

4 Faroe Plateau cod

This section was updated in November 2020.

4.1 Stock description and management units

Both genetic and tagging data suggest that there are three cod stocks present in Faroese waters: on the Faroe Bank (Division 5.b.2), on the Faroe Plateau (Division 5.b.1) and on the Faroe-Iceland Ridge. Cod on the Faroe-Iceland Ridge seem to belong to the cod stock at Iceland, and the WG in 2005 decided to exclude these catches from the catch-at-age calculations. The stock annex provides more information.

4.2 Scientific data

4.2.1 Trends in landings and fisheries

The landings were obtained from the Fisheries Ministry and Statistics Faroe Islands. The landings are presented in Table 4.2.1 and the working group estimates are presented in Table 4.2.2. The catches on the Faroe-Iceland Ridge, i.e. for single trawlers and the large longliners were not included in the catch-at-age calculations (Table 4.2.3).

4.2.2 Catch-at-age

Landings-at-age for 2019 are provided for the Faroese fishery in Table 4.2.4. Faroese landings from most of the fleet categories were sampled (Table 4.2.5). The catch-at-age is shown in Table 4.2.6. Catch curves are shown in Figure 4.2.1.

4.2.3 Weight-at-age

Mean weight-at-age data are provided for the Faroese fishery in Table 4.2.7. These were calculated using the length/weight relationship based on individual length/weight measurements of samples from the landings. The sum-of-products-check for 2019 showed a discrepancy of 0 %. The weights have increased in recent years (Figure 4.2.2).

4.2.4 Maturity-at-age

The proportion of mature cod by age during the Faroese groundfish surveys carried out during the spawning period (March) is given in Table 4.2.8 and in Figure 4.2.3. Full maturity is generally reached at age 5 or 6, but considerable changes have been observed in the proportion mature for younger ages between years. Maturities were slightly revised during the benchmark in February 2017. The maturities prior to 1983 were set to the average for 1983 to 1996.

4.2.5 Catch, effort and research vessel data

Fisheries independent CPUE series

The spring groundfish surveys in Faroese waters with the research vessel Magnus Heinason is used as a tuning series. The catch curves showed a normal pattern (Figure 4.2.4), i.e., a decreasing

trend after age 5. The stratified mean catch of cod per unit effort (Figure 4.2.5) has decreased in the recent years.

The other tuning series used is the Summer Groundfish Survey. The stratified mean catch of cod per unit effort has also decreased in recent years (Figure 4.2.5). The catch curves (Figure 4.2.6) show that the fish are fully recruited to the survey gear at an age of 4 or 5 years. Both tuning series are presented in Table 4.2.9 and they show that the 2016 and 2017 year classes initially seemed to be of average strength but were less abundant in 2020 than expected. Catch per tow in the spring and summer survey shows that there were occasional large hauls in both surveys (Figure 4.2.7 and Figure 4.2.8).

Commercial CPUE series

Three commercial CPUE series (longliners and pairtrawlers) are also presented (tables 4.2.10, 4.2.11, and 4.2.12 as well as Figure 4.2.7), although they are not used as tuning series. The incoming year classes observed in the surveys are only seen in the small longliners, probably because the large longliners and pairtrawlers operate in deeper waters where the juveniles are infrequent. Note that the small boats (0–25 GRT) operating with longlines and jigging reels close to land have had an extremely high CPUE in recent years relative to the fishable biomass (Figure 4.2.10, Figure 4.2.11), a feature also observed for the larger longliners (Figure 4.2.9). When that happens, the recruitment of cod tends to be low (Steingrund *et al.*, 2010). However, the catchability for the large longliners came down to the average level in 2017 but increased thereafter (Figure 4.2.11).

4.3 Information from the fishing industry

The sampling of the catches is included in the ‘scientific data’. The fishing industry has since 1996 gathered data on the size composition of the landings but this information has not been used in this assessment.

4.4 Methods

The benchmark in February 2017 decided to change the traditional assessment tool from XSA to SAM although it was recognised that the results of the assessment were mainly data-driven. The SAM model had some beneficial characteristics, e.g. that it provided uncertainty estimates for the catch in numbers, surveys and the output from the assessment (biomasses and fishing mortalities).

4.5 Reference points

Since the assessment model was replaced at the benchmark in February 2017, it was necessary to recalculate reference points at the NWWG meeting in 2017 (this was not finally conducted during the benchmark).

The B_{lim} was kept unchanged at 21 thousand tonnes, since this previously defined B_{loss} was the lowest spawning biomass from which the stock had made a recovery. It was noted that the biomass had been lower afterwards but the stock had not recovered by the time when the reference point was defined.

The $B_{pa} = B_{trigger} = 29\,226$ tonnes (changed from 40 000 tonnes). The uncertainty in the SAM assessment on the final year of SSB was found to be $\sigma = 0.20$ and the B_{pa} was found by using the formula $B_{pa} = B_{lim} \times \exp(\sigma \times 1.645)$. The $B_{trigger}$ was, according to ICES guidelines, set equal to B_{pa} since the stock had not been fished at F_{MSY} for five or more years.

$F_{lim} = 0.90$ (changed from 0.68). F_{lim} was derived from B_{lim} . A stock was simulated with a segmented regression on the spawning stock – recruitment function having the point of inflection at B_{lim} . F_{lim} was set to the F that, in equilibrium, gave a 50% probability that $SSB > B_{lim}$. This simulation was based on a fixed F , i.e., without inclusion of a $B_{trigger}$ and without inclusion of assessment/advice errors.

$F_{pa} = 0.69$ (changed from 0.35). F_{pa} was derived from F_{lim} in the reverse of the way B_{pa} was derived from B_{lim} , i.e., $F_{pa} = F_{lim} \times \exp(-\sigma \times 1.645)$, where $\sigma = 0.16$.

The calculations were conducted using EQSIM following ICES guidelines. Decisions made involved the spawning stock – recruitment relationship, the weights at age, the selection pattern and the level of advice error. The full time series (1959–2015) was used as basis for the spawning stock – recruitment relationship where the S-R function was based on the segmented regression (weight 0.61), Ricker (weight 0.36) and Beverton and Holt (weight 0.03). The Ricker curve was included because recruitment at very large stock sizes was low according to extension of stock biomass back to 1710 (ICES, 2016). The autocorrelation between SSB-R data points was approximately 0.55. The weights at age were based on the last 10 years (2007–2016). The selection pattern was also based on the last 10 years. The selection pattern has been very stable over time, so the use of the last 20 years would not make any big difference for the F_{MSY} . The advice error was estimated from advice sheets back to 1999: $cvF = 0.44$, $\phi F = 0.47$, $cvSSB = 0.38$, $\phi SSB = 0.24$. In total, 2000 iterations were performed that projected the stock 200 years into the future, of which, the last 50 years were kept to calculate ‘equilibrium’ values.

The result of the analyses was that $F_{MSY} = 0.23$ (changed from 0.32). The fishing mortality that is associated with a risk of 5% to fall below B_{lim} , $F_{p0.5}$, was estimated to be 0.41, greater than F_{MSY} .

4.6 State of the stock - historical and compared to what is now

As previous years, the two surveys were used for tuning. The commercial series showed a similar overall tendency as the surveys (Figure 4.2.9) but were not used in the tuning. At the benchmark in February 2017, the traditional XSA was replaced by a SAM assessment model. The SAM model settings and the model parameters are shown in Table 4.6.1, e.g. the fishing mortality is assumed equal for ages 7+. The variation in the catchability coefficients for the survey at age was set equal for ages 2+, although different for each survey, and age 1 was set different from the other ages, but different for the two surveys. An AR covariance structure was applied for the summer survey, eliminating year effects, but not for the spring survey. The observation residuals looked quite random (Figure 4.6.1) as well as the joint residuals (Figure 4.6.2).

The results from the SAM-run shows that fishing mortality (F_{3-7}) has decreased in recent years albeit increasing steeply the last two years (Table 4.6.2, Table 4.6.4, Figure 4.6.3). The population numbers, total biomass and spawning stock biomass have been low compared with other years in the series, but temporarily increased around 2017 and decreased again (Table 4.6.3, Table 4.6.4, Figure 4.6.4, Figure 4.6.5). The poor state of the stock since 2004 was due to poor recruitment (not poor individual growth). Prior to that time, extremely weak year classes (< 5 million individuals at age 2) were only observed three times, whereas it has happened eight times since 2004. In the past there has been a poor relationship between the size of the spawning stock and subsequent recruitment (Figure 4.6.6), but the increasing number of low data points in recent years have strengthened the stock-recruitment relationship. The spawning stock biomass in the terminal year was above $B_{trigger}$ and the fishing mortality above F_{pa} (Table 4.6.4). The spawning stock biomass in the assessment year was below $B_{trigger}$.

The decade of low biomass of Faroe Plateau cod since 2004 has been unprecedented over the last 300 years (Figure 4.6.4); for data and figures for the years before 1959, see ICES (2016), although there were short periods of low biomass between 1700 and 1750 and around 1813.

4.7 Short term forecast

4.7.1 Input data

The short term prediction was performed in the SAM model. The SAM model provides predictions that carry the signals from the assessment into the short term forecast. The forecast procedure starts from the last year's (assessment year) estimate of the state ($\log(N)$ and $\log(F)$) at age. One thousand replicates of the last state are simulated from its estimated joint distribution. Each of these replicates are then simulated forward according to the assumptions and parameter estimates found by the assessment model. In the forward simulations a 5 year average (years up to the assessment year) is used for catch mean weight, stock mean weight, proportion mature, and natural mortality. Recruitment is re-sampled from the last 10 years (up to the year before the assessment year). In each forward simulation step the fishing mortality is scaled, such that the median of the distribution is matching the requirement in the scenario (e.g. hitting a specific mean F value or a specific catch).

4.7.2 Results

The landings in 2020 were originally expected to be 17 thousand tonnes (Table 4.6.4) with an extremely high projected fishing mortality of 0.87. However, the landings in 2020 were estimated to be only 10600 tonnes, based on the January-September landings 2020 and comparing with 2019. Therefore, (deviating from the stock annex) a catch constraint was set on the landings in 2020 of 10600 tonnes and forecasts based on this assumption (Table 4.6.4). The landings from the Faroe-Iceland Ridge should be added to this figure in order to get the total Faroese landings within the 5.b.1 area. The spawning stock biomass is expected to be 33 thousand tonnes in 2021 and 37 thousand tonnes in 2022 if the F_{msy} is applied. This is markedly lower than expected in the last years' forecast.

4.8 Long term forecast

The yield per recruitment calculations were performed in the SAM model and were based on the last 20 years (up to the year before the assessment year). The F_{max} was estimated at 0.27 (Figure 4.8.1).

4.9 Uncertainties in assessment and forecast

Since there is no incentive to discard fish or misreport catches under the effort management system, the catch figures are considered adequate, as well as the catch-at-age.

The retrospective pattern indicates uncertainties in the assessment, especially in recruitment (Figure 4.9.1). The Mohn's ρ was -178%, -14% and -7% for recruitment, F , and the spawning stock biomass, respectively. The massive downscaling of the recruitment is commented on later in this report (4.10).

Steingrund *et al.* (2010) found that the recruitment of Faroe Plateau cod (age 2) could be rather precisely estimated as there is a significant relationship between cod biomass (age 3+) and the

amount of cannibalistic cod in nearshore waters in June–October the previous year. This approach showed that the recent year classes were extremely weak and that the 2016 and 2017 year classes were slightly stronger (Figure 4.9.2).

A preliminary catch-at-age for 2020 was calculated, based on the data already available (catch figures January–September scaled up to the whole year, 10604 tonnes, based on the landings in 2019; age and length samples from the catch January–September). The catch-at-age figures for 2020 were (age 2 to 10+ in thousands): 24, 808, 1340, 528, 344, 129, 56, 12, and 4. The fishing mortality in 2020 was much more reasonable (0.57 vs. 0.87) and the recruitment was even more downscaled leading to a more pessimistic forecast of future biomass. Question is whether an additional recruitment index should be used in future assessments that reflects the food availability in the ecosystem – much food, large recruitment, and *vice versa* (WD 23), see 4.10.

4.10 Comparison with previous assessment and forecast

The assessment settings were according to the Stock Annex. The assessment this year showed substantial downscaling of the recruitment, a lower total stock biomass and spawning stock biomass and higher fishing mortality compared with last year's assessment (Figure 4.10.1). Reason for this downscaling of recruitment is likely either food shortage or cannibalism or both. This is indicated by a high catchability with longlines and a high abundance of age 3+ cod close to land (in the nursery areas of recruiting cod) that are easily caught by small longliners. This was observed in summer-autumn 2018 and especially in 2019 (Figure 4.2.10, Figure 4.2.11 and Figure 4.9.2). In hindsight, this has happened before (in 1997, 2002–2003) and was not surprising given the low abundance of sandeels and below-average abundance of Norway pout. For some reason, though, the weights-at-age in 2019 and 2020 were above average and this should be investigated further in the future.

4.11 Management plans and evaluations

A management plan based on the fishing day system is agreed on by the fishing industry, Faroe Marine Research Institute and Faroe Coastal Guard but is not implemented yet.

4.12 Management considerations

The productivity of the Faroe Plateau cod stock seems to be less now than for decades ago. Future management plans should preferably keep the fishing mortality close to F_{MSY} in order to obtain maximum catch and avoiding low stock levels in the future.

4.13 Ecosystem considerations

Regarding the ecosystem effects on fishing, this issue is partly addressed in the overview section for Faroese stocks. Although the fishery has changed substantially during the last century the total biomass of cod+haddock+saithe has fluctuated around the same level. However, the proportion of saithe has increased steadily over the time period, whereas cod has decreased. This could indicate some effect of fishing on the ecosystem, although other factors cannot be ruled out.

4.14 Regulations and their effects

There seems to be a poor relationship between the number of fishing days and the fishing mortality because of large fluctuations in catchability. Area restrictions may help to reduce fishing mortality, but they cause practical problems for the fishing fleets (e.g. high concentrations of vessels in certain areas).

4.15 Changes in fishing technology and fishing patterns

Fishing effort per fishing day may have increased gradually since the effort management system was introduced in 1996, although little direct quantitative information exists. There also seems to have been substantial increases in fishing power when new vessels are replacing old vessels.

The fishing pattern in recent years has changed in comparison to previous years. The large long-liners seem to have exploited the deep areas (> 200 m) to a larger extent (ling and tusk) because the catches in shallower waters of cod and haddock have been so poor – which was also observed in the beginning of the 1990s. They also have fished in other areas, e.g. in Greenland and on the Flemish Cap. This could reduce the fishing mortality on cod and haddock, but the small long-liners and jiggers still exploit the shallow areas.

4.16 Changes in the environment

The primary production was low for a number of years, albeit high in 2008 to 2010 and in 2017, but it is not believed that this has any relationship with a change in the environment. Since 2002, the temperature has been about 1 °C higher than in the 1990s, which may have had a negative effect on cod recruitment.

Table 4.2.1. Faroe Plateau cod (Subdivision 5.b.1). Nominal catch (t) by countries, as officially reported to ICES.

	Denmark	Faroe Islands	France	Germany	Iceland	Netherlands	Norway	Greenland	Portugal	UK	UK Scotland	Total
1986	8	34492	4	8			83	-		0	0	34595
1987	30	21303	17	12			21	-		8	0	21391
1988	10	22272	17	5			163	-		0	0	22467
1989	-	20535	-	7			285	-		0	0	20827
1990	-	12232	-	24			124	-		0	0	12380
1991	-	8203	..**	16			89	-		1	0	8309
1992	-	5938	3***	12			39	-		74	0	6066
1993	-	5744	1***	+			57	-		186	0	5988
1994	-	8724	-	2***			36	-		56	0	8818
1995	-	19079	2***	2			38	-		43	0	19164
1996	-	39406	1***	+			507	-		126	0	40040
1997	-	33556	-	+			410	-		61***	0	34027
1998	-	23308	..*	-			405	-		27***	0	23740
1999	-	19156	..*	39	-		450	-		51	0	19696
2000		0	1	2	-		374	-		18	0	395
2001		29762	9***	9	-		531	-		50	0	30361
2002		40602	20	6	5		573			42	0	41248
2003		30259	14	7	-		447	-		15	0	30742
2004		17540	2	3***			414		1	15	0	17975
2005		13556	-				201			24	0	13781
2006		11629	7	1***			49	5		0	0	11691
2007		9905	1***				71	7		0	360	10344
2008		9394	1				40			0	383	9818
2009		10736	1				14	7		0	300	11058

	Denmark	Faroe Islands	France	Germany	Iceland	Netherlands	Norway	Greenland	Portugal	UK	UK Scotland	Total
2010		13878	1				10			0	312	14206
2011		11348	-				0			0	0	11348
2012		8437	0		28		0			0	0	8466
2013		5331	0		20		0	2		0	0	5333
2014		6655					2			0	226	6883
2015		7812					33	14		0	367	8174
2016		6736					31	5		0	456	7232
2017		6215	2			0	16			0	388	6625
2018		13297	2			0	69			0	504	13872
2019		22342*	1			0	219			0	238	22800

* Preliminary, ** Included in 5.b.2, *** Reported as 5.b.

Table 4.2.2. Faroe Plateau cod (Subdivision 5.b.1). Nominal catch (t) used in the assessment.

	Officially reported	Faroese catches				Reported as 5.b.2			Foreign catches				Used in the assessment
		in 5.b.1	Adjustment in 5.b.1	On Faroe-Iceland ridge	in 2.a within Faroe area jurisdiction	UK (E/W/Nl)	UK (Scotl.)	UK	French ***	Greenland ***	Russia ***	UK ***	
1986	34595												34595
1987	21391												21391
1988	22467				715								23182
1989	20827				1229				12				22068
1990	12380				1090	-	205		17				13692
1991	8309				351	-	90						8750
1992	6066				154	+	176						6396
1993	5988					1	118						6107
1994	8818					1	227						9046
1995	19164	3330****				-	551						23045
1996	40040					-	382						40422
1997	34027					-	277						34304
1998	23740					-	265						24005
1999	19696				-661	-	210						19245
2000	395	21793*			-600	-	245						21833
2001	30361		-1766		-306	-	288						28577
2002	41248		-2409		-223	-	218	-				-	38834
2003	30742		-1795		-4034	-	254	-				-	25167
2004	17975		-1041		-4338	-	244	-				-	12840
2005	13781		-804		-3987		1129	-				-	10119
2006	11691		-690		-1435		278						9844

	Officially reported	Faroeese catches			Reported as 5.b.2			Foreign catches				Used in the assessment	
		in 5.b.1	Adjustment in 5.b.1	On Faroe-Iceland ridge	in 2.a within Faroe area jurisdiction	UK (E/W/Nl)	UK (Scotl.)	UK	French ***	Greenland ***	Russia ***		UK ***
2007	10344		-588		-2304		53			6			7511
2008	9818		-557		-1978		32						7315
2009	11058		-637		-510		38			26	4		9979
2010	14206		-823		-680		54			5			12762
2011	11348		-673		-986					3			9692
2012	8466		-500		-766					5			7205
2013	5333		-316		-544						0		4473
2014	6883		-395		-777								5711
2015	8174		-460		-384								7329
2016	7232		-399		-958								5876
2017	6625		-369		-896								5360
2018	13872		-789		-869								12214
2019	22800*		-1326		-804								20670

* Preliminary, ** In order to be consistent with procedures used previous years, *** Reported to Faroese Coastal Guard, **** expected misreporting/discard.

Table 4.2.3. Faroe Plateau cod (Subdivision 5.b.1). The landings of Faroese fleets (in percentage) of total catch (t). Note that the catches on the Faroe-Iceland ridge (mainly belonging to single trawlers and longliners) are included in this table, but excluded in the catch in numbers.

Year	Openboats	Longliners <100 GRT	Singtrawl <400 HP	Gill-nets	Jiggers	Sing trawl 400–1000 HP	Sing trawl >1000 HP	Pair trawl <1000 HP	Pair trawl >1000 HP	Long liners >100 GRT	Industrial trawlers	Others	Faroe catch Round.weight
1985	16.0	27.2	6.7	0.6	4.3	7.9	11.2	12.3	5.6	7.5	0.2	0.6	39,422
1986	9.5	15.1	5.1	1.3	2.9	6.2	8.5	29.6	14.9	5.1	0.4	1.3	34,492
1987	9.9	14.8	6.2	0.5	2.9	6.7	8.0	26.0	14.5	9.9	0.5	0.1	21,303
1988	2.6	13.8	4.9	2.6	7.5	7.4	6.8	25.3	15.6	12.7	0.6	0.2	22,272
1989	4.4	29.0	5.7	3.2	9.3	5.7	5.5	10.5	8.3	17.7	0.7	0.0	20,535
1990	3.9	35.5	4.8	1.4	8.2	3.7	4.3	7.1	10.5	19.6	0.6	0.2	12,232
1991	4.3	31.6	7.1	2.0	8.0	3.4	4.7	8.3	12.9	17.2	0.6	0.1	8,203
1992	2.6	26.0	6.9	0.0	7.0	2.2	3.6	12.0	20.8	13.4	5.0	0.4	5,938
1993	2.2	16.0	15.4	0.0	9.0	4.1	3.6	14.2	21.7	12.6	0.8	0.4	5,744
1994	3.1	13.4	9.6	0.5	19.2	2.7	5.3	8.3	23.7	13.7	0.5	0.1	8,724
1995	4.2	17.9	6.5	0.3	24.9	4.1	4.7	6.4	12.3	18.5	0.1	0.0	19,079
1996	4.0	19.0	4.0	0.0	20.0	3.0	2.0	8.0	19.0	21.0	0.0	0.0	39,406
1997	3.1	28.4	4.4	0.5	9.8	5.1	2.9	4.8	11.3	29.7	0.0	0.1	33,556
1998	2.4	31.2	6.0	1.3	6.5	6.3	5.5	3.1	8.6	29.1	0.1	0.0	23,308
1999	2.7	24.0	5.4	2.3	5.4	5.2	11.8	6.4	14.5	21.9	0.4	0.1	19,156
2000	2.3	19.3	9.1	0.9	10.5	9.6	12.7	5.7	13.9	15.7	0.1	0.1	21,793
2001	3.7	28.3	7.4	0.2	15.6	6.4	6.4	5.2	9.2	17.8	0.0	0.0	28,838
2002	3.8	32.9	5.8	0.3	9.9	6.7	6.6	2.5	7.2	24.4	0.0	0.0	38,347
2003	4.9	28.7	4.0	1.5	7.4	3.0	14.4	2.2	7.4	26.5	0.0	0.0	29,382
2004	4.4	31.1	2.1	0.5	6.6	1.6	12.9	2.2	11.7	26.8	0.0	0.0	16,772
2005	3.7	27.5	5.1	0.8	5.4	2.4	28.1	1.7	6.4	18.8	0.0	0.0	15,472
2006	6.2	35.0	3.2	0.2	7.1	1.6	12.9	2.5	6.6	24.7	0.0	0.0	8,636
2007	5.1	28.2	2.6	0.3	6.1	1.7	17.5	1.7	4.8	32.0	0.0	0.0	8,866

Year	Openboats	Longliners <100 GRT	Singtrawl <400 HP	Gill-nets	Jiggers	Sing trawl 400–1000 HP	Sing trawl >1000 HP	Pair trawl <1000 HP	Pair trawl >1000 HP	Long liners >100 GRT	Industrial trawlers	Others	Faroe catch Round.weight
2008	5.1	32.7	4.7	0.7	6.4	3.2	14.6	1.0	3.1	28.6	0.0	0.0	7,666
2009	6.9	41.6	4.3	0.3	10.1	2.5	1.9	2.8	6.5	23.0	0.0	0.0	7,146
2010	6.2	31.9	2.7	0.0	12.6	1.3	1.4	3.4	9.6	30.8	0.0	0.0	10,258
2011	3.6	26.5	3.4	0.1	6.7	1.3	1.4	3.1	21.9	31.9	0.0	0.0	9,502
2012	2.7	23.5	4.9	0.0	5.3	1.1	2.6	5.3	21.5	32.9	0.0	0.0	6,378
2013	4.6	26.3	6.3	0.2	8.0	2.3	2.0	4.0	15.9	30.2	0.0	0.0	4,749
2014	8.7	28.0	6.4	0.4	6.4	1.2	5.2	2.5	12.3	28.7	0.0	0.0	5,699
2015	9.0	26.0	9.6	0.1	9.1	2.1	4.2	2.2	10.9	26.9	0.0	0.0	5,890
2016	9.7	21.0	10.9	0.7	9.4	2.4	2.0	3.7	12.9	27.2	0.0	0.0	5,562
2017	5.6	13.8	14.8	0.5	9.3	9.3	6.7	2.6	19.5	17.9	0.0	0.0	5,279
2018	8.0	15.2	14.3	0.3	11.3	6.8	9.1	3.0	14.9	17.1	0.0	0.0	10379
2019	14.2	21.8	6.0	0.2	15.3	2.9	3.2	2.6	14.5	19.4	0.0	0.0	16176
Avg	5.5	25.2	6.5	0.7	9.2	4.1	7.3	6.9	12.7	21.5	0.3	0.1	

Table 4.2.4. Faroe Plateau cod (Subdivision 5.b.1). Catch in numbers at age per fleet in terminal year. Numbers are in thousands and the catch is in tonnes, gutted weight.

Age\Fleet	Longliners < 100 GRT	Single trawl 400-700 HP	Trawlers > 700 HP	Longliners > 100 GRT	Sum CAA	Final CAA
2	298	66	71	141	576	576
3	994	187	416	573	2170	2170
4	585	186	276	361	1408	1407
5	545	150	188	358	1241	1242
6	501	103	78	247	929	928
7	118	30	23	68	239	239
8	14	3	7	12	36	37
9	10	0	4	8	22	23
10+	4	0	3	2	9	9
Numbers	3069	725	1066	1770	6630	6631
Tonnes	9014	2294	3679	5683	20670	20670

Open boats are included in longliners < 100 GRT.
Jiggers and gillnetters have negligible catch.

Table 4.2.5. Faroe Plateau cod (Subdivision 5.b.1). Number of samples, lengths, otoliths, and individual weights in terminal year.

Drift	Samples		Only lengths		Lengths and Weights		Otoliths	
	Q1-2	Q3-4	Q1-2	Q3-4	Q1-2	Q3-4	Q1-2	Q3-4
Open boats	2	0	0	0	445	0	104	0
Longliners < 100 GRT	3	2	0	0	610	311	179	120
Jiggers	0	1	0	0	0	116	0	60
Single trawlers < 400 HP	4	3	0	0	771	646	239	178
Single trawlers > 400 HP	0	0	0	0	0	0	0	0
Pair trawlers < 1000 HP	13	10	153	0	2405	1783	711	665
Pair trawlers > 1000 HP	9	11	326	0	1434	2183	420	646
Longliners > 100 GRT	16	17	0	0	2972	3393	898	1006
Sum	47	44	479	0	8637	8432	2551	2675

Table 4.2.6. Faroe Plateau cod (Subdivision 5.b.1). Catch in numbers at age.

Year\age	1	2	3	4	5	6	7	8	9	10+
1959	0	2002	4239	858	1731	200	207	50	10	0
1960	0	4728	4027	2574	513	876	171	131	61	0
1961	0	3093	2686	1331	1066	232	372	78	29	0
1962	0	4424	2500	1255	855	481	93	94	22	0
1963	0	4110	3958	1280	662	284	204	48	30	0
1964	0	2033	3021	2300	630	350	158	79	41	0
1965	0	852	3230	2564	1416	363	155	48	63	0
1966	0	1337	970	2080	1339	606	197	104	33	0
1967	0	1609	2690	860	1706	847	309	64	27	0
1968	0	1529	3322	2663	945	1226	452	105	11	0
1969	0	878	3106	3300	1538	477	713	203	92	0
1970	0	402	1163	2172	1685	752	244	300	44	0
1971	0	328	757	821	1287	1451	510	114	179	0
1972	0	875	1176	810	596	1021	596	154	25	0
1973	0	723	3124	1590	707	384	312	227	120	97
1974	0	2161	1266	1811	934	563	452	149	141	91
1975	0	2584	5689	2157	2211	813	295	190	118	150
1976	0	1497	4158	3799	1380	1427	617	273	120	186
1977	0	425	3282	6844	3718	788	1160	239	134	9
1978	0	555	1219	2643	3216	1041	268	201	66	56
1979	0	575	1732	1673	1601	1906	493	134	87	38
1980	0	1129	2263	1461	895	807	832	339	42	18
1981	0	646	4137	1981	947	582	487	527	123	55
1982	0	1139	1965	3073	1286	471	314	169	254	122
1983	0	2149	5771	2760	2746	1204	510	157	104	102
1984	0	4396	5234	3487	1461	912	314	82	34	66
1985	0	998	9484	3795	1669	770	872	309	65	80
1986	0	210	3586	8462	2373	907	236	147	47	38
1987	0	257	1362	2611	3083	812	224	68	69	26
1988	0	509	2122	1945	1484	2178	492	168	33	25
1989	0	2237	2151	2187	1121	1026	997	220	61	9
1990	0	247	2892	1504	865	410	298	295	51	26
1991	0	192	451	2152	622	303	142	93	53	24
1992	0	205	455	466	911	293	132	53	30	34
1993	0	120	802	603	222	329	96	33	22	25
1994	0	573	788	1062	532	125	176	39	23	16
1995	0	2615	2716	2008	1012	465	118	175	44	49
1996	0	351	5164	4608	1542	1526	596	147	347	47
1997	0	200	1278	6710	3731	657	639	170	51	120

Year\age	1	2	3	4	5	6	7	8	9	10+
1998	0	455	745	1558	5140	1529	159	118	28	25
1999	0	1246	1044	840	1164	2339	461	62	18	8
2000	0	2170	2737	811	443	700	840	108	8	1
2001	0	3967	3812	2130	373	372	728	443	36	6
2002	0	2099	7354	3405	1688	474	538	417	293	7
2003	0	697	2186	4696	1979	657	182	94	118	21
2004	0	98	673	1230	2051	717	234	63	41	36
2005	0	504	604	896	1146	841	208	41	19	31
2006	0	1110	1097	469	663	801	333	76	10	3
2007	0	506	1226	723	315	289	255	85	20	3
2008	0	287	761	783	430	187	157	156	57	19
2009	0	873	2262	861	618	296	85	55	43	17
2010	0	2114	2034	861	468	481	178	58	33	38
2011	0	328	2344	1234	365	188	126	50	19	2
2012	0	49	517	1347	555	200	99	69	25	22
2013	0	55	173	333	587	175	39	25	15	5
2014	0	387	517	286	499	350	86	14	9	1
2015	0	154	1026	517	208	280	219	46	23	7
2016	0	175	374	702	214	146	143	67	18	2
2017	0	112	280	333	438	151	75	41	24	8
2018	0	929	1026	717	541	476	94	60	36	4
2019	0	576	2170	1407	1242	928	239	37	23	9

Table 4.2.7. Faroe Plateau cod (Subdivision 5.b.1). Mean weight at age (kg) in the catches. Stock weights are set equal to catch weights.

Year\age	2	3	4	5	6	7	8	9	10+
1959	0.850	1.730	3.230	4.400	5.800	6.370	7.340	7.880	10.270
1960	1.000	2.030	3.370	4.420	6.020	6.650	8.120	11.000	10.270
1961	1.080	2.220	3.450	4.690	5.520	7.090	9.910	8.030	10.270
1962	1.000	2.270	3.350	4.580	4.930	9.080	6.590	6.660	10.270
1963	1.040	1.940	3.510	4.600	5.500	6.780	8.710	11.720	10.820
1964	0.970	1.830	3.150	4.330	6.080	7.000	6.250	6.190	14.390
1965	0.920	1.450	2.570	3.780	5.690	7.310	7.930	8.090	11.110
1966	0.980	1.770	2.750	3.510	4.800	6.320	7.510	10.340	11.650
1967	0.960	1.930	3.130	4.040	4.780	6.250	7.000	11.010	10.690
1968	0.880	1.720	3.070	4.120	4.650	5.500	7.670	10.950	9.280
1969	1.090	1.800	2.850	3.670	4.890	5.050	7.410	8.660	14.390
1970	0.960	2.230	2.690	3.940	5.140	6.460	10.310	7.390	9.340
1971	0.810	1.800	2.980	3.580	3.940	4.870	6.480	6.370	10.220
1972	0.660	1.610	2.580	3.260	4.290	4.950	6.480	6.900	11.550
1973	1.110	2.000	3.410	3.890	5.100	5.100	6.120	8.660	7.570
1974	1.080	2.220	3.440	4.800	5.180	5.880	6.140	8.630	7.620
1975	0.790	1.790	2.980	4.260	5.460	6.250	7.510	7.390	8.170
1976	0.940	1.720	2.840	3.700	5.260	6.430	6.390	8.550	13.620
1977	0.870	1.790	2.530	3.680	4.650	5.340	6.230	8.380	10.720
1978	1.112	1.385	2.140	3.125	4.363	5.927	6.348	8.715	12.229
1979	0.897	1.682	2.211	3.052	3.642	4.719	7.272	8.368	13.042
1980	0.927	1.432	2.220	3.105	3.539	4.392	6.100	7.603	9.668
1981	1.080	1.470	2.180	3.210	3.700	4.240	4.430	6.690	10.000
1982	1.230	1.413	2.138	3.107	4.012	5.442	5.563	5.216	6.707
1983	1.338	1.950	2.403	3.107	4.110	5.020	5.601	8.013	8.031
1984	1.195	1.888	2.980	3.679	4.470	5.488	6.466	6.628	10.981
1985	0.905	1.658	2.626	3.400	3.752	4.220	4.739	6.511	10.981
1986	1.099	1.459	2.046	2.936	3.786	4.699	5.893	9.700	8.815
1987	1.093	1.517	2.160	2.766	3.908	5.461	6.341	8.509	9.811
1988	1.061	1.749	2.300	2.914	3.109	3.976	4.896	7.087	8.287
1989	1.010	1.597	2.200	2.934	3.468	3.750	4.682	6.140	9.156
1990	0.945	1.300	1.959	2.531	3.273	4.652	4.758	6.704	8.689
1991	0.779	1.271	1.570	2.524	3.185	4.086	5.656	5.973	8.147
1992	0.989	1.364	1.779	2.312	3.477	4.545	6.275	7.619	9.725
1993	1.155	1.704	2.421	3.132	3.723	4.971	6.159	7.614	9.587
1994	1.194	1.843	2.613	3.654	4.584	4.976	7.146	8.564	8.796
1995	1.218	1.986	2.622	3.925	5.180	6.079	6.241	7.782	8.627
1996	1.016	1.737	2.745	3.800	4.455	4.978	5.270	5.593	7.482
1997	0.901	1.341	1.958	3.012	4.158	4.491	5.312	6.172	7.056

Year\age	2	3	4	5	6	7	8	9	10+
1998	1.004	1.417	1.802	2.280	3.478	5.433	5.851	7.970	8.802
1999	1.050	1.586	2.350	2.774	3.214	5.496	8.276	9.129	10.652
2000	1.416	2.170	3.187	3.795	4.048	4.577	8.182	11.895	13.009
2001	1.164	2.076	3.053	3.976	4.394	4.871	5.563	7.277	12.394
2002	1.017	1.768	2.805	3.529	4.095	4.475	4.650	6.244	7.457
2003	0.820	1.362	2.127	3.329	4.092	4.670	6.000	6.727	6.810
2004	1.037	1.154	1.693	2.363	3.830	5.191	6.326	7.656	9.573
2005	0.986	1.373	1.760	2.293	3.138	5.287	8.285	8.703	9.517
2006	0.839	1.304	1.988	2.386	3.330	4.691	7.635	9.524	11.990
2007	0.937	1.324	1.970	3.076	3.529	4.710	6.464	9.461	9.509
2008	1.209	1.478	2.104	2.714	3.804	4.669	5.915	7.233	9.559
2009	0.805	1.431	2.287	2.723	3.435	5.081	6.281	8.312	9.959
2010	1.049	1.642	2.400	3.212	3.678	4.774	5.973	7.094	9.800
2011	0.815	1.367	2.413	3.493	4.525	5.076	6.631	6.863	10.089
2012	1.007	1.315	1.893	3.102	4.279	5.573	5.871	7.482	9.206
2013	1.011	1.527	2.528	3.180	4.672	6.776	6.966	9.028	10.324
2014	1.099	1.653	2.466	3.000	4.148	6.489	9.394	9.236	12.120
2015	1.198	1.733	2.769	3.650	4.403	5.768	8.035	10.334	11.127
2016	1.358	1.993	2.752	3.937	4.419	5.399	7.059	10.227	10.975
2017	1.281	2.162	3.051	4.042	4.985	5.650	7.407	9.172	10.882
2018	1.278	2.095	3.392	4.249	4.919	5.553	6.987	8.530	10.099
2019	1.328	2.123	3.408	4.292	4.956	5.663	7.009	8.817	10.393
2020	1.169	2.016	3.304	4.547	5.243	6.006	7.655	8.034	9,613

Table 4.2.8. Faroe Plateau cod (Subdivision 5.b.1). Proportion mature at age. The average for 1983 to 1996 is used prior to 1983.

Year	Age									
	1	2	3	4	5	6	7	8	9	10+
1959	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1960	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1961	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1962	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1963	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1964	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1965	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1966	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1967	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1968	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1969	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1970	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1971	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1972	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1973	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1974	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1975	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1976	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1977	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1978	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1979	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1980	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1981	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1982	0.00	0.18	0.64	0.87	0.95	0.99	0.99	0.99	1.00	1.00
1983	0.00	0.03	0.71	0.93	0.94	1.00	1.00	1.00	1.00	1.00
1984	0.00	0.07	0.96	0.98	0.97	1.00	1.00	1.00	1.00	1.00
1985	0.00	0.00	0.50	0.96	0.96	1.00	1.00	1.00	1.00	1.00
1986	0.00	0.00	0.38	0.93	1.00	1.00	0.96	0.94	1.00	1.00
1987	0.00	0.00	0.67	0.91	1.00	1.00	1.00	1.00	1.00	1.00
1988	0.00	0.06	0.72	0.90	0.97	1.00	1.00	1.00	1.00	1.00
1989	0.00	0.05	0.54	0.98	1.00	1.00	1.00	1.00	1.00	1.00
1990	0.00	0.00	0.68	0.90	0.99	0.96	0.98	1.00	1.00	1.00
1991	0.00	0.00	0.72	0.86	1.00	1.00	1.00	1.00	1.00	1.00
1992	0.00	0.06	0.50	0.82	0.98	1.00	1.00	1.00	1.00	1.00
1993	0.00	0.03	0.73	0.78	0.91	0.99	1.00	1.00	1.00	1.00
1994	0.00	0.05	0.33	0.88	0.96	1.00	0.96	1.00	1.00	1.00
1995	0.00	0.09	0.35	0.33	0.66	0.97	1.00	1.00	1.00	1.00
1996	0.00	0.04	0.43	0.74	0.85	0.94	1.00	1.00	1.00	1.00

Year	Age									
	1	2	3	4	5	6	7	8	9	10+
1997	0.00	0.00	0.64	0.91	0.97	1.00	1.00	1.00	1.00	1.00
1998	0.00	0.00	0.62	0.90	0.99	0.99	1.00	1.00	1.00	1.00
1999	0.00	0.02	0.43	0.88	0.98	1.00	1.00	1.00	1.00	1.00
2000	0.00	0.02	0.39	0.69	0.92	0.99	1.00	1.00	1.00	1.00
2001	0.00	0.07	0.47	0.86	0.94	1.00	1.00	1.00	1.00	1.00
2002	0.00	0.04	0.37	0.76	0.97	0.93	0.97	1.00	1.00	1.00
2003	0.00	0.00	0.29	0.79	0.88	0.98	1.00	1.00	1.00	1.00
2004	0.00	0.00	0.51	0.78	0.92	0.89	0.87	1.00	1.00	1.00
2005	0.00	0.05	0.66	0.90	0.93	0.98	0.92	1.00	1.00	1.00
2006	0.00	0.04	0.59	0.80	0.99	0.99	1.00	1.00	1.00	1.00
2007	0.00	0.00	0.47	0.78	0.91	0.99	0.97	1.00	1.00	1.00
2008	0.00	0.10	0.78	0.91	0.90	0.95	1.00	1.00	1.00	1.00
2009	0.00	0.09	0.61	0.81	0.96	0.94	0.96	1.00	1.00	1.00
2010	0.00	0.08	0.61	0.77	0.94	0.97	1.00	1.00	1.00	1.00
2011	0.00	0.06	0.51	0.69	0.84	0.93	0.98	1.00	1.00	1.00
2012	0.00	0.00	0.63	0.85	0.94	0.97	1.00	1.00	1.00	0.83
2013	0.00	0.24	0.82	0.95	0.98	1.00	1.00	1.00	1.00	1.00
2014	0.00	0.24	0.73	0.98	1.00	1.00	1.00	1.00	1.00	1.00
2015	0.00	0.28	0.48	0.70	0.95	0.97	1.00	1.00	1.00	1.00
2016	0.00	0.21	0.89	0.91	0.97	1.00	1.00	1.00	1.00	1.00
2017	0.00	0.10	0.73	0.98	0.98	0.97	1.00	1.00	1.00	1.00
2018	0.00	0.14	0.64	0.78	0.94	0.95	0.91	0.92	1.00	1.00
2019	0.00	0.07	0.55	0.83	0.98	0.97	1.00	1.00	1.00	1.00
2020	0.00	0.07	0.45	0.74	0.93	1.00	1.00	1.00	1.00	1.00

Table 4.2.9. Faroe Plateau cod (Subdivision 5.b.1). Summer survey tuning series (number of individuals per 200 stations) and spring survey tuning series (number of individuals per 100 stations) used as tuning series in the assessment model. Zero values were replaced by 0.1.

Year	Effort	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9
1996	200	39.0	724.2	6568.0	3719.9	1298.6	700.2	232.4	48.4	75.5
1997	200	55.0	514.5	1476.6	6647.4	1445.9	177.0	138.1	30.6	1.4
1998	200	411.5	529.2	507.9	981.8	3677.1	901.0	49.6	36.5	17.8
1999	200	121.7	374.3	1257.2	752.3	676.4	1419.0	236.8	40.0	10.0
2000	200	461.6	1374.3	1151.0	672.7	310.5	436.6	601.2	36.5	7.6
2001	200	212.2	3442.3	2446.6	1534.3	417.2	237.4	282.9	242.7	30.9
2002	200	737.1	2368.2	5574.6	1812.6	811.5	149.2	84.3	69.9	49.9
2003	200	68.3	357.4	1038.0	2211.5	566.0	123.7	17.7	12.0	18.4
2004	200	204.1	451.8	839.2	1081.3	1547.3	344.3	80.1	25.6	21.6
2005	200	218.8	616.3	736.6	871.7	1167.8	754.8	142.4	44.7	12.7
2006	200	133.5	980.1	689.3	348.3	311.5	256.3	122.8	28.0	15.5
2007	200	85.6	233.2	449.5	314.0	179.7	134.8	75.8	30.8	12.7
2008	200	181.6	70.3	370.6	328.0	400.6	159.8	52.5	27.8	33.3
2009	200	612.4	435.5	1975.0	821.1	552.9	392.3	131.5	47.2	37.6
2010	200	269.1	1247.8	1551.3	1008.4	363.2	244.2	148.9	41.8	34.2
2011	200	7.1	302.8	1374.7	1083.8	380.7	160.7	105.0	37.4	14.1
2012	200	40.9	22.2	231.1	1080.5	512.6	88.3	35.7	19.2	4.7
2013	200	394.5	105.1	205.3	209.3	888.9	541.5	104.3	44.3	30.9
2014	200	14.4	644.0	866.2	357.9	357.6	400.8	124.0	36.8	22.2
2015	200	205.8	233.0	2236.9	1694.9	412.5	361.1	241.6	66.8	15.8
2016	200	205.6	590.4	838.8	1849.4	693.1	146.5	142.7	73.2	14.6
2017	200	708.3	831.3	997.4	1591.2	1636.3	361.0	129.7	65.0	17.8
2018	200	980.3	982.0	779.4	781.5	502.9	409.8	105.8	27.7	19.8
2019	200	234.0	743.9	922.9	801.5	437.6	276.2	123.4	36.3	16.6
2020	200	83.6	164.6	857.0	685.5	212.3	86.0	48.6	29.6	4.5

Year	Effort (hours)	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9
1994	100	7.8	611.1	336.9	915.0	509.3	130.1	187.3	29.0	0.0
1995	100	4.4	628.7	848.3	1524.9	1518.4	1200.4	282.5	348.3	49.5
1996	100	0.0	216.6	4042.0	3986.7	1889.7	1374.3	421.6	83.2	169.2
1997	100	2.1	74.9	841.6	5395.5	2362.7	332.6	225.4	57.4	4.9
1998	100	1.2	69.5	422.0	1568.5	4928.3	1136.3	82.0	40.6	35.0
1999	100	10.7	708.4	676.9	991.9	1227.7	2085.0	253.4	25.0	13.6
2000	100	2.0	321.5	1433.1	747.1	442.1	507.8	838.6	64.5	1.6
2001	100	1.4	945.3	2381.3	1992.4	456.6	323.9	576.9	125.2	5.3
2002	100	0.2	397.1	4559.4	2896.1	1578.3	330.5	230.8	177.9	130.7
2003	100	0.0	91.4	723.4	3915.6	1263.7	531.3	68.5	52.3	39.8
2004	100	0.5	629.8	581.8	846.8	1178.8	295.0	66.5	22.4	12.0

Year	Effort (hours)	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9
2005	100	0.0	382.1	440.3	1151.8	1442.4	839.5	140.1	14.0	3.8
2006	100	1.1	167.7	156.5	177.0	360.1	292.6	94.7	15.4	4.0
2007	100	0.0	41.7	271.8	286.2	154.8	170.4	105.1	38.6	14.8
2008	100	5.6	174.0	464.9	832.6	469.8	149.4	83.2	39.4	13.5
2009	100	73.7	309.3	470.5	980.0	1162.5	427.1	73.4	31.8	24.8
2010	100	36.9	699.5	1316.9	747.7	539.3	381.2	99.1	41.4	17.4
2011	100	0.0	149.5	1318.6	1241.6	562.7	300.4	237.4	84.8	21.8
2012	100	0.0	1.4	273.2	1301.5	327.5	73.7	27.1	23.9	6.2
2013	100	3.5	65.2	379.6	1694.7	2055.9	297.3	32.6	22.6	17.5
2014	100	1.0	143.6	126.2	160.3	421.2	333.2	74.8	21.9	13.4
2015	100	0.0	22.5	532.4	226.5	193.9	304.9	138.9	32.6	8.0
2016	100	6.2	82.7	279.3	697.0	152.2	73.7	77.4	27.2	7.7
2017	100	26.6	109.4	529.0	695.0	1085.1	136.0	56.3	31.7	10.3
2018	100	22.7	592.3	923.6	1002.7	730.6	714.4	155.0	50.8	35.3
2019	100	39.0	352.1	1080.5	760.0	555.5	350.7	187.4	20.2	14.2
2020	100	0.2	11.2	676.7	728.7	306.2	147.2	76.2	36.1	4.1

Table 4.2.10. Faroe Plateau cod (Subdivision 5.b.1). Pair trawler abundance index (number of individuals per 1000 fishing hours). This series was not used in the tuning in the assessment model. The season is June–December. The otoliths are selected from deep (> 150 m) locations.

Year	Age							
	2	3	4	5	6	7	8	9
1989	1200	1638	1783	1381	928	719	297	194
1990	116	2856	2057	834	465	419	200	0
1991	8	148	1401	869	329	225	65	93
1992	84	487	696	1234	760	353	129	62
1993	51	1081	2192	746	1062	398	67	107
1994	1314	2129	1457	2208	697	1241	461	53
1995	577	3645	5178	4199	2769	543	539	106
1996	242	10608	16683	7985	4410	194	0	723
1997	28	674	6038	9375	2413	944	113	0
1998	80	731	1805	5941	4904	801	286	0
1999	444	2082	1933	3008	5136	2220	218	4
2000	3478	3956	1737	956	1003	1694	382	0
2001	3385	6700	3009	555	415	797	862	25
2002	571	6409	5019	1235	432	400	41	228
2003	63	1341	4450	3630	870	270	152	145
2004	23	0	278	2534	2831	1733	274	184
2005	42	399	655	1766	2171	860	148	70
2006	93	135	699	755	1580	612	787	71
2007	64	916	1767	1392	802	656	206	46
2008	54	295	418	573	387	456	487	182
2009	11	734	801	756	448	247	147	105
2010	1578	2917	1787	543	603	190	0	81
2011	22	1487	4078	1967	622	441	95	25
2012	0	95	1531	1789	950	223	40	107
2013	35	102	761	1583	670	103	57	36
2014	292	1631	1006	1690	1812	477	94	101
2015	43	967	1943	1019	1190	1086	320	96
2016	130	485	2227	1521	905	691	362	177
2017	158	392	855	1477	561	276	216	142
2018	620	1205	1929	1927	1466	629	176	74
2019	2170	5140	2243	1207	339	86	8	6

Table 4.2.11. Faroe Plateau cod (Subdivision 5.b.1). Longliner abundance index (number of individuals per 100 000 hooks). This series was not used in the tuning in the assessment model. The age composition was obtained from all longliners > 100 GRT. The area was restricted to the area west of Faroe Islands at depths between 100 and 200 m.

Year	Age							
	1	2	3	4	5	6	7	8
1993	405	2610	9306	3330	806	2754	847	258
1994	101	8105	14105	7863	4659	962	1187	71
1995	0	15249	23062	2895	2505	1568	708	1073
1996	0	2269	18658	13265	4153	8435	4513	1147
1997	0	1738	5837	26368	18089	2805	2807	402
1998	1892	4490	2025	2565	11738	2732	131	19
1999	849	10968	3811	985	1891	3759	548	109
2000	2695	10983	6710	998	780	1473	2136	109
2001	287	12999	7409	2660	515	1135	1808	2545
2002	105	6862	20902	10819	7759	1561	1945	1265
2003	16	2099	6057	15910	7778	1830	708	650
2004	59	510	1773	2438	3214	1059	293	71
2005	297	2169	1543	2313	2327	1360	170	13
2006	151	5813	5319	674	2205	2352	1148	56
2007	274	3578	6383	2778	1927	1159	1118	134
2008	1270	2243	4449	4773	2564	1133	816	716
2009	294	2670	15107	6308	3028	2491	683	132
2010	23	20287	16914	8733	2595	4780	1878	864
2011	160	2817	28218	14391	4295	2207	1252	195
2012	0	1833	9562	8309	2364	1296	403	197
2013	0	52	209	2887	5132	2654	1222	359
2014	93	5898	9602	4695	4398	3475	1289	116
2015	0	1260	10417	8202	3167	3342	2428	414
2016	157	1790	3118	5109	1985	873	1370	1548
2017	584	1624	1700	1255	1073	743	462	553
2018	0	3690	8057	7624	6613	7832	1836	1899
2019	0	5430	15027	7622	6057	2776	698	73

Table 4.2.12. Longliner abundance index (number of individuals per day) for longliners < 25 GRT operating mainly near shore. This series was not used in the tuning of the assessment model. The age composition was obtained from all longliners.

Year	Age							
	1	2	3	4	5	6	7	8
1983	0.9	7.5	4.7	3.8	1.6	0.9	0.5	0.2
1984	0.0	33.3	32.1	13.2	5.8	6.3	1.0	0.7
1985	0.0	3.7	50.1	35.0	25.3	14.1	19.6	5.8
1986	0.0	5.6	41.6	24.0	15.3	6.8	6.2	2.2
1987	0.0	6.8	11.3	16.6	27.5	12.4	5.3	0.9
1988	0.0	3.1	6.4	13.0	8.5	19.1	6.5	2.6
1989	0.1	43.7	21.3	20.5	13.9	7.5	16.1	2.2
1990	0.0	7.9	40.3	8.6	12.2	6.5	7.7	4.2
1991	0.0	0.0	5.2	27.0	8.7	3.9	2.4	0.7
1992	0.0	6.2	17.1	6.9	3.9	3.6	1.8	1.4
1993	0.4	4.6	19.2	7.3	1.4	1.3	0.3	1.3
1994	0.1	14.9	18.4	15.4	6.6	2.1	2.6	0.5
1995	0.0	53.6	47.8	12.2	8.4	5.1	2.0	3.1
1996	0.0	5.9	76.2	52.1	13.1	28.8	14.3	4.2
1997	0.0	4.6	16.6	71.8	54.5	7.9	7.6	0.9
1998	5.8	12.1	5.6	8.2	33.1	9.9	0.4	0.4
1999	0.3	29.2	10.0	4.7	7.0	15.9	2.5	0.1
2000	9.6	40.4	23.5	1.3	1.3	2.4	4.2	0.5
2001	0.6	96.6	48.7	17.1	3.0	5.7	12.6	12.9
2002	0.1	47.6	97.2	43.4	30.0	7.3	11.5	6.8
2003	0.0	17.5	37.4	106.4	59.1	12.9	4.1	1.5
2004	0.0	7.0	21.5	21.0	31.1	8.2	0.3	0.0
2005	0.6	14.7	20.5	18.5	32.9	15.6	1.5	0.0
2006	2.0	58.7	47.0	9.1	10.6	13.6	4.1	0.4
2007	0.2	11.2	23.2	8.9	4.2	4.9	3.5	0.6
2008	0.3	3.4	16.2	21.1	14.4	3.3	1.5	2.1
2009	3.1	33.3	154.6	57.5	33.9	23.5	9.6	5.9
2010	2.6	135.7	147.1	62.4	27.3	28.5	8.5	1.8
2011	0.0	19.7	156.5	65.0	25.2	15.6	8.5	1.9
2012	0.3	4.6	39.3	59.0	15.1	5.2	2.6	1.3
2013	1.2	16.6	23.8	63.6	58.0	7.8	2.9	0.0
2014	2.1	103.4	102.0	46.9	27.3	17.1	1.4	0.0
2015	0.9	25.4	148.6	65.3	23.0	17.9	10.7	0.7
2016	3.2	30.5	40.6	36.9	7.8	4.9	5.6	0.0
2017	14.6	41.2	36.0	18.8	11.6	2.1	0.1	0.0
2018	1.2	126.1	86.6	40.4	25.1	27.8	6.5	9.3
2019	0.0	60.5	148.2	83.0	63.4	46.5	7.8	1.0

Table 4.6.1. Faroe Plateau cod (Subdivision 5.b.1). Configuration in the SAM-run and the model parameters.

```
> conf
```

```
$minAge
```

```
[1] 1
```

```
$maxAge
```

```
[1] 10
```

```
$maxAgePlusGroup
```

```
[1] 1
```

```
$keyLogFsta
```

```
  [1] [2] [3] [4] [5] [6] [7] [8] [9] [10]
```

```
[1,] -1  0  1  2  3  4  5  5  5  5
```

```
[2,] -1 -1 -1 -1 -1 -1 -1 -1 -1 -1
```

```
[3,] -1 -1 -1 -1 -1 -1 -1 -1 -1 -1
```

```
$corFlag
```

```
[1] 2
```

```
$keyLogFpar
```

```
  [1] [2] [3] [4] [5] [6] [7] [8] [9] [10]
```

```
[1,] -1 -1 -1 -1 -1 -1 -1 -1 -1 -1
```

```
[2,]  0  1  2  3  4  5  6  7  7 -1
```

```
[3,]  8  9 10 11 12 13 14 15 15 -1
```

```
$keyQpow
```

```
  [1] [2] [3] [4] [5] [6] [7] [8] [9] [10]
```

```
[1,] -1 -1 -1 -1 -1 -1 -1 -1 -1 -1
```

```
[2,] -1 -1 -1 -1 -1 -1 -1 -1 -1 -1
```

```
[3,] -1 -1 -1 -1 -1 -1 -1 -1 -1 -1
```

```
$keyVarF
```

```
  [1] [2] [3] [4] [5] [6] [7] [8] [9] [10]
```

```
[1,]  0  0  0  0  0  0  0  0  0  0
```

```
[2,] -1 -1 -1 -1 -1 -1 -1 -1 -1 -1
```

```
[3,] -1 -1 -1 -1 -1 -1 -1 -1 -1 -1
```

```
$keyVarLogN
```

```
[1] 0 1 1 1 1 1 1 1 1 1
```

```
$keyVarObs
```

```
  [1] [2] [3] [4] [5] [6] [7] [8] [9] [10]
```

```
[1,] 0 0 0 0 0 0 0 0 0 0 0
[2,] 1 2 2 2 2 2 2 2 2 2 -1
[3,] 3 4 4 4 4 4 4 4 4 4 -1
```

\$obsCorStruct

[1] ID AR ID

Levels: ID AR US

\$keyCorObs

1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-9 9-10

[1,] NA NA NA NA NA NA NA NA NA NA

[2,] 0 0 0 0 0 0 0 0 0 -1

[3,] NA NA NA NA NA NA NA NA NA -1

\$stockRecruitmentModelCode

[1] 0

\$noScaledYears

[1] 0

\$keyScaledYears

numeric(0)

\$keyParScaledYA

<0 x 0 matrix>

\$fbarRange

[1] 3 7

\$keyBiomassTreat

[1] -1 -1 -1

\$obsLikelihoodFlag

[1] LN LN LN

Levels: LN ALN

\$fixVarToWeight

[1] 0

Table of model parameters:

Parameter name	par	sd(par)	exp(par)	Low	High
logFpar_0	-9.068	0.223	0.000	0.000	0.000
logFpar_1	-7.763	0.135	0.000	0.000	0.001
logFpar_2	-6.657	0.129	0.001	0.001	0.002
logFpar_3	-6.154	0.126	0.002	0.002	0.003
logFpar_4	-5.923	0.124	0.003	0.002	0.003
logFpar_5	-5.823	0.122	0.003	0.002	0.004
logFpar_6	-5.700	0.118	0.003	0.003	0.004
logFpar_7	-5.613	0.121	0.004	0.003	0.005
logFpar_8	-13.242	0.375	0.000	0.000	0.000
logFpar_9	-8.404	0.147	0.000	0.000	0.000
logFpar_10	-6.682	0.140	0.001	0.001	0.002
logFpar_11	-5.767	0.136	0.003	0.002	0.004
logFpar_12	-5.436	0.134	0.004	0.003	0.006
logFpar_13	-5.386	0.133	0.005	0.004	0.006
logFpar_14	-5.447	0.133	0.004	0.003	0.006
logFpar_15	-5.631	0.103	0.004	0.003	0.004
logSdLogFsta_0	-1.393	0.119	0.248	0.196	0.315
logSdLogN_0	-0.298	0.126	0.742	0.577	0.955
logSdLogN_1	-1.257	0.115	0.285	0.226	0.358
logSdLogObs_0	-1.334	0.103	0.263	0.215	0.323
logSdLogObs_1	-0.019	0.163	0.981	0.708	1.358
logSdLogObs_2	-0.639	0.086	0.528	0.445	0.627
logSdLogObs_3	0.628	0.140	1.875	1.415	2.483
logSdLogObs_4	-0.444	0.054	0.642	0.576	0.715
transfIRARdist_0	-0.612	0.226	0.542	0.345	0.853
itrans_rho_0	1.683	0.212	5.383	3.521	8.230

Model	log(L)	#par	AIC
Current	-886.04	26	1824.08
base	-886.04	26	1824.08

Table 4.6.2. Faroe Plateau cod (Subdivision 5.b.1). Fishing mortality at age from the SAM model.

Year Age	1	2	3	4	5	6	7	8	9	10
1959		0.226	0.466	0.495	0.538	0.525	0.577	0.577	0.577	0.577
1960		0.293	0.608	0.654	0.722	0.725	0.804	0.804	0.804	0.804
1961		0.252	0.527	0.581	0.656	0.672	0.750	0.750	0.750	0.750
1962		0.216	0.458	0.519	0.593	0.608	0.666	0.666	0.666	0.666
1963		0.178	0.388	0.455	0.526	0.551	0.605	0.605	0.605	0.605
1964		0.146	0.336	0.418	0.504	0.553	0.627	0.627	0.627	0.627
1965		0.129	0.310	0.403	0.500	0.568	0.658	0.658	0.658	0.658
1966		0.110	0.278	0.376	0.484	0.579	0.705	0.705	0.705	0.705
1967		0.099	0.262	0.360	0.462	0.556	0.674	0.674	0.674	0.674
1968		0.094	0.258	0.360	0.452	0.533	0.630	0.630	0.630	0.630
1969		0.093	0.267	0.381	0.479	0.576	0.689	0.689	0.689	0.689
1970		0.071	0.212	0.308	0.388	0.475	0.571	0.571	0.571	0.571
1971		0.063	0.195	0.292	0.375	0.471	0.575	0.575	0.575	0.575
1972		0.059	0.186	0.276	0.345	0.424	0.510	0.510	0.510	0.510
1973		0.062	0.202	0.297	0.364	0.437	0.537	0.537	0.537	0.537
1974		0.061	0.200	0.299	0.371	0.449	0.567	0.567	0.567	0.567
1975		0.072	0.248	0.381	0.473	0.566	0.728	0.728	0.728	0.728
1976		0.077	0.280	0.453	0.586	0.721	0.972	0.972	0.972	0.972
1977		0.071	0.274	0.451	0.575	0.685	0.889	0.889	0.889	0.889
1978		0.061	0.243	0.398	0.494	0.581	0.746	0.746	0.746	0.746
1979		0.060	0.247	0.402	0.486	0.560	0.701	0.701	0.701	0.701
1980		0.056	0.233	0.369	0.433	0.487	0.592	0.592	0.592	0.592
1981		0.060	0.255	0.406	0.476	0.541	0.663	0.663	0.663	0.663
1982		0.061	0.267	0.426	0.498	0.569	0.705	0.705	0.705	0.705
1983		0.079	0.357	0.576	0.666	0.750	0.901	0.901	0.901	0.901
1984		0.069	0.313	0.505	0.573	0.632	0.742	0.742	0.742	0.742
1985		0.073	0.348	0.598	0.711	0.836	1.022	1.022	1.022	1.022
1986		0.061	0.301	0.532	0.633	0.745	0.902	0.902	0.902	0.902
1987		0.054	0.266	0.472	0.553	0.649	0.790	0.790	0.790	0.790
1988		0.069	0.330	0.587	0.680	0.791	0.949	0.949	0.949	0.949
1989		0.082	0.383	0.685	0.788	0.897	1.047	1.047	1.047	1.047
1990		0.067	0.314	0.581	0.690	0.799	0.950	0.950	0.950	0.950
1991		0.050	0.229	0.435	0.529	0.623	0.755	0.755	0.755	0.755
1992		0.039	0.178	0.343	0.428	0.516	0.647	0.647	0.647	0.647
1993		0.031	0.136	0.257	0.319	0.384	0.496	0.496	0.496	0.496
1994		0.032	0.134	0.244	0.296	0.352	0.456	0.456	0.456	0.456
1995		0.044	0.178	0.321	0.395	0.481	0.640	0.640	0.640	0.640
1996		0.057	0.235	0.444	0.600	0.801	1.144	1.144	1.144	1.144
1997		0.068	0.274	0.511	0.721	1.024	1.550	1.550	1.550	1.550
1998		0.075	0.281	0.486	0.658	0.925	1.420	1.420	1.420	1.420

Year Age	1	2	3	4	5	6	7	8	9	10
1999		0.085	0.298	0.480	0.620	0.853	1.318	1.318	1.318	1.318
2000		0.077	0.257	0.379	0.453	0.586	0.855	0.855	0.855	0.855
2001		0.089	0.294	0.428	0.511	0.661	0.958	0.958	0.958	0.958
2002		0.117	0.396	0.593	0.736	0.960	1.335	1.335	1.335	1.335
2003		0.101	0.349	0.532	0.685	0.901	1.204	1.204	1.204	1.204
2004		0.075	0.269	0.425	0.579	0.807	1.108	1.108	1.108	1.108
2005		0.094	0.327	0.493	0.647	0.884	1.186	1.186	1.186	1.186
2006		0.104	0.350	0.495	0.614	0.794	0.998	0.998	0.998	0.998
2007		0.094	0.312	0.426	0.507	0.638	0.793	0.793	0.793	0.793
2008		0.092	0.312	0.431	0.515	0.660	0.850	0.850	0.850	0.850
2009		0.103	0.354	0.476	0.555	0.682	0.836	0.836	0.836	0.836
2010		0.117	0.415	0.577	0.701	0.890	1.093	1.093	1.093	1.093
2011		0.082	0.301	0.428	0.530	0.675	0.814	0.814	0.814	0.814
2012		0.080	0.308	0.467	0.622	0.849	1.076	1.076	1.076	1.076
2013		0.051	0.201	0.308	0.414	0.561	0.706	0.706	0.706	0.706
2014		0.052	0.204	0.308	0.406	0.527	0.620	0.620	0.620	0.620
2015		0.060	0.241	0.373	0.516	0.716	0.883	0.883	0.883	0.883
2016		0.045	0.181	0.282	0.400	0.577	0.714	0.714	0.714	0.714
2017		0.037	0.149	0.234	0.343	0.505	0.623	0.623	0.623	0.623
2018		0.057	0.233	0.359	0.513	0.720	0.818	0.818	0.818	0.818
2019		0.079	0.340	0.536	0.775	1.051	1.109	1.109	1.109	1.109

Table 4.6.3. Faroe Plateau cod (Subdivision 5.b.1). Stock number at age from the SAM model.

Year Age	1	2	3	4	5	6	7	8	9	10
1959	20144	11861	12081	2389	4244	602	505	158	25	0
1960	18570	16691	8562	5985	1183	1871	334	227	95	12
1961	26287	14274	8138	3664	2520	515	692	139	70	39
1962	26960	22567	7896	3637	1819	1112	235	221	51	42
1963	19898	23167	13813	3806	1778	760	494	123	81	39
1964	11375	16915	13484	7311	1824	868	345	221	74	54
1965	17954	8021	12845	7972	3714	878	395	134	119	56
1966	22719	15184	5158	7960	4105	1623	378	185	64	74
1967	20903	19493	12485	3447	5128	2120	715	124	67	56
1968	12570	18218	15825	8535	2383	3085	991	300	35	51
1969	8875	10052	13944	10772	4574	1221	1629	399	166	38
1970	10062	6777	6661	8530	6053	2263	570	773	134	85
1971	19117	7636	5096	3895	4707	3592	1176	245	425	104
1972	18178	17329	7286	3727	2334	2554	1622	503	88	280
1973	38547	13228	15291	5845	2541	1392	1000	700	282	218
1974	39512	35120	9101	9196	3525	1587	910	441	353	237
1975	24230	34888	25690	6659	6185	2130	837	402	227	295
1976	11303	20652	23888	13852	3560	3347	1103	473	151	202
1977	12961	8108	14960	17698	7626	1636	1589	391	207	40
1978	15615	10534	6641	8838	9234	2951	637	450	131	98
1979	24067	12330	8291	4952	4620	4742	1326	273	161	80
1980	17895	21933	10676	5134	2762	2250	2216	682	114	66
1981	26714	13225	18015	6811	2779	1476	1072	1109	311	105
1982	36377	22169	10007	10626	3855	1377	683	418	478	212
1983	55032	29326	18226	6770	5877	2165	739	271	183	229
1984	20556	55343	20454	9410	3294	2419	804	217	82	147
1985	8069	16708	37735	10718	4086	1422	1198	384	99	113
1986	8694	5695	13559	20968	5038	1687	450	315	96	65
1987	11377	6918	5838	7691	8960	2052	592	140	112	51
1988	19735	8936	7016	4372	3728	4321	925	276	51	47
1989	6053	20845	6986	4452	2137	1704	1634	331	101	21
1990	5859	4186	12580	3721	1810	810	557	467	95	41
1991	7970	4563	2709	6497	1622	694	303	184	129	47
1992	8595	6751	3552	1697	2875	727	276	124	71	74
1993	23753	6128	6432	2882	909	1286	298	96	57	66
1994	42283	20747	6279	5090	2125	510	699	140	41	60
1995	11946	45294	16946	6018	3696	1527	340	525	92	80
1996	5204	9025	31754	12861	3483	2501	933	186	379	75
1997	6929	4554	6517	21682	6941	1116	921	269	40	142
1998	15637	6621	3453	4521	11663	2806	283	147	48	32

Year Age	1	2	3	4	5	6	7	8	9	10
1999	28812	13201	5571	2530	2730	4939	758	83	24	12
2000	42070	25604	10502	3005	1368	1690	1944	158	19	4
2001	18371	44107	16074	6587	1401	920	1178	735	53	9
2002	8553	16938	26784	8527	3452	790	609	526	291	14
2003	4550	6562	8661	12782	3733	1181	262	153	153	46
2004	6722	3350	3874	4306	4978	1275	334	83	55	55
2005	9254	6161	2614	2559	2721	1839	384	80	23	33
2006	6123	9426	3753	1433	1377	1262	560	106	21	8
2007	5558	5125	4804	2138	828	640	462	174	44	7
2008	12508	4011	3903	2477	1338	478	278	189	90	27
2009	19343	8417	5802	2327	1506	744	219	104	78	36
2010	6279	16262	6801	2630	1080	786	335	96	44	41
2011	1094	4711	9293	3615	1001	436	280	98	38	9
2012	2575	729	2449	4644	1535	363	169	102	31	24
2013	8390	1819	1100	1395	2144	592	109	52	27	11
2014	3019	7788	2427	926	1108	972	228	46	24	6
2015	5150	2508	5462	1789	574	631	418	98	26	12
2016	6695	4363	2420	3186	872	312	278	130	34	7
2017	14667	5186	2904	2065	1901	454	180	112	41	16
2018	13455	13207	4808	2683	1596	1098	231	95	58	13
2019	4999	9804	7713	3343	1802	1085	417	75	37	19
2020	4749	2896	6922	4141	1364	602	282	124	19	15

Table 4.6.4. Faroe Plateau cod (Subdivision 5.b.1). Summary table from the SAM model (catch is also provided) and forecast with Fmsy fishing mortality.

Year	R(age 1)	Low	High	SSB	Low	High	Fbar(3-7)	Low	High	Catch	TSB	Low	High
1959	20144	10178	39870	47632	37738	60120	0.52	0.402	0.673	22415	65439	52119	82163
1960	18570	9786	35237	52981	43200	64978	0.703	0.556	0.887	32255	75962	61698	93522
1961	26287	13855	49877	46563	37959	57118	0.637	0.5	0.812	21598	68034	54973	84198
1962	26960	14158	51337	43803	35503	54043	0.569	0.443	0.73	20967	70852	56016	89616
1963	19898	10448	37896	50770	40537	63587	0.505	0.392	0.651	22215	82406	64331	105558
1964	11375	5930	21819	56504	44688	71445	0.487	0.378	0.629	21078	82321	64767	104633
1965	17954	9370	34399	54851	43627	68963	0.488	0.378	0.63	24212	71063	56528	89334
1966	22719	11828	43637	54237	43117	68225	0.484	0.373	0.629	20418	73408	58331	92381
1967	20903	10878	40169	64503	51600	80632	0.463	0.355	0.602	23562	91115	72298	114831
1968	12570	6525	24217	75163	60053	94076	0.447	0.345	0.578	29930	102227	81202	128695
1969	8875	4581	17193	79658	63476	99965	0.478	0.369	0.619	32371	102680	81585	129230
1970	10062	5169	19585	78124	62265	98024	0.391	0.301	0.508	24183	93216	74436	116733
1971	19117	9856	37081	58112	46565	72521	0.382	0.295	0.495	23010	69052	55516	85888
1972	18178	9412	35110	51023	41420	62854	0.348	0.268	0.452	18727	66478	53609	82436
1973	38547	19977	74382	69347	55517	86623	0.368	0.287	0.47	22228	95646	75514	121146
1974	39512	20551	75969	84323	67665	105082	0.377	0.298	0.478	24581	127820	100398	162731
1975	24230	12626	46498	100446	81246	124183	0.479	0.385	0.597	36775	143697	114393	180507
1976	11303	5858	21810	108018	87577	133231	0.603	0.487	0.746	39799	144779	116397	180081
1977	12961	6739	24926	104531	83577	130739	0.575	0.46	0.718	34927	127365	101892	159206
1978	15615	8117	30042	73510	59021	91557	0.492	0.391	0.621	26585	90524	73065	112155
1979	24067	12502	46329	61493	50198	75331	0.479	0.379	0.607	23112	77967	63578	95611
1980	17895	9322	34355	54657	45003	66381	0.423	0.333	0.536	20513	78962	63513	98169
1981	26714	13979	51051	58812	47966	72110	0.468	0.373	0.589	22963	82582	66215	102995
1982	36377	19047	69476	60465	49351	74082	0.493	0.395	0.615	21489	91583	73043	114829

Year	R(age 1)	Low	High	SSB	Low	High	Fbar(3-7)	Low	High	Catch	TSB	Low	High
1983	55032	28495	106286	99677	80395	123583	0.65	0.525	0.804	38133	126736	100310	160125
1984	20556	10756	39287	121553	96788	152653	0.553	0.446	0.686	36979	163703	125811	213006
1985	8069	4171	15610	85733	68523	107266	0.703	0.572	0.864	39484	133817	104897	170710
1986	8694	4527	16695	73679	57464	94469	0.623	0.502	0.771	34595	95600	75747	120657
1987	11377	5969	21683	59253	47359	74135	0.546	0.44	0.678	21391	71409	57763	88279
1988	19735	10187	38232	50210	41546	60681	0.667	0.545	0.817	23182	61888	51193	74817
1989	6053	3127	11719	36997	30868	44343	0.76	0.622	0.929	22068	62675	49903	78716
1990	5859	3022	11357	30697	24839	37937	0.667	0.537	0.828	13692	40640	32463	50876
1991	7970	4080	15566	21924	17359	27690	0.514	0.406	0.651	8750	26934	21486	33762
1992	8595	4405	16773	16624	13267	20831	0.423	0.328	0.544	6396	27003	21246	34319
1993	23753	12496	45151	25681	20166	32705	0.318	0.245	0.413	6107	35788	27668	46293
1994	42283	22308	80147	56479	44468	71734	0.296	0.232	0.378	9046	65101	50600	83759
1995	11946	6527	21861	60395	49712	73375	0.403	0.327	0.496	23045	133764	104486	171247
1996	5204	2861	9464	82440	68176	99689	0.645	0.535	0.777	40422	132320	107611	162702
1997	6929	3828	12541	75959	61519	93788	0.816	0.684	0.973	34304	87656	71358	107677
1998	15637	8853	27621	49422	40039	61004	0.754	0.631	0.901	24005	59107	48703	71735
1999	28812	16197	51253	37804	31330	45615	0.713	0.591	0.861	19245	57289	47942	68458
2000	42070	23622	74926	38225	32234	45330	0.506	0.412	0.622	21833	91110	73314	113225
2001	18371	10365	32560	56177	46900	67291	0.57	0.47	0.691	28577	124760	99423	156553
2002	8553	4805	15224	58224	48371	70082	0.804	0.669	0.966	38834	111008	90295	136472
2003	4550	2550	8117	44056	35821	54185	0.734	0.609	0.886	25167	65111	53442	79327
2004	6722	3803	11881	26113	21560	31627	0.638	0.526	0.773	12840	35084	29272	42051
2005	9254	5235	16358	21235	17864	25242	0.707	0.585	0.855	10119	29392	24821	34804
2006	6123	3465	10818	16631	14108	19605	0.651	0.533	0.793	9844	26874	22442	32181
2007	5558	3135	9853	14547	12305	17199	0.535	0.436	0.658	7511	23965	20001	28713
2008	12508	7005	22334	18049	15157	21493	0.554	0.454	0.676	7315	24606	20500	29534

Year	R(age 1)	Low	High	SSB	Low	High	Fbar(3-7)	Low	High	Catch	TSB	Low	High
2009	19343	10670	35066	19056	16014	22676	0.58	0.477	0.706	9979	29833	24708	36021
2010	6279	3494	11283	21990	18443	26220	0.735	0.603	0.897	12762	43787	35189	54485
2011	1094	599	2000	19899	16356	24210	0.55	0.443	0.682	9692	33164	26926	40847
2012	2575	1444	4589	17444	14273	21319	0.664	0.539	0.819	7205	21058	17249	25707
2013	8390	4629	15205	16074	13100	19723	0.438	0.348	0.552	4473	18087	14826	22065
2014	3019	1655	5509	16776	14019	20075	0.413	0.331	0.516	5711	24410	19884	29967
2015	5150	2878	9217	17138	14384	20419	0.546	0.44	0.677	7329	25898	21286	31510
2016	6695	3718	12055	21070	17170	25855	0.431	0.345	0.538	5876	27173	22050	33485
2017	14667	8040	26759	23539	19120	28979	0.371	0.295	0.466	5360	31560	25515	39038
2018	13455	7066	25622	31071	25629	37669	0.528	0.424	0.659	12214	52800	42190	66078
2019	4999	2284	10942	33134	26507	41417	0.762	0.589	0.987	20670	50936	40051	64780
2020	4888	1365	17761	29040	20594	40991	0.476	0.289	0.724	10600	44310	30992	62275
2021	6279	1094	14667	33111	20744	55003	0.23	0.124	0.449	6247	42630	26257	72406
2022	5150	1094	14667	37415	20383	71425	0.23	0.106	0.516	7653	47954	27090	90414
2023	6279	1094	14667	39780	19518	81010	0.23	0.091	0.566	8129	50852	25709	100666

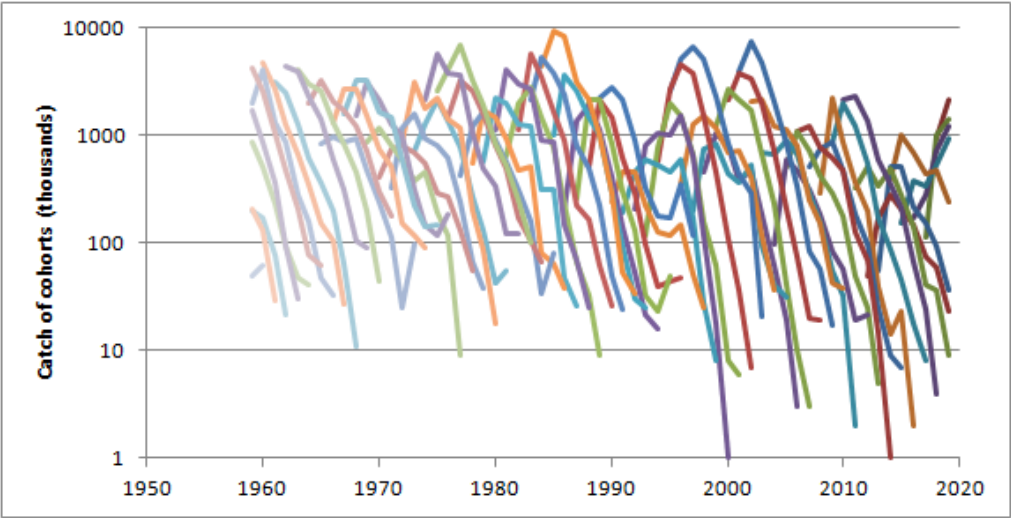


Figure 4.2.1. Faroe Plateau cod (Subdivision 5.b.1). Catch in numbers at age shown as catch curves.

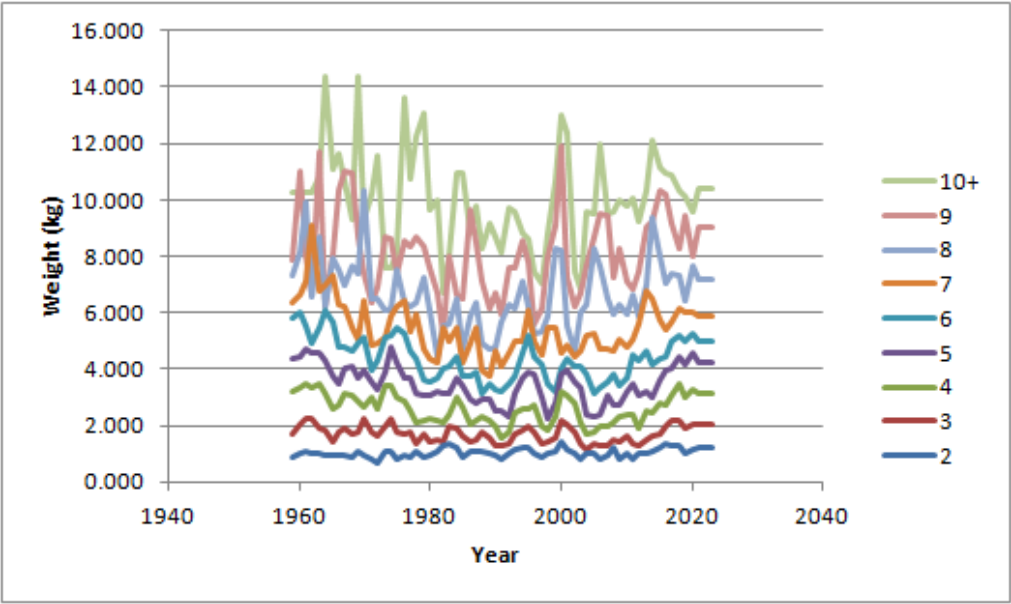


Figure 4.2.2. Faroe Plateau cod (Subdivision 5.b.1). Mean weight at age in the catches. The last three years are based on a previous 5 year average.

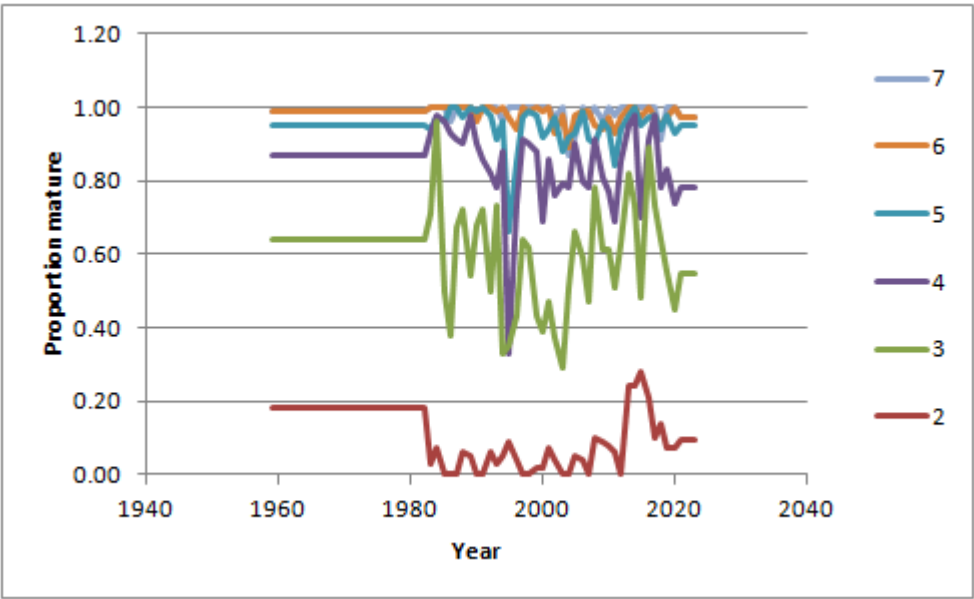


Figure 4.2.3. Faroe Plateau cod (Subdivision 5.b.1). Proportion mature at age as observed in the spring groundfish survey. The last three years are based on a previous 5 year average.

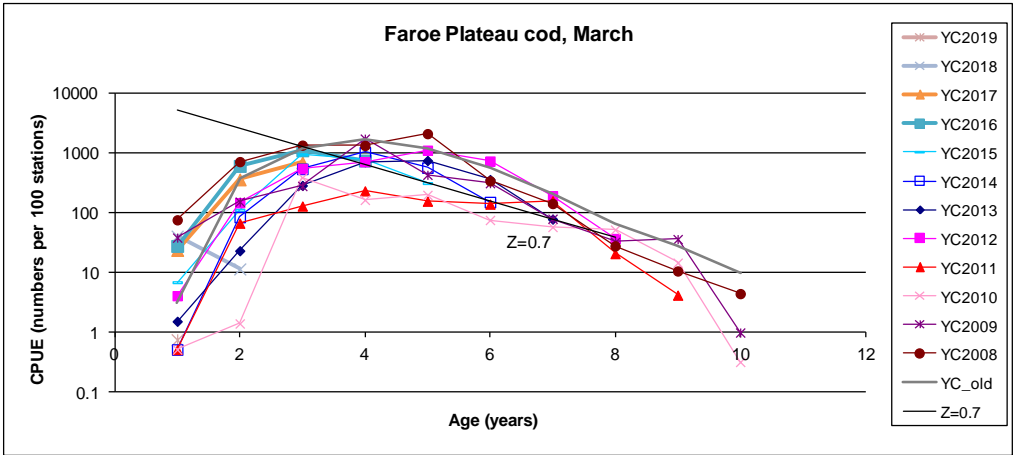


Figure 4.2.4. Faroe Plateau cod (Subdivision 5.b.1). Catch curves from the spring groundfish survey.

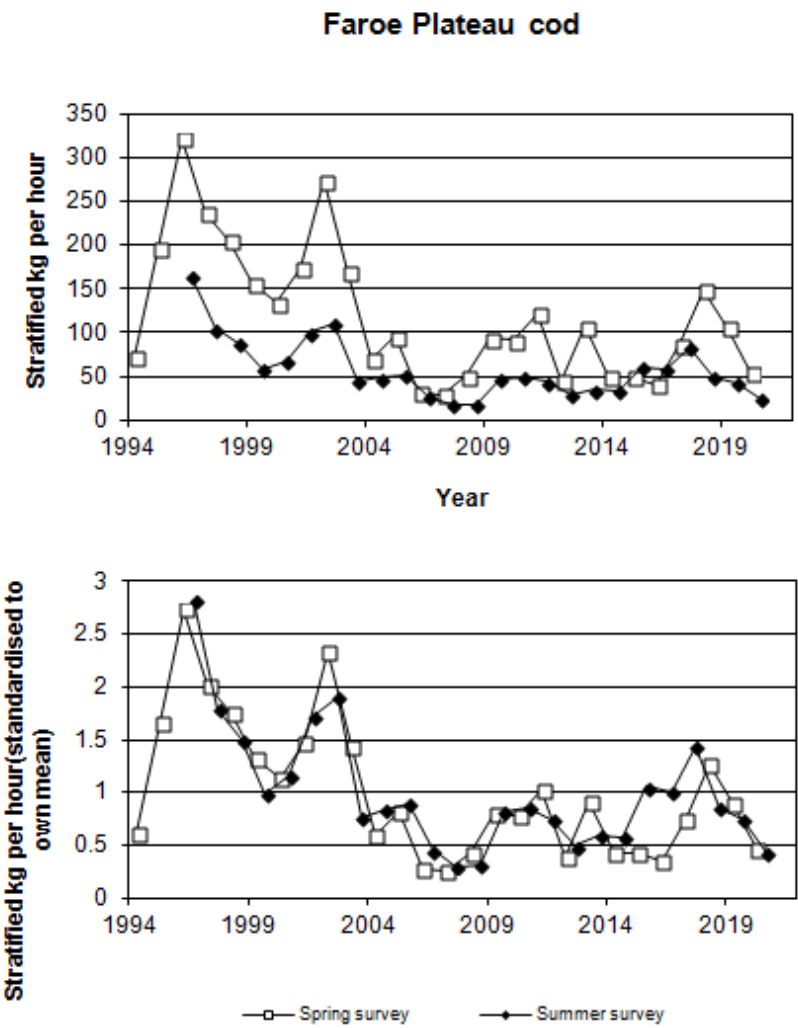


Figure 4.2.5. Faroe Plateau cod (Subdivision 5.b.1). Stratified kg/hour in the spring and summer surveys.

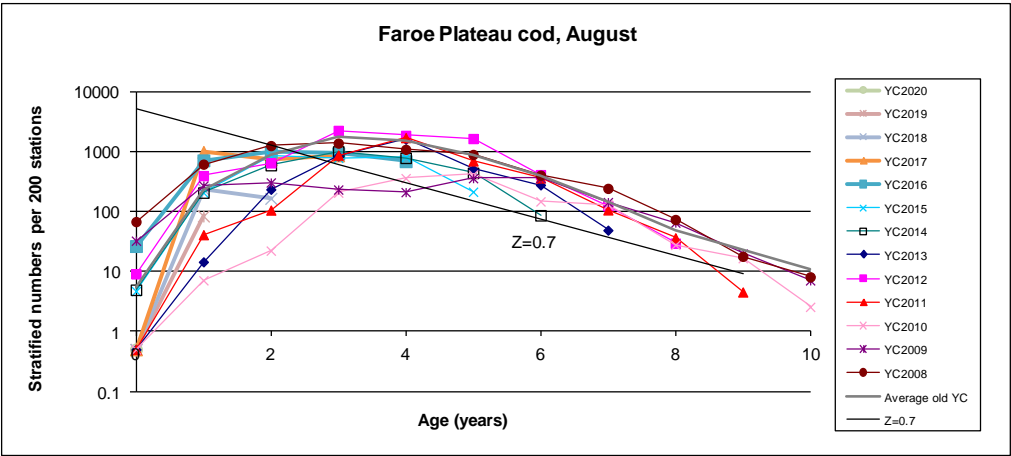


Figure 4.2.6. Faroe Plateau cod (Subdivision 5.b.1). Catch curves from the summer groundfish survey.

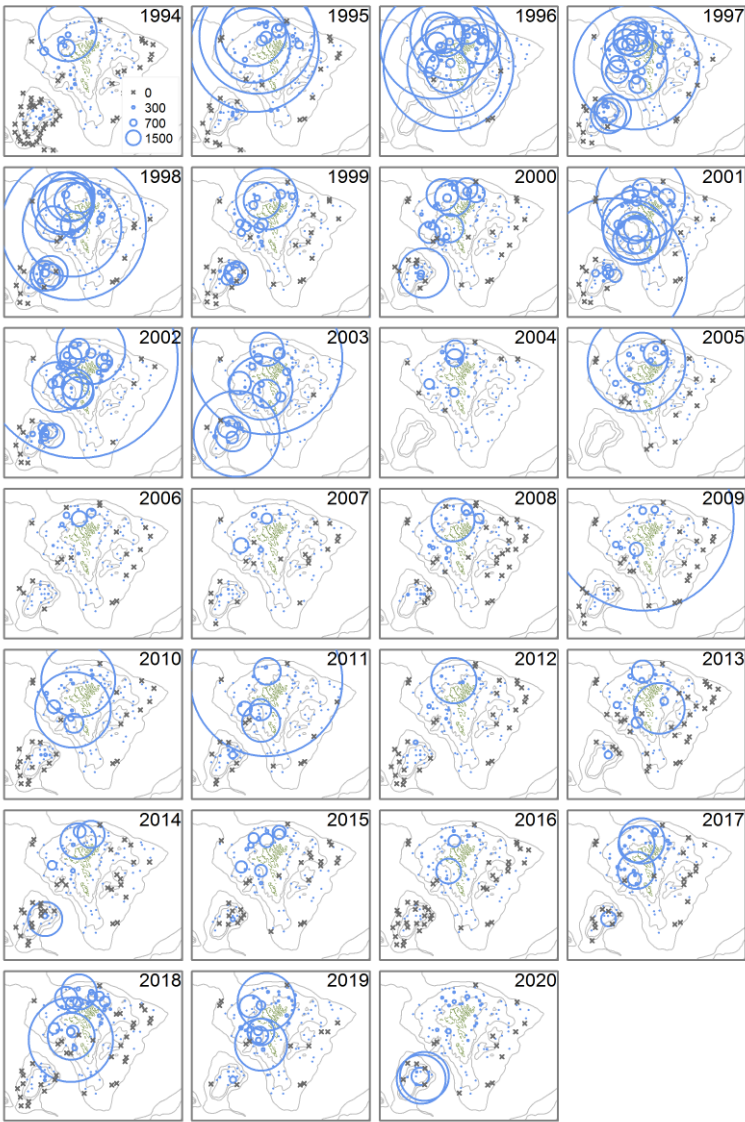


Figure 4.2.7. Faroe Plateau cod (Subdivision 5.b.1). Catch per tow in the spring groundfish survey.

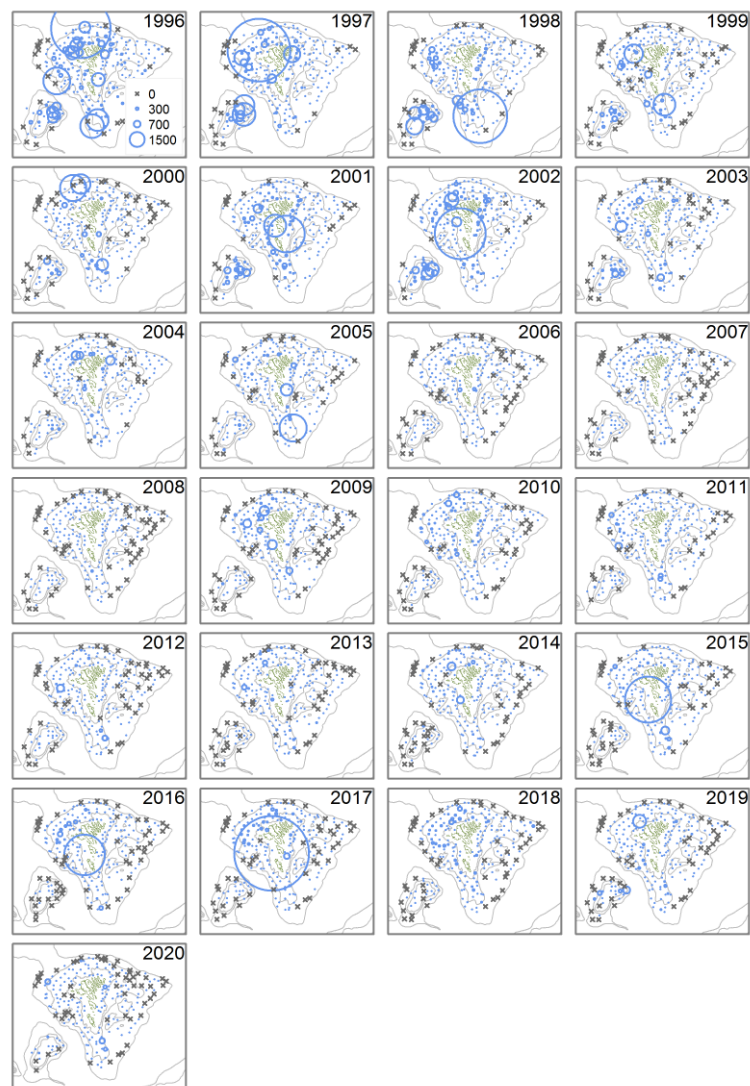


Figure 4.2.8. Faroe Plateau cod (Subdivision 5.b.1). Catch per tow in the summer groundfish survey.

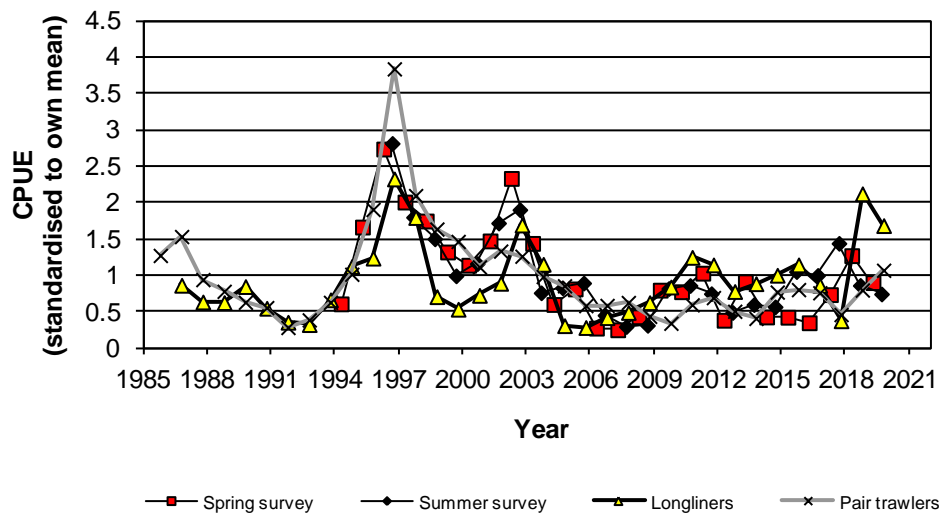


Figure 4.2.9. Faroe Plateau cod (Subdivision 5.b.1). Standardised catch per unit effort for pair trawlers and longliners. The two surveys are shown as well.

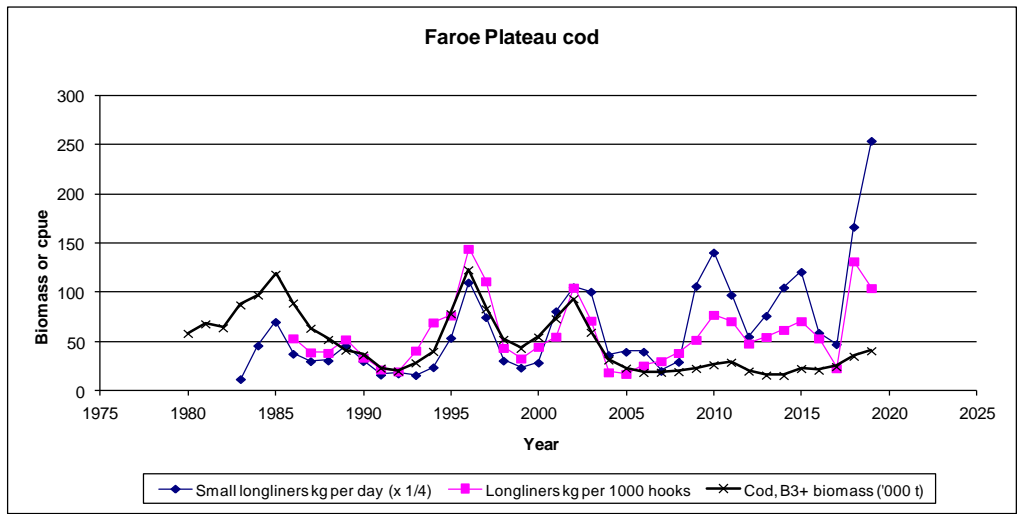


Figure 4.2.10. Faroe Plateau cod (Subdivision 5.b.1). Catch per unit effort for small and large longliners compared with the fishable (age 3+) biomass.

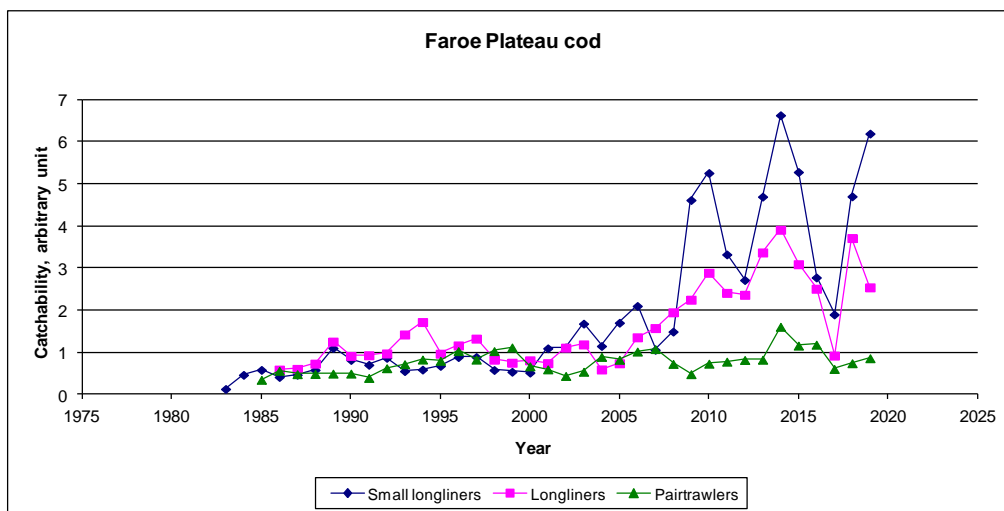


Figure 4.2.11. Faroe Plateau cod (Subdivision 5.b.1). Catchability (cpue divided by age 3+ biomass) for small and large longliners and pair trawlers.

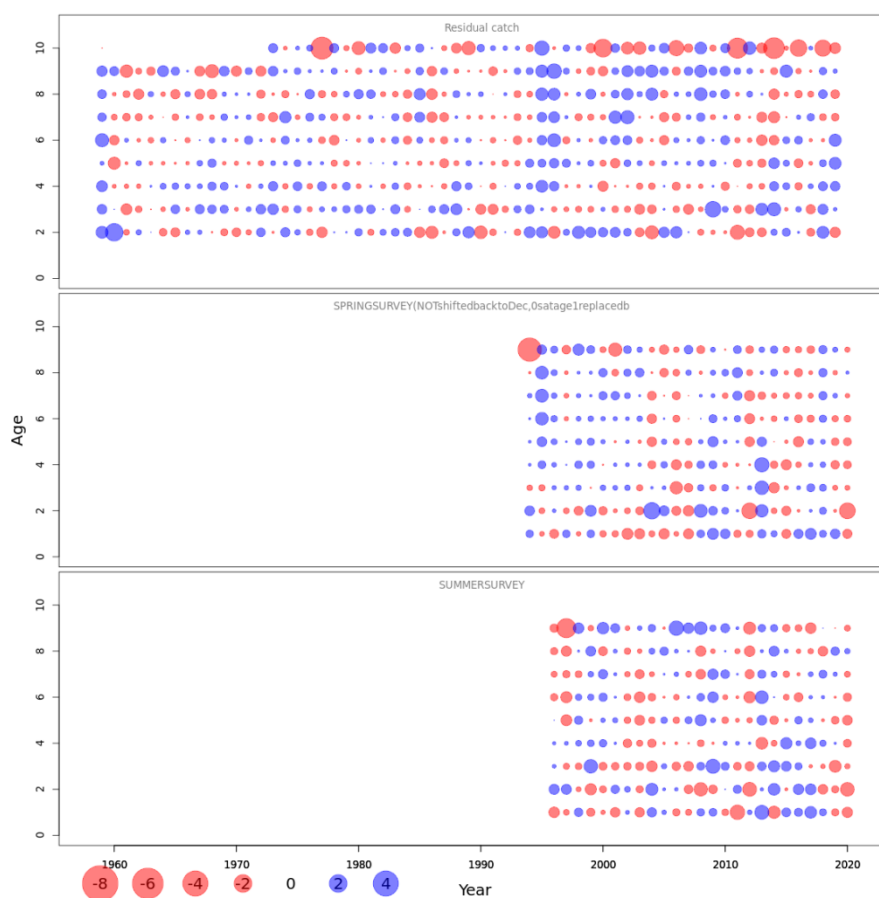


Figure 4.6.1. Faroe Plateau cod (Subdivision 5.b.1). Observation residuals for the catch, spring survey and the summer survey as estimated by the SAM model.

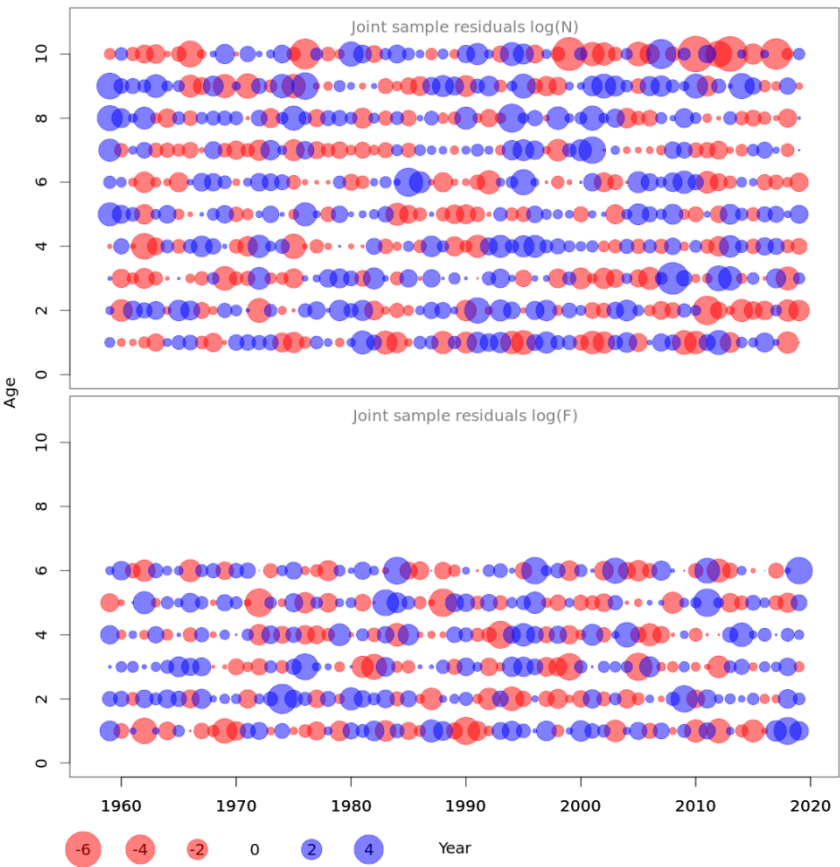


Figure 4.6.2. Faroe Plateau cod (Subdivision 5.b.1). Joint sample residuals for the population numbers and fishing mortality as estimated by the SAM model.

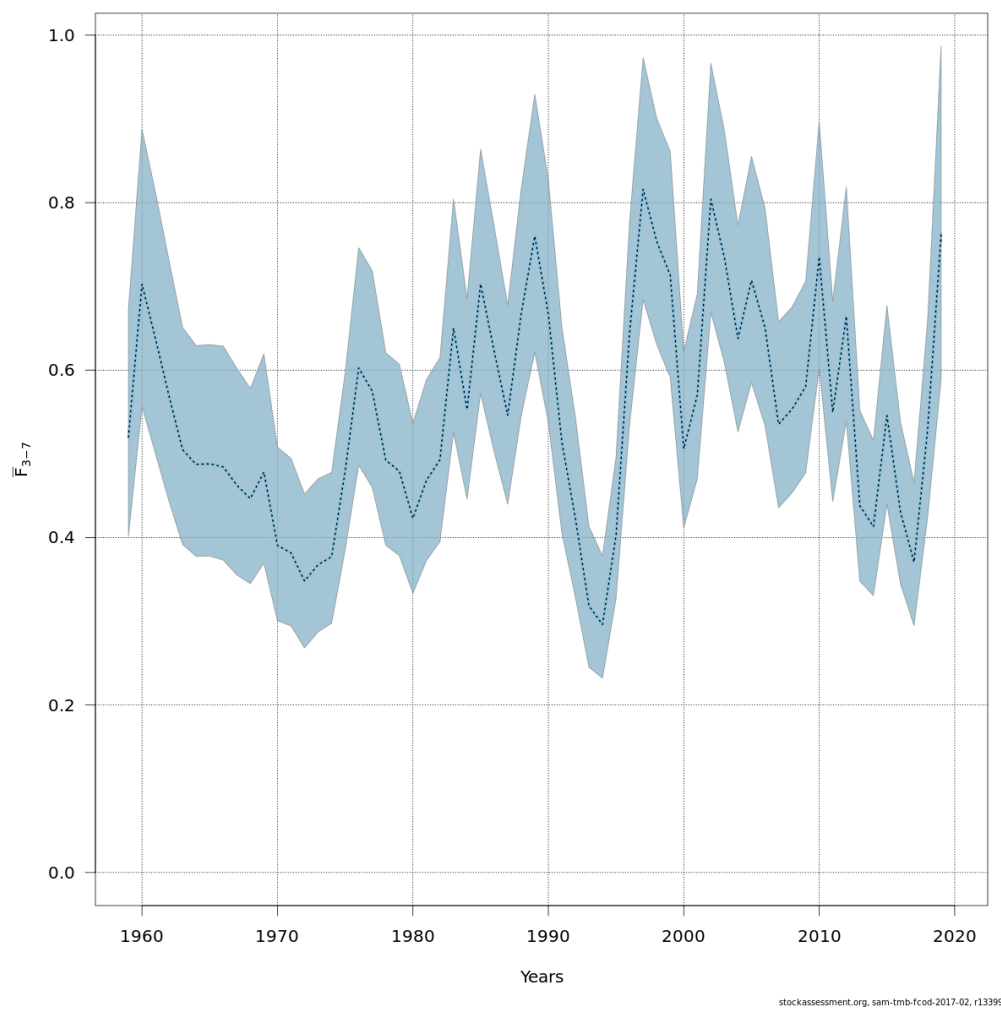


Figure 4.6.3. Faroe Plateau cod (Subdivision 5.b.1). Development of fishing mortality over time.

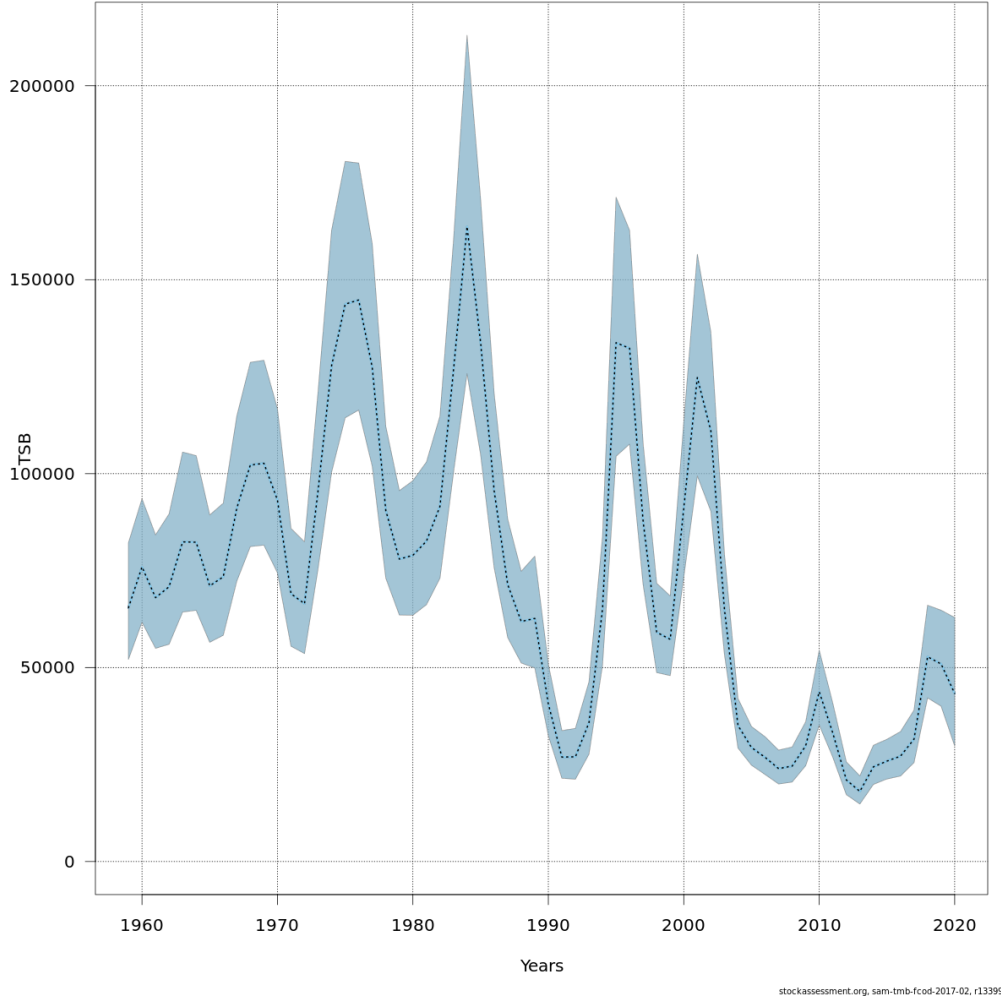


Figure 4.6.4. Faroe Plateau cod (Subdivision 5.b.1). Development of the total stock over time.

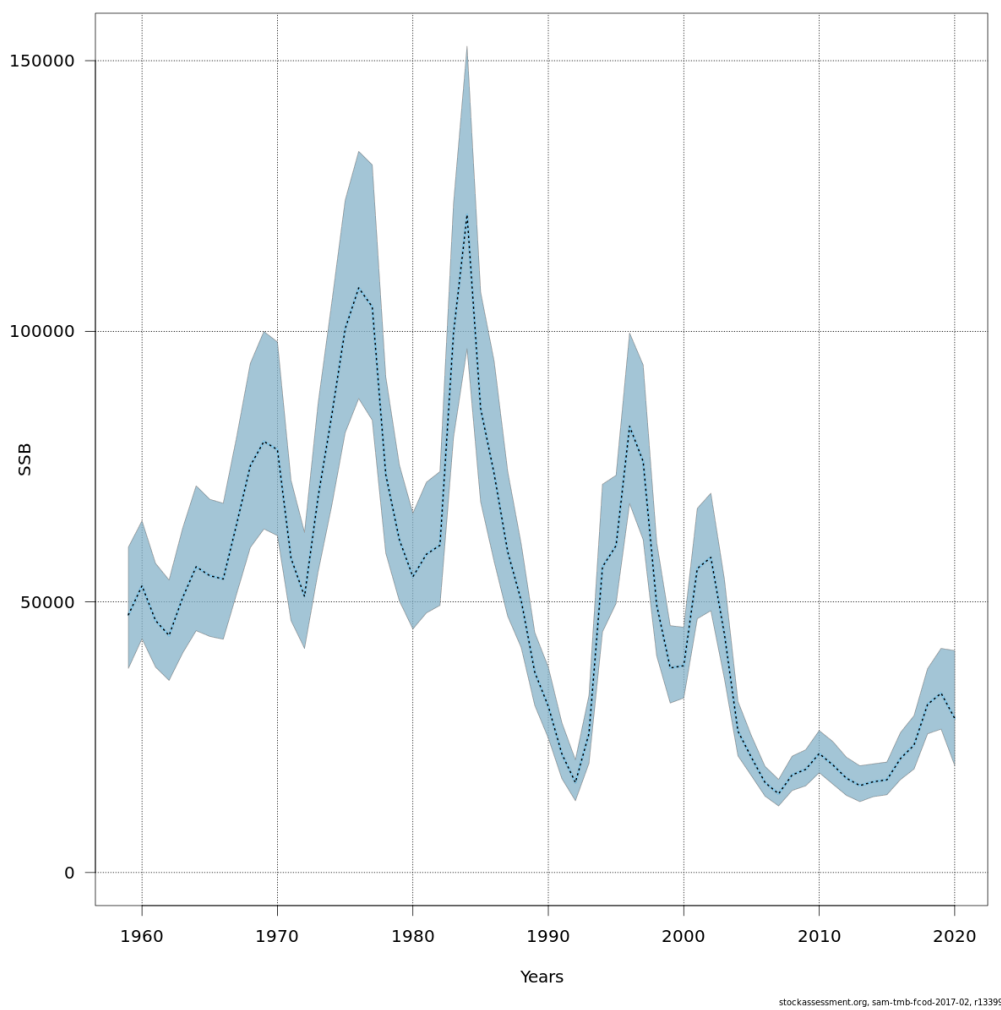


Figure 4.6.5. Faroe Plateau cod (Subdivision 5.b.1). Development of the spawning stock biomass over time.

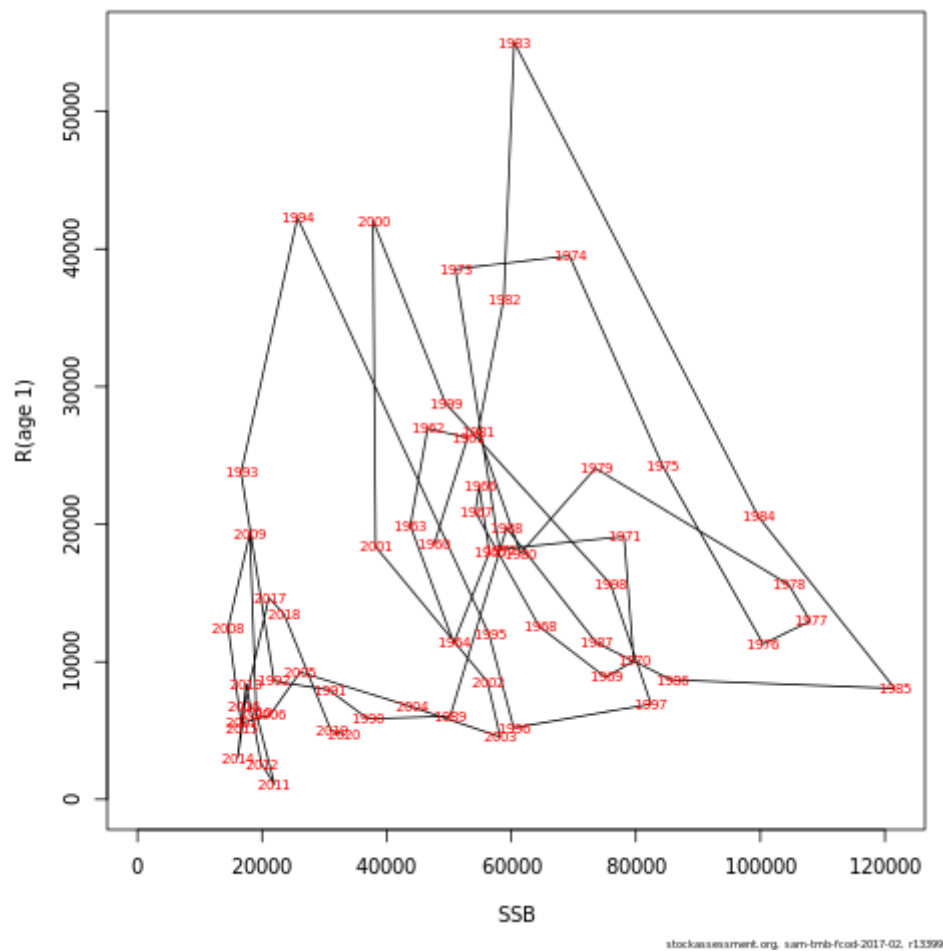


Figure 4.6.6. Faroe Plateau cod (Subdivision 5.b.1). Spawning stock (tons) – recruitment (thousands) relationship. Years are shown at each data point.

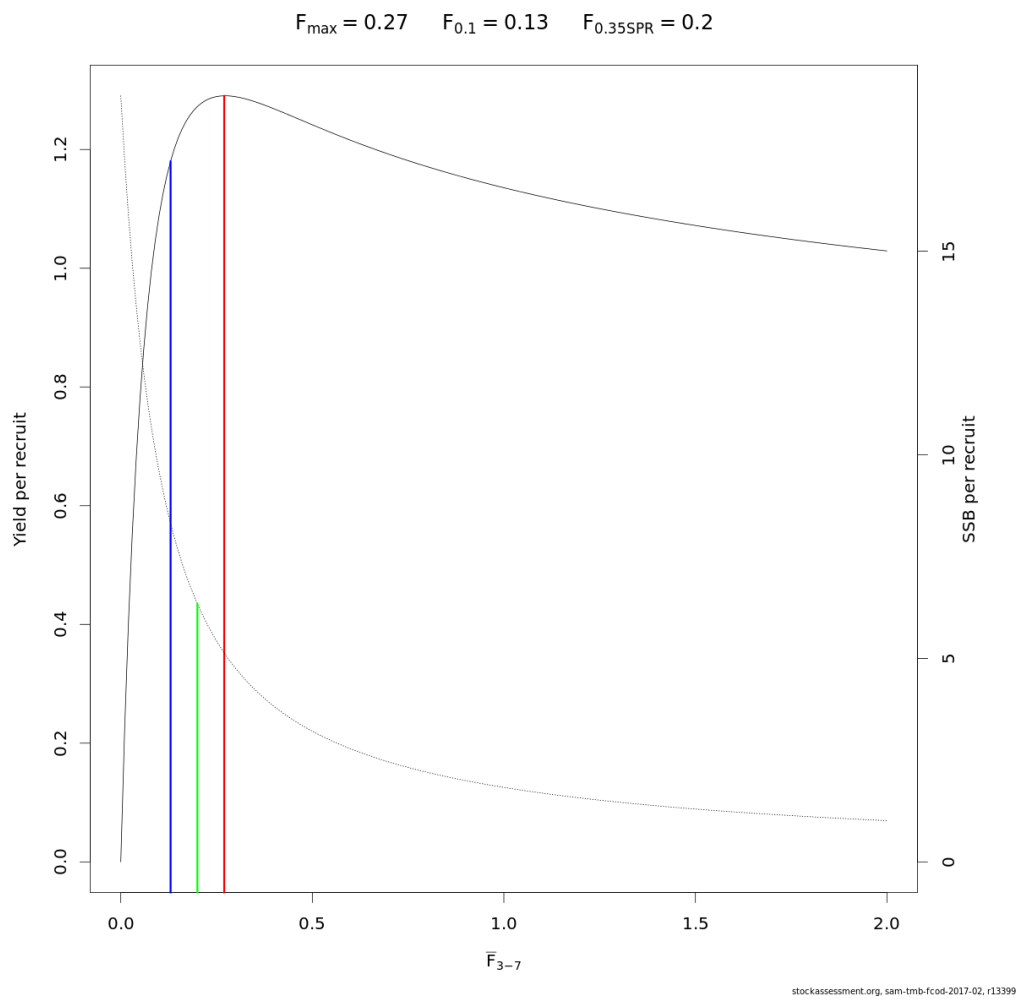


Figure 4.8.1. Faroe Plateau cod (Subdivision 5.b.1). Yield per recruit and spawning stock biomass (SSB) per recruit versus fishing mortality.

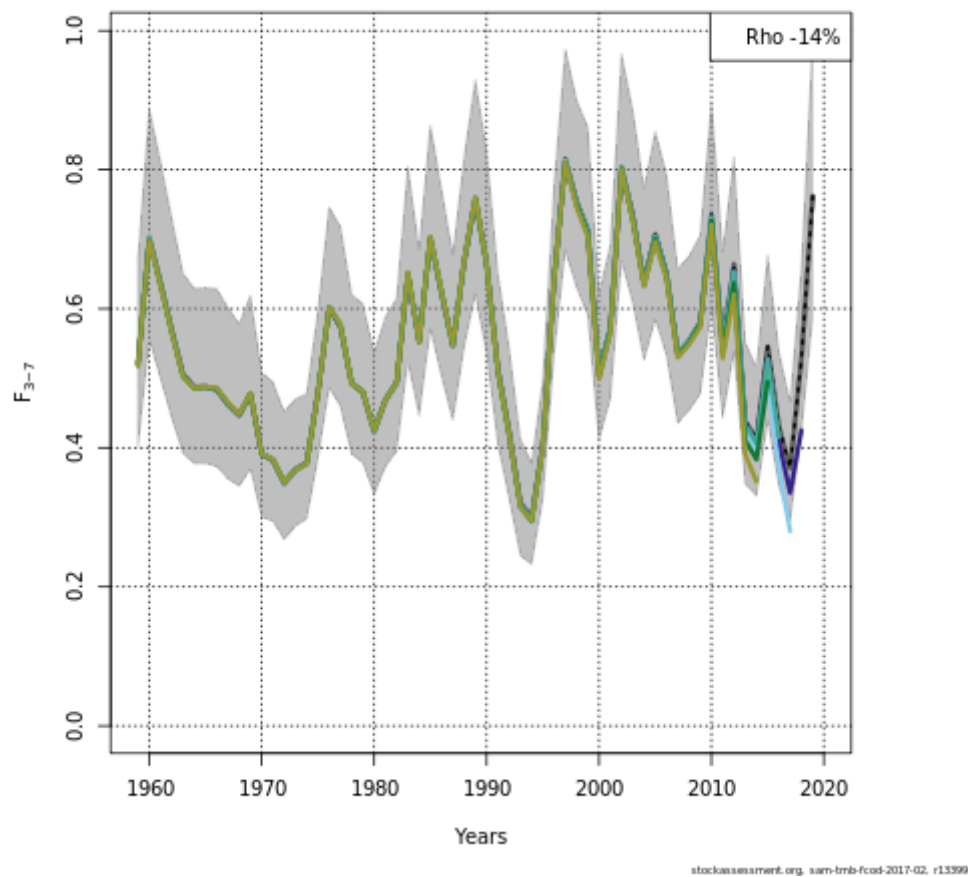


Figure 4.9.1. Faroe Plateau cod (Subdivision 5.b.1). Results from the SAM retrospective analysis of fishing mortality (ages 3-7).

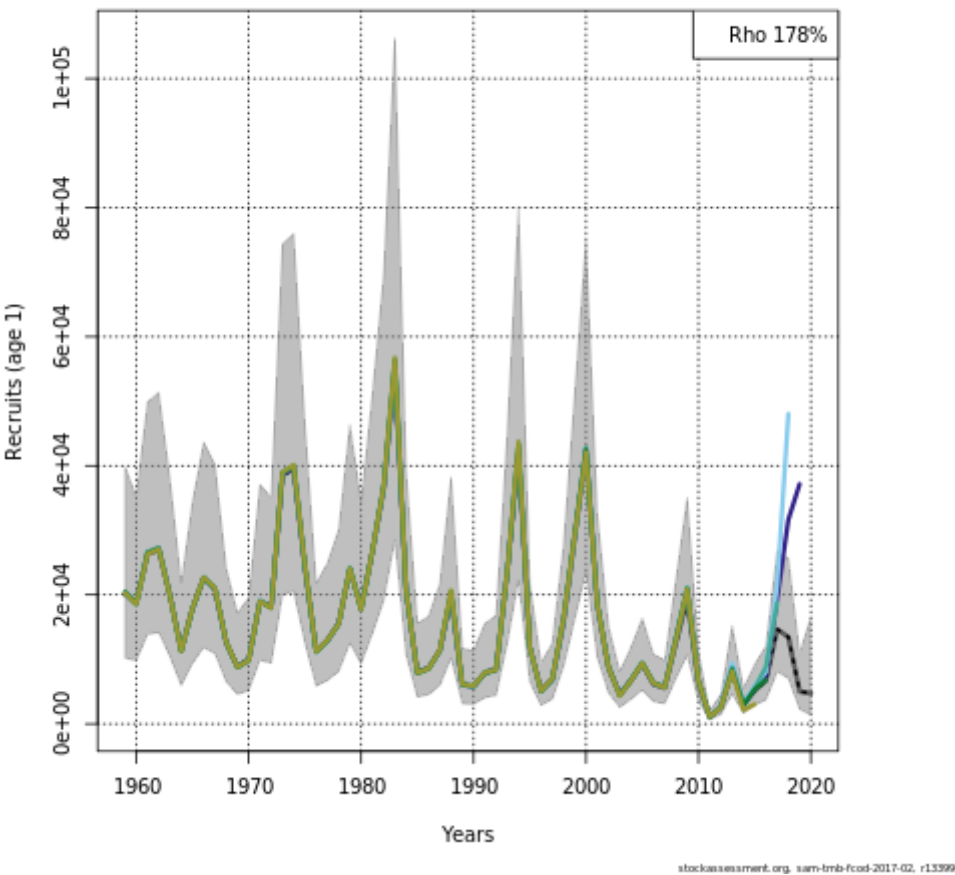


Figure 4.9.1. Faroe Plateau cod (Subdivision 5.b.1). Results from the SAM retrospective analysis (continued). Recruitment at age 1.

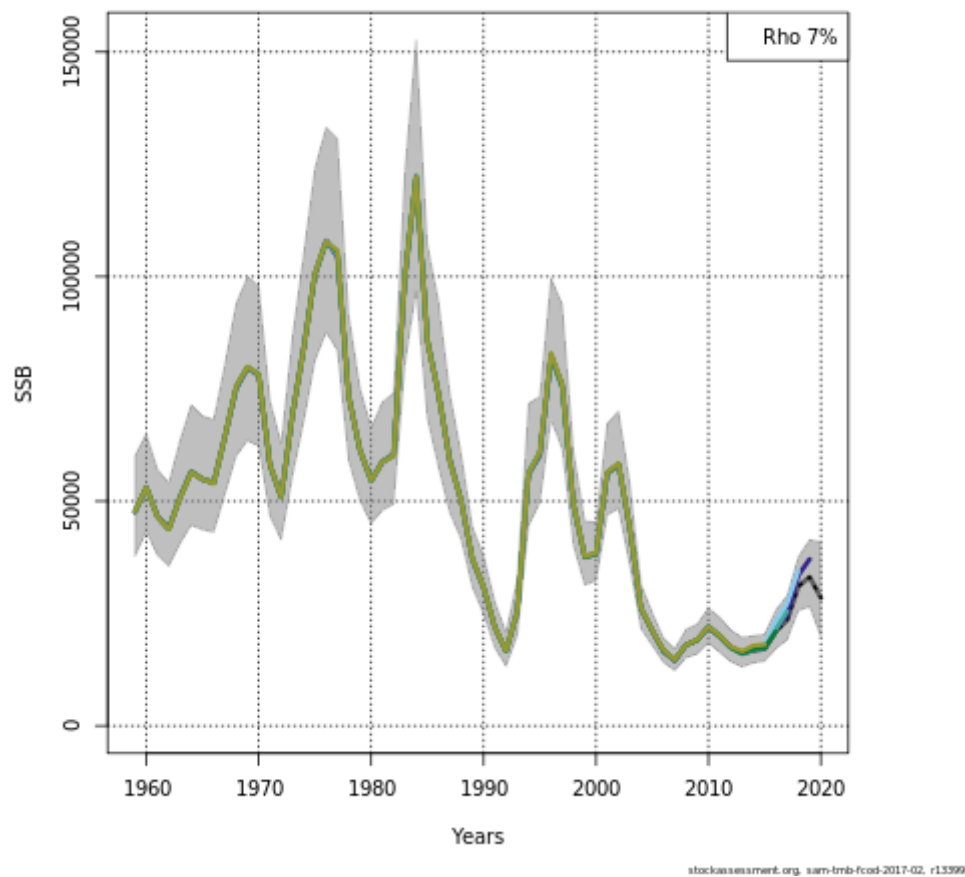


Figure 4.9.1. Faroe Plateau cod (Subdivision 5.b.1). Results from the SAM retrospective analysis (continued). Spawning stock biomass.

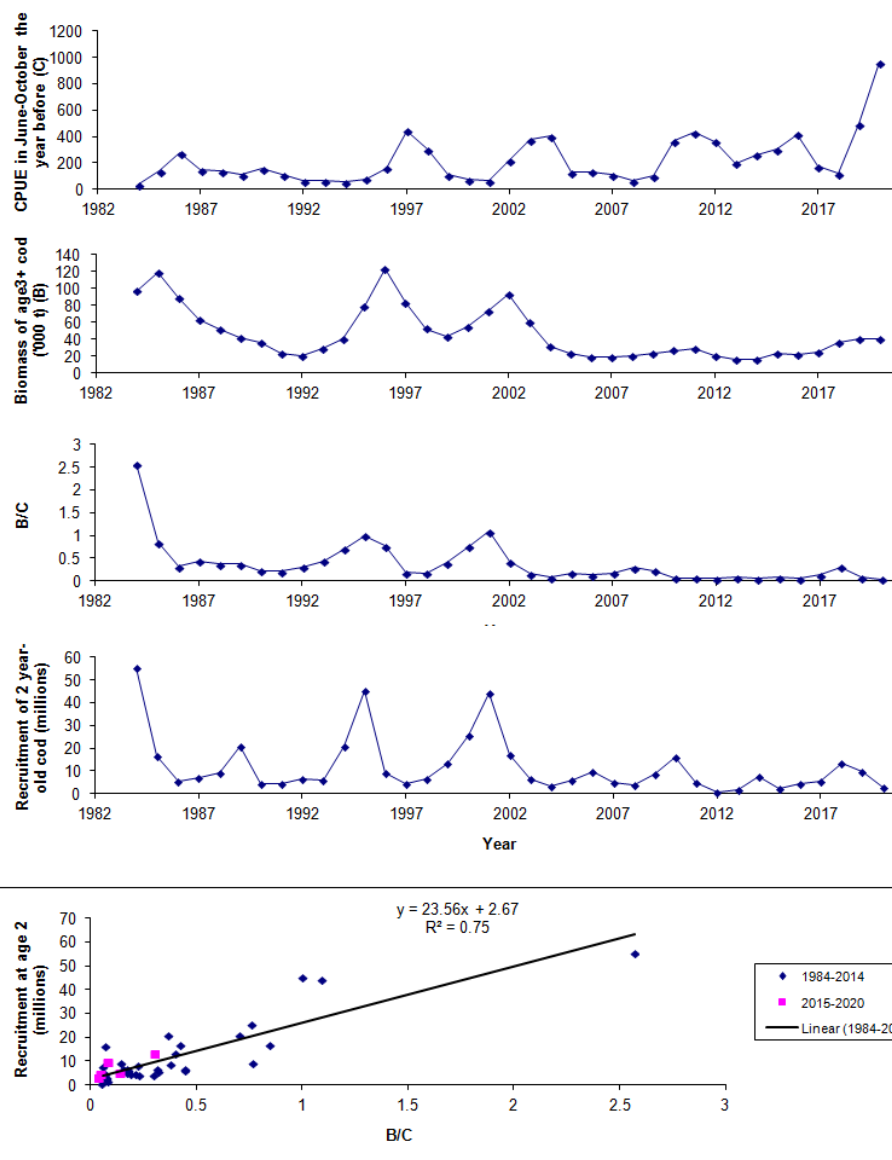


Figure 4.9.2. Faroe Plateau cod (Subdivision 5.b.1). Modelling cod recruitment in three steps. First, the catch-per-unit-effort of cod (C) for small boats operating close to land, as being indicative of the amount of cannibalistic cod. Second, the amount of cod (older than the recruiting cod) (B), as being indicative of e.g. culling-down of potential predators/competitors of recruiting cod. Third, the ratio between B and C, as indicative of recruitment success. Fourth and fifth, a comparison with observed recruitment.



Figure 4.9.3. Faroe Plateau cod (Subdivision 5.b.1). The current assessment (accepted assessment) compared with an assessment that included a preliminary catch-at-age for 2020.

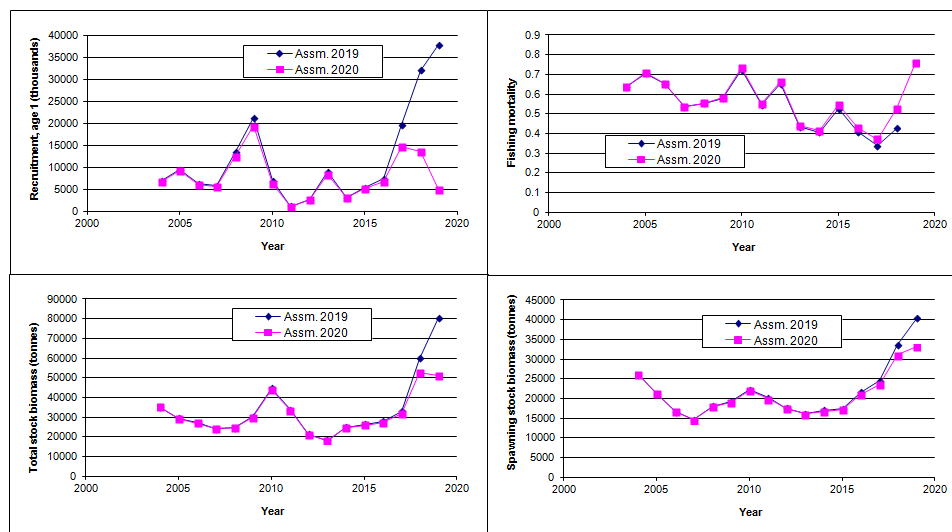


Figure 4.10.1. Faroe Plateau cod (Subdivision 5.b.1). Comparison between the results from the current autumn assessment compared with last year's assessment.