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Survey results of the longline survey on NAFO Division 3M

by

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Abstract

This paper presents the results of the Faroese longline survey carried out in NAFO 3M in June 2022. The 656 GRT longline vessel “Eivind” (LOA 41.3 m) conducted the survey. The goal was primarily to provide information about the stock status of the cod (*Gadus morhua*) stock on Flemish Cap.

Introduction

The objective of the survey was to cover as much as possible of area 3M with longline fishing gear and contrast the results with those of the EU groundfish survey and the potential inclusion in the assessment of 3M cod in the future. The survey covered mainly the stock distribution of cod at depths ranging from 130 m to 450 m on the Flemish Cap with 54 longline sets of 4400 hooks each (Figure 1).

Results

Cod dominated the catch and the overall catch rate of cod was extremely high, 1018 grams per hook (Table 1). In addition to cod other fish species such as halibut, wolffish and spotted wolffish were caught in the survey. The high catch rates of cod were apparent at all depths (shallower than 600 m) and areas on the Flemish Cap (Figure 1). Due to operational limitations the eastern area of 3M was not surveyed. The bottom temperature profile indicates an average temperature of 4.29 °C at depths shallower than 250 m, followed by a substantial drop to around 3.6 °C in waters deeper than 400 m. A histogram of the catch rates showed that the catch rates were reasonably bell shaped around the mean value of 1018 grams per hook (Figure 2). Hence, the overall cpue of cod was well defined since the effect of outliers was very limited in contrast to what is frequently observed in trawl surveys. Biological samples of cod were also taken. A total of 912 individuals were measured in length and weight of which 273 were also used for age-readings. Length composition data and weight-length relationship are displayed in table 2 and figure 3. Average length of cod is estimated at 69.4 cm and weight at 3.425 kg. Around 24% of all individuals sampled were greater than 80 cm. The largest individual observed was 1270 cm and it weighted 2.4 kg. Length distribution split by sex is shown in figure 4. The observed size difference between females and males is around 7 cm (females=77.3 cm, males=70.6 cm). Age-length composition data are displayed in table 3. Age groups dominant in the samples range from 3 to 10-years old individuals (Figure 4). Age classes 1 and 2 were not observed in the survey.



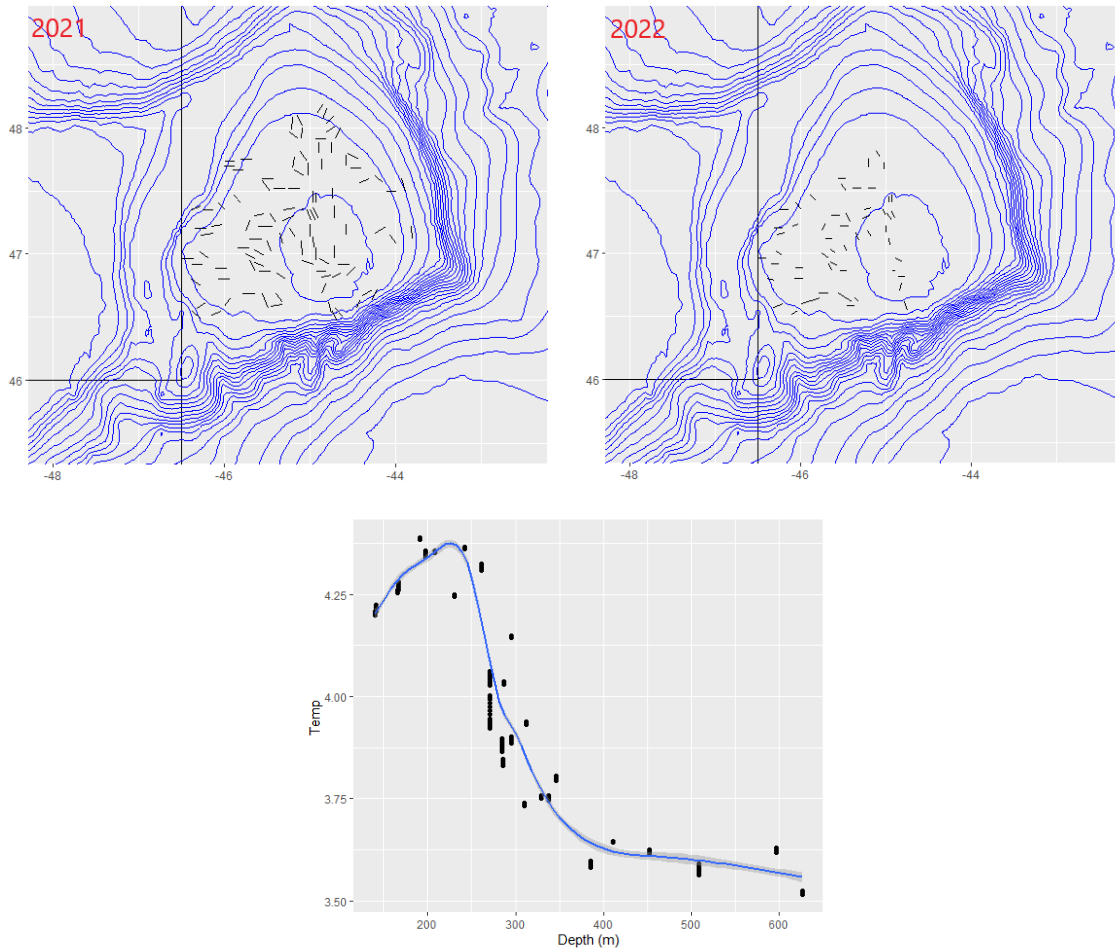


Figure 1. Spatial distribution of Faroese longline survey in SA3 in 2021 (left) and 2022 (right). A total of 101 and 54 stations were sampled in 2021 and 2022 respectively. Bottom temperature profile in SA3 (2021, bottom).

Table 1. Faroese longline survey on Flemish Cap in June 2022. Catch composition and the number of sets in which species were caught.

Fish species	Total catch (tons)	Number of sets
Atlantic cod	241.9	54
Halibut	4.80	40
Spotted wolffish	2.37	29
Wolffish	0.19	4
Total	249.3	54

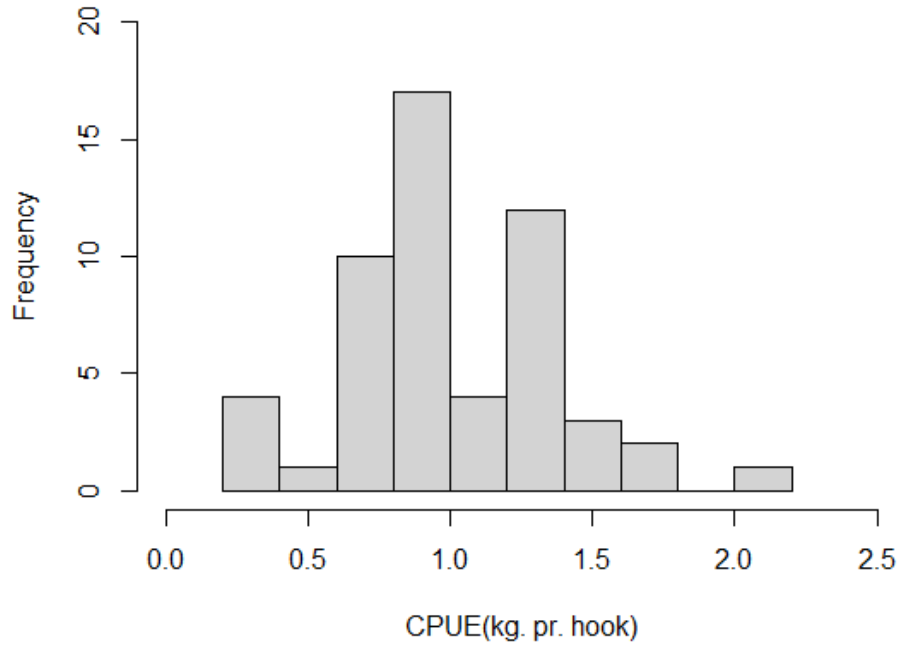


Figure 2. Catch rates of cod (kg per hook) in the Faroese longline survey in SA3 (2022).

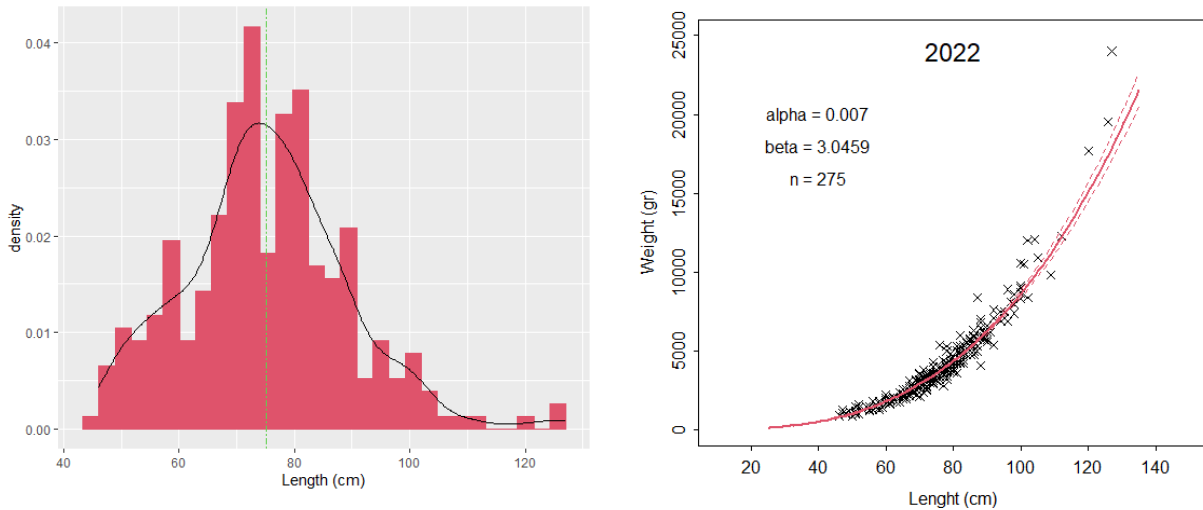


Figure 3. Length composition data (left) and length-weight relationship (right) of cod in the Faroese longline survey in SA3 (2022). Green vertical line (left) shows average length. Length measured in cm and weight in gr. Estimated parameters of the weight-length equation are shown.

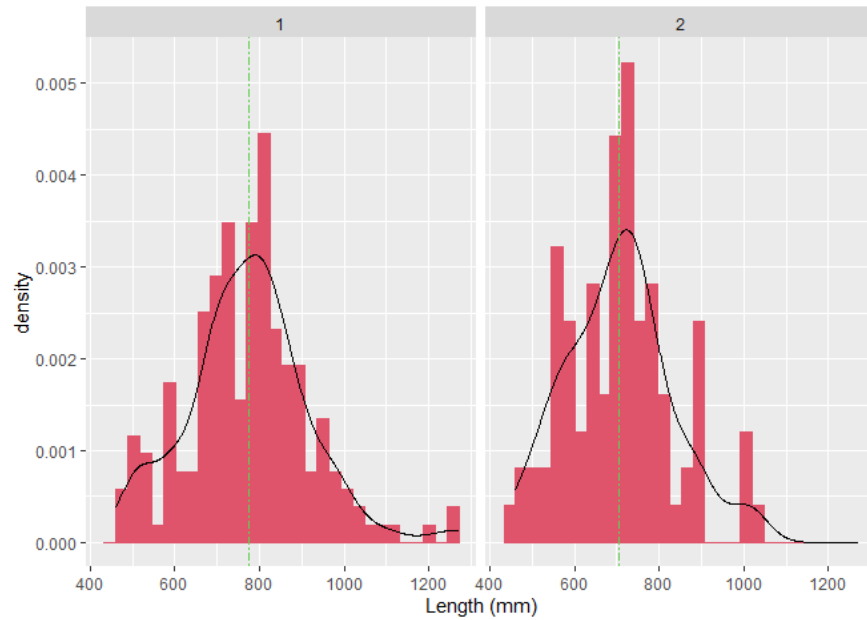


Figure 4. Length composition data split by sex (female=1, male=0) of cod in the Faroese longline survey in SA3 (2022). Green vertical line (left) shows average length.

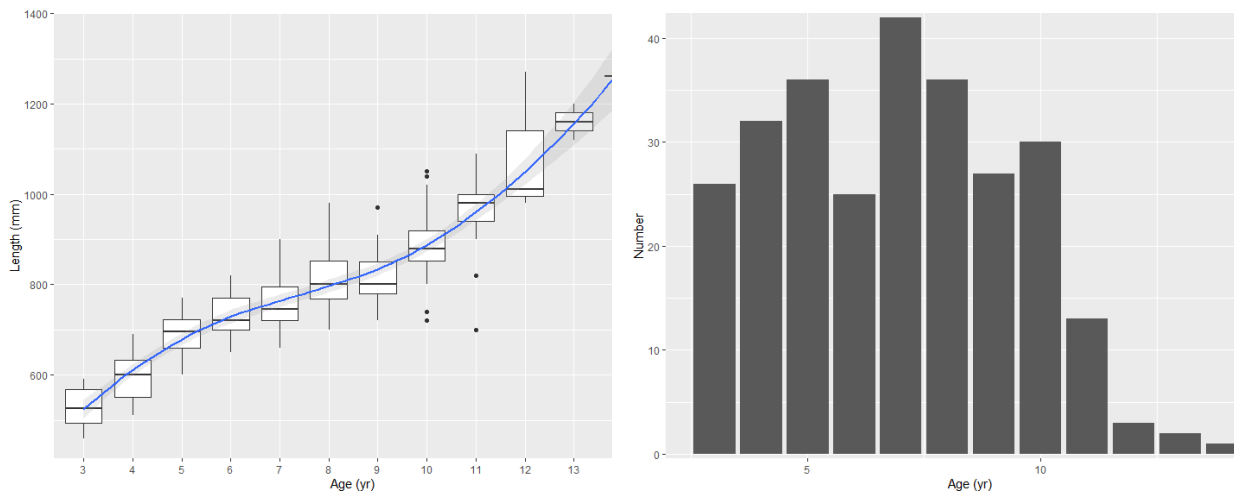


Figure 5. Length distribution disaggregated by age (left) and number of individuals in each age group (right) of cod in the Faroese longline survey in SA3 (2022). Length measured in mm and age in years.

Table 2. Length distribution of cod in the Faroese longline survey in SA3 (2022). Length measured in cm.

Length (cm)	n	Length (cm)	n
46	1	77	7
47	2	78	11
48	3	79	7
49	1	80	12
50	1	81	5
51	6	82	10
52	3	83	4
53	2	84	3
54	2	85	6
55	5	86	7
56	2	87	5
57	2	88	6
58	6	89	4
59	2	90	6
60	7	91	1
61	5	92	3
62	2	94	2
63	1	95	3
64	3	96	2
65	7	97	1
66	6	98	3
67	5	100	5
68	6	101	1
69	6	102	2
70	14	104	1
71	6	105	1
72	12	109	1
73	8	112	1
74	12	120	1
75	8	126	1
76	6	127	1

Table 3. Age-length composition of cod in the Faroese longline survey in SA3 (2022). Length measured in cm and age in years.

Length (cm)	Age							
	3	4	5	6	7	8	9	10+
46	1	0	0	0	0	0	0	0
47	2	0	0	0	0	0	0	0
48	3	0	0	0	0	0	0	0
49	1	0	0	0	0	0	0	0
50	1	0	0	0	0	0	0	0
51	4	2	0	0	0	0	0	0
52	1	2	0	0	0	0	0	0
53	2	0	0	0	0	0	0	0
54	1	1	0	0	0	0	0	0
55	1	4	0	0	0	0	0	0
56	2	0	0	0	0	0	0	0
57	2	0	0	0	0	0	0	0
58	3	3	0	0	0	0	0	0
59	2	0	0	0	0	0	0	0
60	0	5	2	0	0	0	0	0
61	0	4	1	0	0	0	0	0
62	0	2	0	0	0	0	0	0
63	0	1	0	0	0	0	0	0
64	0	2	1	0	0	0	0	0
65	0	0	4	3	0	0	0	0
66	0	2	2	0	2	0	0	0
67	0	0	3	1	1	0	0	0
68	0	3	1	1	1	0	0	0
69	0	1	4	0	1	0	0	0
70	0	0	5	5	2	1	0	1
71	0	0	2	1	3	0	0	0
72	0	0	2	2	3	2	2	1
73	0	0	3	0	4	1	0	0
74	0	0	2	2	4	2	1	1
75	0	0	0	1	4	2	1	0
76	0	0	2	2	1	1	0	0
77	0	0	2	1	2	1	1	0
78	0	0	0	1	3	3	4	0
79	0	0	0	2	0	3	2	0
80	0	0	0	1	3	3	4	1
81	0	0	0	1	2	1	0	1
82	0	0	0	1	1	2	3	2
83	0	0	0	0	1	1	1	1
84	0	0	0	0	0	1	1	1
85	0	0	0	0	2	3	0	1
86	0	0	0	0	1	1	1	4
87	0	0	0	0	0	2	2	1
88	0	0	0	0	0	3	0	3
89	0	0	0	0	0	0	0	4
90	0	0	0	0	1	1	2	2
91	0	0	0	0	0	0	1	0
92	0	0	0	0	0	0	0	3
94	0	0	0	0	0	1	0	1
95	0	0	0	0	0	0	0	2
96	0	0	0	0	0	0	0	2
97	0	0	0	0	0	0	1	0
98	0	0	0	0	0	1	0	2
100+	0	0	0	0	0	0	0	15
Total	26	32	36	25	42	36	27	49

References

scwp 21-012. Preliminary results from the scientific Faroese longline survey on Flemish Cap 2021. NAFO SC Working Paper 21/012