



Regional Training Course on Fish Larvae
Phase I: Larval Fish Identification and Fish Early Life History Science
16-27 November 2022,
SEAFDEC Training Department, Samut Prakan, Thailand



**TASK 3: SPECIES IDENTIFICATION AND
MORPHOLOGICAL DESCRIPTIONS OF FISH LARVAE
(FAMILY: SCOMBRIDAE, CARANGIDAE,
ENGRAULIDAE & SERRANIDAE)**

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26 November 2022

MALAYSIA



MEET OUR TEAM



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EXAMINED SPECIMENS



SCOMBRIDAE

- *Katsuwonus pelamis*
- Skipjack Tuna



SCOMBRIDAE

- *Scomberomorus commerson*
- Narrow-barred Spanish Mackerel



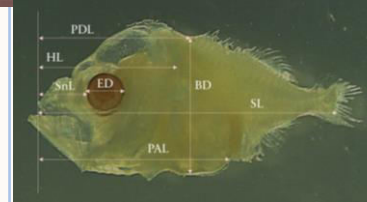
ENGRAULIDAE

- *Encrasicholina heteroloba*
- Shorthead anchovy



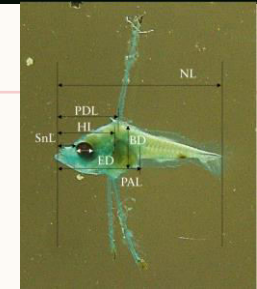
CARANGIDAE

- *Carangoides* sp.
- Trevally



SERRANIDAE

- *Ephinephelus* sp.
- Grouper

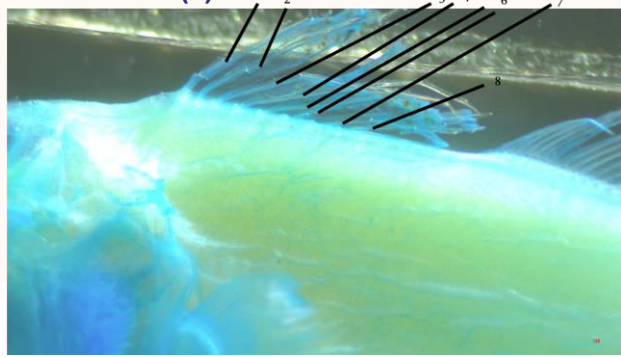


SCOMBRIDAE

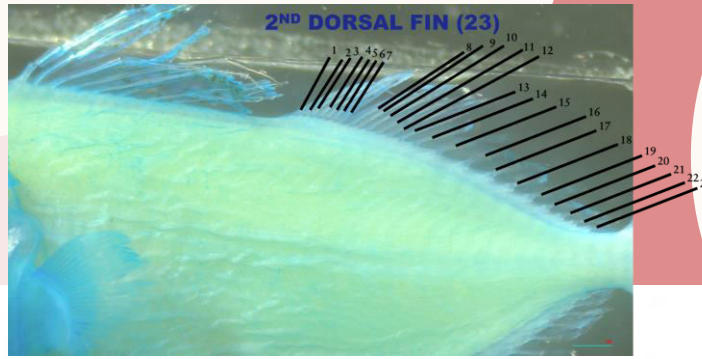


Katsuwonus pelamis

1ST DORSAL FIN (8)

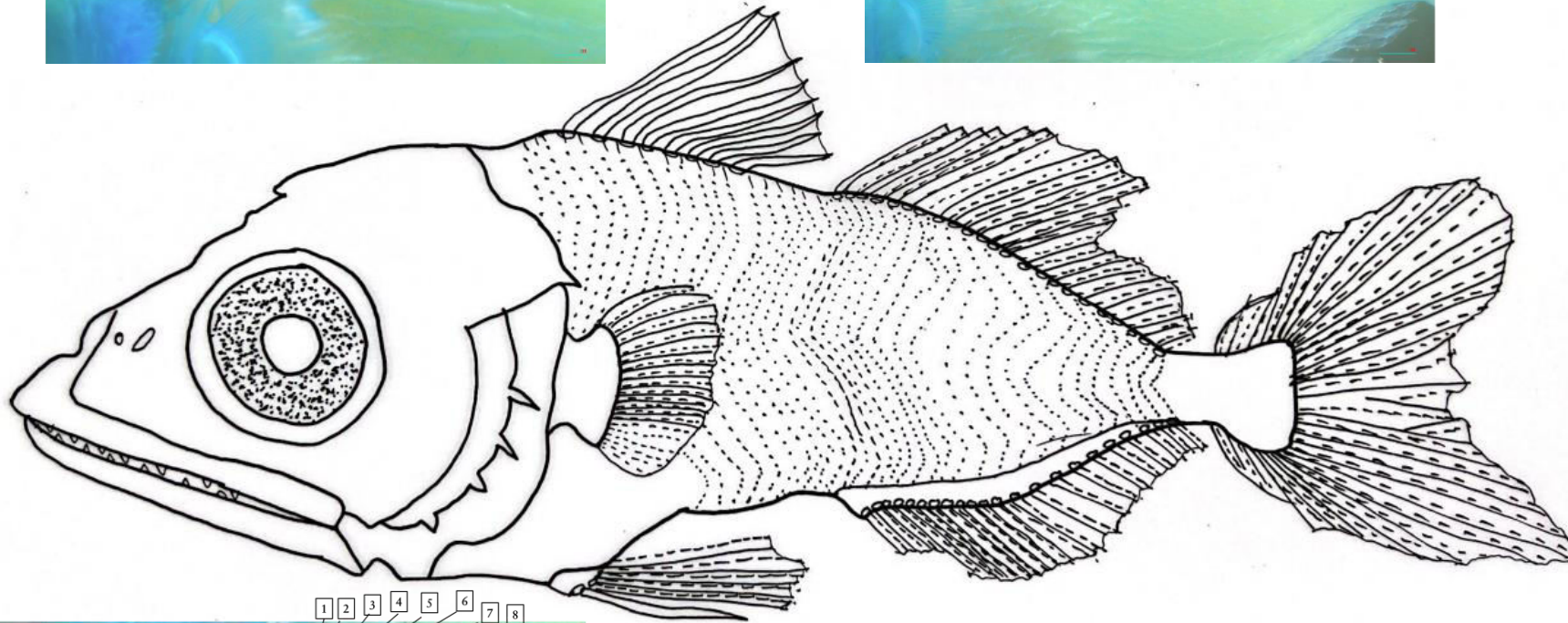


2ND DORSAL FIN (23)

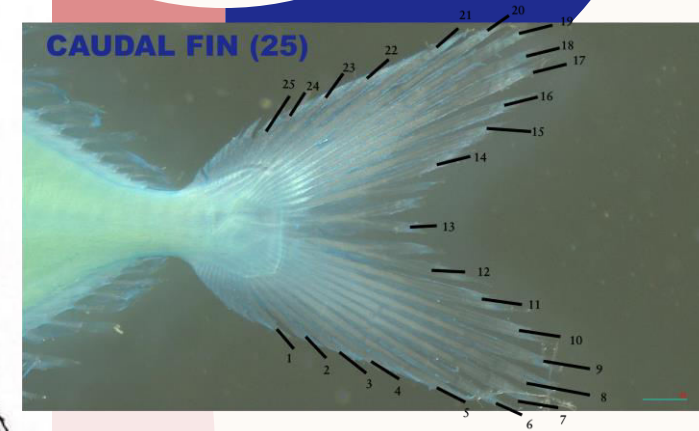


SCOMBRIDAE

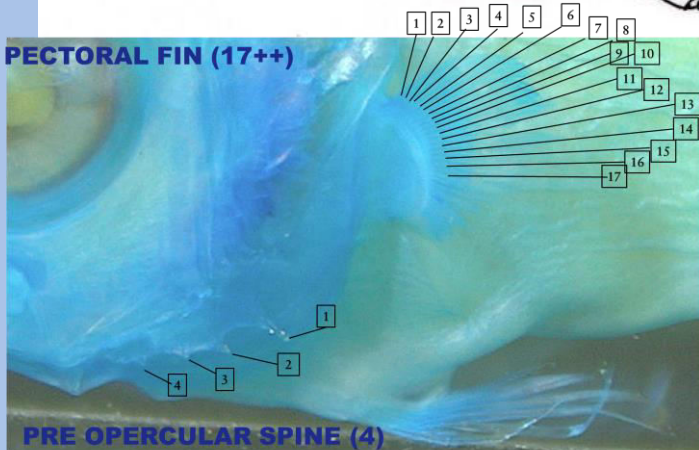
Katsuwonus pelamis



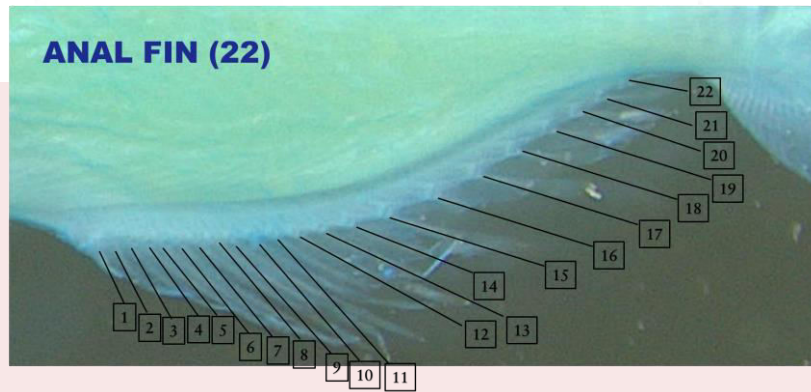
CAUDAL FIN (25)



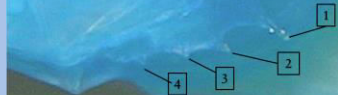
PECTORAL FIN (17++)



ANAL FIN (22)



PRE OPERCULAR SPINE (4)



KEYS TO IDENTIFY UNTIL SPECIES LEVEL:

1b. First dorsal fin develop prior second dorsal fin3

3b. Snout pointed or elongated. Preopercular spines form elongate at angle.
Vertebrae (myomere) >39..... 4

4b. Supraoccipita spine absent..... 6

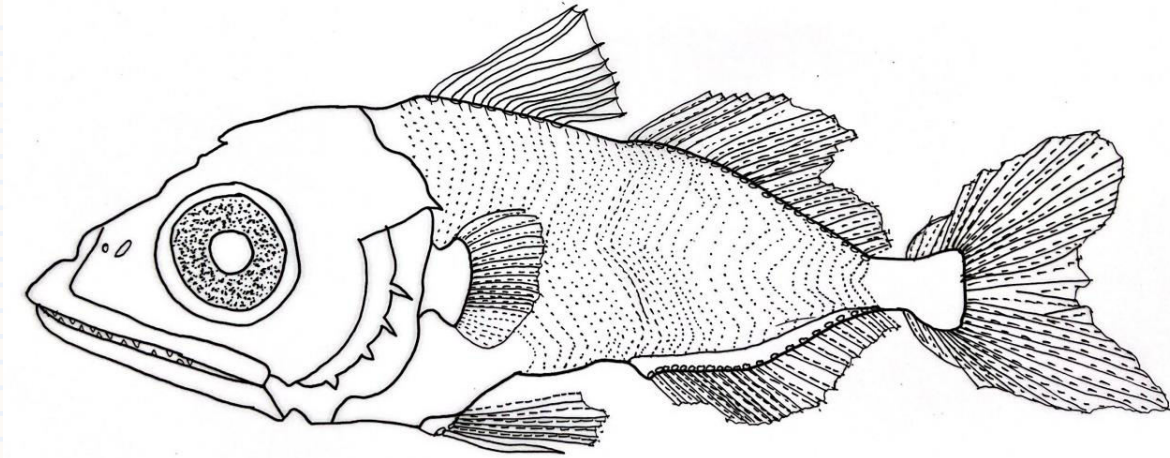
6b. Body moderate and tail tapering. Gut compact and anus position
anterior to or near half the body. Snout pointed or elongate. Mouth
moderate or large. Myomere 38-41 7

7b. Snout pointed. Both jaw tips nearly Or upper jaw tip slightly
projecting at postflexion stage. Branchiostegal membrans and opercular
area sparsely pigmented..... 8

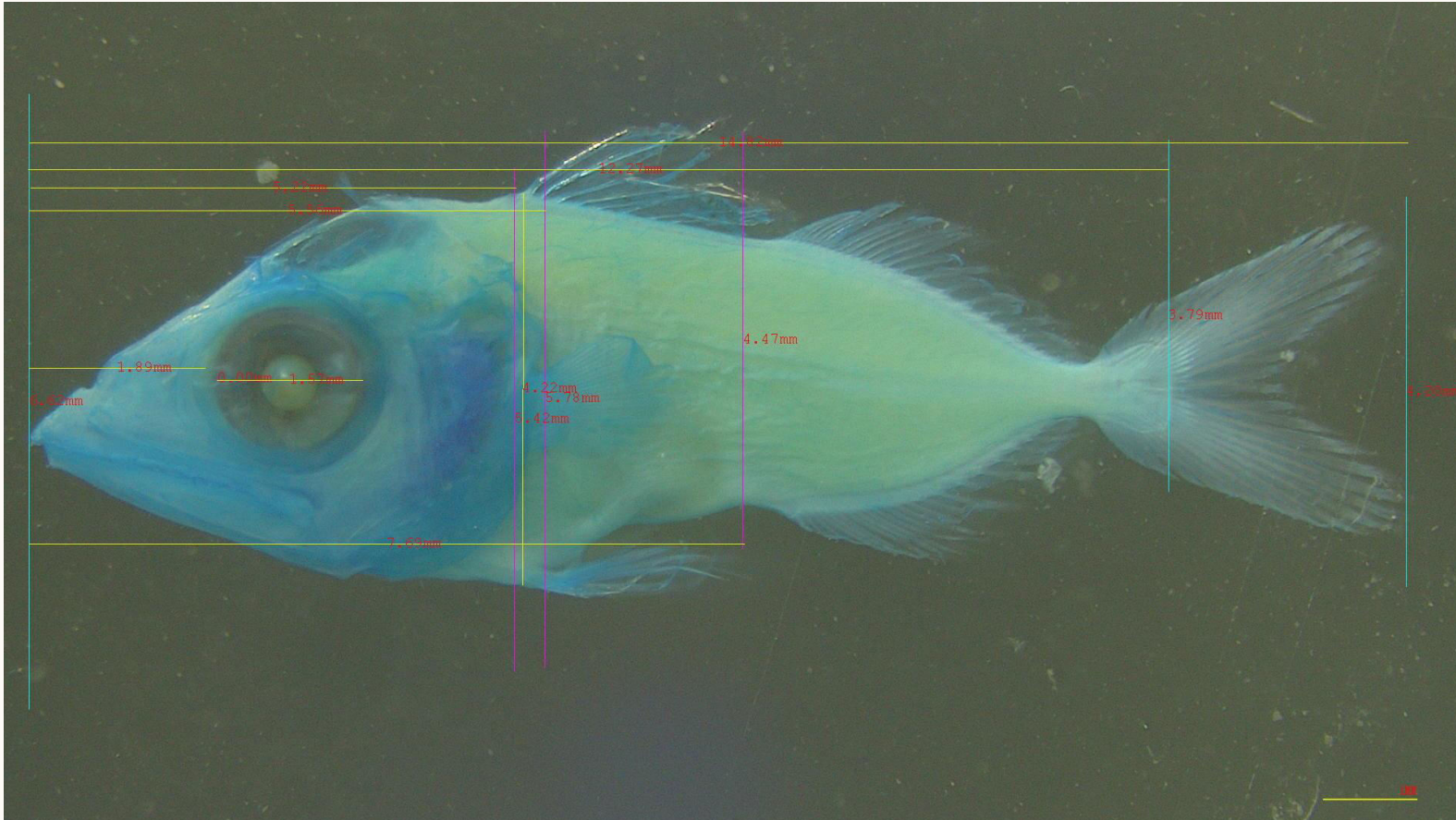
8a. Internal pigment present on anterior margin of forebrain..... 9

9b. Cleithral symphysis (ithmus) and pre anus unpigmented.10

10a. Pigment appears early on lower jaw tip at about 3.5 mm NL. First
dorsal fin pigmented late at above 6mm SL. Pigment appear late on upper
jaw. Myomere 41.....*Katsuwonus pelamis*



Measurement



No	Part	Measurement (mm)	Notes
1	SL	12.27	
2	TL	14.82	
3	BD	4.22	
4	HL	5.56	
5	ED	1.57	
6	PAL	7.64	
7	SnL	1.89	
8	PDL	5.22	

*Notes:

SL = Standard Length

TL = Total Length

BD = Body Depth

HL = Head Length

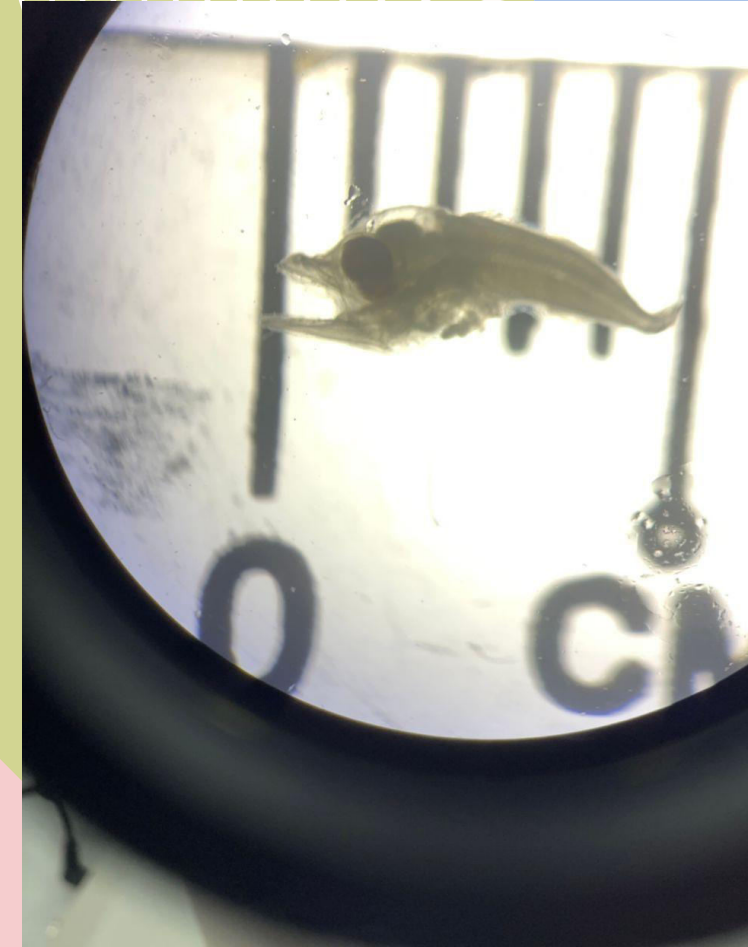
ED = Eye Diameter

PAL = Pre Anal Length

SnL = Snout Length

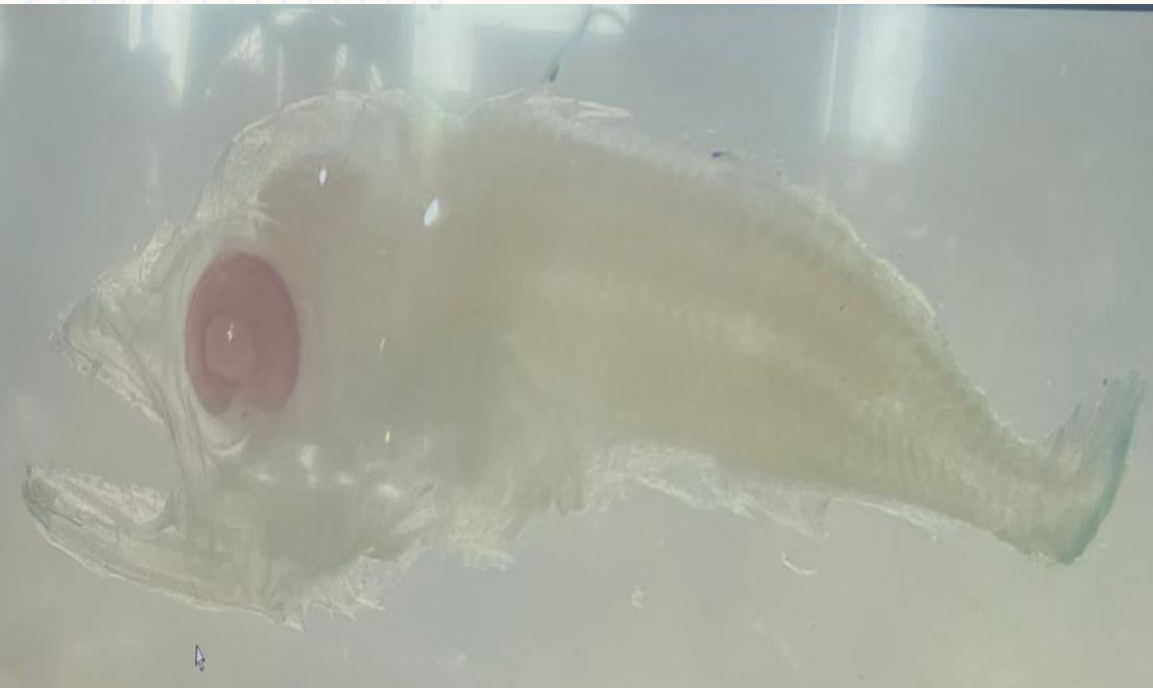
PDL=Pre dorsal-fin length





Scomberomorus commerson
Tenggiri batang

Genus identified= *Scomberomorus*



Five species of the Genus *Scomberomorus* in the Southeast Asian region (1/2)

S. sinensis
 total gill rakers on 1st gill arch 10 to 15
 lateral line with a deep dip below 1st dorsal fin spines
 lateral lines

S. commerson
 total gill rakers on 1st gill arch 1 to 8
 lateral line with a deep dip below 2nd dorsal fin spines
 lateral lines

S. lineolatus
 body with a series of short straight stripes and few if any spots
 body with vertical stripes
 lateral line descending gradually backward without auxiliary branches anteriorly

Five species of the Genus *Scomberomorus* in the Southeast Asian region (2/2)

S. guttatus
 dorsal-fin spines XV to XVIII (usually XVI or more)
 lateral line descending gradually backward with many small auxiliary branches anteriorly
 body with many spots
 intestine with 2 loops and 3 limbs

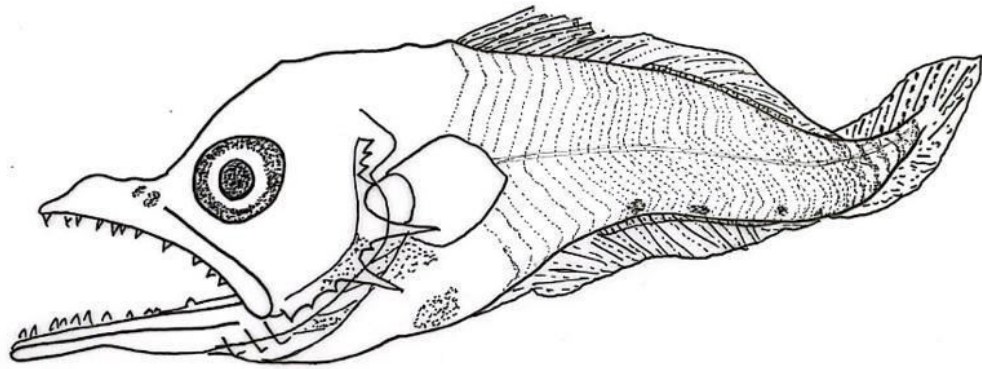
S. koreanus
 dorsal-fin spines XIV to XVII (usually XIV or XV)
 lateral line descending gradually backward with many small auxiliary branches anteriorly
 intestine with 4 loops and 5 limbs



Drawing based on Microscope Observation

1b

41-52



Scomberomorus commerson

Tenggiri batang

[Signature]
VRL
BAR DEC TD
25/11/2022



1b. First dorsal fin develop prior second dorsal fin. Preopercular spines present. Vertebrae (myomere) 31-643

3b. Snout pointed. Preopercular spines form usually well and elongate at angle. Vertebrae (myomere) ≥ 39 4

4a. Supraoccipital spine present..... 5

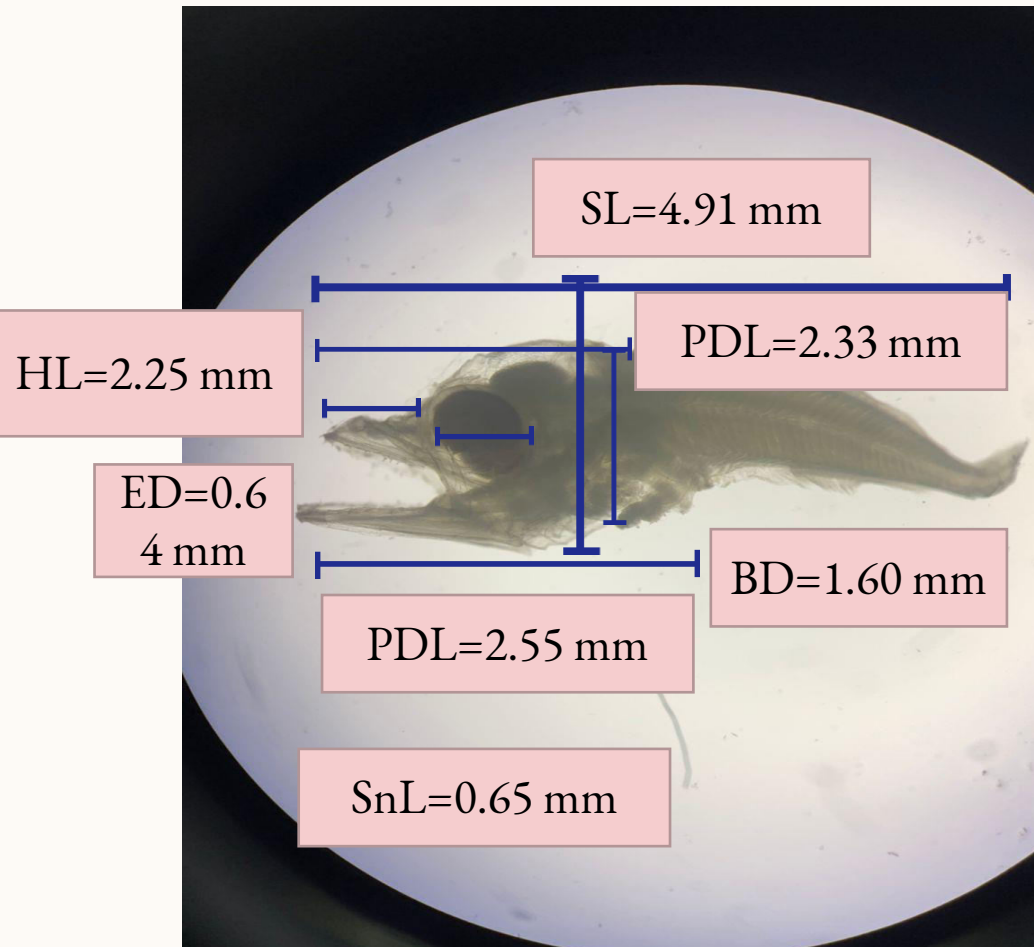
5a. Snout elongate and it length about 2x of eye diameter. Supraoccipital spine distinct. No pigment appears on pelvic fin. Vertebrae (myomere) 41-52

.....***Scomberomorus***

- Key identification for *Scomberomorus commerson*.



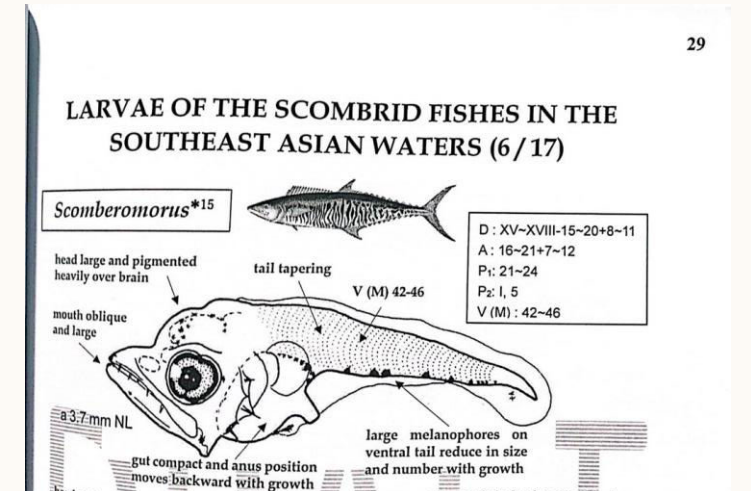
Measurement Information



No	Part	Measurement (mm)	Notes
1	SL	4.91	
2	HL	2.25	
3	ED	0.64	
4	SnL	0.65	
5	PAL	2.55	
6	PDL	2.33	
7	BD	1.60	

*Notes:

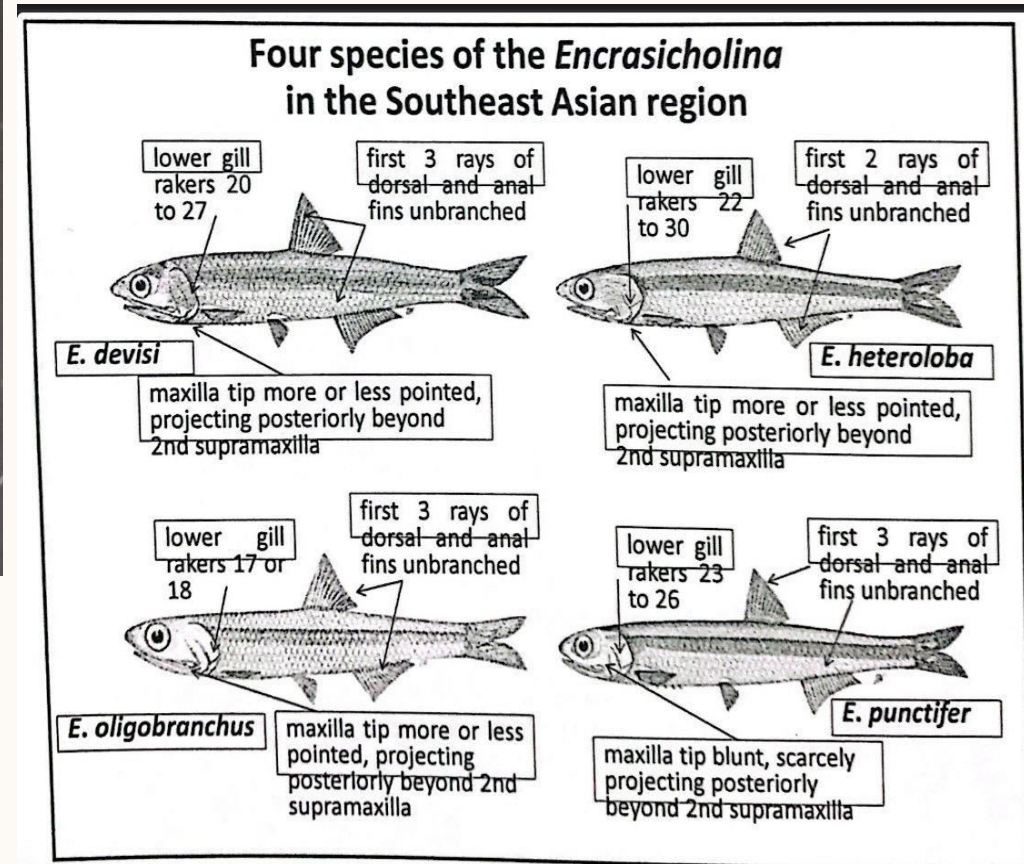
SL = Standard Length
 TL = Total Length
 BD = Body Depth
 HL = Head Length
 ED = Eye Diameter
 PAL = Pre Anal Length
 SnL = Snout Length



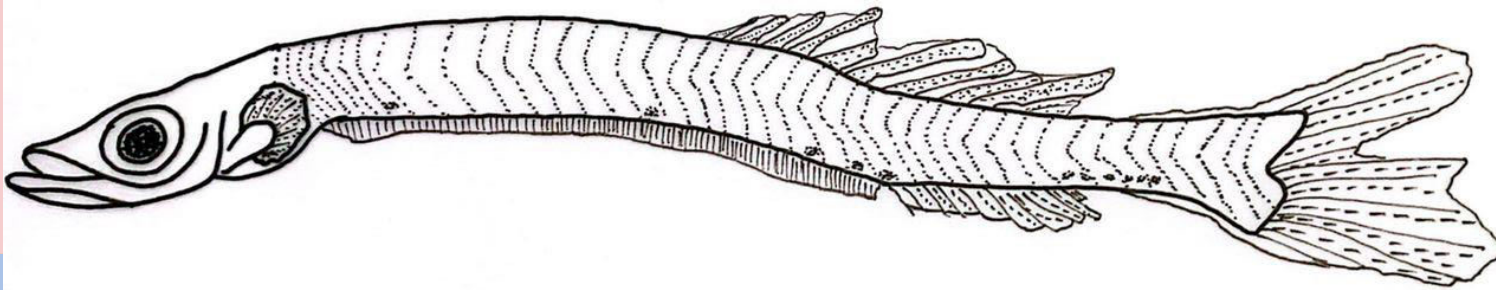


Encrasicholina heteroloba
(Short-head anchovy)
(Bilis Bunga Kepala Pendek)

4 Species under *Encrasicholina* genus



Genus Identified



Encrasicholina heteroloba

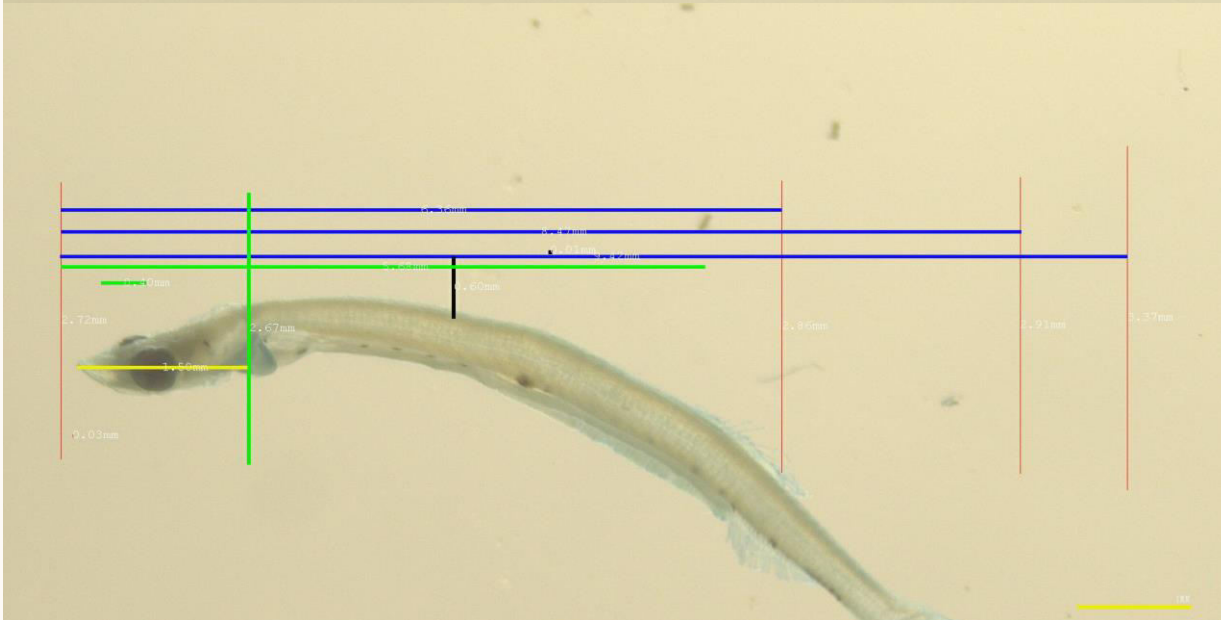
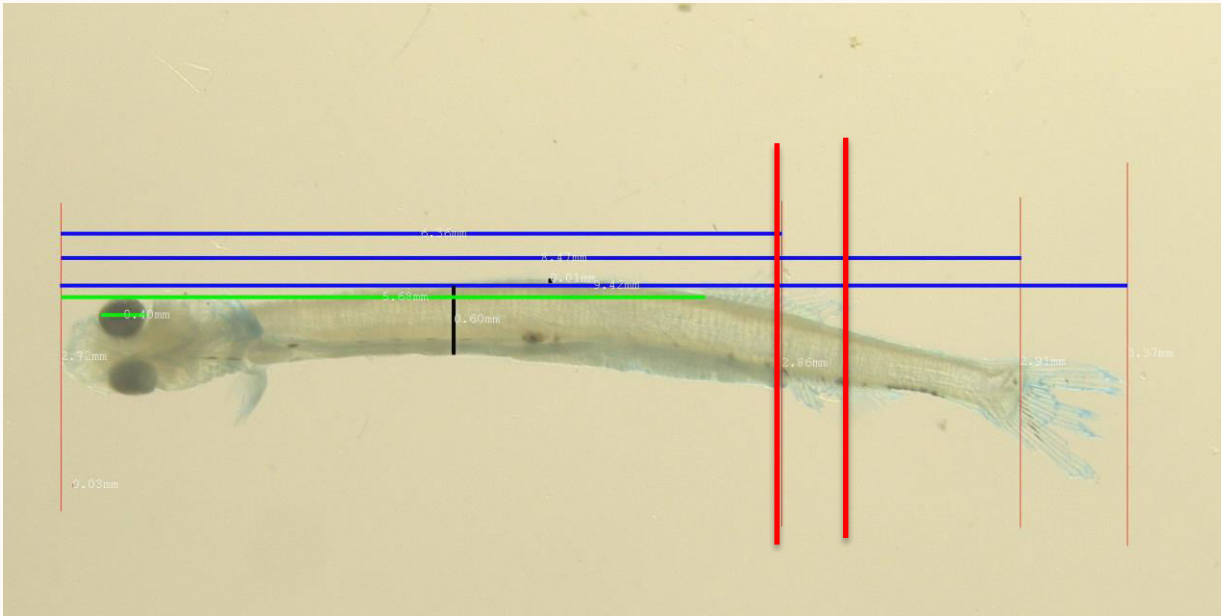
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SEAFDEC TD

Key to genus of the Engraulidae larvae in the Southeast Asian region

- 1a Dorsal-fin base present at midpoint of body, and its end remarkably anterior to anus. Total myomeres more than 70. *Coilia*
- 1b Dorsal-fin base present near midpoint of body or posterior to it, and its end over origin of anal fin or posterior to the origin. Total myomeres less than 70. 2
- 2a Anal-fin rays more than 30, and its base more than 1.5 times of dorsal-fin base. 3
- 2b Anal-fin rays less than 30, and its base less than 1.5 times of dorsal-fin base. 4
- 3a Head depressed (until early postflexion stage). Anal-fin rays more than 47. *Setipinna*
- 3b Head not depressed. Anal-fin rays less than 49. *Thryssa*
- 4a Origin of anal fin just under end of dorsal fin. 5
- 4b Origin of anal fin distinctly anterior to end of dorsal fin.
..... *Stolephorus*
- 5a Total vertebrae 40-45 *Encrasicholina* *
- 5b Total vertebrae 44-47 *Engraulis*

* Some *Encrasicholina* larvae have the *Stolephorus*-type arrangement of dorsal and anal fins. Riverine and lacustrine species of *Lycotryssa* is excluded in the above key.

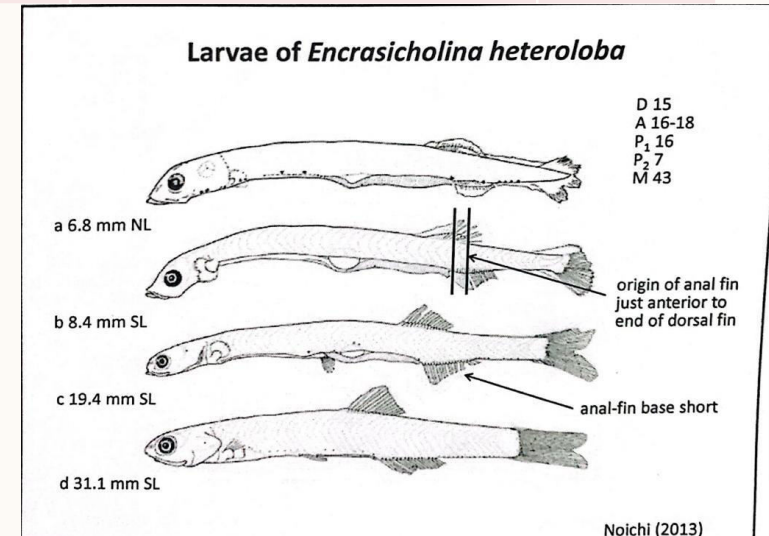
MEASUREMENT

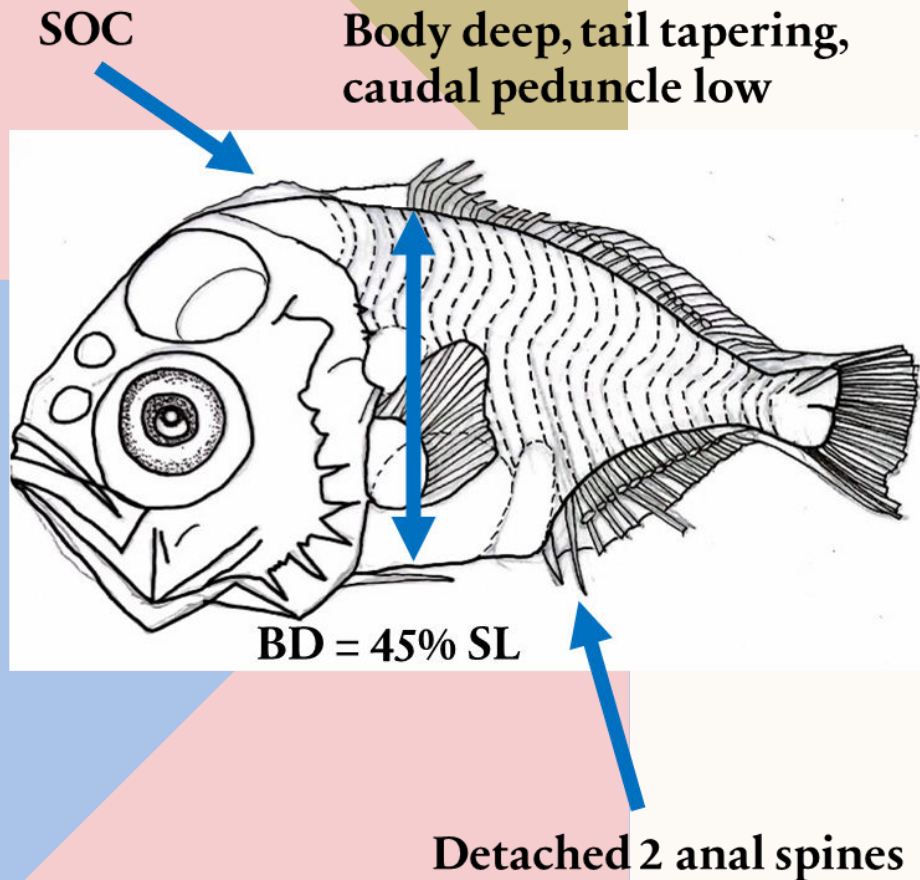


No	Part	Measurement (mm)	Notes
1	SL	8.47	
2	TL	9.42	
3	BD	0.60	
4	HL	1.50	
5	ED	0.40	
6	PAL	6.36	
7	SnL	0.52	
8	PDL	5.68	

*Notes:

- SL = Standard Length
- TL = Total Length
- BD = Body Depth
- HL = Head Length
- ED = Eye Diameter
- PAL = Pre Anal Length
- SnL = Snout Length

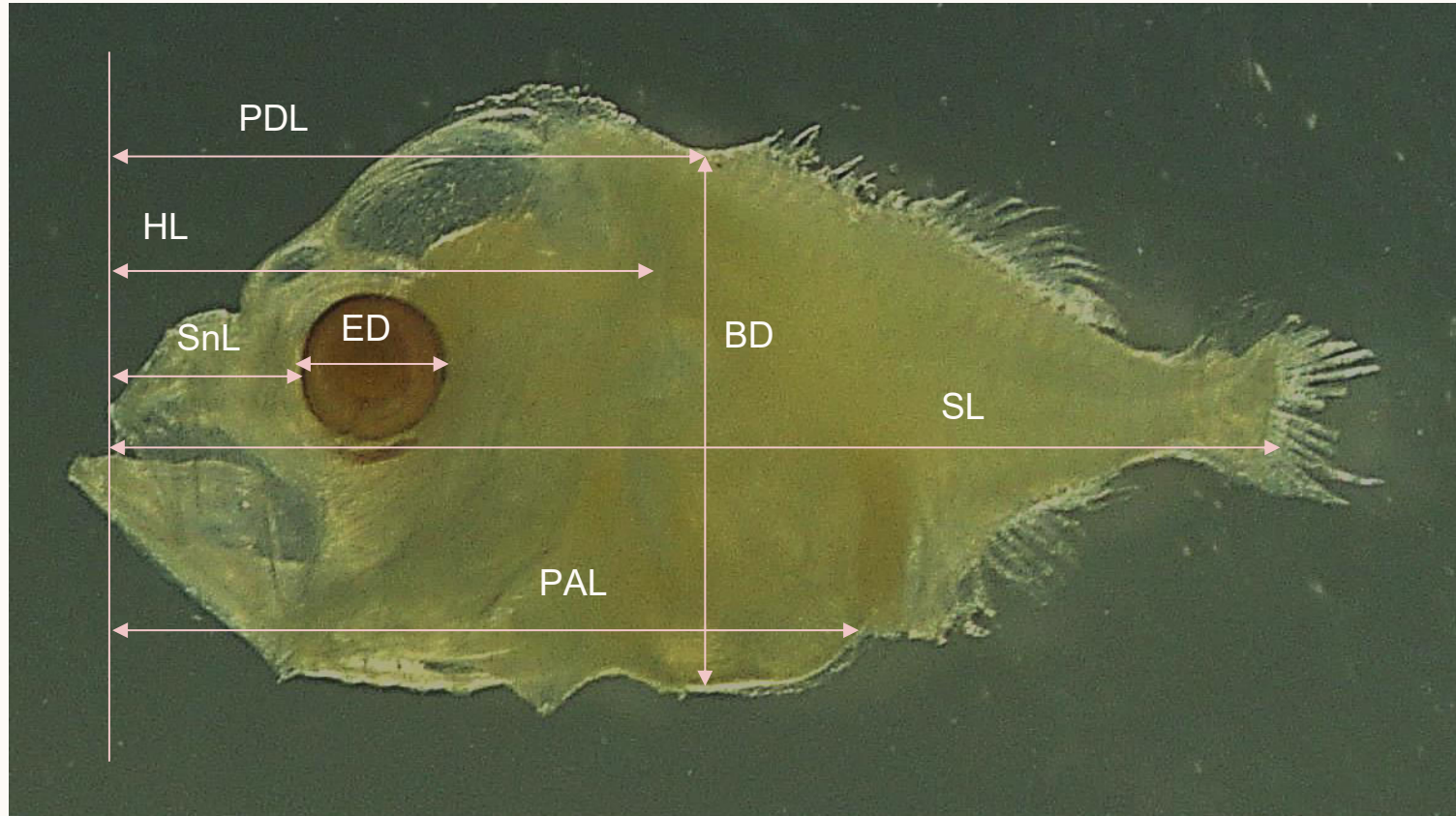




Group 1: supraoccipital crest (SOC) present; body shape deep

- No elongated fin rays → not an *Alectis* spp.
- No pigment on myomere and abdominal finfold → not a *Caranx sexfasciatus*
- No very elongated preopercular spine, and body not heavily pigmented → not a *Gnathanodon speciosus*
- Body not rhomboid → not a *Parastromateus niger*
- Pelvic fins and body not heavily pigmented → not an *Ulua* sp.

MEASUREMENTS AND COUNTS



Stage: Postflexion
D: VIII, 19
A: II, 14
TM: 25 (10+15)

No	Part	Measurement (mm)
1	SL	4.22
2	HL	1.65
3	ED	0.50
4	SnL	0.60
5	PAL	2.79
6	PDL	2.16
7	BD	1.89

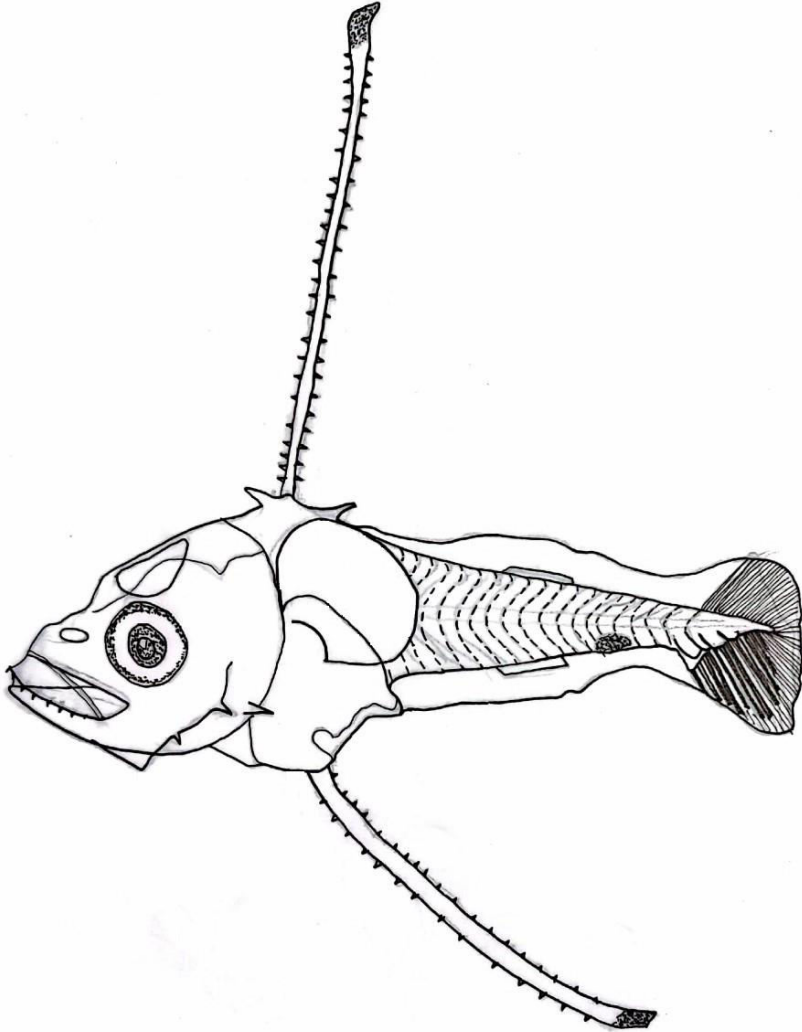
Deep body
BD 45% BL

Large head
HL 52% BL

Small eye
ED 23% HL

Gut moderate
PAL 43% BL

SERRANIDAE *Epinephelus* sp.



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mented at

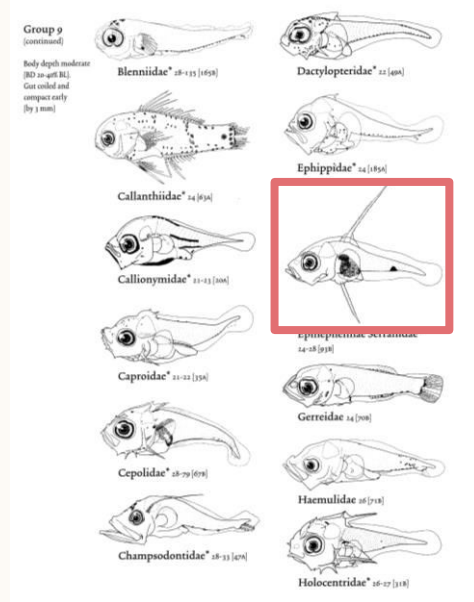
on the

**Group 9: Body moderate,
gut coiled and compact**

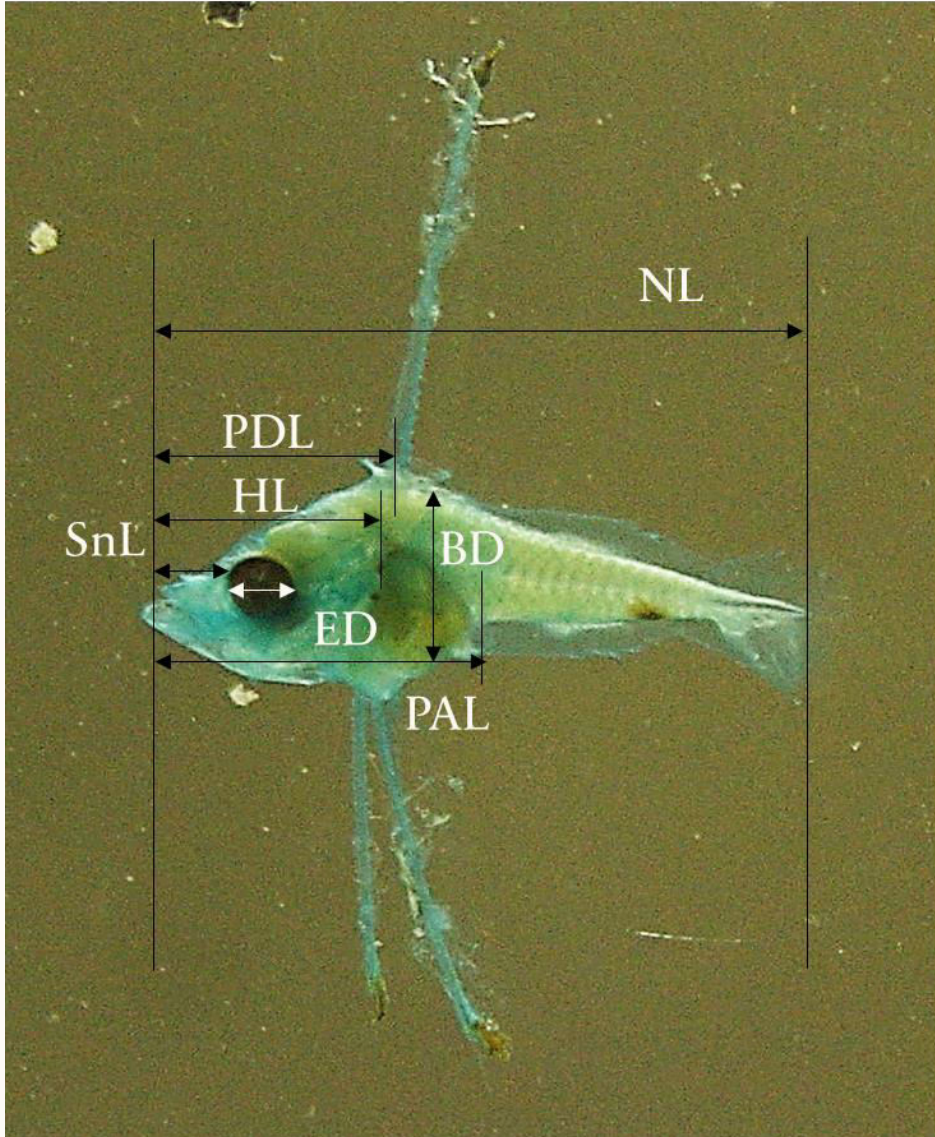
**Body shape: Epinephelinae
Serranidae**

**No. of myomeres is 24,
serrate dorsal- and pelvic-
fin spines → not a *Nippon***

**Tribe: Epinephelini, genus
*Epinephelus***



MEASUREMENTS AND COUNTS



Moderate body
BD 25% BL

Large head
HL 36% BL

Moderate eye
ED 29% HL

Gut short
PAL 49% BL

Stage: Flexion
D: not developed
A: not developed
TM: 24 (5+19)

No	Part	Measurement (mm)
1	NL	4.56
2	HL	1.66
3	ED	0.48
4	SnL	0.44
5	PAL	2.25
6	PDL	1.70
7	BD	1.15

OVERVIEW

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SUMMARY

- **6 families:** Scombridae, Carangidae, Engraulidae, Lutjanidae, Siganidae & Serranidae
- **Achieved main objective:** to identify anchovies until species level.



RECOMMENDATIONS

- **Further training on species identification on other family eg.:** Clupeidae, Nempiteridae, Cynoglossidae, Mullidae & Sphyraenidae
- Hands on @ practical on field sampling using larva net @ bongo net and preservation's methods.



THANK YOU
Arigato
Khaawp-khun
Terima kasih

