Ichthyoplankton Survey Methodology

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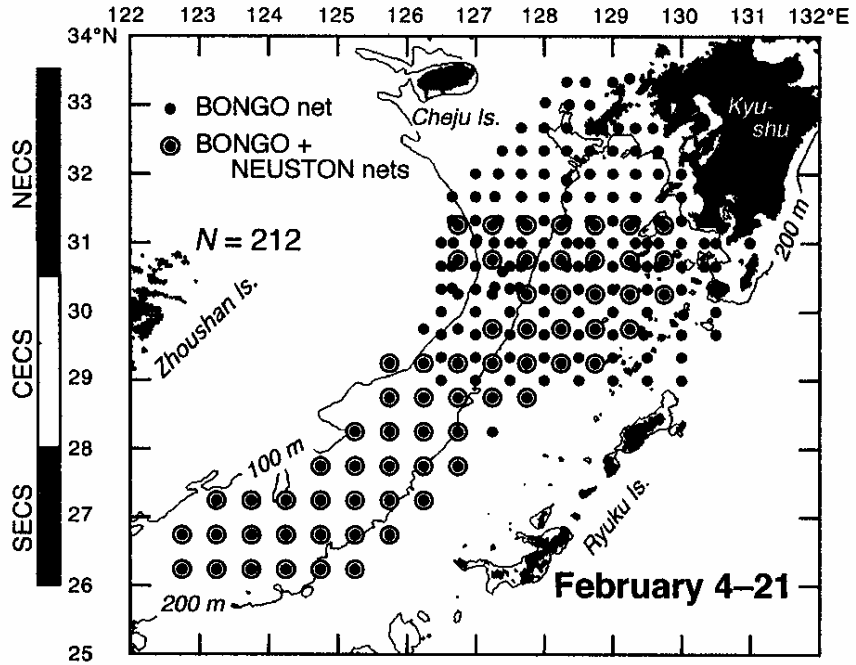
Ichthyoplankton Survey Methodology (1)

Planning

1. **Objectives, schedule, research items and operation methods of equipments, days for survey**
2. **Document of the survey plan**



from Sassa et al. (2006)

Grid survey for a quantitative research on abundance of fish eggs and larvae

Sassa, T., Konishi, Y. and Mori, K. 2006: Distribution of jack mackerel (*Trachurus japonicus*) larvae and juveniles in the East China Sea, with special reference to the larval transport by the Kuroshio Current. Fish. Oceanogr., 15 (6), 508-518.

Ichthyoplankton Survey Methodology (2)

Needed equipments and goods for oblique tow of a Bong net

- Net with a weight
- Flowmeter
- Depth-meter (depth sensor)
- Inclinometer (hanging type)
- Winch (wire diameter > 4 mm, with considerable power, reading meter of wire-out and –in, and wire block)
- Thermometer (equipments for other environment factors)
- Log sheet for towing data
- Small net for transferring the collected plankton to a sample bottle
- Sample bottles
- Labels
- Formalin solution
- Backets
- Net brush etc

Ichthyoplankton Survey Methodology (3)

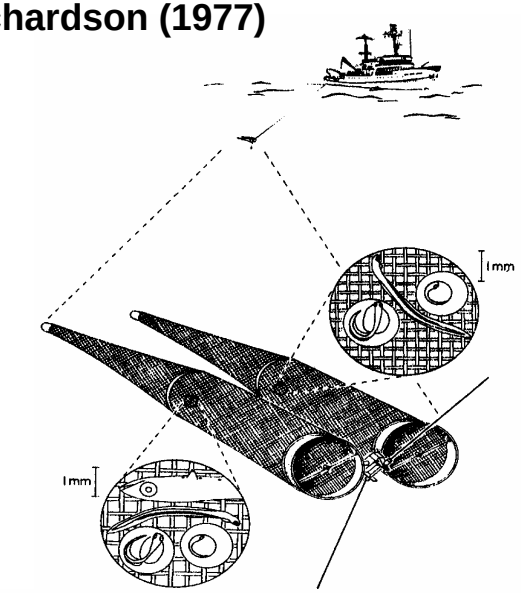
from Smith and Richardson (1977)

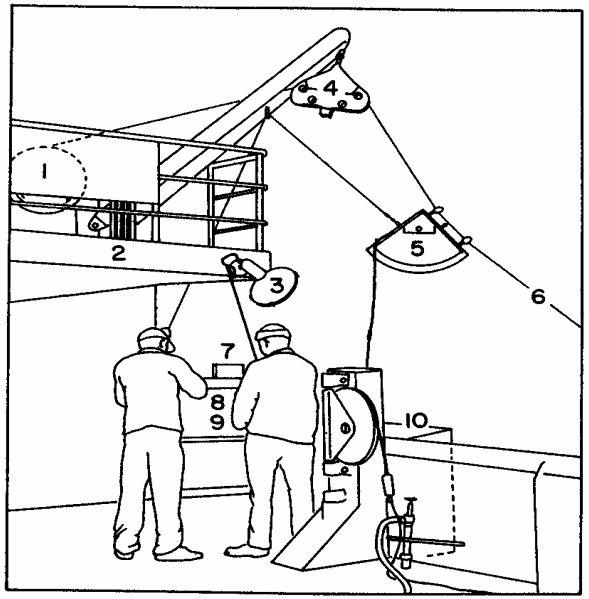
On-board work of a Bongo net tow (1)

1. Ship is stopped on station
2. Required net depth is confirmed
3. A net is lowered to the depth with wire-out speed in 0.6 m/s
4. A net is lifted to the sea surface with wire-in speed in 0.3 m/s
5. During the net tow ship speed is regulated to keep wire angle in 45°
6. The flowmeter is read and the collected plankton is put into a sample bottle with a label and 10% sea water-formalin

Towing data to be recorded: Station No., date, start and finish time of net towing, net depth, length of wire out, flowmeter reading, remarks

Calibration of flowmeter used should be carried out before and after the survey





1.wire dram, 3.lamp, 4. wire block, 5.inclinometer, 6.towing wire, 10. platform

Smith, P. E. and Richardson, S. L. 1977: Standard techniques for pelagic fish egg and larva surveys. FAO Tech. Paper No. 175, 100 pp.

Ichthyoplankton Survey Methodology (4)

On-board work of a Bongo net tow (2)

● Calibration of flowmeter

to get a value (m/r) of moving distance of flowmeter per one revolution of the blade

A flowmeter mounted to a flame without a net is vertically towed 5 times with a 50-m wire-out and its speed of 1 m/s. The value is calculated by a formulation (50 m/average revolution). The calibration should be done under the calm sea surface, and low-speed current and wind condition (wire angle< 5 degree).

Flowmeter: **an essential equipment to know a quantity of sea water filtered by a net**

Clogging: **the process by which the porosity and filtering area ratio of a net are progressively reduced by particles which adhere to the strands of gauze during filtration.**

● Prevention of net clogging

After sampling the plankton collection in a station the net should be washed by sea water well. Brushing of the net should be sometimes done with a brush.

After the survey the net should have been put in a tank with freshwater and detergent used for washing machine of wears for about 2 weeks. After that the net should be brushed and re-wash by freshwater, dried and kept out until next survey.

Ichthyoplankton Survey Methodology (5)

Laboratory work (Sorting of fish eggs and larvae) (1)

- Needed goods for sorting work -

1. Big labo. dishes (ca 6 cm in diameter)
2. Small labo. dishes (2-3cm)
3. Soft tweezers
4. Pipettes (ca 5 mℓ)
5. Needles with a stalk
6. 5-10% formalin solution
7. Binocular or loupe
8. Vials (10 – 20 mℓ)
9. Desk light
10. Freshwater bottle
11. Counter
12. White and black felts
13. Log sheet for sorting & identification

Ichthyoplankton Survey Methodology (6)

Laboratory work (Sorting of fish eggs and larvae) (2)

1. Measuring a settlement volume (*cc*) of the collected plankton (large jelly fish and gelatinous plankton should be removed)
2. Washing the plankton in a station by running freshwater with a small net in same or smaller mesh size of a Bongo net
3. Putting part of the washed plankton into a laboratory dish with freshwater
4. Concentrating the plankton at the center of the dish by water circulation with a soft tweezer
5. Sorting fish eggs and larvae from the lower margin of the settled plankton
6. Repeating from “work 3” to “work 5”
7. Bottling the sorted eggs and larvae into a vial with formalin and a label (eggs and larvae should be bottled separately)