Sampling and treatment of Ichthyoplankton samples

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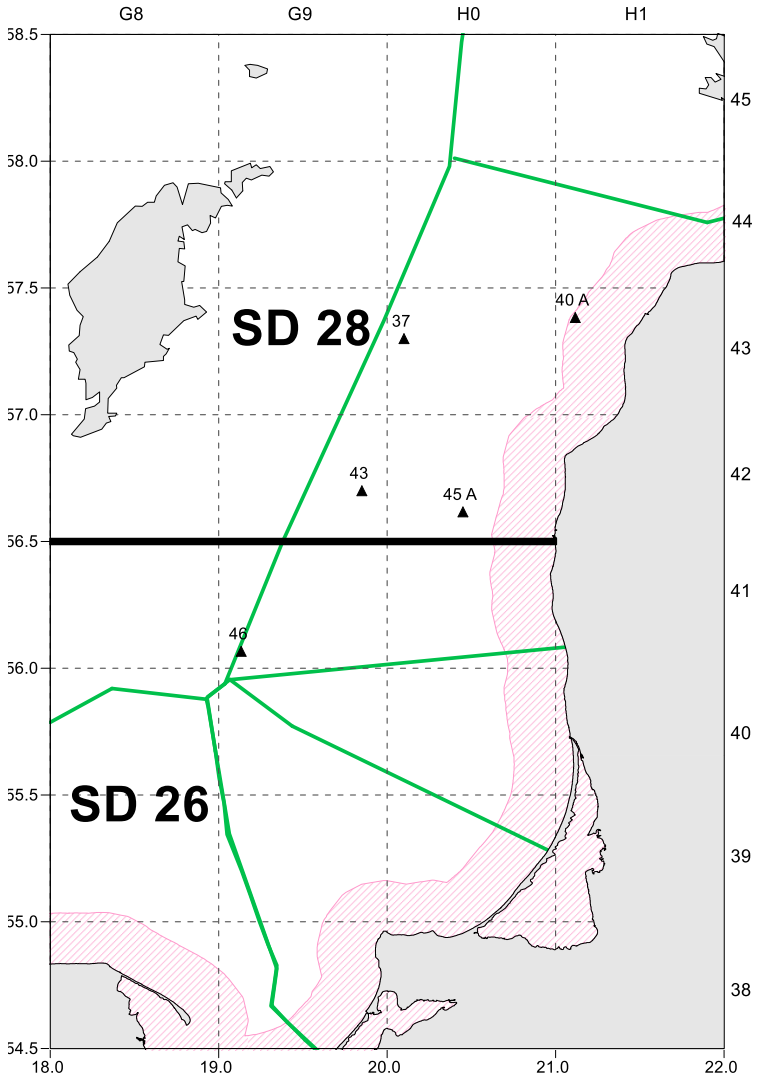
Ichthyoplankton sampling in Latvian EEZ (Eastern part of the Baltic proper) is carried out with the ichthyoplankton net IKS-80. Ichthyoplankton samples are collected on the standard net of stations during ichthyoplankton surveys. If ichthyoplankton is sampled on the cruises combined with trawl surveys, sampling happens at the start or end of trawling, and on 5 main hydrographic stations (Picture 1).



Picture 1. Position of 5 main hydrographic stations (black triangles)

Ichthyoplankton net IKS-80 is conic ring-net ca. 4 m long. It has the mouth opening 0.5 m^2 and mesh size 500 μm. This net is operated vertically from bottom or 140 m depth to the water surface with speed of 0.4 ms^{-1}. Low speed of lifting allowed preventing eggs from destroying by mechanic forces. Filtration rate was determined to be approximately 70% using flow meter that was rotating in only one direction. Also this net is towed on the water surface at a speed of ca. 2 knots for 10 minutes; speed of vessel is ca. 3 knots and it is making circulations, so the net is

going in the inner circus and not in the wake of the vessel. Condition of fish larvae sampled with this method is not ideal, similar to larvae sampled with Bongo net.

Samples are conserved in 2 % unbuffered formaldehyde solution with seawater and processed during the year. All the eggs and larvae are counted. If the number of eggs is very big the sample is splitted for most numerous species (usually for sprat): content of this sample is poured into 150 ml measuring glass, then it is mixed thoroughly and 1/5 or 1/3 of the sample content is transported into Bogorov tray with the special closing metal pipette (stempel-pipette, volume 2 ml). The rest of the sample then is looked through for less numerous species.

At least 100 eggs (or all of them if less than 100 in sample) are processed for measuring and determination of stages of development.

Eggs are measured under the 40X magnification using micrometre scale. One unit of this scale is equal to 0.05 mm. If the eggs have an irregular shape, lesser diameter is measured. Stages of development of eggs were determined according to the 4-stage system by Rass and Kazanova (1965); additionally the 1st stage is divided into substages IA and IB. Eggs on each stage are divided into alive and dead ones arbitrary following morphological criteria (shape of egg and yolk), and the condition of chorion and embryo in the main (Rass and Kazanova, 1965).

Total lengths of fish larvae are measured in 0.5 mm length classes (to the nearest value). Usually all found larvae are measured, but in some cases if the number of larvae exceeded 100 only 100 or 200 were measured. The reason for measuring all the larvae is that it is not possible sometimes to divide larvae into equal portions, because many of them are mixed with numerous algae.