
2008	208	68	96	5007	477	1927	1583	9283
2009	208	78	88	6231	723	2193	1367	10945
2010	197	69	86	6532	363	2529	1304	11131
2011	201	61	82	5594	222	2625	873	9626
2012	206	62	81	7479	245	2509	1162	11817
2013	206	62	85	6836	345	2808	1356	11581
2014	206	57	78	10624	673	2717	30	14246
2015	193	55	75	9249	650	2802	23	13035
2016	173	55	71	6545	681	2426	20	9884
2017	157	48	70	5975	556	2063	11	8766
2018	137	47	68	5366	387	2114	18	8062
2019	135	33	61	5964	115	2009	9	8269
2020	114	36	67	4765	138	1985	15	7061
2021	108	39	66	4828	126	2074	10	7128

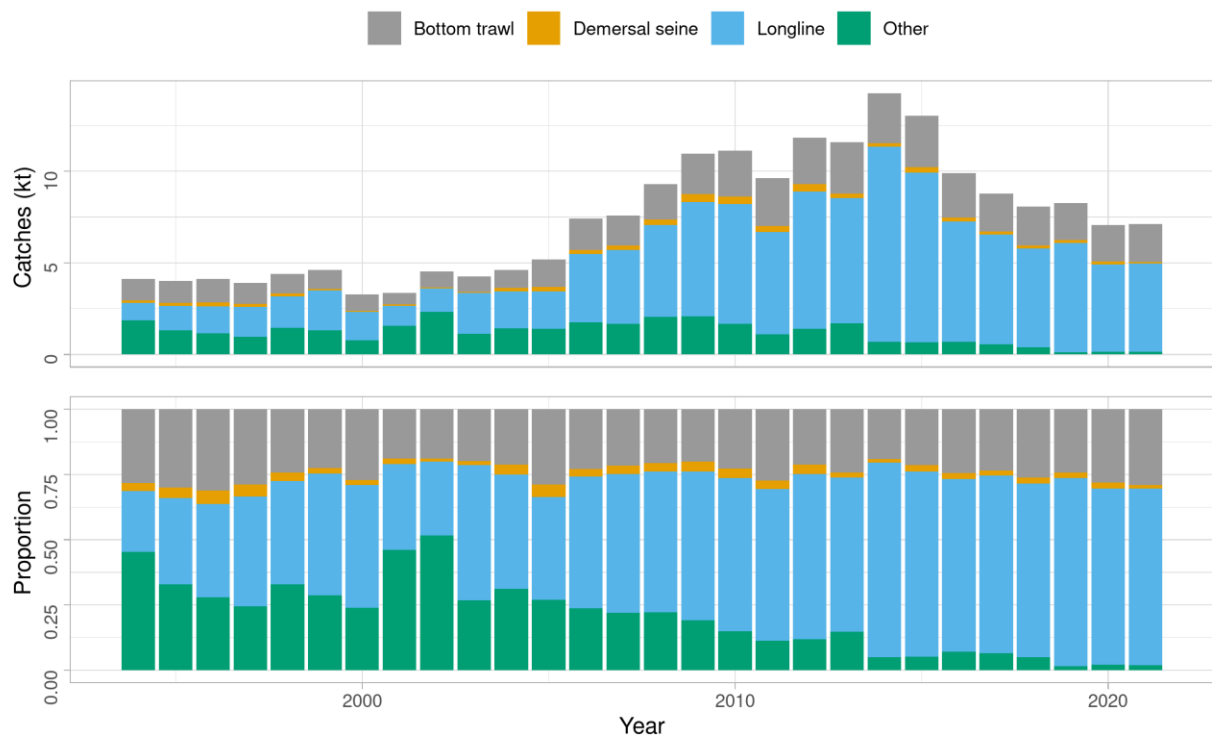


Figure 2. Ling. Total catch (landings) by fishing gear since 1994, according to statistics from the Directorate of Fisheries.

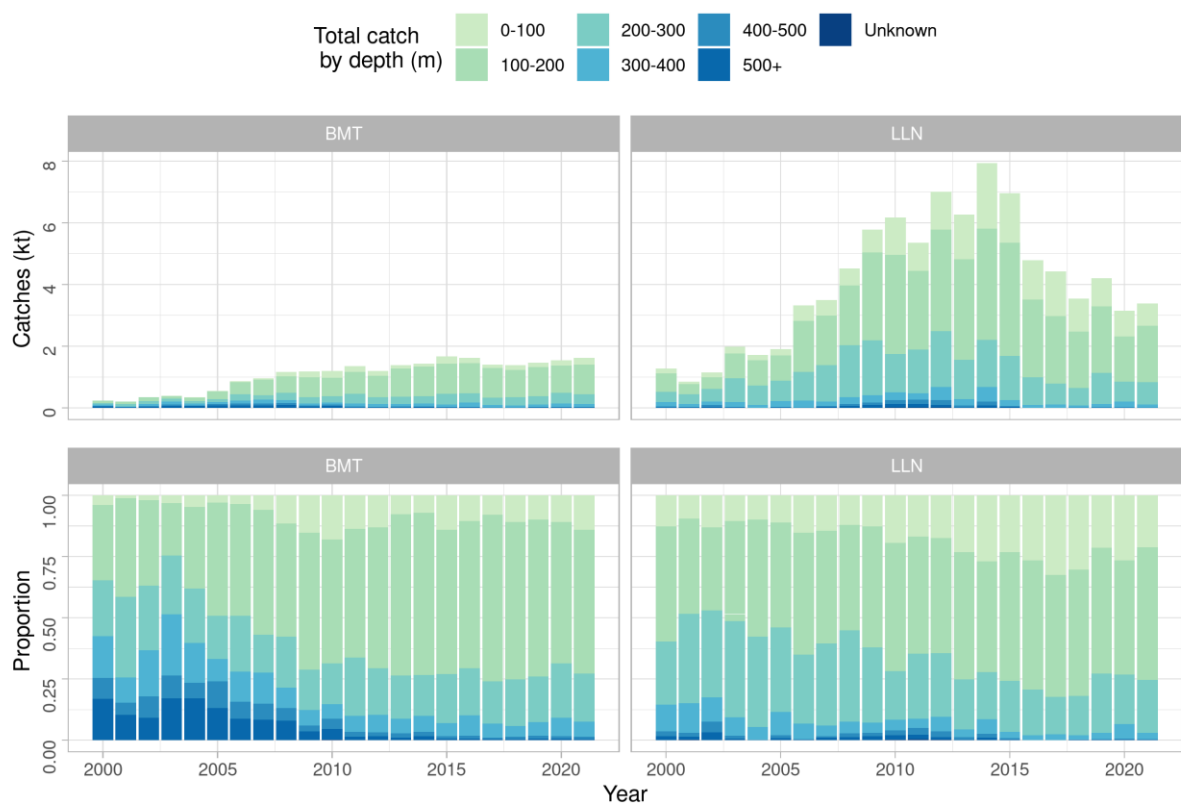


Figure 3. Ling. Depth distribution of ling catches from longlines and trawls from Icelandic logbooks.

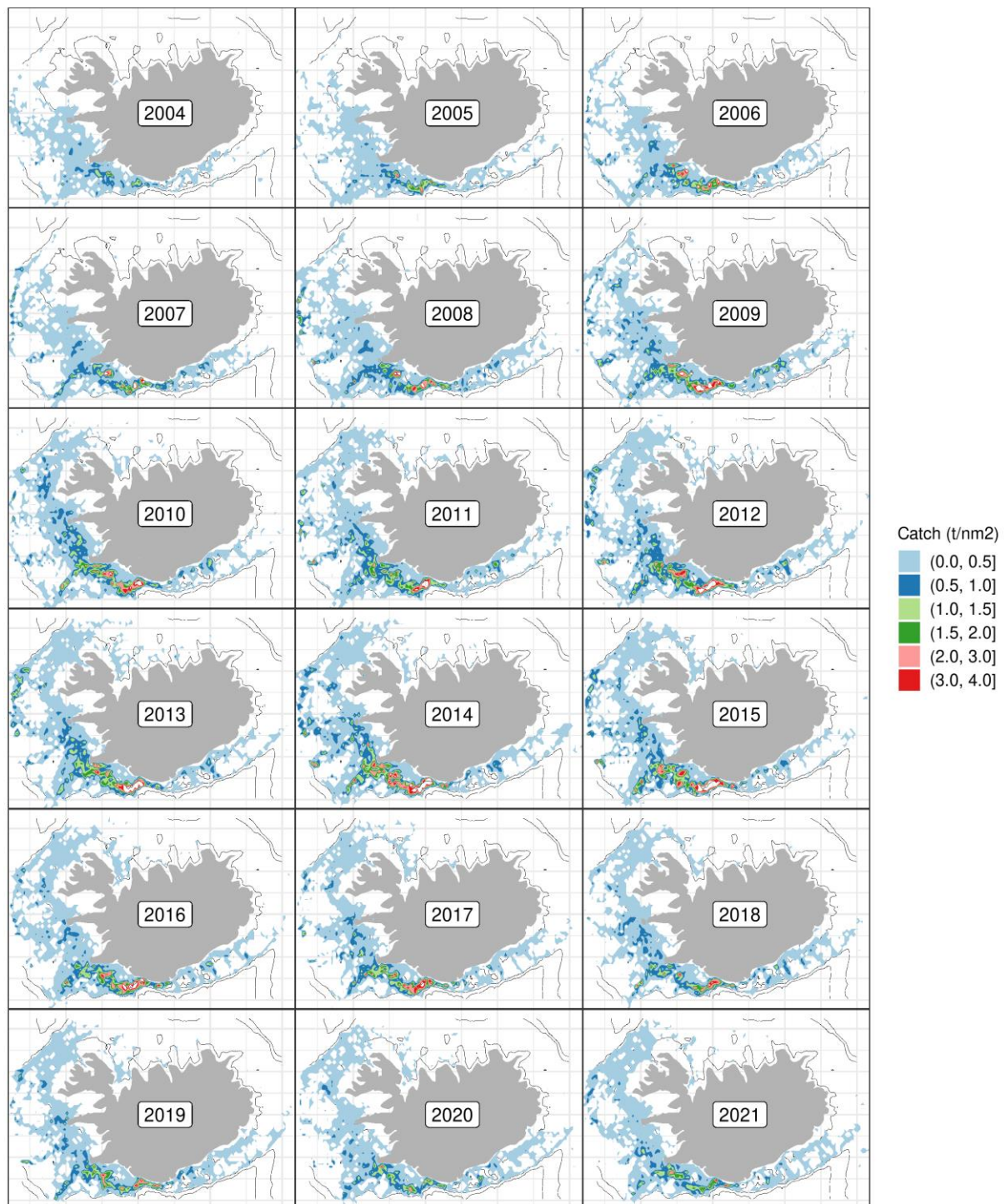


Figure 4. Ling. Geographical distribution (tonnes/square mile) of the Icelandic longline ling fishery since 2004 as reported in logbooks by the Icelandic fleet.

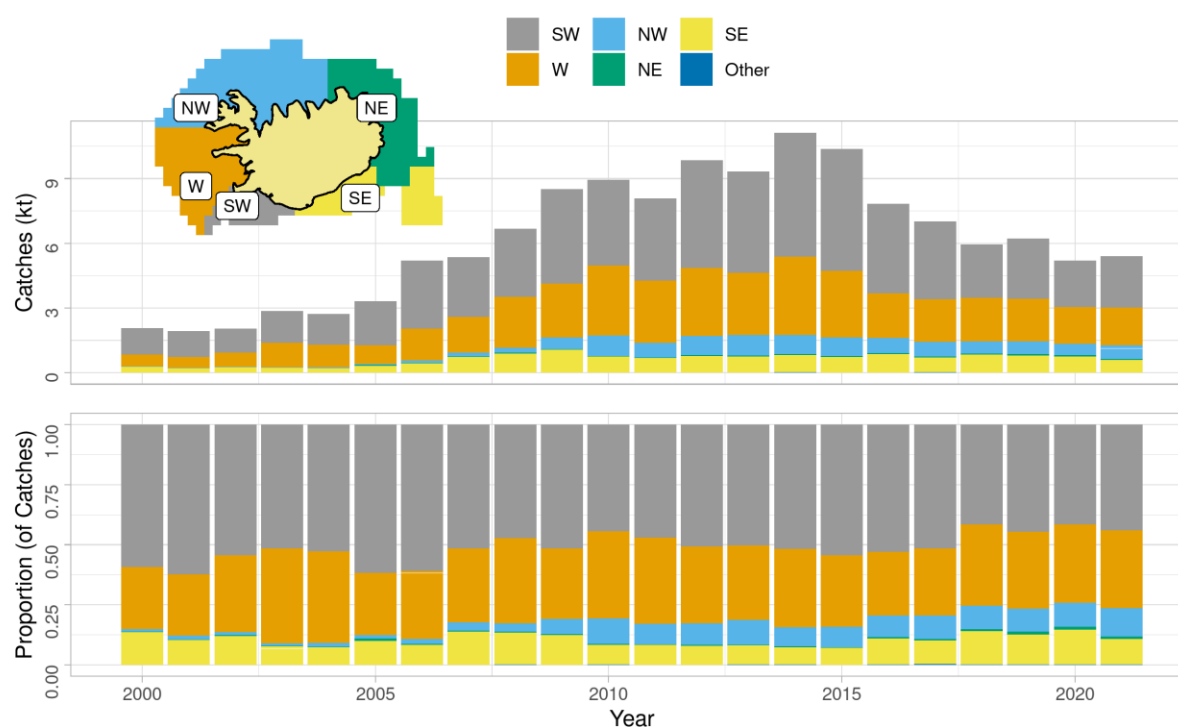


Figure 5. Ling. Catch distribution and proportions by area according to logbooks.

LANDING DATA AVAILABLE

In general sampling is considered good from commercial catches from the main gears (longlines and trawls). Sampling does seem to cover the spatial distribution of catches for longlines and trawls but less so for gillnets. Similarly, sampling does seem to follow the temporal distribution of catches (Figure 6, WGDEEP 2012).

LANDINGS AND DISCARDS

Landings by Icelandic vessels are given by the Icelandic Directorate of Fisheries. Landings of Norwegian and Faroese vessels are given by the Icelandic Coast Guard. Discarding is banned by law in the Icelandic demersal fishery. Based on limited data, discard rates in the Icelandic longline fishery for ling are estimated very low (<1% in either numbers or weight) (WGDEEP, ICES 2011:WD02). Measures in the management system such as converting quota share from one species to another are used by the fleet to a large extent and this is thought to discourage discarding in mixed fisheries. A description of the management system is given in the area overview (ICES 2019).

LENGTH COMPOSITIONS

An overview of available length measurements is given in Table 2. Most of the measurements are from longlines and bottom trawls. The number of available length measurements increased in recent years in line with increased landings but in 2020 they were fewer (due to the covid pandemic). Length distributions from the Icelandic longline and trawling fleet are presented in Figure 7. Sampling from commercial catches of ling is considered good; both in terms of spatial and temporal distribution of samples (Figure 6). Mean length as observed in length samples from longlines and trawls decreased from 2006-2008 from around 86 to 80 cm (Figure 7). This may be the result of increased recruitment in recent years rather than increased fishing effort. Mean length has increased in the period and in 2020, the highest mean length was recorded, or 96cm (Figure 7).

Table 2. Ling. Number of available length measurements from Icelandic commercial catches.

YEAR	LONGLINES	GILLNETS	DEMERSAL SEINE	TRAWLS	SUM
2000	1624	566	0	383	2573
2001	1661	493	0	37	2191
2002	1504	366	0	221	2091
2003	2404	300	0	280	2984
2004	2640	348	46	141	3175
2005	2323	31	101	499	2954
2006	3354	645	0	1558	5557
2007	3661	0	76	400	4137
2008	5847	357	15	969	7188
2009	9014	410	0	966	10390
2010	7322	57	0	2345	9724
2011	7248	0	150	1995	9393
2012	12 770	85	150	2748	15 753
2013	10 771	267	122	2337	13 497
2014	6448	1286	120	5053	13 610
2015	3315	1563	0	5667	10 545
2016	2483	2039	0	3673	8195
2017	1637	485	0	3189	5310
2018	1424	559	0	1603	4298
2019	3598	0	0	1830	6247
2020	1099	4	0	1718	2821
2021	1056	0	0	2028	3084

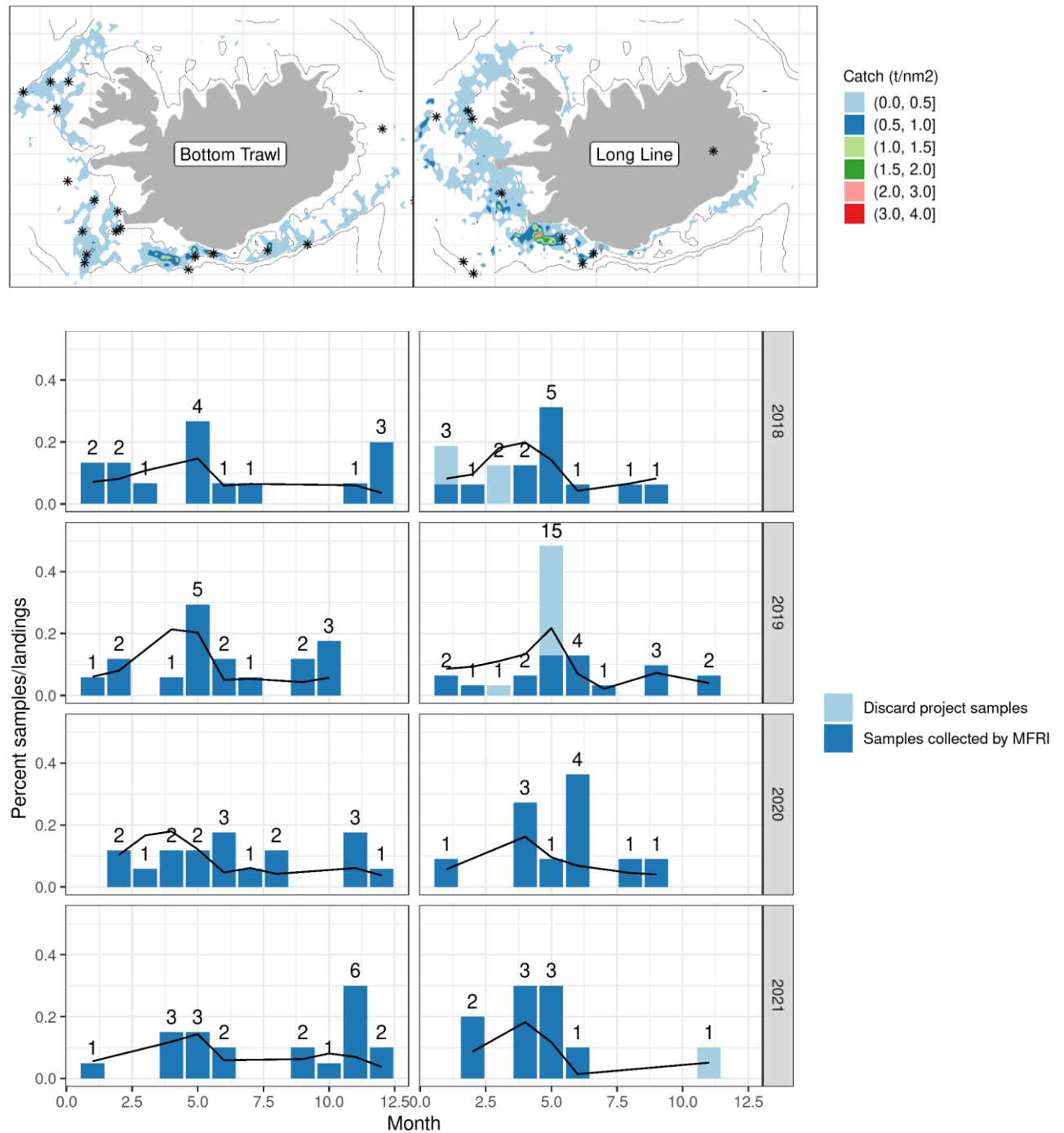


Figure 6. Ling. Spatial distribution of length samples (black dots) from commercial catches in Icelandic waters (upper) and numbers of samples taken per month by project (bars) and proportion of landings per months (black line) (lower)

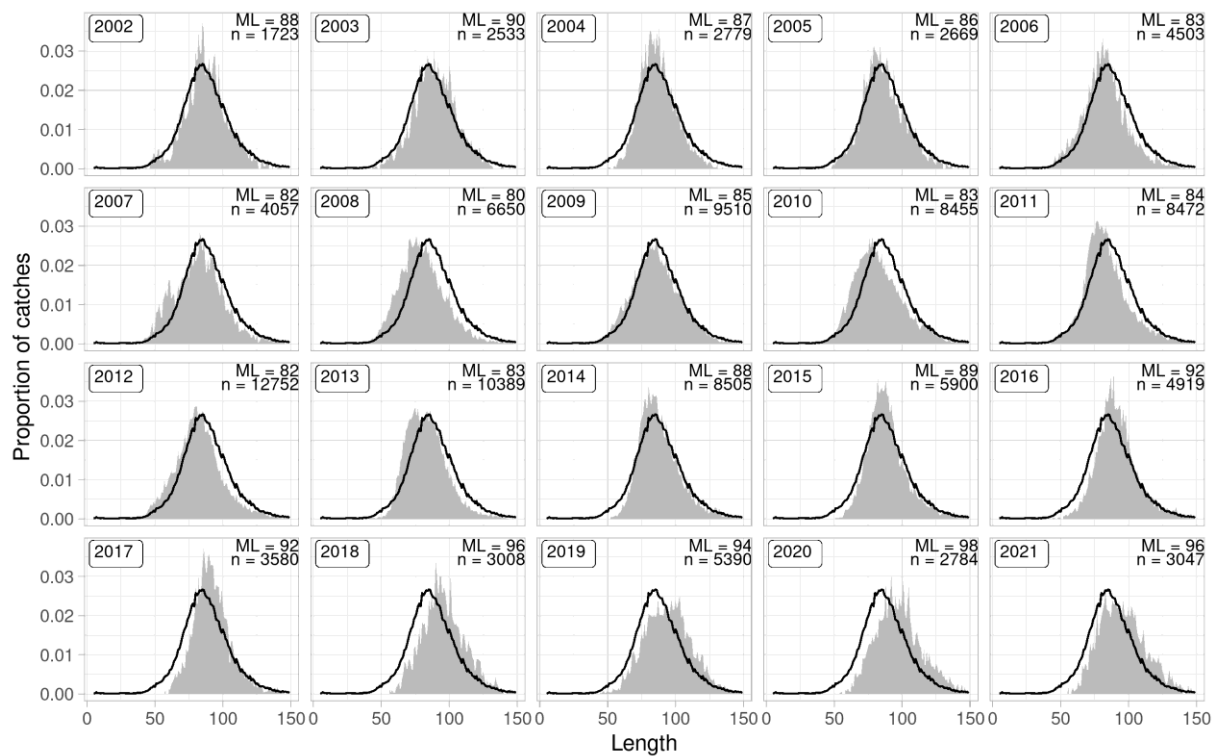


Figure 7. Ling. Length distributions from the Icelandic longline and trawl fleet (grey area) and mean length distribution (black lines) from 2002-2021.

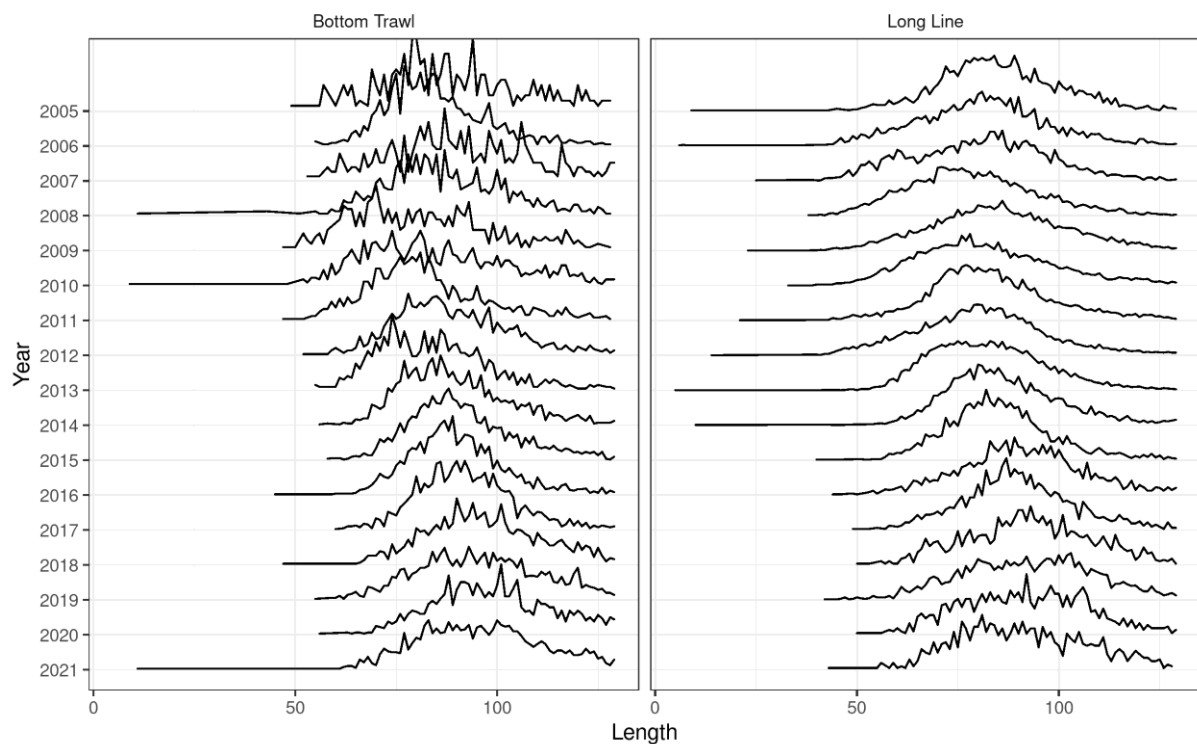


Figure 8. Ling. Length distributions from the Icelandic longline and trawl fleet from 2005-2021.

AGE COMPOSITIONS

Aged data are available from 2000 onwards (Table 3). In previous years, most of the ling caught in the Icelandic spring survey were between age 5 and 8 but from longlines the age was between 6 and 9. The past several years have shown a much larger composition of older fish, common up to 12, from both sample sources (see Survey Data, next section).

Table 3. Ling. Number of available aged otoliths from the commercial catches.

YEAR	LONGLINES	GILLNETS	D. SEINE	TRAWLS	TOTAL
2000	650	200	0	150	1000
2001	550	193	0	37	780
2002	519	166	0	150	835
2003	900	100	0	150	1150
2004	750	100	46	100	996
2005	750	0	0	231	981
2006	1137	288	0	550	1975
2007	1300	0	50	100	1450
2008	1950	150	0	365	2465
2009	2550	150	0	400	3100
2010	2498	50	0	850	3398
2011	2546	0	50	700	3296
2012	4031	50	50	941	5072
2013	2863	100	50	800	3813
2014	743	225	20	913	1901
2015	595	300	0	1003	1898
2016	440	345	0	680	1465
2017	310	85	0	595	990
2018	244	100	0	409	753
2019	385	0	0	340	865
2020	225	40	0	355	620
2021	180	0	0	398	578

CATCH AND EFFORT

The CPUE estimates of ling from commercial fisheries in Icelandic waters have not been considered representative of stock abundance.

SURVEY DATA

The Icelandic spring groundfish survey, which has been conducted annually in March since 1985, covers the most important distribution area of the ling fishery. In addition, the autumn survey was commenced in 1996 and expanded in 2000, however a full autumn survey was not conducted in 2011 and therefore the results for 2011 are not presented.

Figure 9 shows distribution of ling in groundfish surveys in spring 2022 and autumn 2021. Figure 10 shows both a recruitment index and the trends in biomass from both surveys. Length distributions from the spring survey are shown in Figure 11 (abundance) and changes in spatial distribution in the spring survey are presented in Figure 12.

Ling in both the spring and autumn surveys are mainly found in the deeper waters south and west off Iceland. Both the total biomass index and the index of the fishable biomass (>40 cm) gradually decreased in the spring survey until 1995 (Figure 10). In the years 1995–2003 these indices were half of the mean from 1985–1989. In 2003–2007, the recruitment indices increased and remained high until 2010. The index of the large ling (80 cm and larger) shows a similar trend as the total biomass index (Figure 10). The recruitment index of ling, defined here as ling smaller than 40 cm, showed a considerable increase in 2003–2007 and remained high until 2010. Then the juvenile index fell to a very low level in 2014 and has been relatively low since then (Figure 10).

Length distributions from the spring survey show a similar pattern as survey indices, with the 2012–2018 peak in abundance observed as high proportions of fish in the range of 60–100 cm, that has slowly decreased as they have reached sizes 80–120 cm (Figure 11). This pattern is likely to have caused the increase in ling sizes observed in the trawl samples (Figure 7).

Biomass indices in the autumn survey were low in 1996–2000 but have increased since then (Figure 10). There is consistency between the two surveys; the autumn survey biomass indices are however derived from substantially fewer ling caught. Also, there is an inconsistency in recruitment indices (<40 cm), where the autumn survey shows much lower recruitment, in absolute terms compared with the spring survey (Figure 10). This discrepancy is likely a result of much lower catchability of small ling (due to different gears) in the autumn survey, where ling less than 40 cm has rarely been caught.

Changes in spatial distribution as observed in surveys: According to the spring survey most of the increase during the 2012–2018 peak in ling abundance was in the western area, but an increase was seen in most areas. However, most of the index in terms of biomass comes from the southwestern area or around 40% compared to around 30% between 2003 and 2011. Since 2016, the amounts of biomass in the west and southwest have, however, reduced while the proportions in the southeast have increased, leading to a greater contribution of ling from the northwest and southeast to the total index. A similar pattern is observed in the autumn survey.

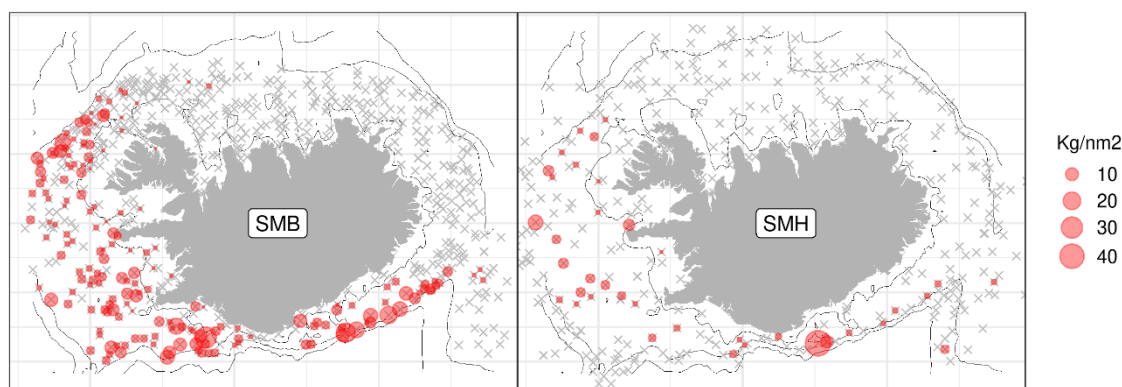


Figure 9. Ling. Location and abundance of ling in the spring survey (SMB) in 2022 and the autumn survey (SMH) in 2021.

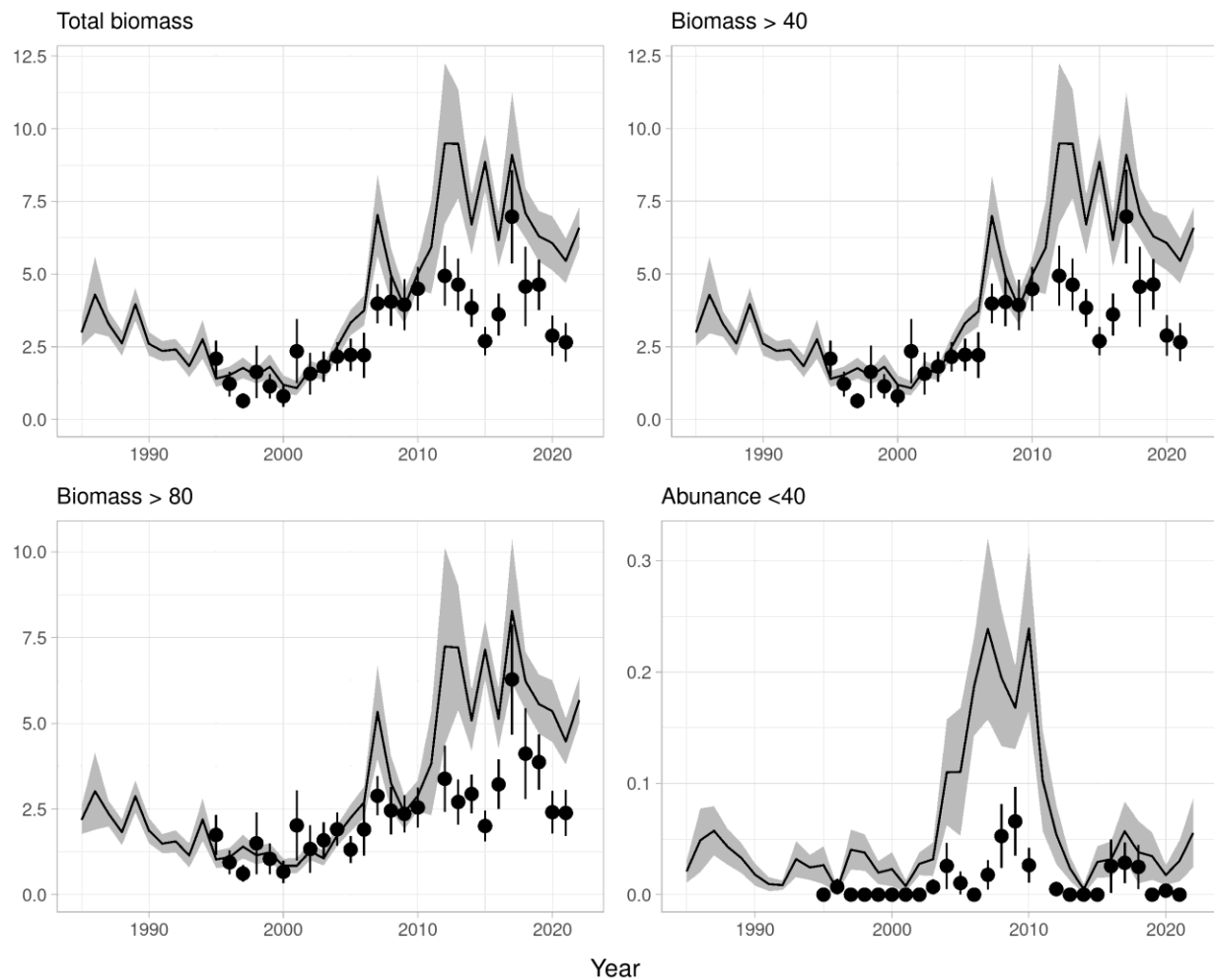


Figure 10. Ling. Total biomass indices, biomass indices >40 cm, biomass indices >80 cm, and abundance indices <40 cm. The lines with shaded area show the spring survey index from 1985 and the points with the vertical lines show the autumn survey from 1996. The shaded areas and vertical lines indicate \pm standard error.

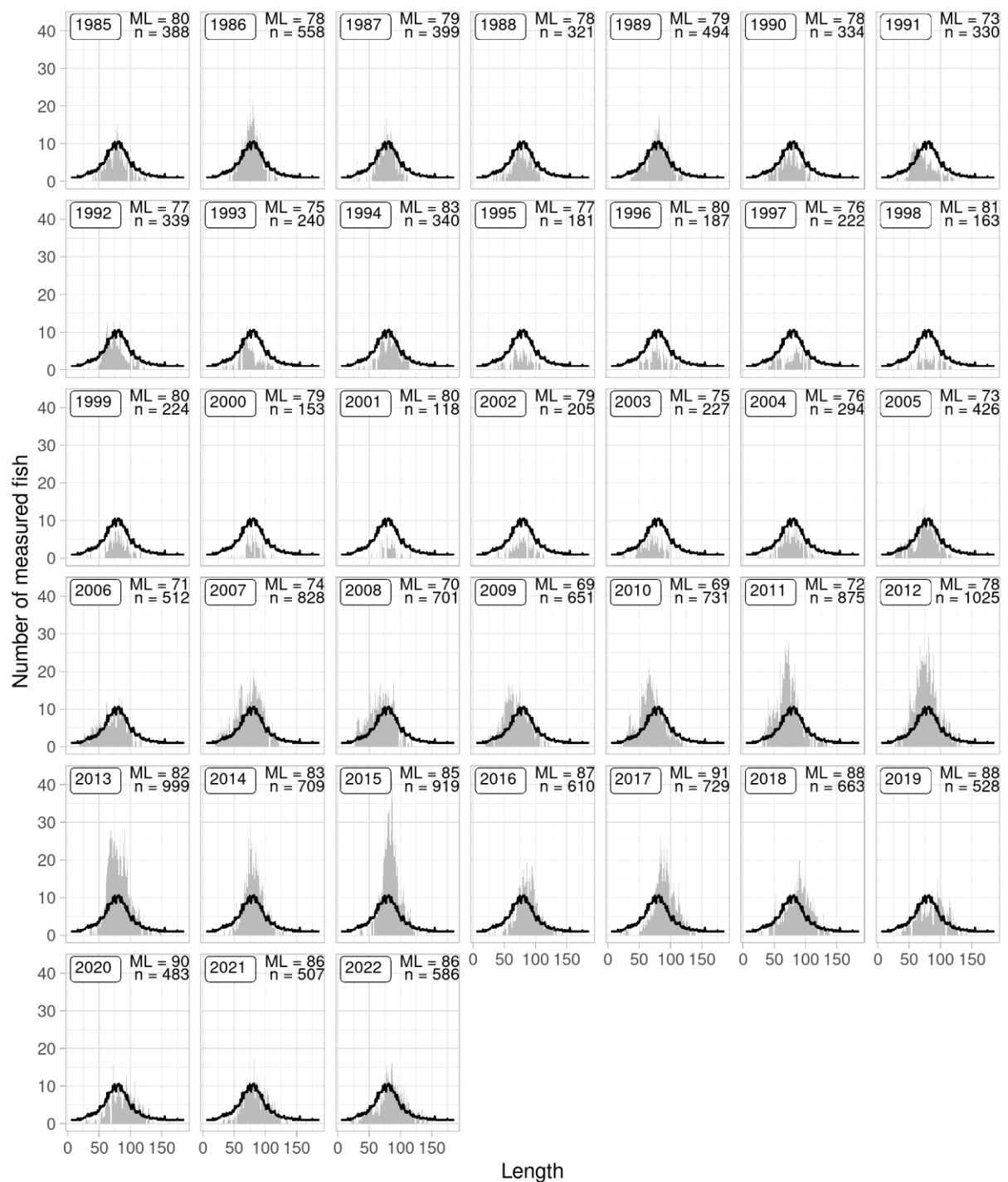


Figure 11. Ling. Length distributions (grey area) and mean length distribution (black line) from the spring survey.

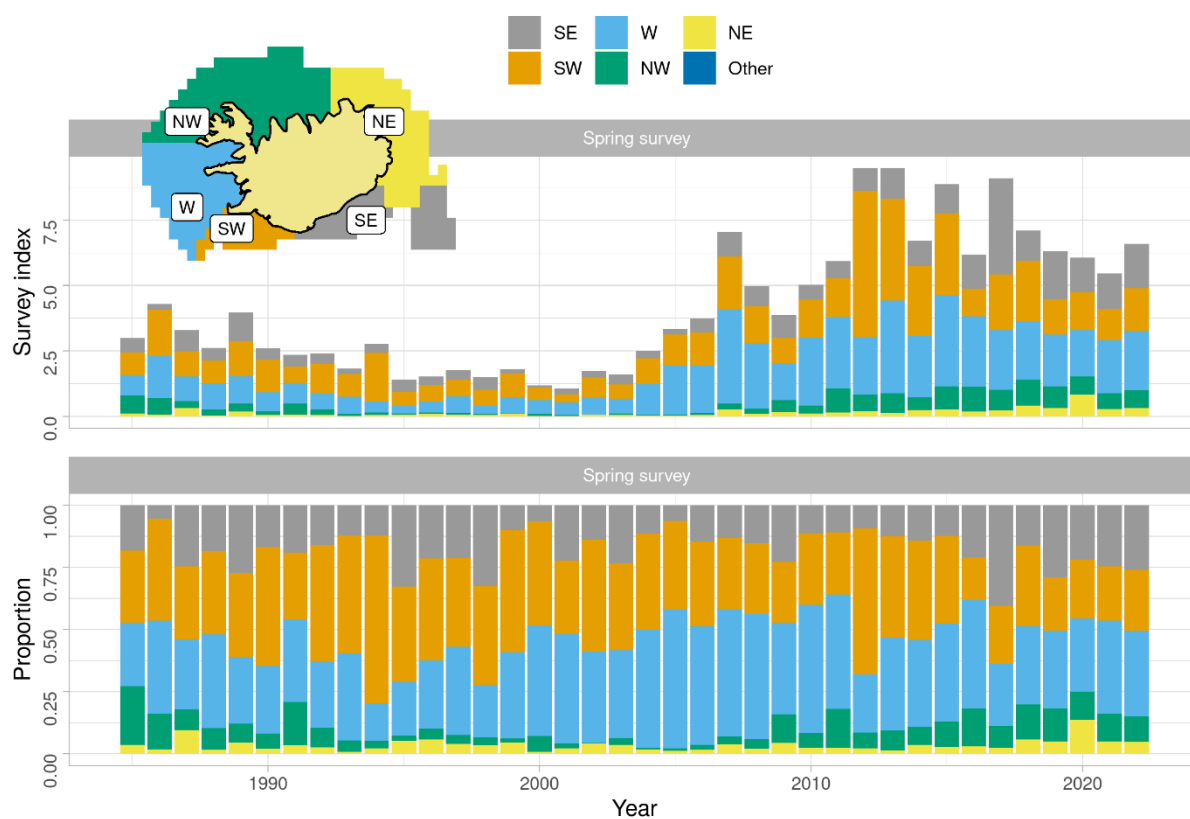


Figure 12. Ling. Estimated survey biomass in the spring survey by year from different parts of the continental shelf (upper figure) and as proportions of the total (lower figure).

ANALYTICAL ASSESSMENT USING SAM

In 2022, Ling in 5.a was re-assessed as the previously benchmarked Gadget model had begun to show great instability in retrospective patterns in recent years. As a part of a Harvest Control Evaluation requested by Iceland (WKICEMSE, ICES 2022a), the stock was benchmarked (WKICEMSE, ICES 2022c) which resulted in changes in the assessment method and updated reference points. Model setup and settings are described in the Stock Annex (ICES 2022b).

DATA USED AND MODEL SETTINGS

Data used for tuning are given in the stock annex (ICES 2022b).

Figure 13 shows the overall fit to the survey indices described in the stock annex. In general, the model appears to follow the stock trends historically. Furthermore, the terminal estimate is not seen to deviate substantially from the observed value for most length groups, with model overestimating the abundance in the two largest length group. Summed up over survey biomass the model overestimates the biomass in the terminal years.

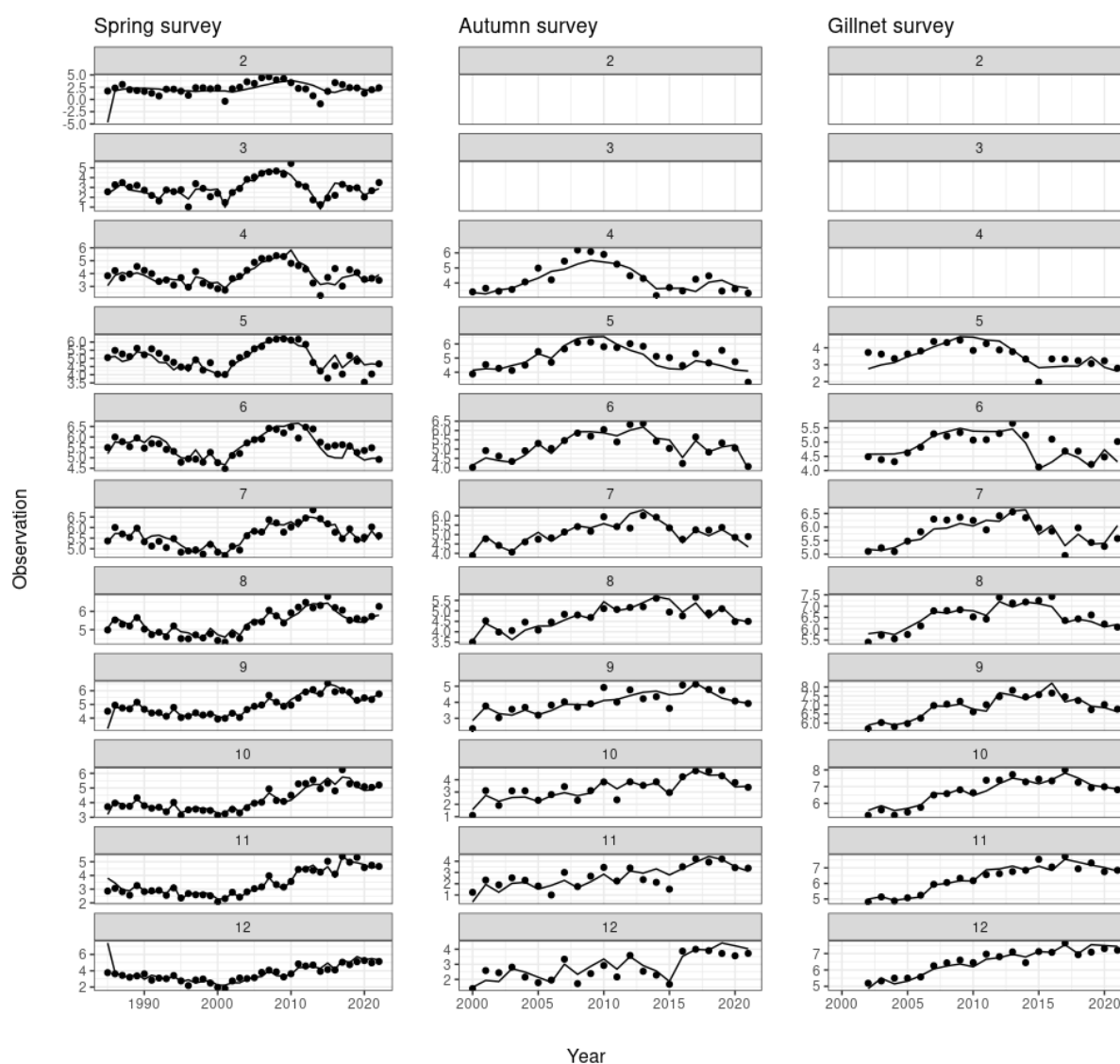


Figure 13. Ling. Model fit to spring survey, autumn survey and gillnet indices.

RESULTS

Population dynamics of the ling estimated in this model show a clear trend of a high recruitment period from 2004-2010, corresponding with increased spawning stock biomass (SSB) and catches during the 2010-2019 period. Despite this trend, fishing mortality has remained rather steady or slightly declined (Figure 14).

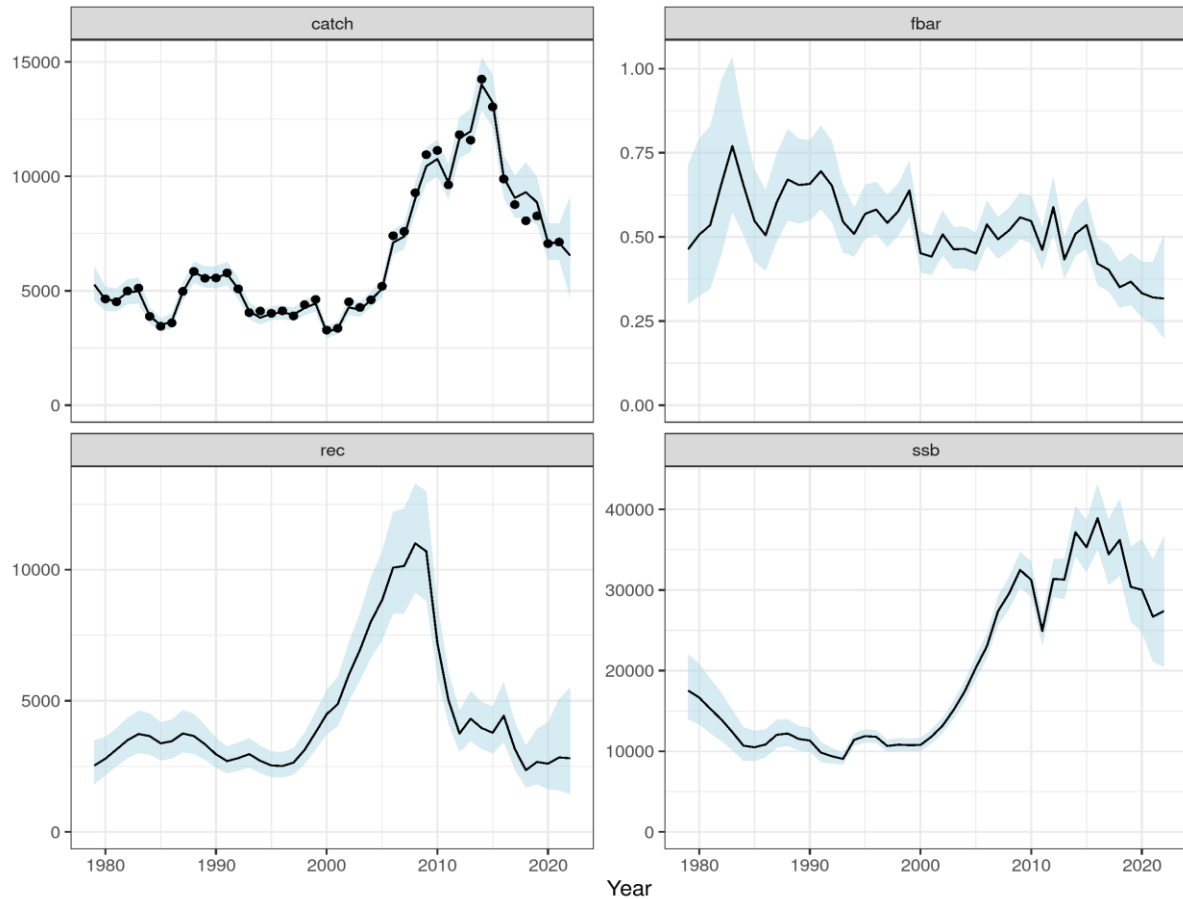


Figure 14. Ling. Model results of population dynamics overview: estimated catch, average fishing mortality over ages 8-11 (Fbar), recruitment (age 2), and spawning stock biomass (SSB). Catch and fbar values in 2022 are projections.

The overall scale of model results, including SSB (kt), fishing mortality, and recruitment at age 3, are similar between the previously used Gadget model and the SAM model (Figure 15).

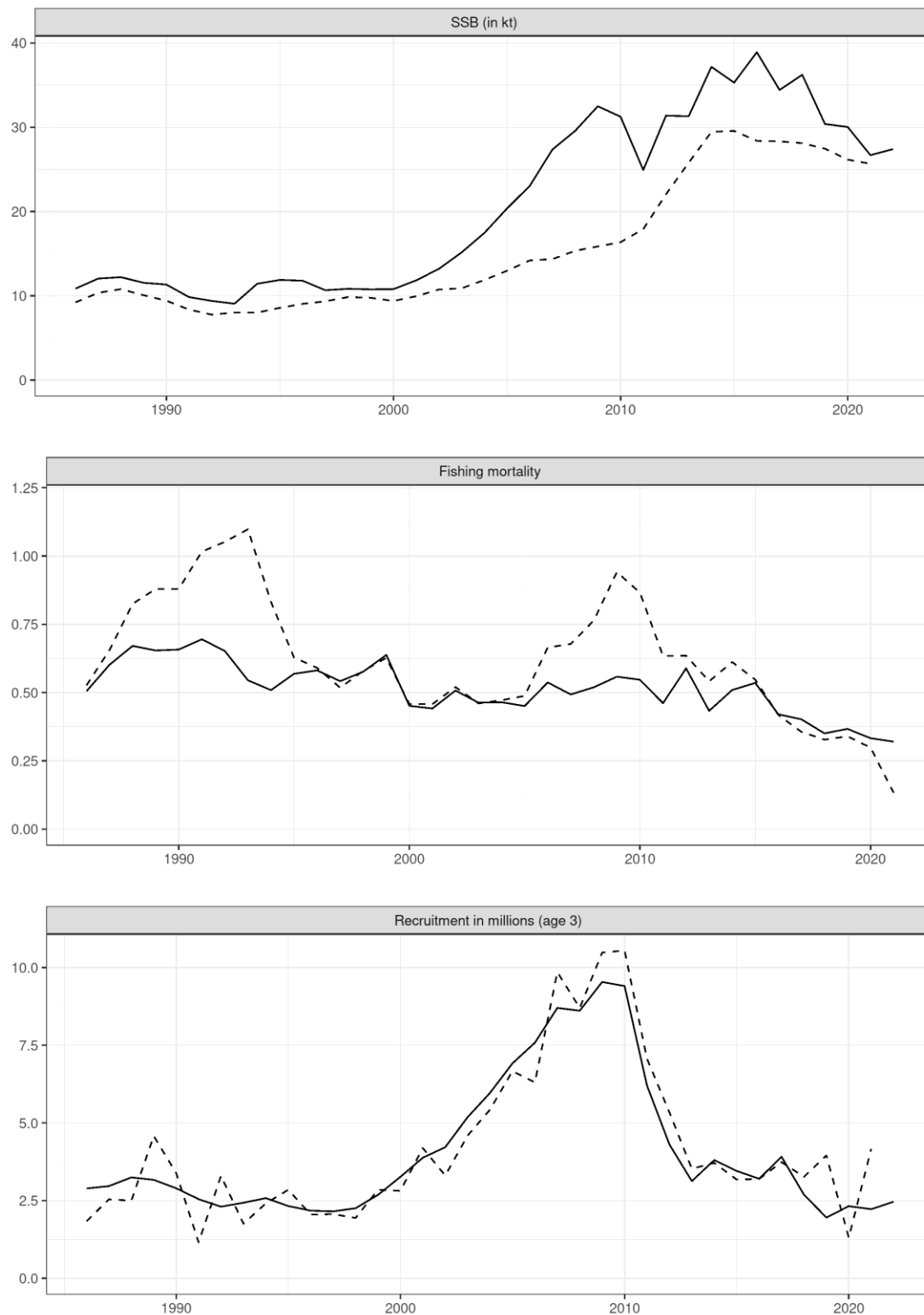


Figure 15. Ling. Comparison of SSB, fishing mortality, and recruitment (age 3) estimates from the previously used Gadget assessment (dashed) to those produced by the SAM model (black line).

RETROSPECTIVE ANALYSIS

The results of an analytical retrospective analysis indicate that there was an overall downward revision of biomass over the 5-year peel, and an upward revision of F (Figure 16). Estimates of recruitment are decently stable except for the apparent peak in 2017-2018. As explained in reference to the survey indices, this is likely the influence of highly variable survey indices that, for the smallest sizes in the most recent years, have no repeated observations at larger sizes with which this influence can be tempered. Therefore, it is expected that these recruitment peaks may simply be the result of uncertainty in survey indices and are likely to disappear in the coming assessment years.

Mohn's p was estimated to be 0.092 for SSB, -0.087 for F , and 0.440 for recruitment. Neither observation nor process residuals show obvious trends (Figures 17 and 18).

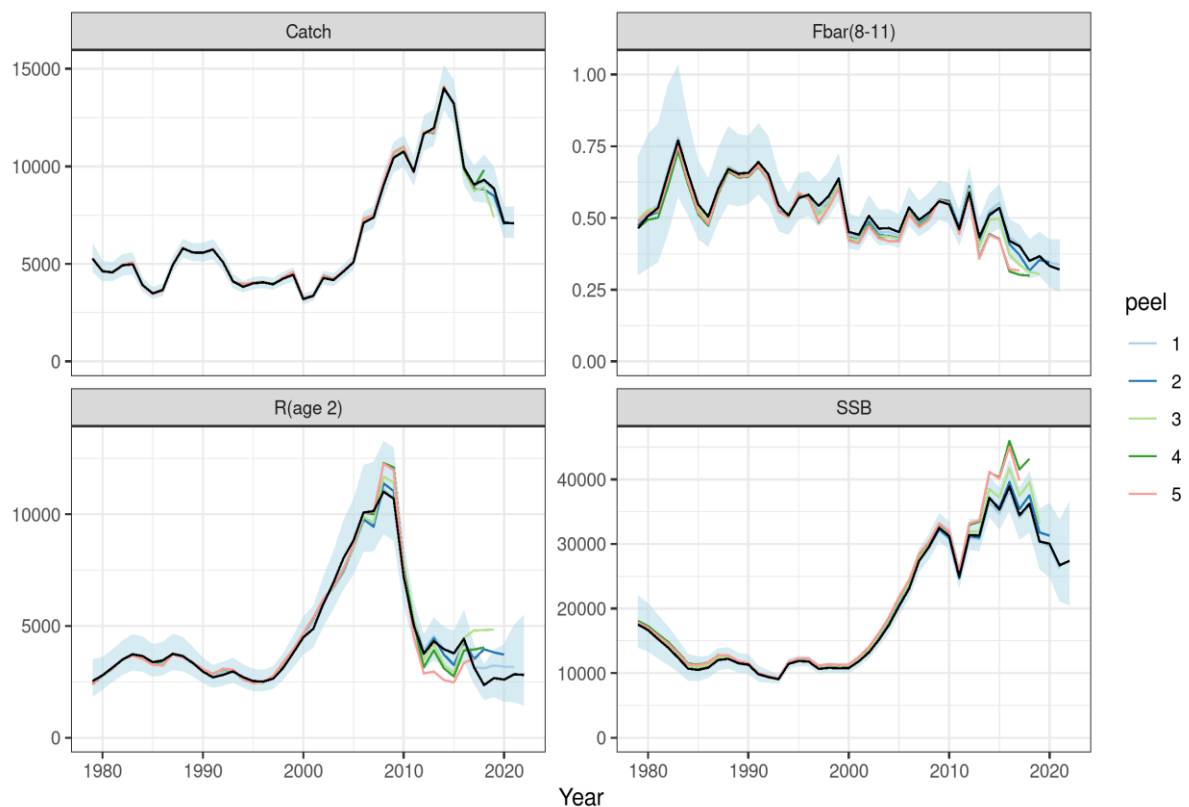


Figure 16. Ling. Retrospective plots illustrating stability in model estimates over a 5-year 'peel' in data. Results of spawning stock biomass, fishing mortality F , and recruitment (age 2) are shown.

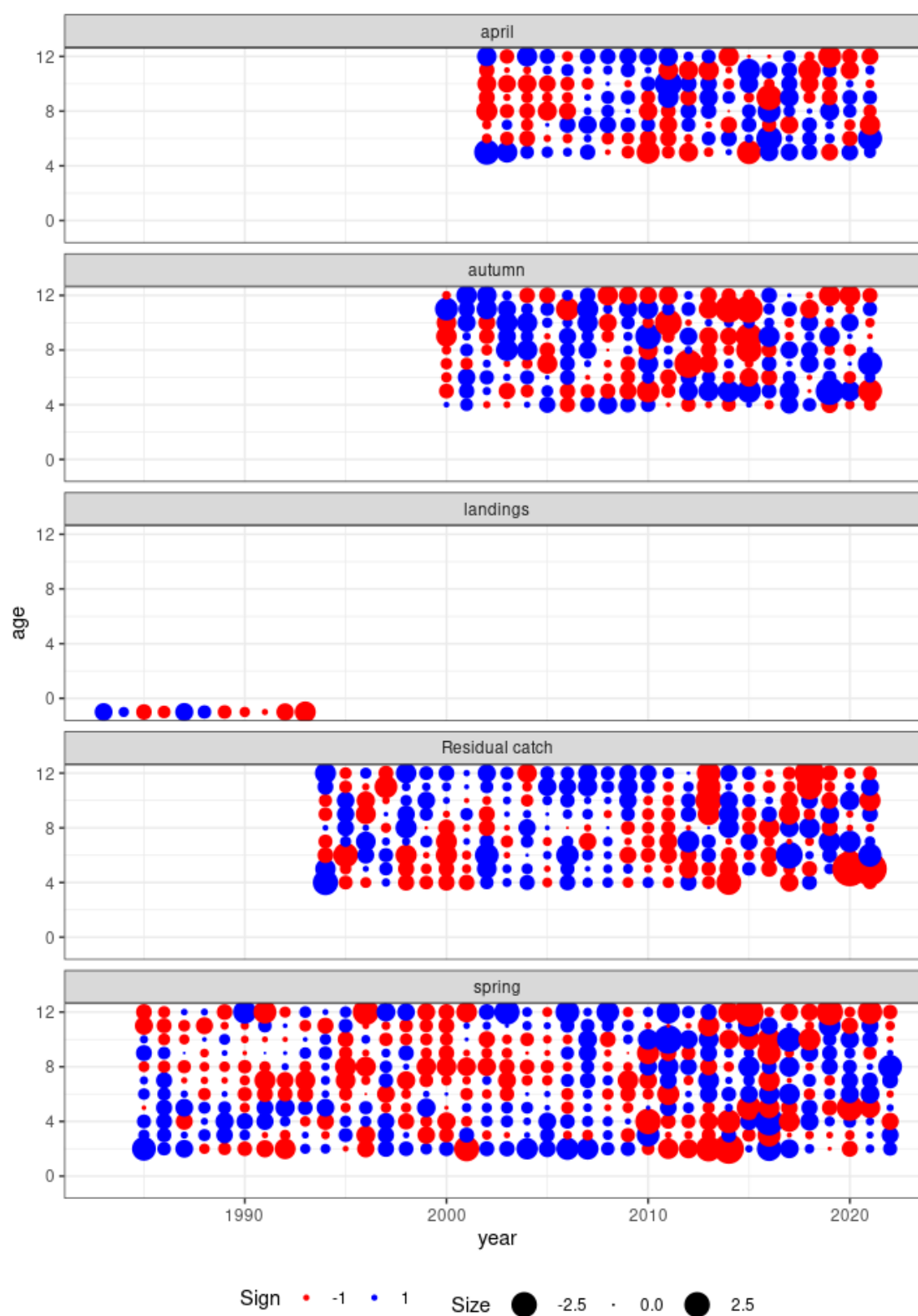


Figure 17. Ling. Observation error residuals of the SAM model.

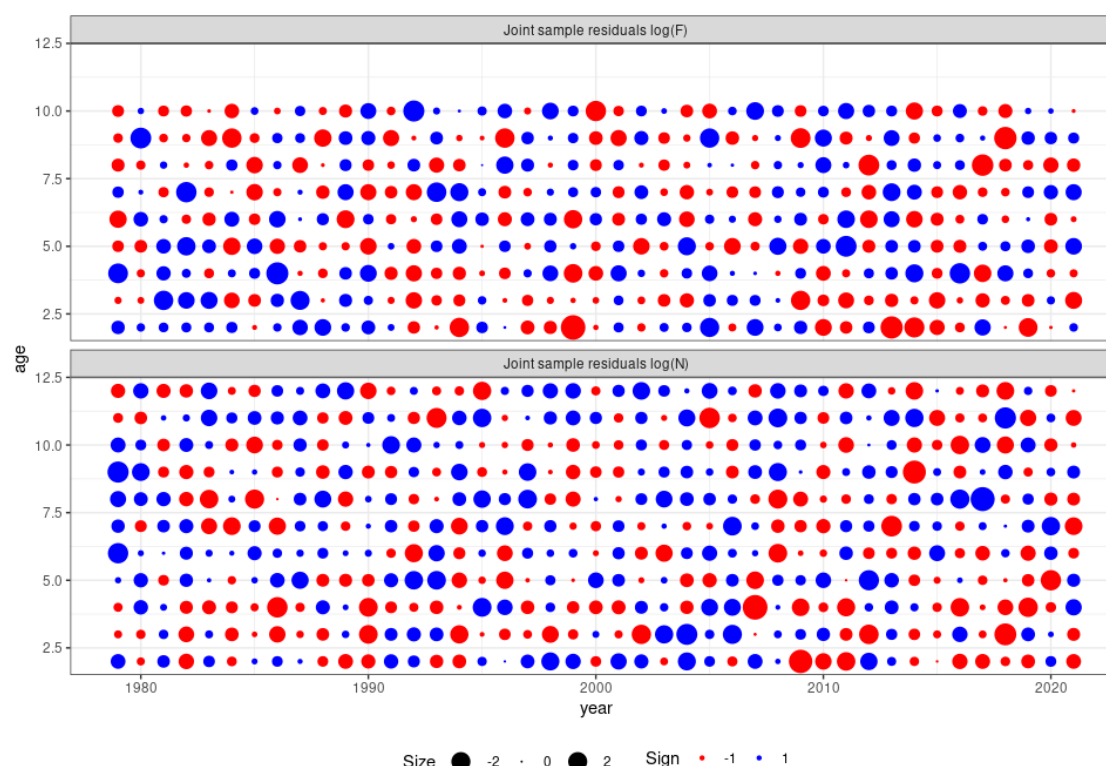


Figure 18. Ling. Process error residuals of the SAM model.

REFERENCE POINTS

As part of the WKICEMP 2022 HCR evaluations (ICES 2022c), the following reference points were defined for the stock.

Table 4. Ling. Reference points adopted from ICES WKICEMP 2022 (ICES 2022).

Framework	Reference point	Value	Technical basis
MSY Approach	MSY $B_{trigger}$	11 100	B_{pa}
	F_{MSY}	0.30	F that produces MSY in the long term
Precautionary Approach	B_{lim}	9000	B_{loss} (SSB in 1993)
	B_{pa}	11 100	$B_{lim} \times e^{1.645 \times \sigma_B}$
	F_{lim}	0.95	Fishing mortality that in stochastic equilibrium will result in median SSB at B_{lim} .
	F_{pa}	0.62	Maximum F at which the probability of SSB falling below B_{lim} is <5%
Management plan	MGT $B_{trigger}$	11 100	According to the harvest control rule
	F_{MGT}	0.30	According to the harvest control rule

The harvest control rule (HCR) for the Icelandic Ling fishery, which sets a TAC for the fishing year $y/y+1$ (September 1 of year y to August 31 of year $y+1$) based on a fishing mortality F_{MGT} of 0.30 applied to ages 8 to 11 modified by the ratio $SSB_y / MGT B_{trigger}$ when $SSB_y < MGT B_{trigger}$, maintains a high yield while being precautionary as it results in lower than 5% probability of $SSB < B_{lim}$ in the medium and long term. WKICEMP 2022 concluded that the HCR was precautionary and in conformity with the ICES MSY approach (ICES 2022c).

MANAGEMENT

The Icelandic Ministry of Food, Agriculture and Fisheries is responsible for management of the Icelandic fisheries and implementation of legislation. The Ministry issues regulations for commercial fishing for each fishing year (1 September–31 August), including an allocation of the TAC for each stock subject to such limitations. Ling in 5.a has been managed by TAC since the 2001/2002 fishing year.

Landings have exceeded both the advice given by MFRI and the set TAC from 2002/2003 to 2013/2014 but amounted to less than two thirds in 2015/2016 (Table 5). Overshoot in landings in relation to advice/TAC has been decreasing steadily since the 2009/2010 fishing year, with an overshoot of 53% to 35% in 2010/2011, 24% in 2011/2012 and 4% in 2012/2013. The reasons for the implementation errors are transfers of quota share between fishing years, conversion of TAC from one species to another (Figure 19) and catches by Norway and the Faroe Islands by bilateral agreement. The level of those catches is known in advance but has until recently not been taken into consideration by the Ministry when allocating TAC to Icelandic vessels. There is no minimum landing size for ling.

There are agreements between Iceland, Norway and the Faroe Islands relating to a fishery of vessels in restricted areas within the Icelandic EEZ. Faroese vessels are allowed to fish 5600 t of demersal fish species in Icelandic waters which includes maximum 1200 tonnes of cod and 40 t of Atlantic halibut. The rest of the Faroese demersal fishery in Icelandic waters is mainly directed at tusk, ling, and blue ling.

Table 5. Ling. Recommended TAC, national TAC, and catches (tonnes).

FISHING YEAR	RECOMMENDED TAC	NATIONAL TAC	CATCHES ICELAND	CATCHES OTHER	TOTAL CATCH
1999/2000			3 487	1	3 488
2000/2001			3 094	12	3 107
2001/2002	3 000	3 000	2 539	2	2 541
2002/2003	3 000	3 000	3 135	5	3 141
2003/2004	3 000	3 000	3 869	0	3 869
2004/2005	4 000	4 000	4 488	0	4 488
2005/2006	4 500	5 000	5 842	5	5 846
2006/2007	5 000	5 000	6 583	0	6 583
2007/2008	6 000	7 000	6 750	3	6 753
2008/2009	6 000	7 000	9 192	0	9 192
2009/2010	6 000	7 000	9 783	1	9 784
2010/2011	7 500	7 500	9 327	0	9 327
2011/2012	8 800	9 000	10 074	10	10 072
2012/2013	12 000	12 000	11 196	15	11 140
2013/2014	14 000	14 000	11 794	1 188	12 982
2014/2015	14 300	14 300	11 684	1 974	13 658
2015/2016	16 200	16 200	9 773	1 456	11 229
2016/2017	9 343	9 343	7 291	1 135	8 426
2017/2018	8 598 ¹⁾	8 598	7 017	1 309	8 326
2018/2019	6 255 ¹⁾	6 255	6 927	1 101	8 028
2019/2020	6 599 ¹⁾	6 599	5 972	1 183	7 155
2020/2021	5 700 ¹⁾	5 700	6 201	1 013	7 214
2021/2022	4 735 ¹⁾	4 735			

¹⁾ 18% harvest control rule

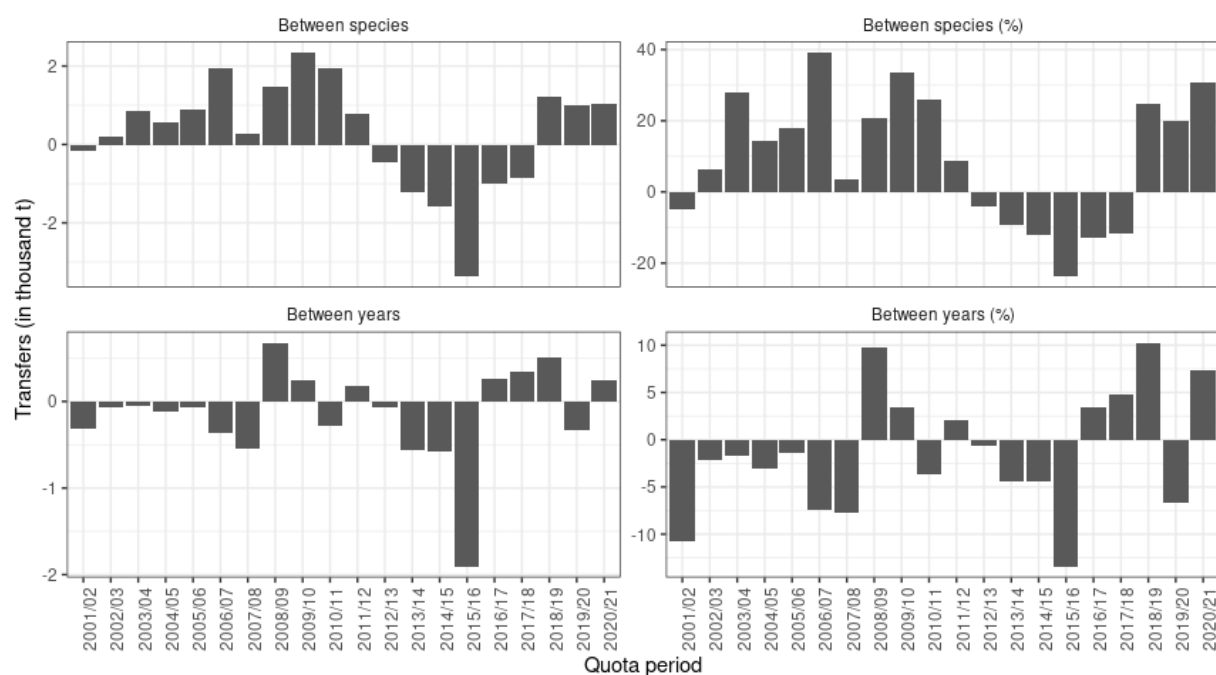


Figure 19. Ling. Net transfer of quota to and from ling in the Icelandic ITQ system by fishing year. Between species (upper): Positive values indicate a transfer of other species to ling, but negative values indicate a transfer of ling quota to other species. Between years (lower): Transfer of quota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

MANAGEMENT CONSIDERATIONS

All the signs from commercial catch data and surveys indicate that ling is at present in a good state. This is confirmed in the stock assessment. However, the drop in recruitment since 2010 will probably result in a rapid decrease in sustainable catches in the near future.

Currently the longline and trawl fishery represent 95% of the total fishery, while the remainder is assigned to gillnets. Should those proportions change dramatically, so will the total catches as the selectivity of the gillnet fleet is substantially different from other fleets.

Table 6. Ling. Catches in Icelandic waters by country (Source STATLANT).

YEAR	BELGIUM	FAROE	GERMANY	ICELAND	NORWAY	UK	TOTAL
1980	445	607	0	3149	423	0	4624
1981	196	489	0	3348	415	0	4448
1982	116	524	0	3733	612	0	4985
1983	128	644	0	4256	115	0	5143
1984	103	450	0	3304	21	0	3878
1985	59	384	0	2980	17	0	3440
1986	88	556	0	2946	4	0	3594
1987	157	657	0	4161	6	0	4981
1988	134	619	0	5098	10	0	5861
1989	95	614	0	4896	5	0	5610
1990	42	399	0	5153	0	0	5594
1991	69	530	0	5206	0	0	5805
1992	34	526	0	4556	0	0	5116
1993	20	501	0	4333	0	0	4854
1994	3	548	0	4049	0	0	4600
1995	0	463	0	3729	0	0	4192
1996	0	358	0	3670	20	0	4048
1997	0	299	0	3634	0	0	3933
1998	0	699	0	3603	0	0	4302
1999	0	500	0	3973	120	1	4594
2000	0	0	0	3196	67	3	3266
2001	0	362	2	2852	116	1	3333
2002	0	1629	0	2779	45	0	4453
2003	0	565	2	3855	108	5	4535
2004	0	739	1	3721	139	0	4600
2005	0	682	1	4311	180	20	5194
2006	0	960	1	6283	158	0	7402
2007	0	807	0	6592	185	0	7584
2008	0	1366	0	7736	176	0	9278
2009	0	1157	0	9610	172	0	10939
2010	0	1095	0	9867	168	0	11130
2011	0	588	0	8743	249	0	9580
2012	0	875	0	10706	248	0	11829
2013	0	1030	0	10212	294	0	11445
2014	0	1738	0	12450	158	0	13930
2015	0	1233	0	11553	250	0	12862
2016	0	1072	0	8582	230	0	9884
2017	0	829	0	7692	244	0	8766
2018	0	1103	0	6756	203	0	8062
2019	0	1093	0	6992	184	0	8269
2020	0	989	0	5836	237	0	7061
2021	0	329	0	6110	91	0	7128

Table 7. Ling. Assessment summary by calendar year. Catches are ICES estimates.

YEAR	RECRUITMENT AGE 2			SPAWNING STOCK TONNES			CATCH TONNES	FISHING MORTALITY AGE 8-11		
	Value	97.5 %	2.5 %	Value	97.5 %	2.5 %		Value	97.5 %	2.5 %
1979	2531	3505	1827	17538	22057	13946	5315	0.46	0.72	0.30
1980	2790	3618	2152	16669	20838	13335	4645	0.51	0.79	0.32
1981	3142	3951	2499	15276	19031	12263	4520	0.54	0.83	0.35
1982	3496	4350	2810	13958	17265	11284	4990	0.66	0.97	0.45
1983	3734	4631	3010	12384	15160	10117	5123	0.77	1.03	0.57
1984	3654	4530	2947	10693	12996	8799	3880	0.65	0.85	0.51
1985	3379	4185	2728	10499	12563	8775	3450	0.55	0.70	0.43
1986	3458	4287	2789	10845	12717	9248	3596	0.51	0.64	0.40
1987	3753	4650	3029	12038	13911	10418	4974	0.60	0.75	0.48
1988	3655	4502	2967	12207	13964	10672	5846	0.67	0.82	0.55
1989	3344	4075	2744	11535	13159	10111	5547	0.65	0.79	0.54
1990	2959	3574	2449	11329	12937	9920	5560	0.66	0.79	0.55
1991	2699	3265	2231	9839	11185	8655	5780	0.70	0.83	0.58
1992	2813	3405	2324	9385	10390	8478	5086	0.65	0.79	0.54
1993	2967	3579	2459	9054	9807	8358	4046	0.55	0.65	0.45
1994	2711	3285	2237	11420	12245	10651	4115	0.51	0.59	0.44
1995	2535	3077	2088	11881	12728	11091	4015	0.57	0.66	0.49
1996	2513	3048	2072	11789	12622	11011	4125	0.58	0.66	0.51
1997	2642	3196	2183	10655	11435	9928	3906	0.54	0.63	0.47
1998	3128	3783	2586	10822	11651	10051	4394	0.58	0.66	0.50
1999	3795	4582	3144	10760	11590	9989	4625	0.64	0.73	0.56
2000	4490	5418	3721	10786	11638	9996	3284	0.45	0.52	0.39
2001	4876	5910	4023	11826	12739	10978	3362	0.44	0.50	0.39
2002	5994	7213	4981	13190	14203	12249	4519	0.51	0.58	0.44
2003	6935	8346	5762	15144	16318	14055	4270	0.46	0.53	0.40
2004	8032	9727	6633	17446	18755	16228	4606	0.46	0.53	0.41
2005	8829	10686	7294	20357	21849	18967	5198	0.45	0.51	0.40
2006	10077	12210	8316	23032	24644	21526	7405	0.54	0.61	0.47
2007	10139	12336	8334	27359	29239	25599	7591	0.49	0.56	0.44
2008	11005	13278	9121	29572	31640	27640	9283	0.52	0.59	0.46
2009	10697	12991	8808	32494	34765	30372	10945	0.56	0.63	0.49
2010	7201	8710	5953	31249	33514	29137	11131	0.55	0.62	0.48
2011	5024	6120	4125	24921	26865	23118	9626	0.46	0.53	0.40
2012	3751	4629	3040	31376	33843	29089	11817	0.59	0.68	0.51
2013	4316	5381	3462	31302	33942	28867	11581	0.43	0.50	0.38
2014	3961	4955	3167	37169	40433	34169	14246	0.51	0.58	0.44
2015	3781	4785	2988	35300	38695	32203	13035	0.54	0.62	0.46
2016	4430	5735	3421	38903	43189	35042	9884	0.42	0.50	0.36
2017	3158	4190	2380	34432	38714	30624	8766	0.40	0.48	0.34
2018	2355	3298	1681	36224	41318	31759	8062	0.35	0.43	0.29
2019	2668	3929	1812	30387	35445	26050	8269	0.37	0.45	0.30
2020	2602	4187	1617	30032	36361	24804	7061	0.33	0.43	0.26
2021	2840	5073	1590	26688	33760	21097	7128	0.32	0.43	0.24
2022	2810	5507	1434	27405	36698	20464				

REFERENCES

- ICES. 2011. "Report of the Working Group on the Biology and Assessment of Deep-Sea Fish-eries Resources (Wgdeep), 2 March–8 March, 2011, Copenhagen, Denmark. ICES Cm 2011/Acom:17." International Council for the Exploration of the Seas; ICES publishing.
- . 2012. "Report of the Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (Wgdeep), 28 March–5 April, 2012, Copenhagen, Denmark. ICES Cm 2012/Acom:17." International Council for the Exploration of the Seas; ICES publishing.
- . 2019. "11.2 Icelandic Waters ecoregion – Fisheries overview." International Council for the Exploration of the Seas; ICES publishing. <https://doi.org/10.17895/ices.advice.5706>.
- . 2022a. Iceland request for evaluation of a harvest control rule for ling in Icelandic waters. ICES Advice: Special Requests. Report. <https://doi.org/10.17895/ices.advice.19625736.v1>
- . 2022b. "Stock Annex: Ling (*Molva molva*) in Division 5.a (Iceland grounds)." International Council for the Exploration of the Seas; ICES publishing. Unpublished
- . 2022c. Workshop on the evaluation of assessments and management plans for ling, tusk, plaice and Atlantic wolffish in Icelandic waters (WKICEMP). ICES Scientific Reports. Report. <https://doi.org/10.17895/ices.pub.19663971.v1>