Sampling Collection on Board

Supapong Pattarapongpan

Fishery Oceanographer

M.V. SEAFDEC 2

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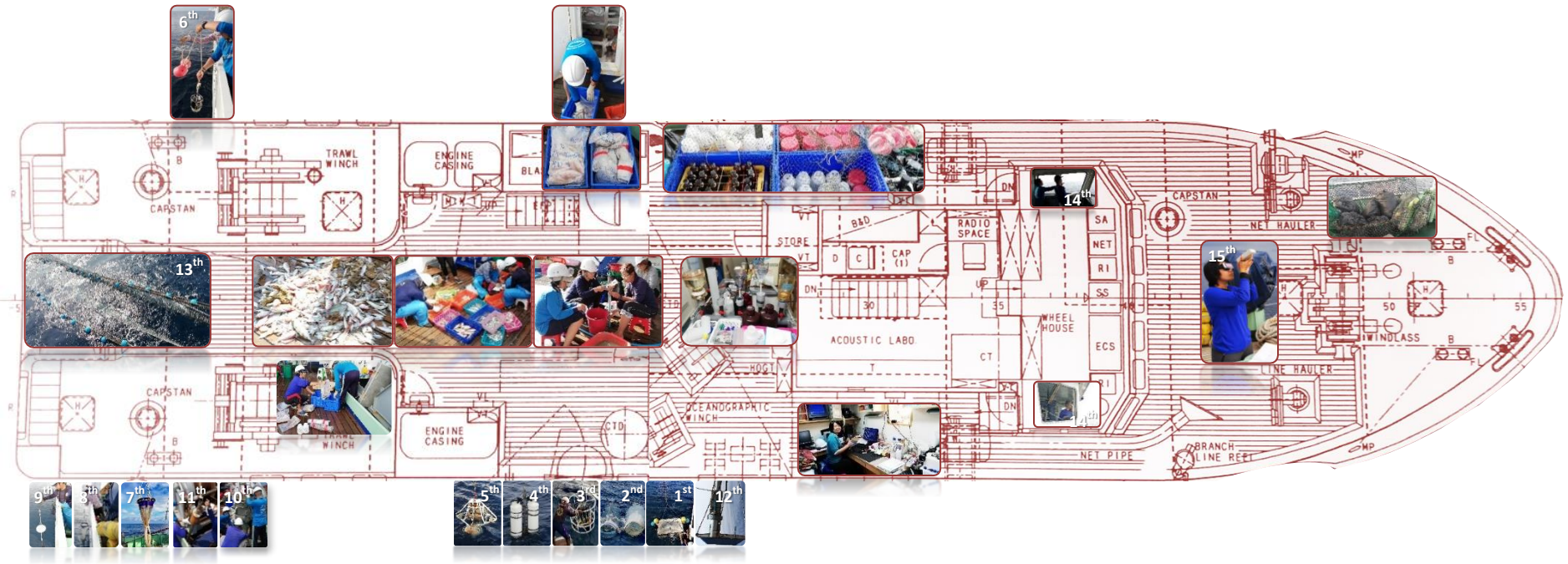
Working space on M.V. SEAFDEC 2



Sampling collection onboard

Introduction

- Sampling collection are important for research
  - Objectives
    - Species composition
    - Juvenile rearing areas or general distribution
    - Spawning areas or general distribution
    - Sizes (length) of adult and juvenile
    - Relative abundance in selected areas
  - Method
  - Budget / Time / Effort

Standard methodology for sampling

Oceanography

Soon after ship arrive station

- Secchi disc and Forel-Ule Scale
- CTD
- Water sampling
- Sampling for sediment and benthos
- Neuston net
- Bongo net

Standard methodology for sampling

Oceanographic logsheet

- Cruise detail
- Station number
- Date and time
- Water depth
- Latitude, Longitude
- Vessel data
- Air
- Water, current
- Bottom
- Equipment

OCEANOGRAPHIC LOGSHEET

Record by Sukchai A.

Project name:		**Name of vessel**				**Water**		
Cruise no:	18-2/2006	M.V. SEAFDEC 2				Temperature:	29.8	° C
Station no:	08(30)	**Start (28-Feb-06)**		**Finish(28-Feb-06)**		Color:	7	
Date:	28-Feb-06	Time	13:55	Time	14:48	Transparency:	23cos50	m
Sounding depth:	68 m.	Lat.	05_29.95 N	Lat.	05_29.66 N	**Current**		
Air		Long.	099_29.05 E	Long.	099_28.70 E	Depth	Speed(Knts)	Direction
Wind		**Bottom**				surface	0.8	128
Speed(Knts)	Direction	Type:	muddy			35 m	0.7	90
8	50	Color:	black			…..m	N/A	N/A
Air temp:	29.06 °C	Smell:	-			Memorandum:		
Air press:	1012.0 hpa	Temperature:	-		° C			
Humidity:	78 %	pH:	-					
Weather condition:	partly cloudy							
Stage of sea:	smoot							

NR: not be recorder

Oceanographic equipment						
CTD system		Data file name		s2d18008,s2u18008		
TSG system		Data file name		20060228(2),20060301(1):FronSt.07-St.08		
PRR system		Data file name				
BT data acquisition system		Data file name				
Temp & Depth Recorder		Data file name				
Vandorn water sampler		List of sampling depth				
Sediment	Piston core	No. of operation		8		
	Smith McIntyre grab	No. of operation		8		
Bongo net(oblique)		Towing depth (m.)	Towing speed (Knots)	**Start**		**Finish**	
				Time	13:55	Time	14:04
		35	1.5-3	Lat.	05_29.95 N	Lat.	05_30.11 N
				Long.	099_29.05 E	Long.	099_28.94 E
		No. at flow meter		**Fish Larvae**		**Zooplankton**	
				21,056		10,833	
		Flow meter Calibration (cycle/m^3)					
Bongo net(horizontal)		Towing depth (m.)	Towing speed (Knots)	**Start**		**Finish**	
				Time	14:11	Time	14:21
		surface	2	Lat.	05_29.95 N	Lat.	05_29.99 N
				Long.	099_29.00 E	Long.	099_28.93 E
		No. at flow meter		**Fish Larvae**		**Zooplankton**	
				36,442		13,933	
		Flow meter Calibration (cycle/m^3)					

Notes

Standard methodology for sampling

Catch from trawl

Standard methodology for sampling

Catch from trawl

- The basic feature of any good sampling systems is " a random sample"
- Deck sampling and recording procedure(FAO)
  - Step 1 : Remove all sea snakes and other venomous or otherwise dangerous animals.

- Step 2 : Remove inorganic debris and plant material. Record type of material removed.
- Step 3 : Remove the larger fish that are readily visible and place them in a box

Standard methodology for sampling

Catch from trawl

- Step 4 : Wash the remainder of catch (Small fish) if necessary, and mixes with shovel.



- Step 5 : Put the mix catch in box while continuing to remove larger fish and putting them into the box mentioned in step3. The box should be filled simultaneously, not one after the other, and it should be made certain that all boxes contain approximately the same weight of fish.
- Step 6 : Count the number of boxes with small fish and record.

Standard methodology for sampling

Catch from trawl

- Step 7 : A rule of thumb, is to take one box out of every five at random for sub-sampling. Record number of boxes taken to sub-sampling as B1, B2, B3,…..
- Step 8 : The boxes taken for sub-sampling is (are) then treated as follow:
  - Weight total catch B1 and record.
  - Place fish of B1 on sorting table and sort to species as far as food fishes and valuable crustacean (e.g. shrimp) are concern and taxonomic grouping as well- defined as possible (e.g. genus, family) for other group (the non-edible fish and miscellaneous). Repeat procedure if appropriate for the other boxes B2, B3,…

Standard methodology for sampling

Catch from trawl

- Step 9 : If more than one box was sorted, compute, for each species (or higher taxonomy group) the total weight and number in all sorted boxes
- Step 10 : Multiply the number and weight of fish and invertebrate by species (or higher taxonomic group) by the ratio of the number of unsorted to sorted boxes.
- Step 11 : Weight and count the larger fish mention in step 3 and 5 by species, very large fish should be weighed individually and measure.

Standard methodology for sampling

Catch from trawl

Standard methodology for sampling

Catch from trawl

- Step 12 : Add, when there is an overlap (when the fish of a certain species occurred both in the sorted boxes of small fish in the large fish box) the weights and number obtained in step 11 to weight and number in step 10
- Step 13 : step 12 (as well as step 11 when there is no overlap) provided estimates of total catch, both in weight and number, by species and higher taxonomic groups. Record the total, both in weight and number in to the appropriate the fishing log sheet and convert to catch per unit if fishing time is less or morn than an hour. During surveys, this step must be complete after each haul every evening at the latest to preclude loss of information.

Standard methodology for sampling

Catch from trawl

- Step 14 : In addition to catch sampling, identifying and recording, the work of the fishery scientist general include among other things:
  - Collecting length-frequency data
  - Collecting miscellaneous biological information
  - Collecting and preserving specimens for further study onshore
  - Collecting oceanographic data

Standard methodology for sampling

Pre-fixation

- Equipment
  - Pins
  - Plastic foam boards and food trays
  - Paintbrush
  - Formalin
- Preparation for fin spreading
  - Before starting fin spreading, the fishes are rinsed in water to remove the mucilaginous solution and dirt adhering

Standard methodology for sampling

Pre-fixation

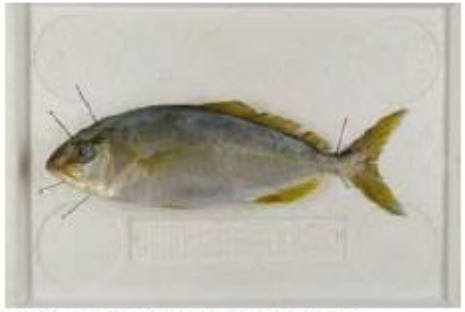
- Fin spreading
  - Positioning of the fish
    - The fish body is laid with the side facing up for fin spreading.
  - Fin spreading
    - Thin pins should be used during fin spreading to prevent damage to the fish membrane.

Standard methodology for sampling

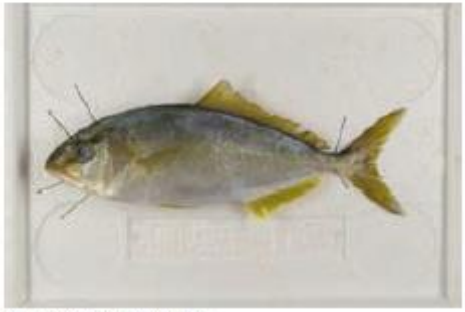
Pre-fixation

1. Fixed body axis.

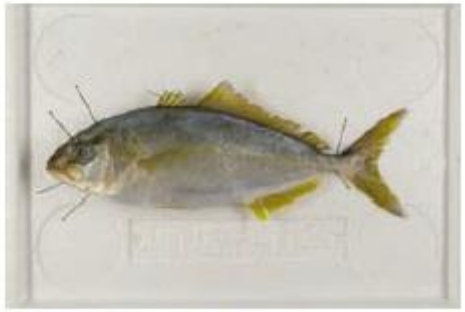
2. Spread and fixed caudal fin.



3. Spread and fixed dorsal fin ray from the rear.



4. Spread and fixed anal fin.



5. Spread and fixed dorsal spiny ray.

6. Spread and fixed pelvic fin.

Motomura and Ishikawa (2013)

Standard methodology for sampling

Pre-fixation

- Application of formalin
  - A concentrated formalin solution is applied around the after spreading all fin.
  - Formalin fixation normally takes 5-10 min for small fish. (Smaller than 10 cm.)
  - Large fish specimens can be fixed in approximately 15 min.
  - To prevent the fish body from drying after application of formalin, it should be covered with a paper towel and sprayed with plenty water
  - Rinsing
    - After formalin fixation, the fish body is re-washed and prepared for obtaining photographs

Standard methodology for sampling

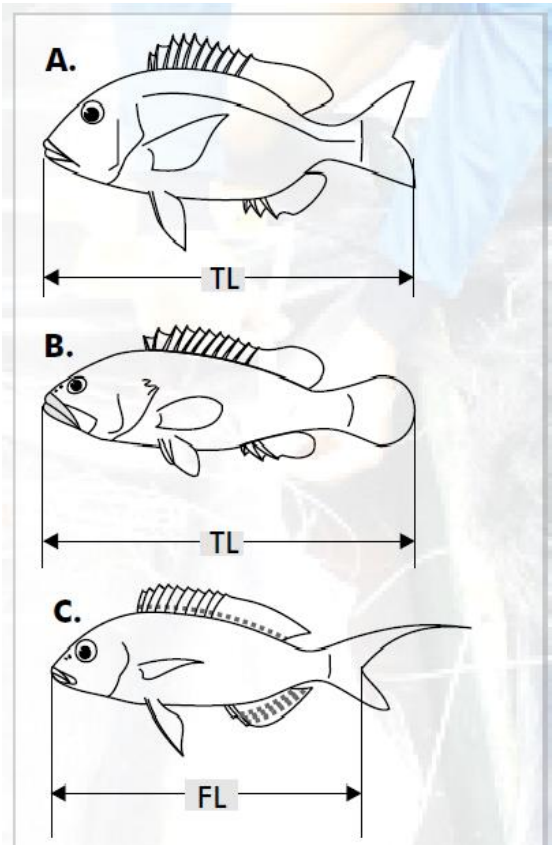
Pre-fixation

Application of formalin solution.

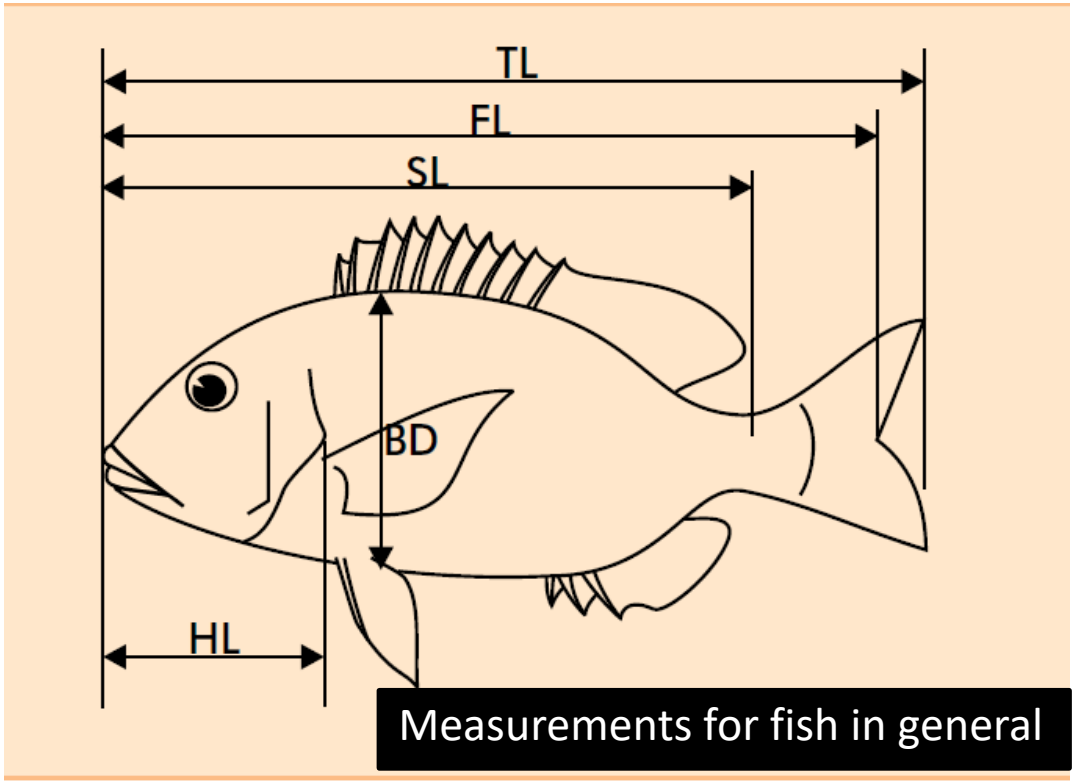
Fish body covered with a wet paper towel, sprayed with water to prevent drying of the fish.

Standard methodology for sampling

Length Measurement



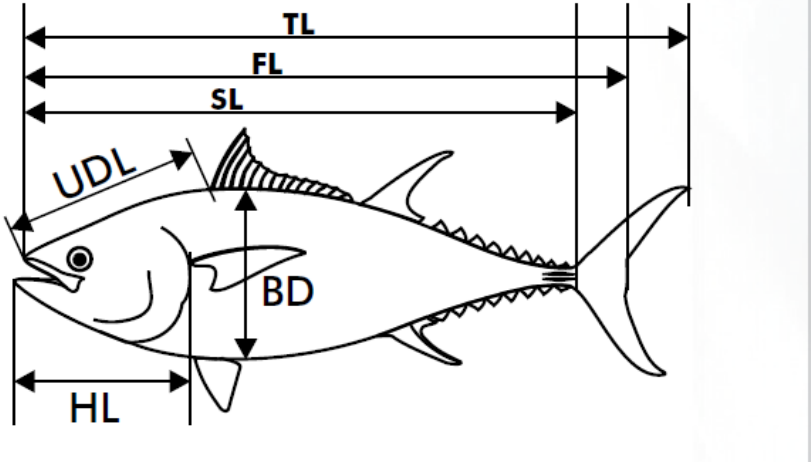
Total length measurement for type A and B, and fork length for type C.



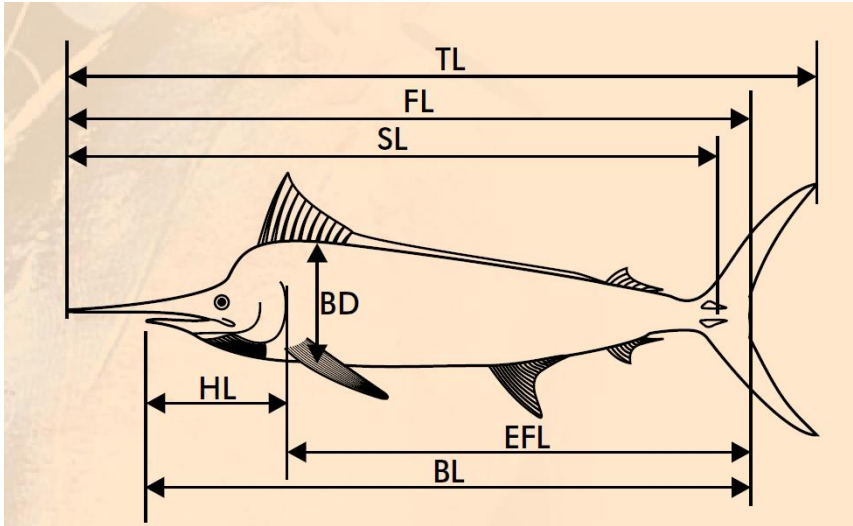
Measurements for fish in general

Standard methodology for sampling

Length Measurement



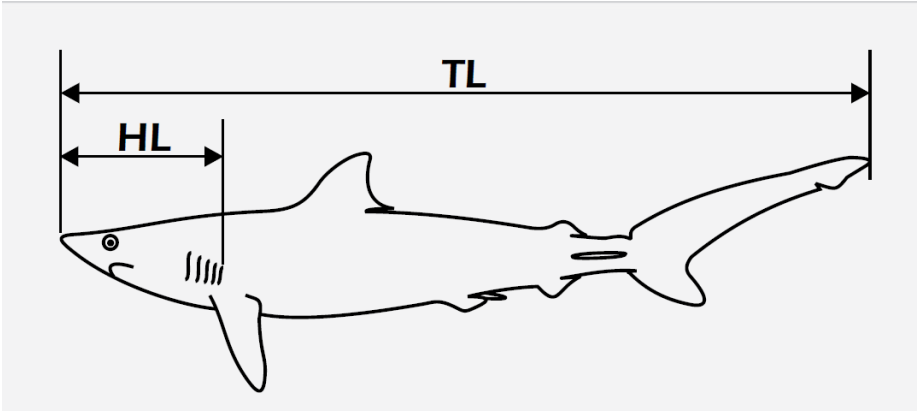
Measurement for Tuna-like species.



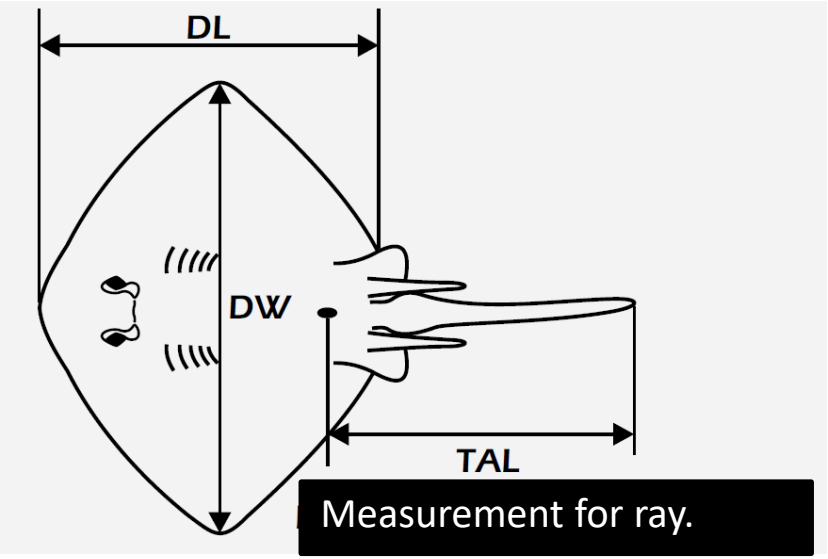
Measurement for marlin and sailfish species.

Standard methodology for sampling

Length Measurement



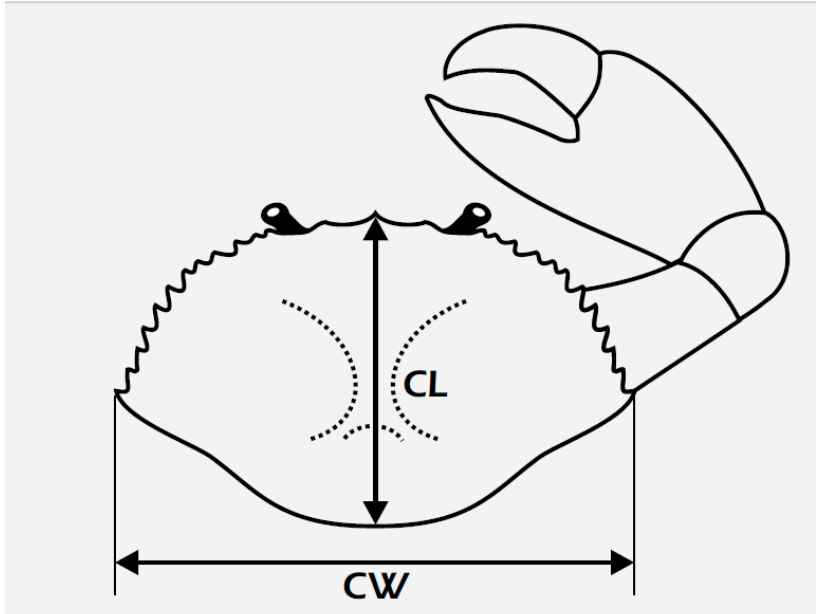
Measurement for Shark.



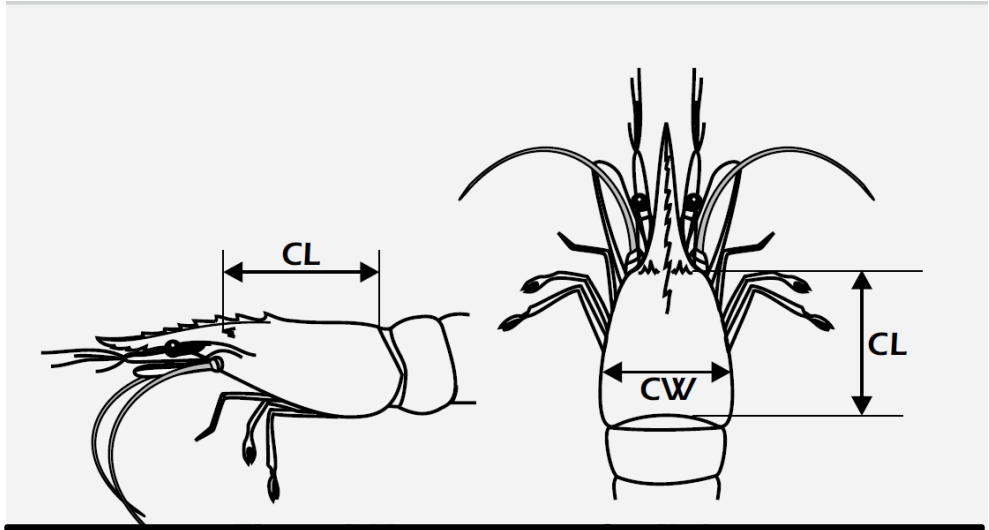
Measurement for ray.

Standard methodology for sampling

Length Measurement



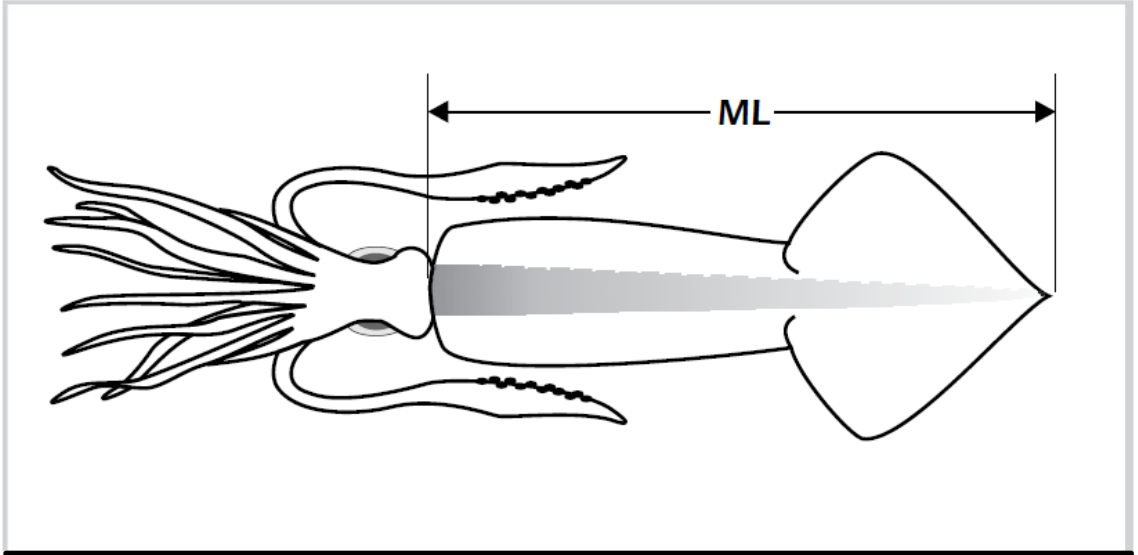
Measurement for crab.



Measurement for shrimp.

Standard methodology for sampling

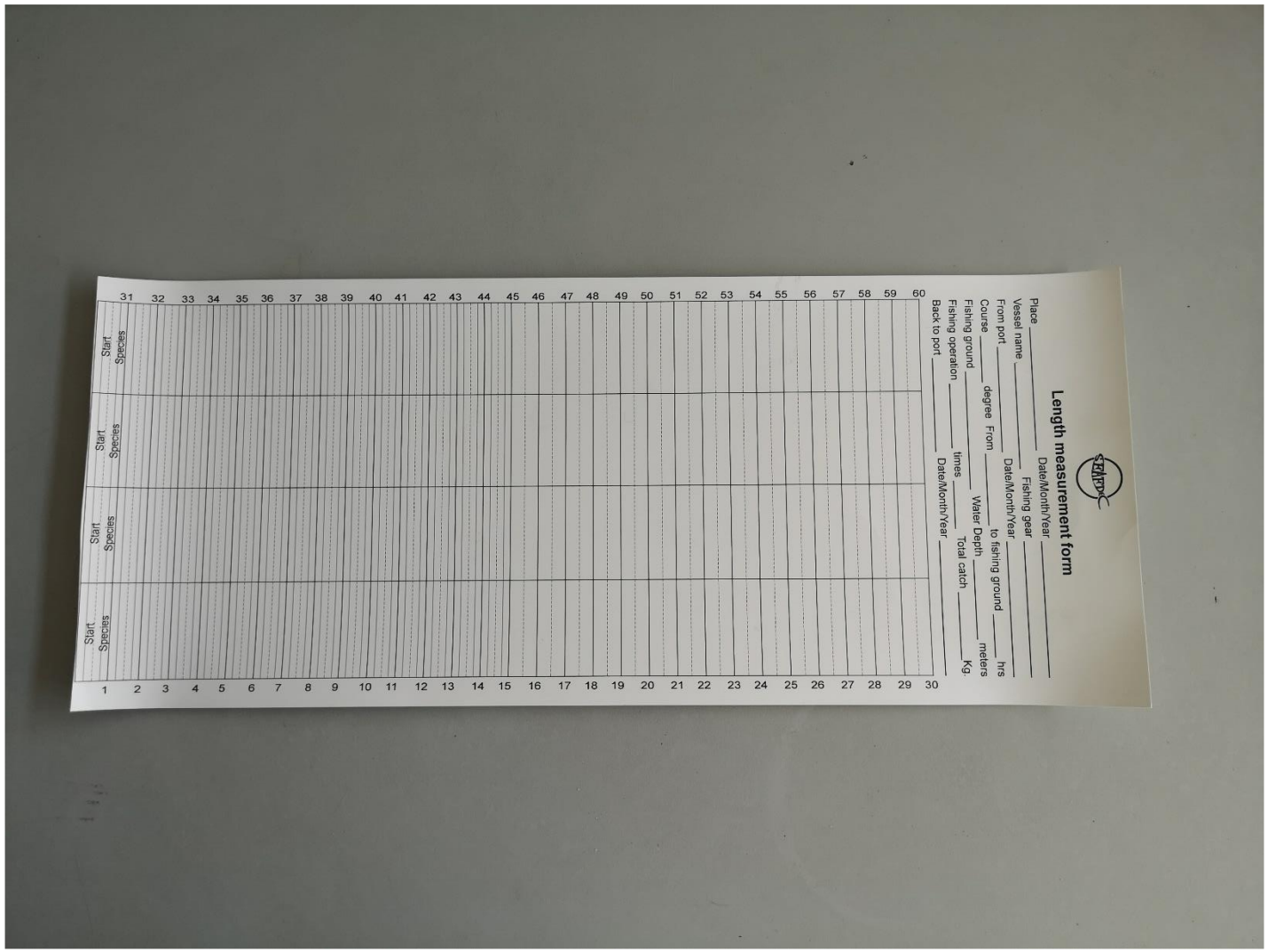
Length Measurement



Measurement for squid.

Standard methodology for sampling

Punching Sheet



Standard methodology for sampling

Specimen Preservation

- Specimens preservation means "long - term preservation of organism either plant or animal is the best possible condition. "
- Step for specimens preservation
  - Killed and relaxing of animal
  - Fixation
  - Storage

Specimen Preservation

- Formalin
  - It is use for vertebrates only.
  - It is avoided for the long term storage
  - Mostly formalin is used where colour is important since alcohol dissolves most colour immediately.
  - Dilution
    - Concentrate formalin 100% = water saturated 40% with formaldehyde
    - 10% formalin = 4% formaldehyde (used for preservation)
    - Mix one part concentrated formalin to nine part water.
    - Fill about two-thirds the bottle's volume with 10% formalin

Standard methodology for sampling

Specimen Preservation

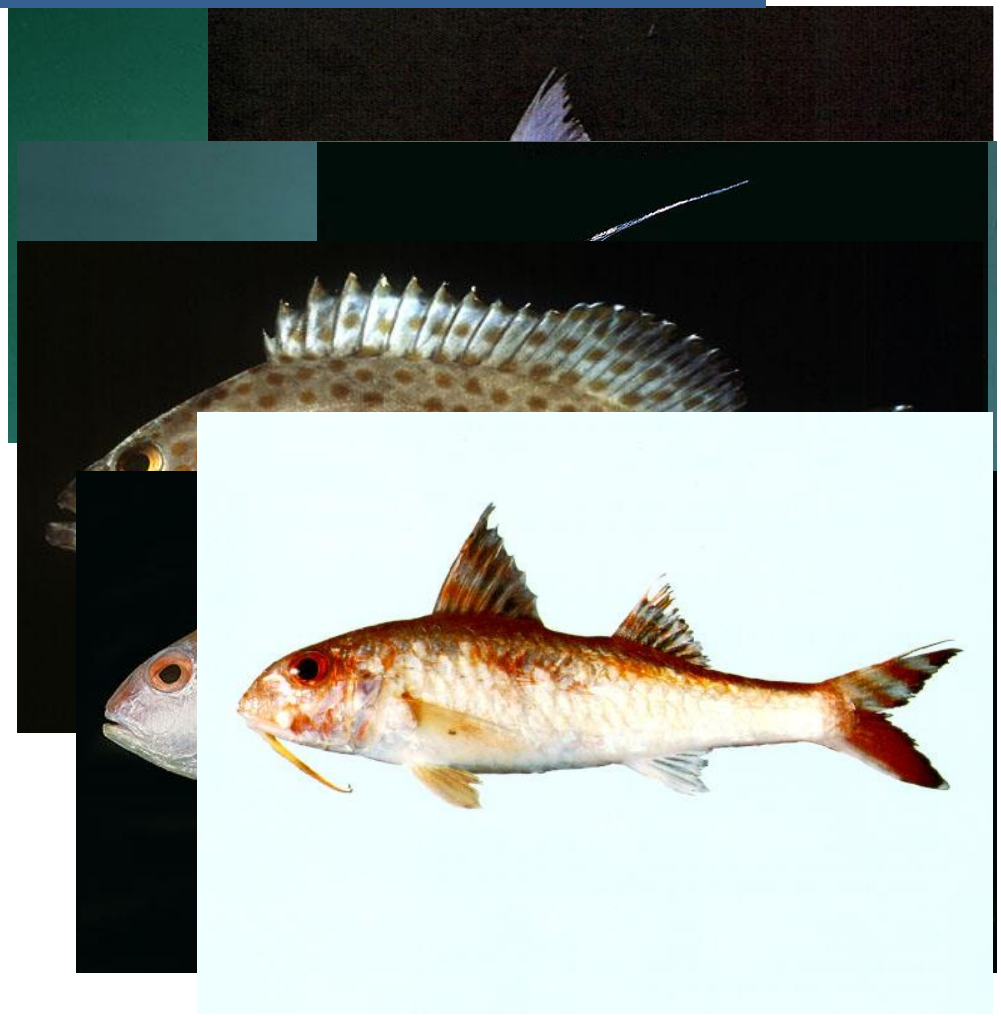
- Alcohol
  - is usually not used for killing and fixing vertebrates. But of course used for long term storage.
  - Colour specimen is lost immediately.
    - A teaspoonful of glycerine in quart of alcohol helps to preserve natural colour and to keep integument flexible
  - Alcohol usually comes in the 95% concentrates form.
  - For long-term preservation, 70-75% strength in used
    - i. Formalin - 1 week (fix soft tissue)
      ii. Water - 1 day (leach out the formalin)
      iii. Alcohol - long term storage

http://preserve.sivasothi.com

Standard methodology for sampling

Species Identification

- Family Priacanthidae
- Family Engraulidae
- Family Synodontidae
- Family Platycephalidae
- Family Carangidae
- Family Leiognatidae
- Family Lutjanidae
- Family Serranidae
- Family Nemipteridae
- Family Mullidae



Standard methodology for sampling

Species Identification

- Family Squillidae
- Family Penaeidae
- Family Portunidae
- Family Loliginidae
- Family Octopodidae