

Reykjavik, 13.02.2013



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A short preliminary report on the Research Survey A8-2012

A survey in Icelandic waters with R/V Arni Fridriksson in July-August 2012

Part of the coordinated ecosystem survey (IESSNS) in the Norwegian Sea and adjacent waters 1 July-10 August 2012 (see ICES WGIPS report, December 2012)

Vessel: R/V Arni Fridriksson, TFNA (Iceland)

Captain: Guðmundur Bjarnason

Cruise leader: Sveinn Sveinbjörnsson

Main objective

To study the abundance, spatial and temporal distribution and feeding ecology of the Northeast Atlantic mackerel, Norwegian spring-spawning herring, blue whiting and other pelagic species in relation to hydrographic conditions, plankton and other prey communities.

Material and methods

Survey area, cruise tracks trawl-, CTD and plankton stations.

The survey area was restricted to Icelandic waters and a predetermined cruise track with a spacing of 40-50 n.m. was followed. CTD-, plankton- and trawl stations were taken, usually simultaneously, along the track with 40-50 n.m. distance between them. A total of 105 trawl stations, 89 CTD stations and 91 plankton stations (WP-2) were worked.

Intercalibration of survey trawls and echo-sounders

On 16-17 July an intercalibration between survey trawls and echo-sounders of the survey vessels from Iceland, Norway and Faroes took place east of Iceland.

Biological sampling of fish

The catch was sorted and the catch of each species weighed. Otoliths of mackerel and blue whiting and scales from herring were collected for age determination. Those target species were also weighed, sexed and maturity stage was determined. Hearts from Icelandic summer spawning herring were collected for estimation of Ichthyophonus infestation. Length and weight were measured for all non-target species. Tissue samples from mackerel for genetic studies were collected and frozen and stomachs from mackerel, herring and blue whiting were collected and frozen for later analysis of the contents. Tissue samples from mackerel and herring for isotope analysis were collected.

Hydrography

Hydrographic stations were worked down to bottom where the bottom depth was less than 500 m but down to 500 m. in deeper waters using SEABIRD CTD sensor with water bottle rosette.

Plankton sampling.

Zooplankton sampling was performed and the samples treated according to adopted working standard. A WP-2 net with a 180 µm mesh size was towed from 200 m depth to the surface at a speed of 0.5 m/s.

Acoustics

A Kaijo Denki survey sonar and high frequency sonar were run throughout the survey and a continuous data logging and raw data recording from 18, 38, 120 and 200 kHz drop keel mounted Simrad EK60 echo sounder were done down to 500 m.d. The quantitative acoustic analysis and NASC species analysis were done with the software program Large Scale Survey System (LSSS).

Results

Hydrography.

The surface temperature around Iceland was generally high and this was particularly pronounced at southwest, west and north Iceland.

Zooplankton

Zooplankton biomass was generally low with somewhat higher concentrations east and west of Iceland.

Pelagic fishes

Mackerel

Mackerel was caught in the majority of tows except in areas off north Iceland and south Iceland (Figure 1). The highest trawl catches were to the west of Iceland. Preliminary swept area biomass estimate indicated a larger biomass in 2012 than in 2010 and 2011 for the Icelandic area.

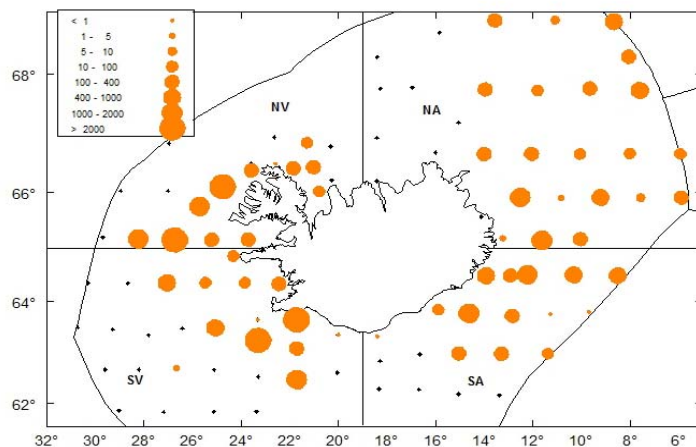


Figure 1. Catch (kg/nm) of mackerel in July-August 2012. Black dots represent tows without catch.

In Figure 2 is shown the total length distribution and mean weights of mackerel in all tows. The mean length and weight of mackerel in the surveyed area was 36,08 cm and 435 gr. The length distribution was from 5-45 cm with the most common length frequencies 33-39 cm. Fish of 5, 8 and 9 cm length are 0-group fish caught off southwest Iceland.

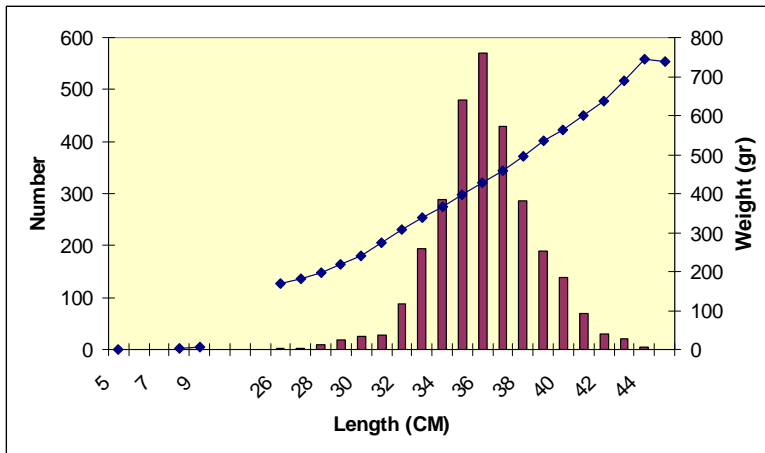


Figure 2. Total length distribution of mackerel and mean weight at length.

Herring

In figure 3 is shown the distribution of the Icelandic summer spawning herring (ISSH) and the Norwegian spring spawning herring (NSSH) and the catch per nm towed. The ISSH is mainly distributed to the west and south of Iceland mostly over the shelf whereas the NSSH has both coastal- and oceanic distribution off the southeast, east and the northeast Iceland. No mixing of the species was observed.

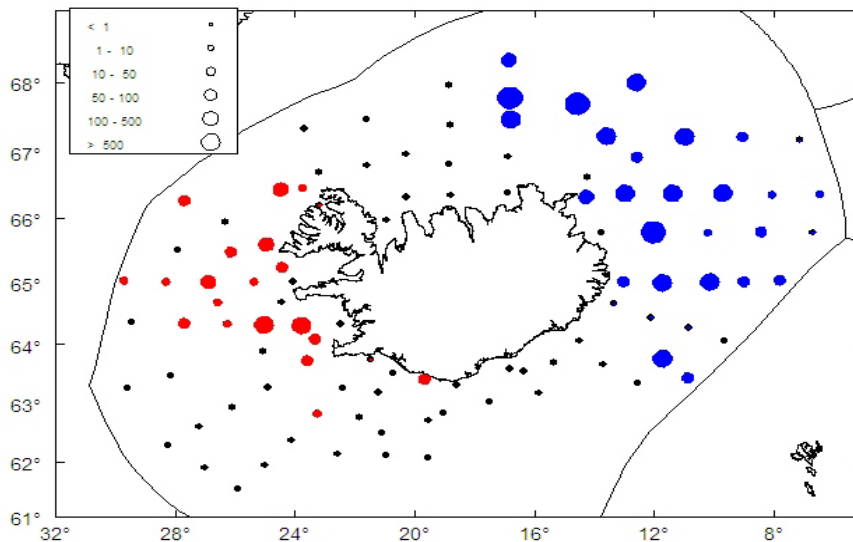


Figure 3. Distribution of ISSH (red circles) and NSSH (blue circles) and catch in kg per nm towed. Black dots represent tows without herring catch.

The length range of the ISSH was from 19 – 38 cm. In Figure 4 is shown the length and weight distribution of the ISSH. As seen from the length distribution both immature and mature herring were caught. Of the mature part the greatest numbers ranged in length from 30-36 cm.

The length and weight distribution of the NSSH is shown in Fig. 5. The length ranged from 21-38 cm. The most common length frequencies were from 33-36 cm.

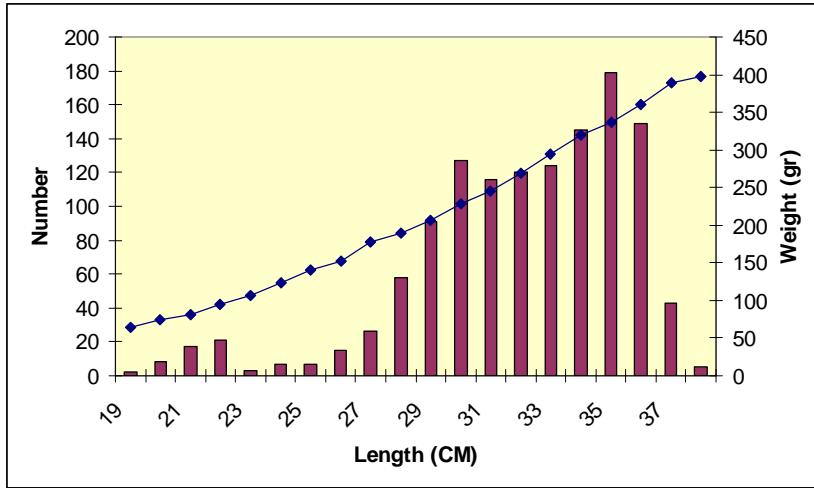


Figure 4. Total length distribution of ISSH and mean weight at length.

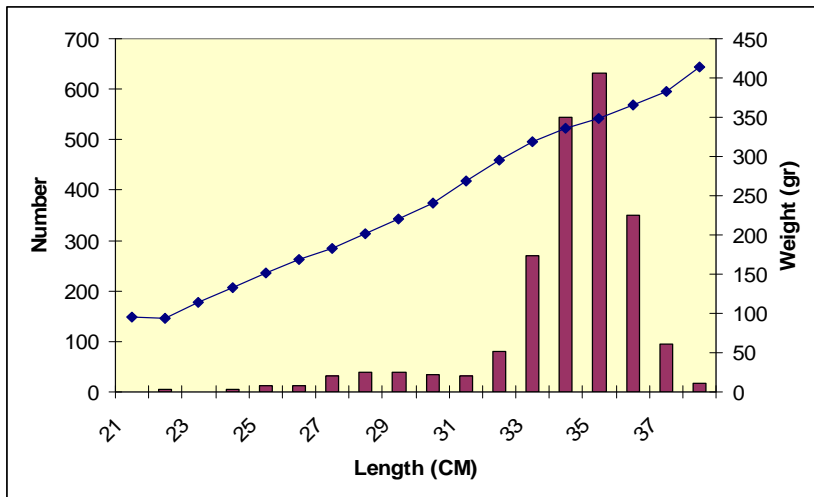


Figure 5. Total length distribution of NSSH and mean weight at length.

Blue whiting

In figure 6 is shown the distribution of blue whiting. The distribution of blue whiting was limited to the warmer waters in the Icelandic area but as blue whiting is usually staying in deeper waters than herring and especially mackerel and mostly surface tows were worked that may have had considerable effect on the distribution as represented in the tows.

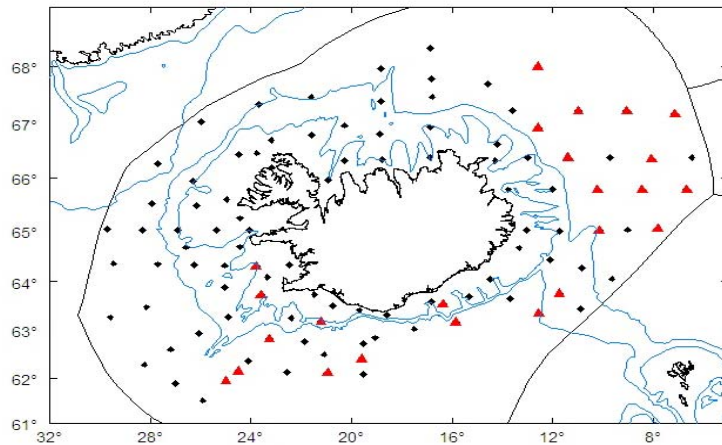


Figure 6. Distribution of blue whiting. Red triangles show tows with catch, black diamonds tows without a catch.

The blue whiting caught in the survey ranged from 11-36 cm. As can be seen from the length distribution (Figure 7) two age groups of young fish, 0-group and 1-group are predominant in numbers in the length distribution. Those fish were mostly caught in directed tows at about 200 m depth at the south coast of Iceland (not shown in fig. 6).

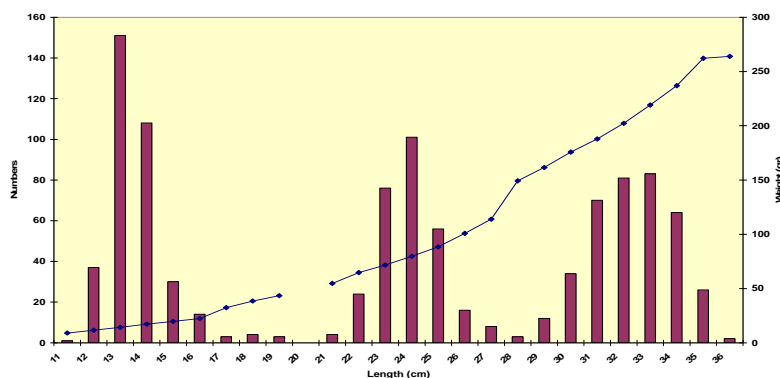


Figure 7. Total length distribution of blue whiting and mean weight at length

Other species

Other species

Twenty one other species were caught in the survey. The most common of which were lump sucker, 0-group capelin and 0-group cod and haddock, myctopheata, pearlides, dealfish and Cornish blackfish.

Ref.

Nöttestad et al. 2012. Cruise report from the coordinated ecosystem survey (IESSNS) with R/V “G. O. Sars” M/V “Brennholm”, M/V “Christian í Grotnum” and R/V “Arni Fridriksson” in the Norwegian Sea and surrounding waters, 1 July-10 August 2012. Working document to ICES Working Group on International Pelagic Surveys (WGIPS), ICES Headquarters, Copenhagen, Denmark, 3-7 December 2012.