

**Skálaberg – Faroese Fisheries Laboratory (FFL) Cruise report**  
**Investigations of the pelagic redfish population *S.mentella* in the Norwegian sea. Cruise nr.**  
**0888**  
**Period: 13-26/8 2008**

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**People from FFL:** Fróði B. Skúvadal (Cruise leader) and Mourits Mohr Joensen (Technician)

**Responsibility:** Jákup Reinert

**People outside FFL:** Sigurður T. Jónsson from the Icelandic Marine Research Institute (Acoustician) and Sámal Olsen (Trawl specialist).

**Purpose of the cruise:** The purpose of the cruise is to investigate the horizontal and vertical distribution of redfish (*Sebastes mentella*) in Faroese, International, Icelandic and Norwegian Economical Exclusive Zones (EEZ). This cruise is part of an international cruise with participation of Faroese, Russian and Norwegian vessels. The cruise conveyed due to a request from the North East Atlantic Fisheries Commission (NEAFC) and will be conducted partly as a trawl based and partly as a acoustic survey.

**Gear:** A Vónin Red Lion 3072 and a Gloria H20 4096 pelagic trawl with 23 m<sup>2</sup> doors, weighing 6 tons each. The bridles were 200 and 300 m, respectively. To measure temperature and salinity CTD Data Storage Tags (DST) were used, placed on the headline and on the groundline. The codend was lined with an inner net of 12 m. length and 40 mm meshes. A mobile measuring system for measuring the weight and length of the catc was set up on the factory of the vessel. Acoustic registrations were done with a 38 KHz SIMRAD EK 60 scientific echo sounder and processed with the program echoview.

**Brief description of the cruise:** On the 13<sup>th</sup> of August the gear used for the cruise was set up onboard. In the morning of the 14<sup>th</sup> of August the course was set for Skálafjørðin, a protected fjord used for acoustic calibration. The calibration of the EK 60 was done with a standard copper sphere, and was successfully completed. Leon Smith from the FFL's technical department managed the calibration. After the completion of the calibration the ship returned to harbour and the remaining crewmembers enrolled. The ship left harbour in the evening on the 14<sup>th</sup> of august and sailed north from the Faroe Islands according to **Figure 1**. The first haul was done in the morning of the 15<sup>th</sup> of August. The planned cruise track for all participating ships is shown on **Figure 2**. 23 trawl stations were taken according to **Figure 1**. The plan was to inter calibrate the echo sounder with the Russian trawlers "Osveiskoe" echo sounder at the end of the cruise but due to bad weather this was not possible. Instead it was decided to do two parallel hauls with "Osveiskoe", one on 400 m and one on 300 m. This was done over 6 nautical miles. The Skálaberg catch was approximately twice that of the "Osveiskoe". This was thought to be because the Skálaberg had a trawl with approximately twice the opening. In the night of the 26<sup>th</sup> of August we met with the pelagic trawler Tróndur í Gøtu, on their way to Iceland. We sailed with them to Iceland and left Iceland with the ferry Norrøna and were back in the Faroe Islands on the 29<sup>th</sup> of August.

**Redfish:** Redfish was caught on all trawl stations except three. These three stations were all west towards the Icelandic EEZ or in the Icelandic EEZ at around 300 m depth. Apart from this area the

redfish was scattered in a layer at 200-600 m deep east towards the EU and Norwegian EEZ. and north towards International waters. In this layer the redfish was mixed with lancetfish (*Paralepis coregonoides*), blue whiting (*Micromesistius potassou*) and lantern fish (*Mueleri ssp.*). Some black fish (*Centrolophus niger*) were also in this layer in the southernmost stations. The largest quantities of redfish were caught in the northern part of the Faroese EEZ. and southern part of the NEAFC area at 350 m depth. The length distribution is shown on **Figure 3** and the catch rate (kg/h) on **Figure 4**. In total 9564 redfish weighing 6430.59 kg were caught on the cruise, with an average length of 38.3 cm and weight of 690 g.

**Blue whiting:** Blue whiting was caught in all of the surveyed area and on all depths, except on three stations in the northern part of the Faroese EEZ.. The largest amounts were caught towards the Icelandic boarder. The average length and weight were 30.08 cm and 154.6 g respectively. The length distribution of blue whiting is shown on **Figure 5** and the catch rate (kg/h) is on **Figure 6**.

**Herring:** Was especially seen in the Northwestern part of the Faroese EEZ. at 300-400 m depth. Here there were some dense schools of herring with a few redfish in between. On one station in this area 2500 kg of herring was caught. The average length and weight of herring on the cruise was 33.7 cm and 345.7 g respectively. The length distribution of herring is shown on **Figure 7** and the catch rate (kg/h) on **Figure 8**.

**Biological sampling:** Regular towing was done to analyse the echogram at different depths of 200-600 m. 23 trawl stations were taken in total. To investigate the age distribution otholiths of 584 redfish were taken, approximately 30 for each station. Otholiths were also taken from 4 cod. As a part of the investigation of the redfish population genetic samples were taken on 15 stations, in total 431 DNA samples. The occurrence of the ectoparasite *S.lumpi* was registered for the same fish as was genetically sampled, as well as pigment spots. Up to a 100 fish were sampled for length, weight, sex and maturity for each station. The total catch weight of redfish was determined by adding the sampled redfish with the processed fish x 1.7 (factor used to calculate the round weight of redfish). In total 9564 redfish were caught weighing 6430.5 kg, of these 1848 were sampled. The samples were taken randomly from the catch. The species composition and catch index can be seen on **Table 2**.

**Hydrografi:** The CTD DST were placed on the trawl, on the headline and on the groundline, to measure the temperature. The sampling frequency was set to 1 Hz. This seemed to function well, but when the trawl was below 500 m, they stopped functioning and at times it was difficult to get in contact with the tags. This led to the lack of temperature measurements in 5 stations, and not below 500 m. The general picture was that the redfish occupied waters that was 2-4 °C warm. The depth on the different stations is seen in **Table 1**. The temperature on the stations is shown on **Figure 9**, on 10 and 300 m depth respectively.

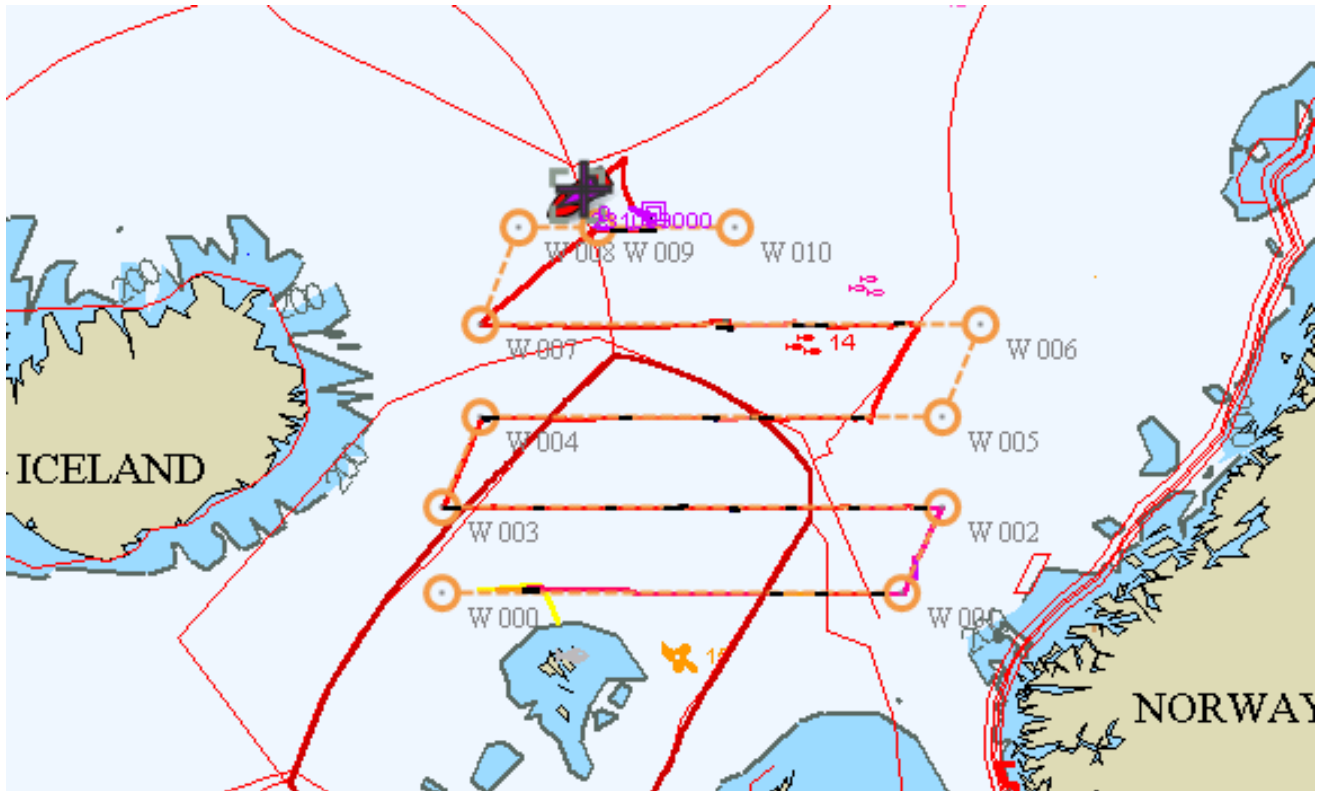
**Preliminary results:** At the season that the cruise was conducted it is seems as the Redfish (*S.mentella*) is distributed in low density over most of the Faroese part of the survey below 300 m, apart from the western area, where there was a cold front in this depth.

**Acknowledgements:** This is the first time that the Faroese Fishery Laboratory has rented a commercial vessel with a research quota to conduct a acoustic and trawl survey of a fish population. We that participated in this survey are very pleased with this cooperation and would like to give our gratitude to the ship owners and the crew of M/Tr. Skálaberg for all their help and good

cooperation. We would also like to give our gratitude to the skipper and crew onboard Tróndur í Gøtu, for taking us onboard on their way to Iceland.

Tórshavn 24-09-08

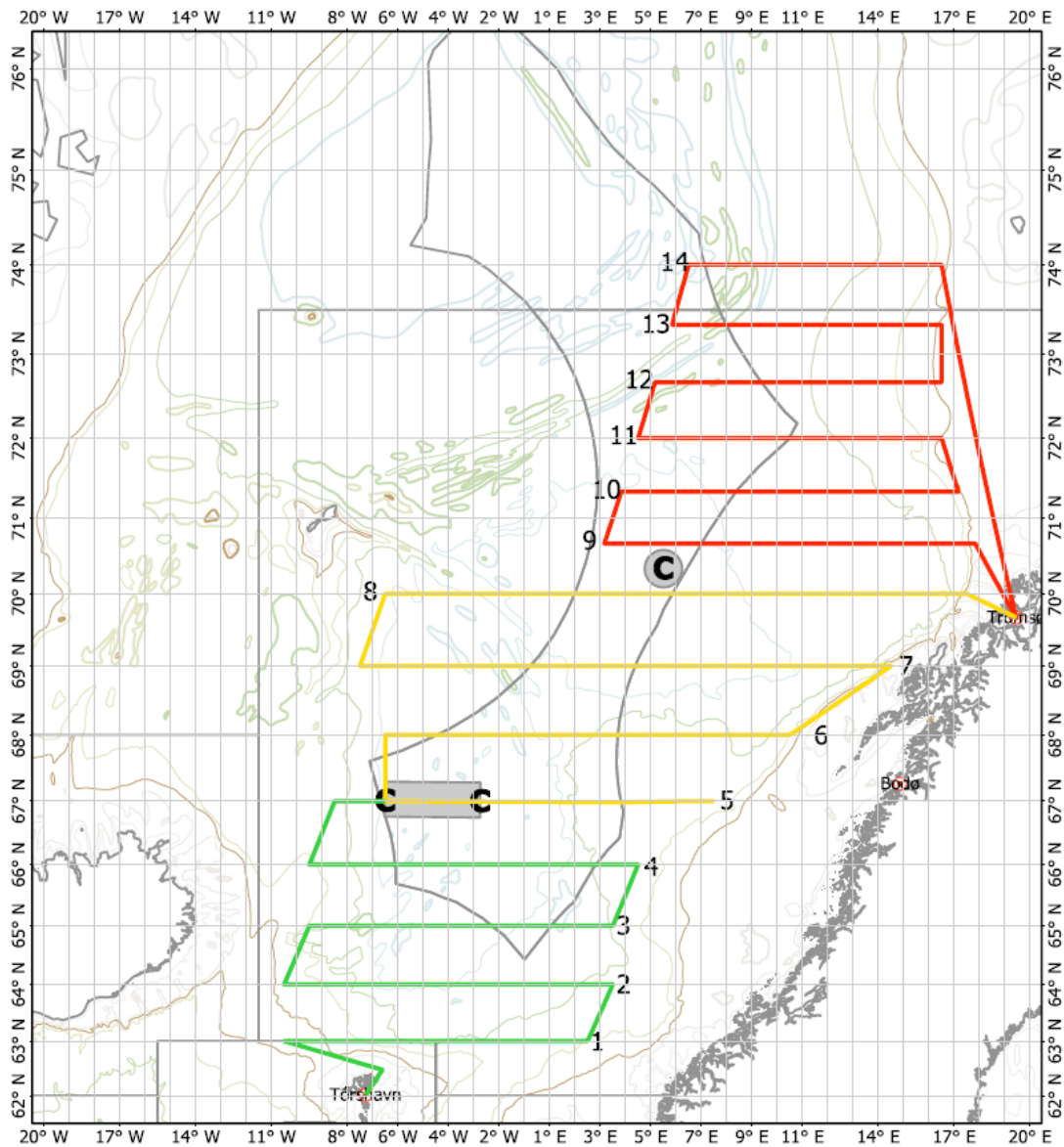
Fróði B. Skúvadal



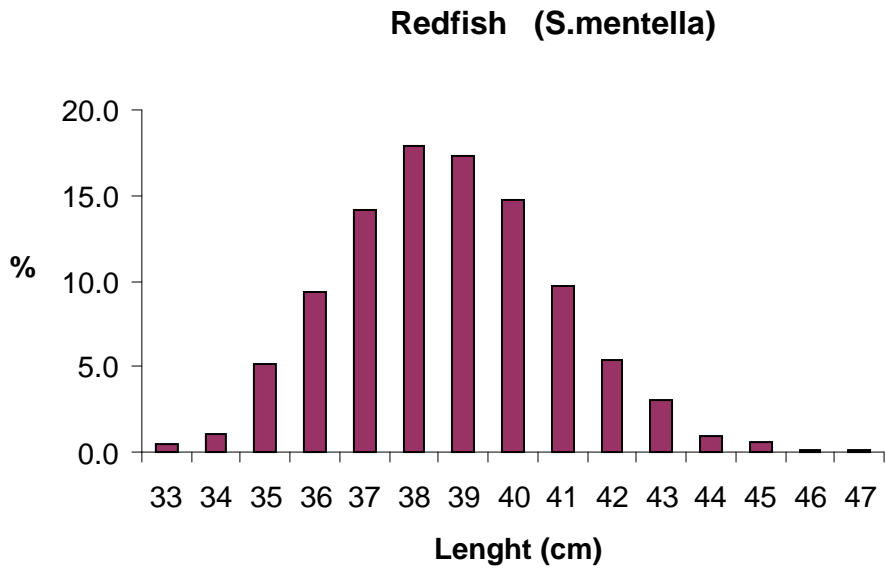
**Figure 1.** The track of Skálaberg (dashed orange line). 23 trawlstations were taken (black lines) and around 1600 nautical miles sailed..

Støð nr.	St 1	St 2	St 3	St 4	St 5	St 6	St 7	St 8	St 9	St 10	St 11	St 12	St 13	St 14	St 15	St 16	St 17	St 18	St 19	St 20	St 21	St 22	St 23
Dýpi	300	250	350	250	450	550	250	350	350	250	350	320	330	440	300	500	350	300	400	350	600	400	300
Positi3n	63N08W	63N01W	63N00W	63N01E	64N02E	64N00E	64N00W	64N02W	64N03W	64N05W	64N07W	64N09W	65N08W	65N07W	65N03W	65N02W	65N00W	66N02E	66N02E	66N00W	66N02W	67N04W	67N04W

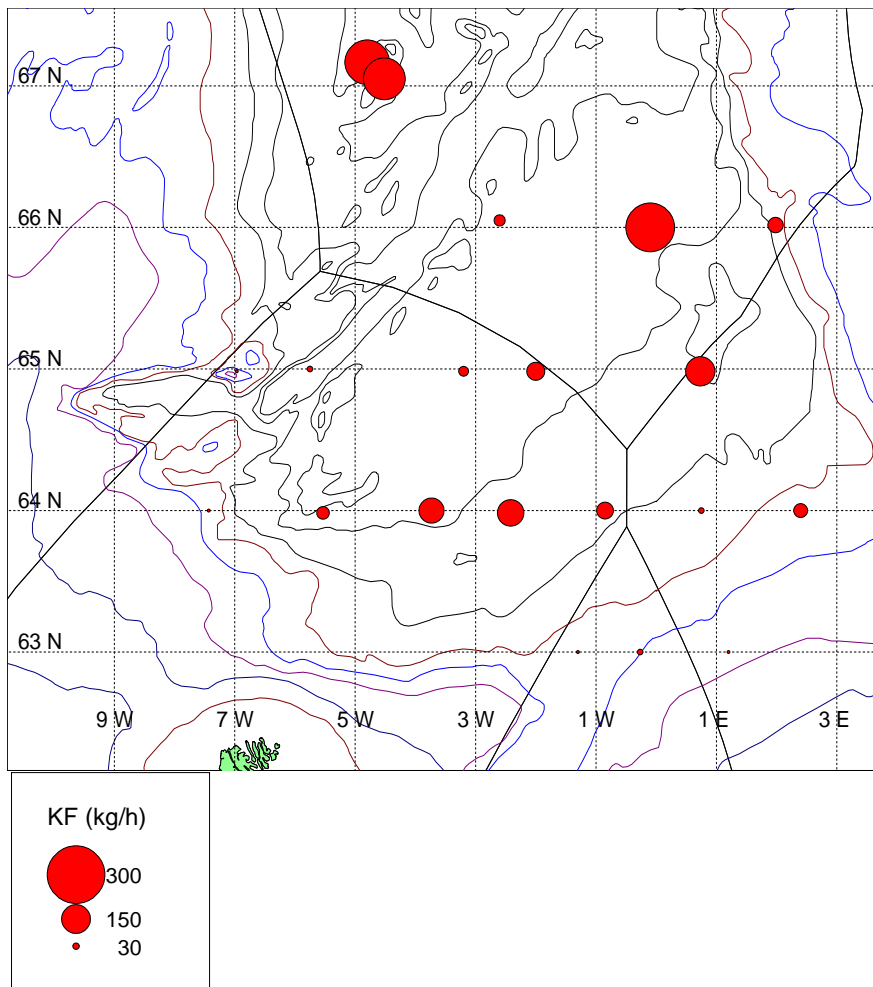
**Table 1.** Depth and position of the stations.



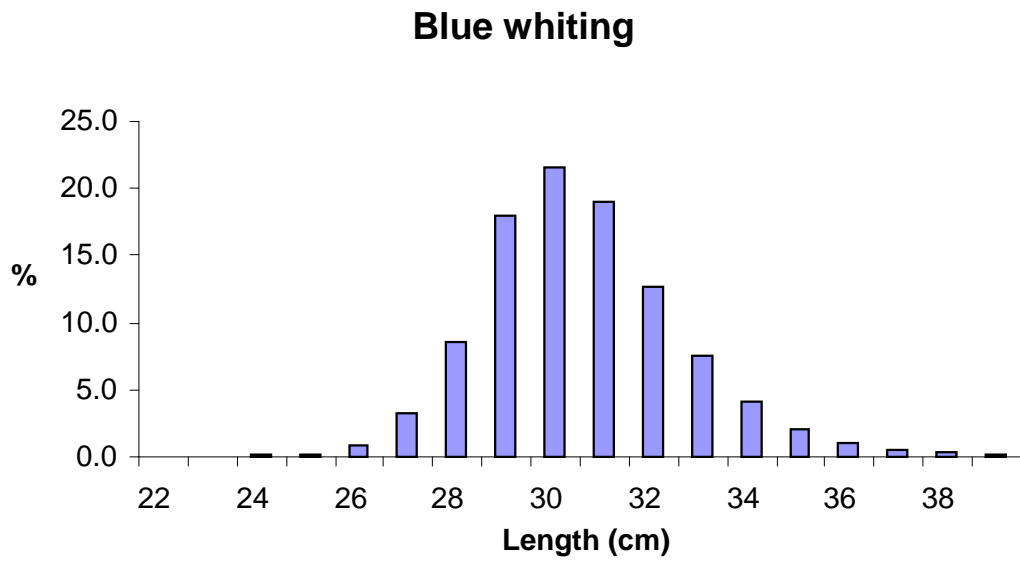
**Figure 2.** Planned track of the three ships that participated. Green lines: Skálaberg (Faroe Islands), yellow lines: Osveiskoe (Russia) and red lines: Atlantic Star (Norway).



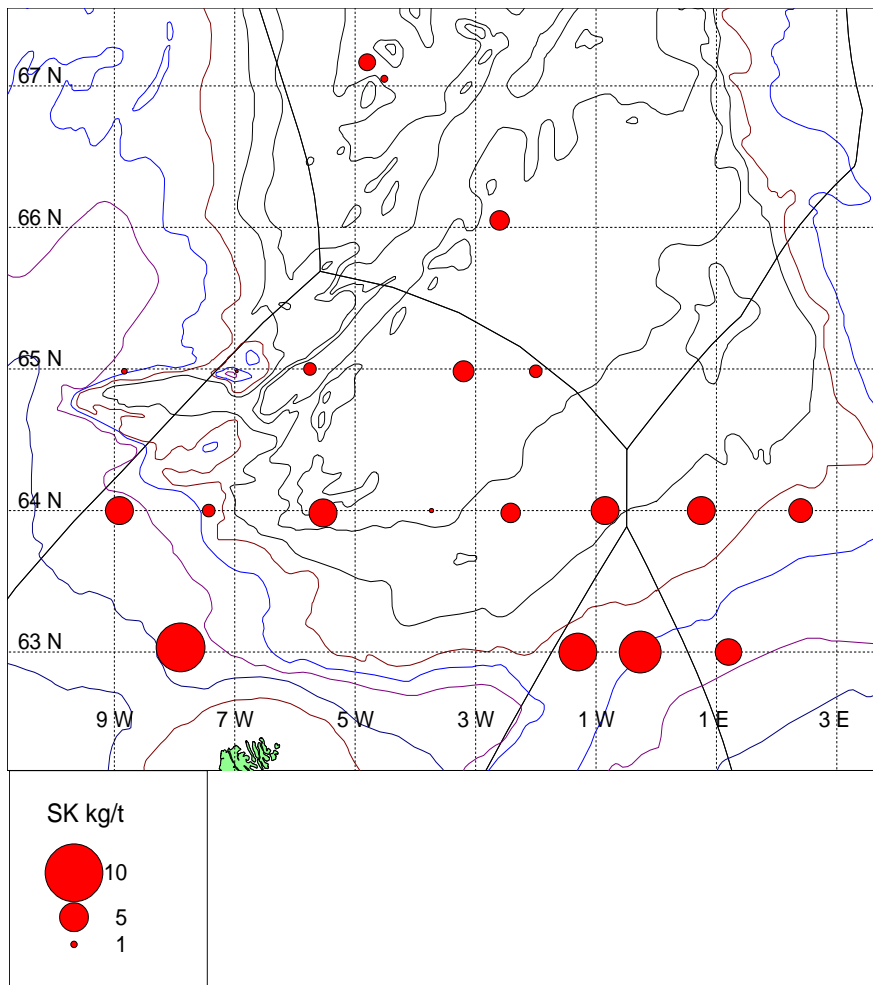
**Figure 3.** Length distribution of Redfish on the Faroese part of the redfish survey in the Norwegian sea. Average length 38.3 cm and average weight 690g.



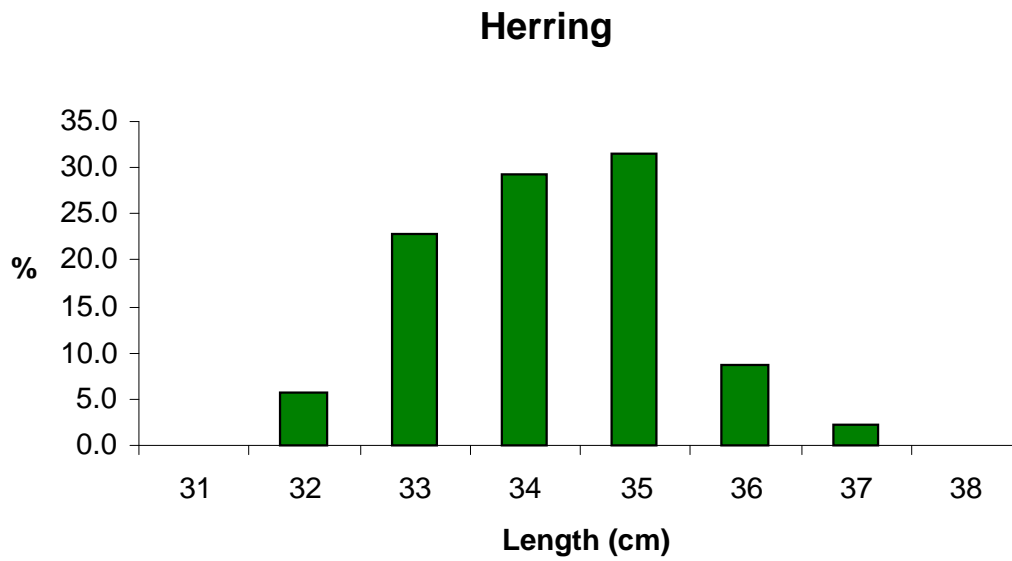
**Figure 4.** Catch of redfish, kg/tow hour.



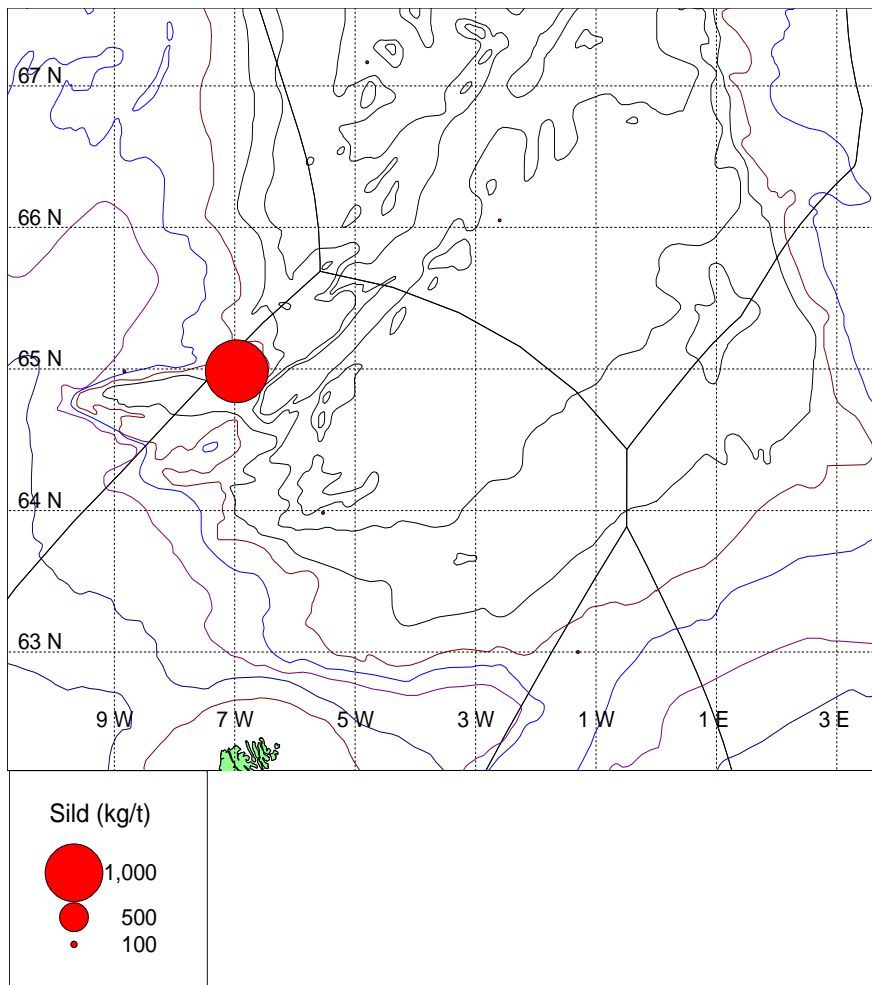
**Figure 5.** Length distribution of Blue whiting on the Faroese part of the redfish survey in the Norwegian sea. Average length 30.08 cm and average weight 154.6.



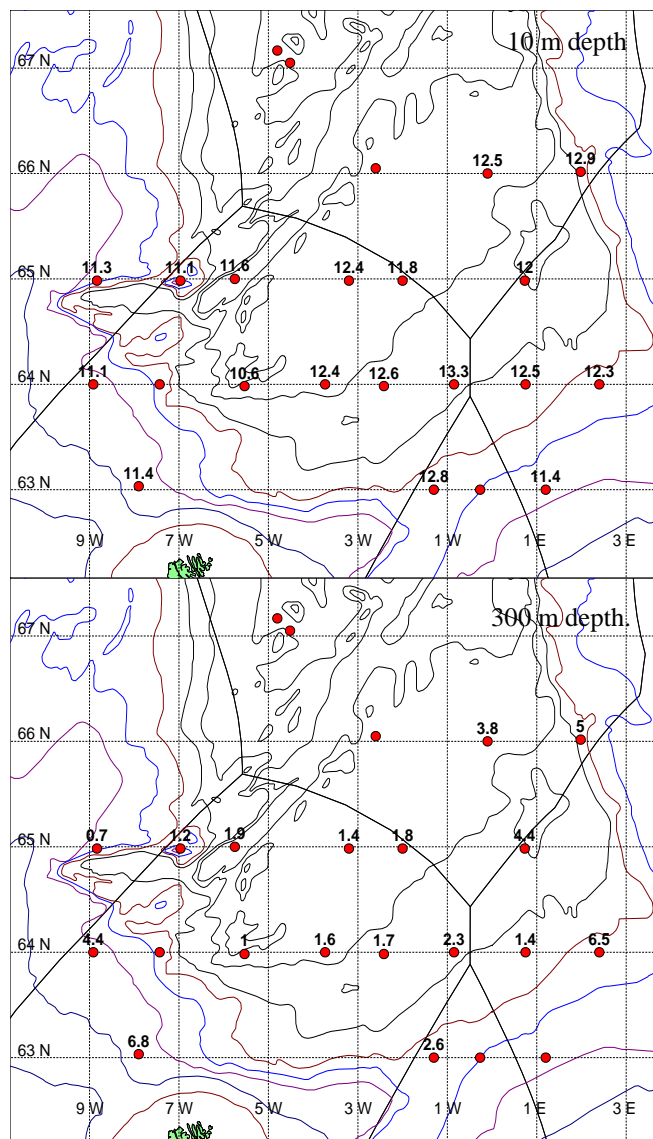
**Figure 6.** Catch of Blue whiting, kg/tow hour.



**Figure 7.** Length distribution of Blue whiting on the Faroese part of the redfish survey in the Norwegian sea. Average length 33.7 cm and average weight 345.7.



**Figure 8.** Catch of Herring, kg/tow hour. Only one station with significant amounts of herring, here 2500 kg of herring was caught.



**Figure 9.** Temperature on 10 m depth (top) and on 300 m (bottom). Temperature on 5 stations is not available.

Species	#hauls	Index
S.mentella	20	0.869565
Lanternfish	6	0.26087
Blue whiting	20	0.869565
Saithe	9	0.391304
Sentropus niger	6	0.26087
Brama brama	2	0.086957
Ommastrephes sagittatus	3	0.130435
Northern Wolffish	1	0.043478
Lancetfish	16	0.695652
Herring	6	0.26087
Silver smelt	1	0.043478
Mackerel	4	0.173913
Shrimp	2	0.086957
S.marinus	1	0.043478
Cod	3	0.130435

**Table 2.** Species composition, the index is calculated as # hauls with species/total # hauls.



