Larval fishes identification

Data summarization and standardization

Data summarization is the techniques for gathering the data collected on the ichthyoplankton survey for the estimation of spawning ground and seasons or spawning biomass or other purposes. End result of data summarization is to standardize the number of eggs or larvae in each plankton haul to the number under a unit of area (m^2) or a unit of sea water volume (m^3)

Data sheet form

Data sheet form for record collected data needed for plankton tow

- Vessel information: project name, name of a vessel,
- Cruise information: cruise no., station no., sampling date, sea bottom depth, operation time
- Hydrographic data: water temperature, color of sea water, transparency, salinity, water current,
- Weather condition: air temperature, wind speed and direction, air pressure, humidity, stage of the sea
- Plankton net tow information: type of net, towing depth, towing speed, starting and finishing time, Lat & Long of station at starting and finishing, Flowmeter number, flowmeter reading at start and finish, flowmeter revolution, calibration factor of flowmeter

Data standardization

The equation of standardization is (for considering abundance in sea water volume)

$$T = 1000t/V$$

Where T is the number of larvae or eggs in the sample per 1000 m^3 sea water volume

t is number of fish larvae or eggs in the sample (collected number)

V is sea water volume flow through plankton nets (m^3)

Where $V = n \times N_1 \times a$ or $a \times n/N$

n is the number of revolutions of flowmeter during the tow

a is the area of the mouth of the net in square meter = πr^2

N is the calibration factor in number of revolutions of the flowmeter per 1 meter

N_1 is the calibration factor in meters per revolution for a given flowmeter

Where N or N_1 derived from Calibrated flow meter before and after each sampling trip

Data standardization

Flowmeter Calibration

Calibration factor: an expression of the number of meters that the flowmeter travels during each revolution of the impeller (= m/rev)

Why calibrate flowmeter? : Calibration factor of different flowmeters are differed from each other or even the same flowmeter, this factor will not be the same for each towing speed.

How to calibrate?

1. Do calibrate each flowmeter before each cruise
2. Find a smooth sea
3. Set a distance of water for hauling a flowmeter (commonly 50 m deep)
4. Haul a flowmeter at different speed (slow and fast speed). Slow speed to define the friction point of each meter. Fast speed to bracket the range of speeds at the flowmeter will be towed at sea.
5. Record number of revolution separately for each test. Doing at least 5 times for slow speed and fast speed (Don't forget to adjust the digit of the flowmeter to Zero before starting each test or record the starting digit before each test)
6. Repeat 2 to 5 after the cruise
7. Plot the meters per revolution against revolutions per second to form part of the calibration curve .
8. The good value for towing speed should be from 0.61 to at least 1.07 meter per second