Biological Sampling

Dr. Dattesh Desai
CSIR-NIO, Goa
ddattesh@nio.org

Seawater sampling

Niskin Bottles & Rosette

CTD

Phytoplankton

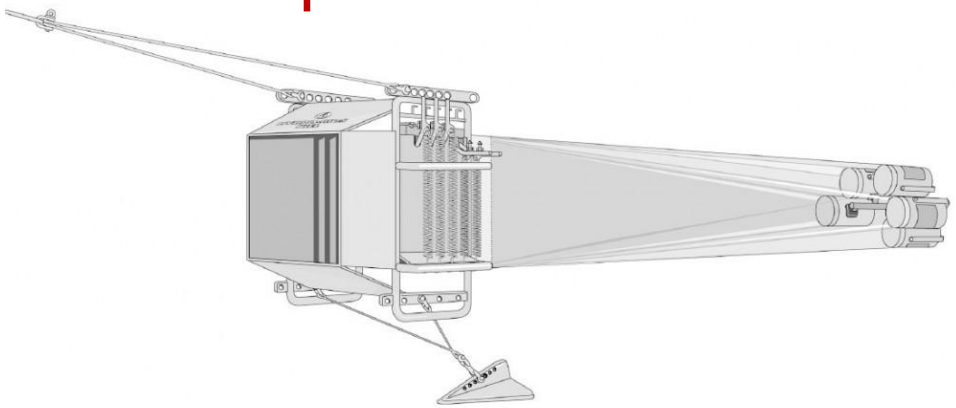
Settling Chambers

Preservatives: Lugol’s Iodine/Ethanol/ Glutaraldehyde/LN2

Phytoplankton abundance : No./ml or No./l

Zooplankton Sampling

Multiple Plankton Net



Horrizontal Plankton Net

Flowmeter

Open-Close-Open System

Folsom Plankton Splitter

Counting Chamber

Based on Bogorov Design

Zooplankton sample preservative - 4-5% buffered (Sodium Borate) Formaldehyde (Formalin)

Volume of water filtered

When a circular net is used, the volume of water filtered can be calculated by the formula given below:

$V = (A \times R)/K$

Where

V = volume of water filtered.
A = mouth area of the net
R = flow meter reading
K = calibration constant of the flow meter

Biomass

Biomass denotes the live weight or the amount of living matter present in the zooplankton sample.

1. Volumetric (displacement volume and settling volume) method
2. Gravimetric (wet weight, dry weight and ash free dry weight)method
3. Chemical method

Prior to determination of biomass, larger zooplankters such as medusae, ctenophores, salps, siphonophores and fish larvae should be separated from the zooplankton sample and their biomass taken separately.

Biomass

After estimation of zooplankton biomass the standing stock values are converted into per cubic meter and is calculated as follows:

a. Volume of zooplankton $\frac{\text{Total volume of zooplankton}}{\text{Volume of water filtered (V)}}$ (ml/m^3)

b. Wet weight of zooplankton $\frac{\text{Total wet weight of zooplankton}}{\text{Volume of water filtered (V)}}$ (g/m^3)

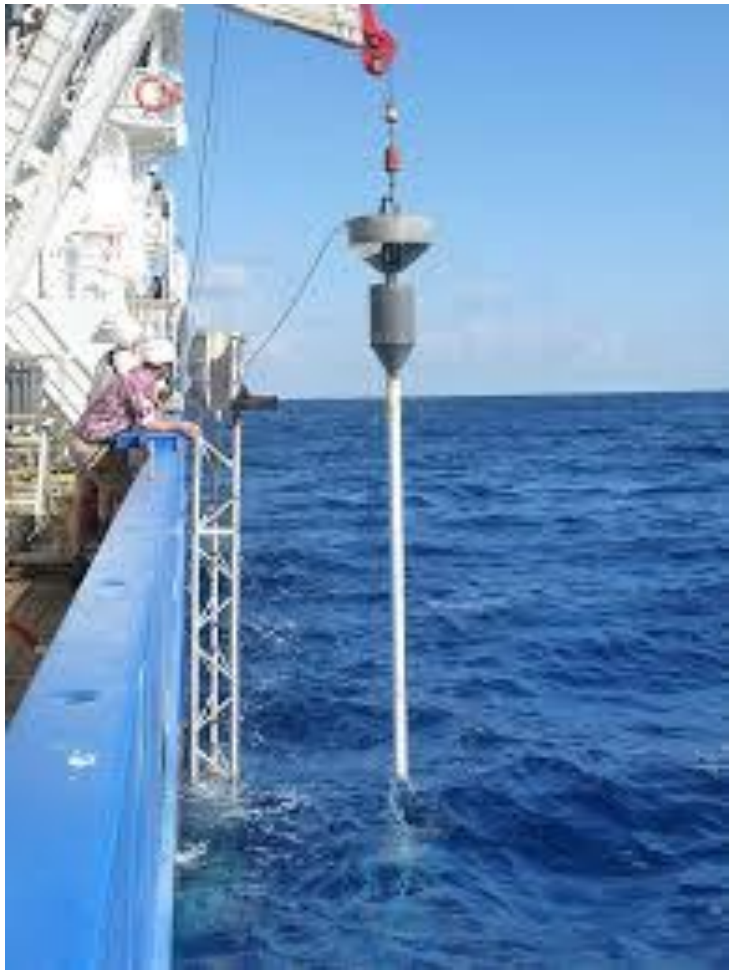
c. Dry weight of zooplankton $\frac{\text{Total dry weight of zooplankton}}{\text{Volume of water filtered (V)}}$ (mg/m^3)

Sediment sampling

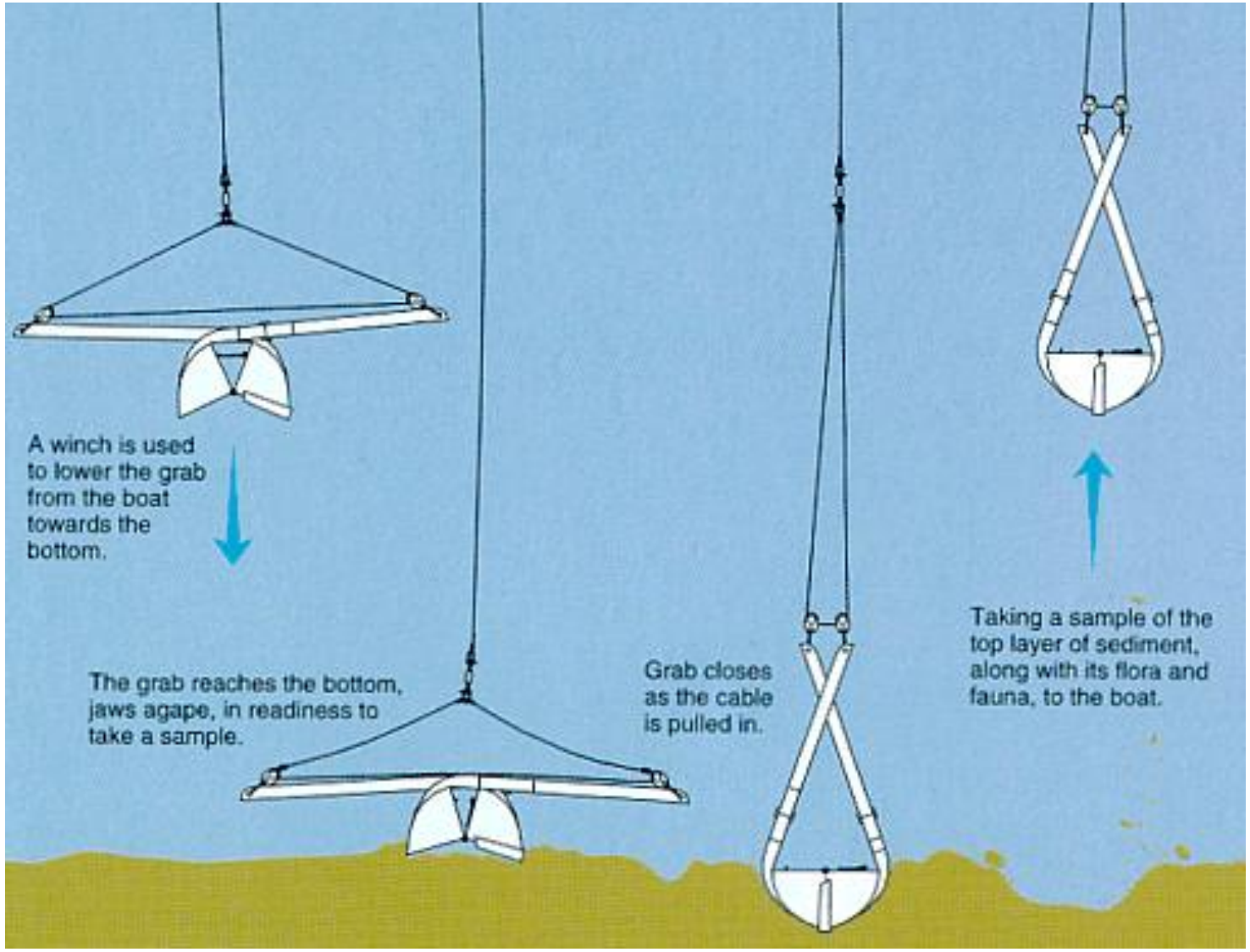
Grab

Corer

Deep-Water sediment collection



Grab Operation



Volume of the Grab

Biomass: gm./m^2
Abundance: No./m^2

Sieves for benthic studies

	Method of collection/Gear	Amount of sample to be collected	Preservative	Type of sampling bottle/vial
Microorganisms	Water sample/Sediment/ zooplankton associated Niskin Water Sampler/Grab	1ml to 15ml – water sample 5 gm (sediment)	TBC – Filtered f Formaldehyde /Ethanol/ LN2	PVC Vial
Phytoplankton	Water sample (Surface/Bottom/Entire water column) Niskin Water Sampler	500ml – 1000ml	Lugol's Iodine/Ethanol/ LN2	PVC Bottle 500/1000ml
Zooplankton	Net haul (Vertical, Horizontal, Oblique)/Use of specialized pumps	100mt net haul/Pump – 1000 lit water	Formaldehyde/ Ethanol	1 lit PVC bottle
Benthic – meiofauna	Grab sample/Diving Grab/Core	0.045m2	Formaldehyde/ Ethanol	Dark Bottle 250 ml
Benthic – macrofauna	Grab sample/Diving Grab/Core	0.045m2	Formaldehyde/ Ethanol	Plastic bags/Bottle