

Larval fishes identification

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Larval fishes identification

Outline

1. Larval fish identification approaches
2. Early life history stages of fishes
3. Major morphological characters
4. Main characters used in identifying fish larvae



Larval fishes identification approaches

Four approaches of identifying fish larvae:

1. Utilizing literature accounts (or the expertise of another worker)
2. The series approach
3. Biochemical approach
4. Rearing approach



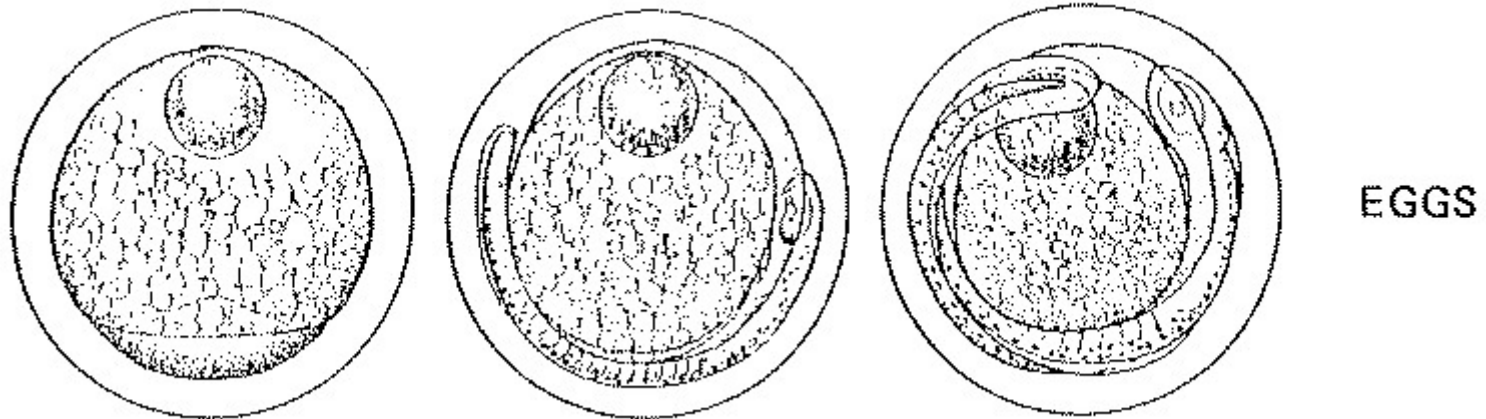
Early life history stages of fishes

- Egg stage
- Larval stage
- Juvenile stage



Early life history stages of fishes

"Egg stage": spawning to hatching.



Early life history stages of fishes

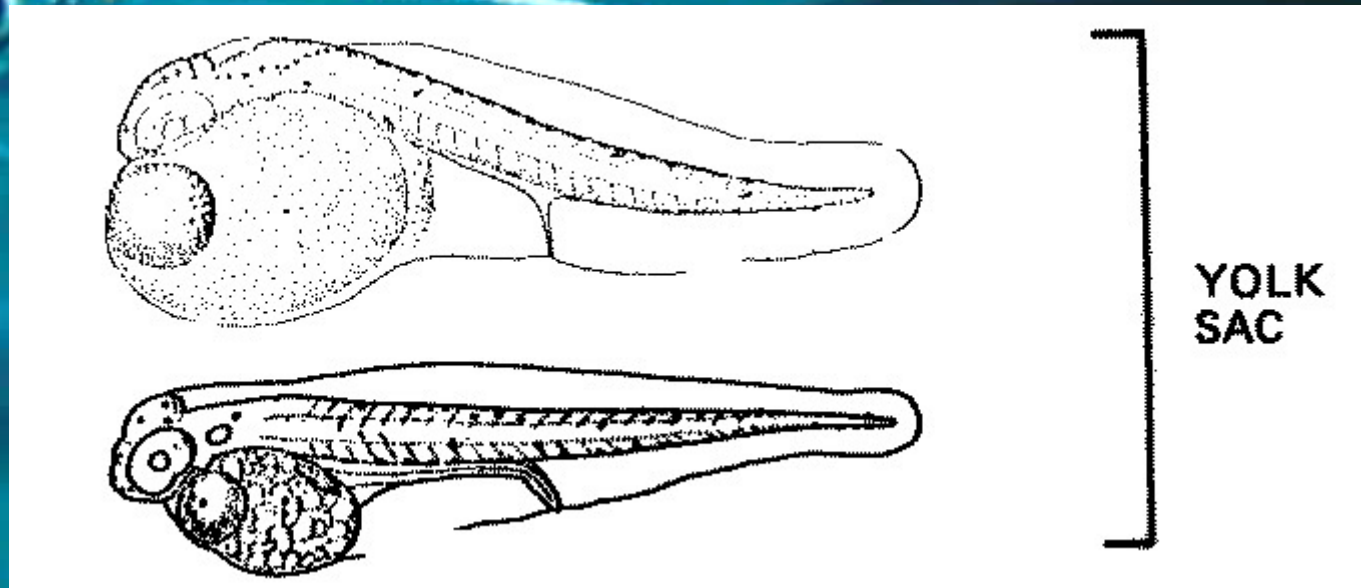
“Larval stage”: hatching to attainment of complete fin ray counts and beginning of squamation

- **Yolk sac larva**
- **Preflexion larva**
- **Flexion larva**
- **Postflexion larva**



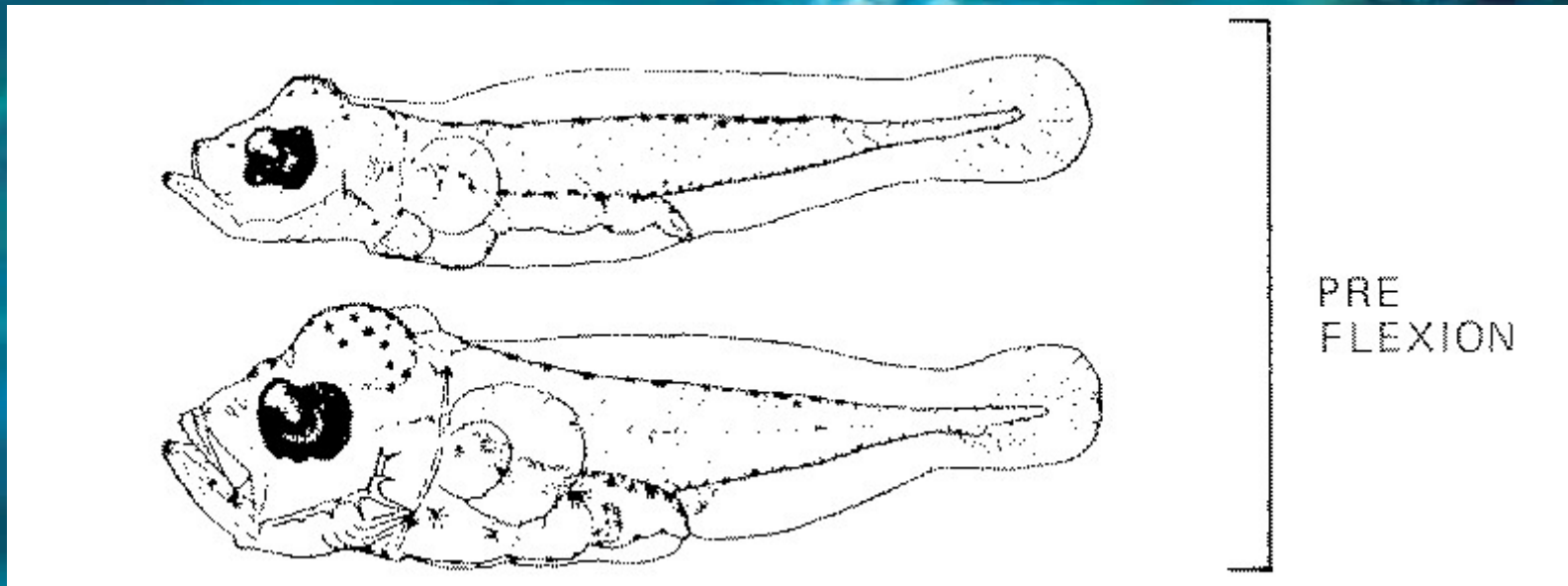
Early life history stages of fishes

“Yolk-sac larva”: Development stage beginning with hatching and ending with exhausting of yolk reserves and characterized by presence of a yolk sac.



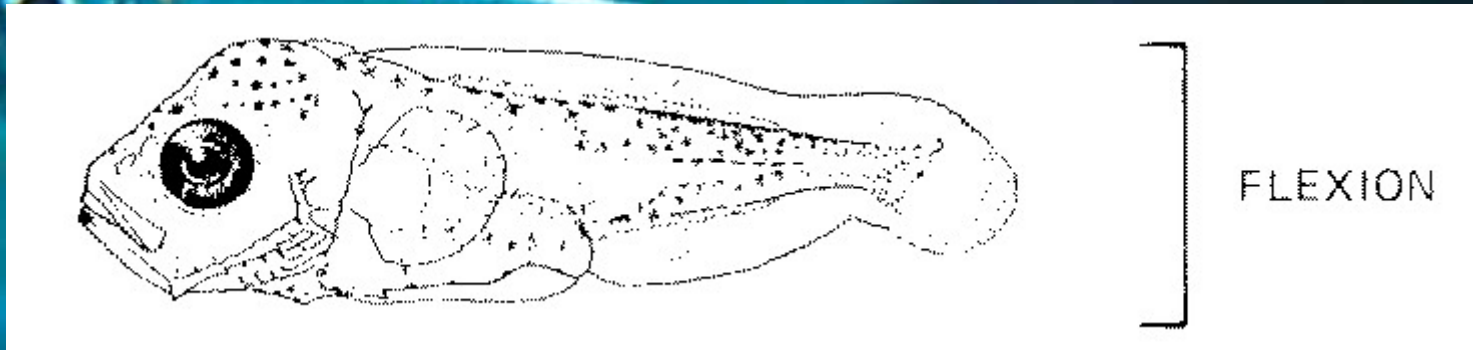
Early life history stages of fishes

“Preflexion larva”: Developmental stage beginning at hatching and ending at the start of upward flexion of the notochord.



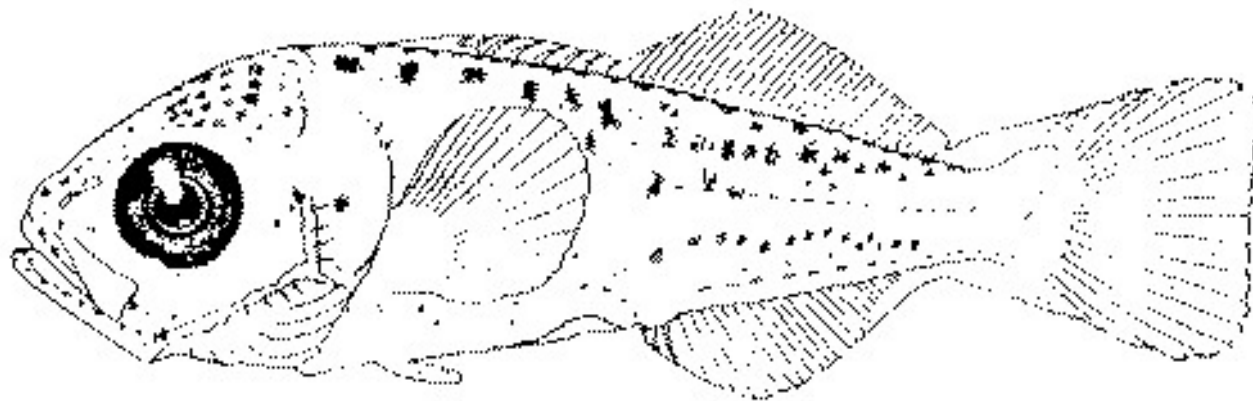
Early life history stages of fishes

“Flexion larva”: Development stage beginning with flexion of the notochord and ending with the hypural bones assuming a vertical position.



Early life history stages of fishes

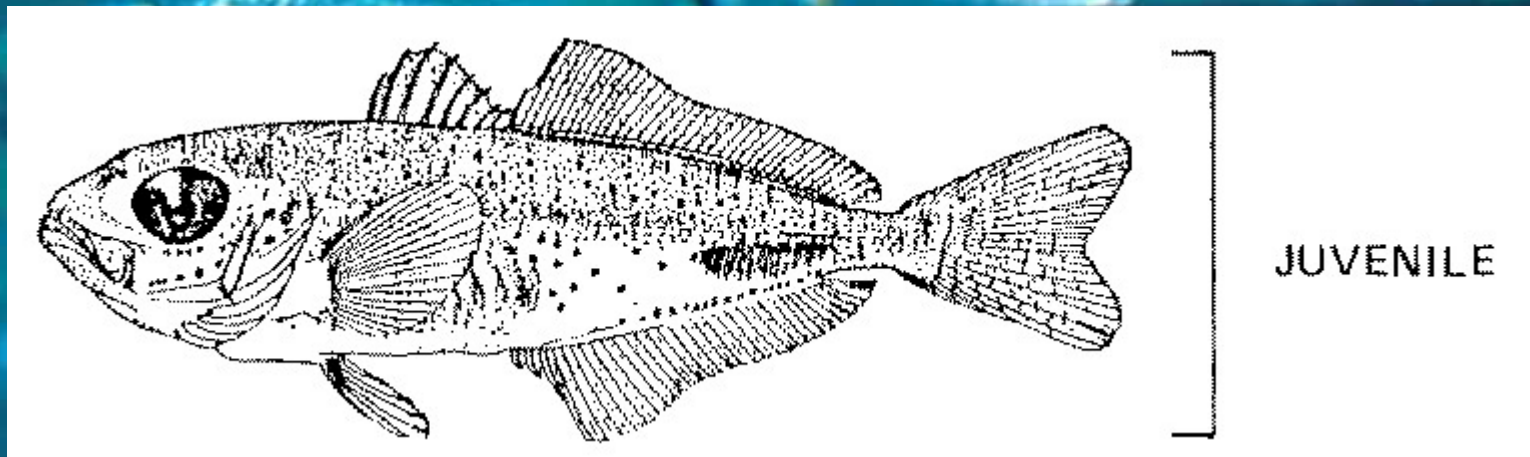
“Postflexion larva”: Development stage from formation of the caudal fin (hypural elements vertical) to attainment of full external meristic complements (fin rays).



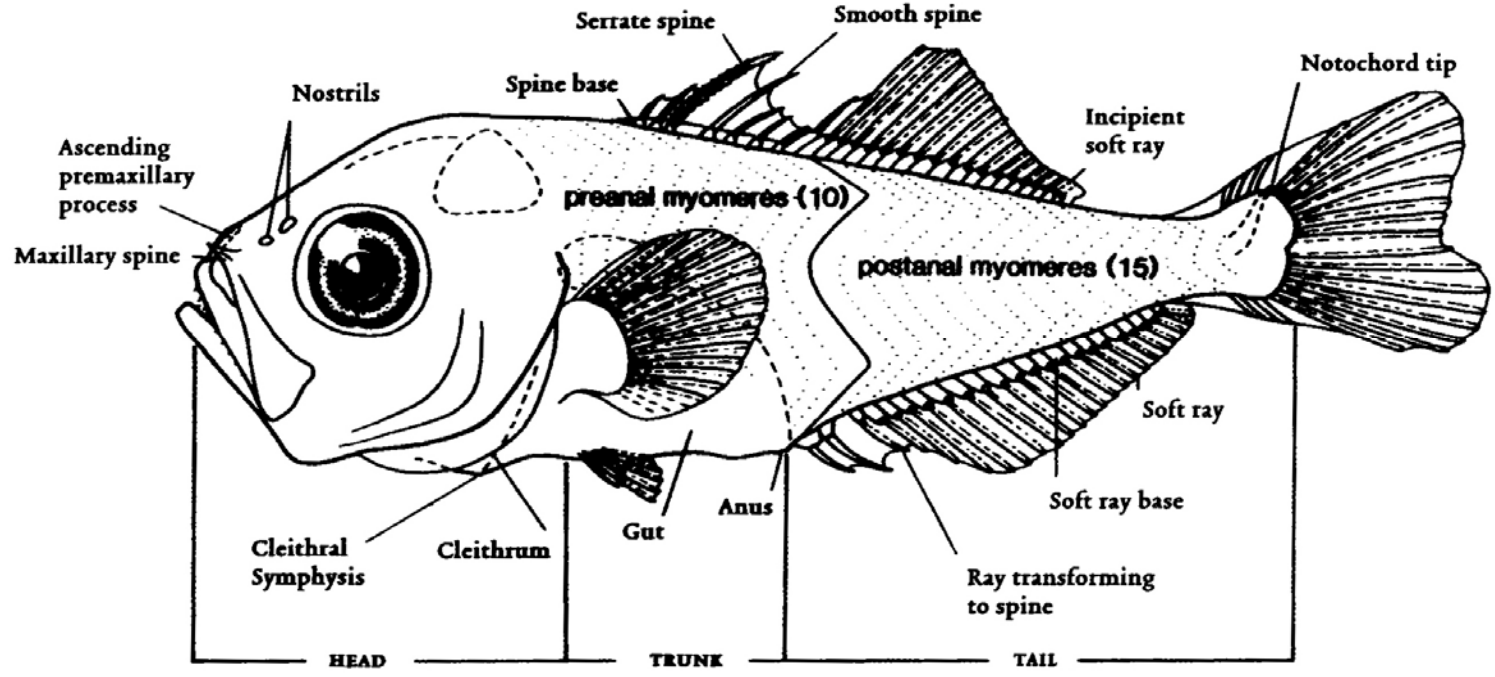
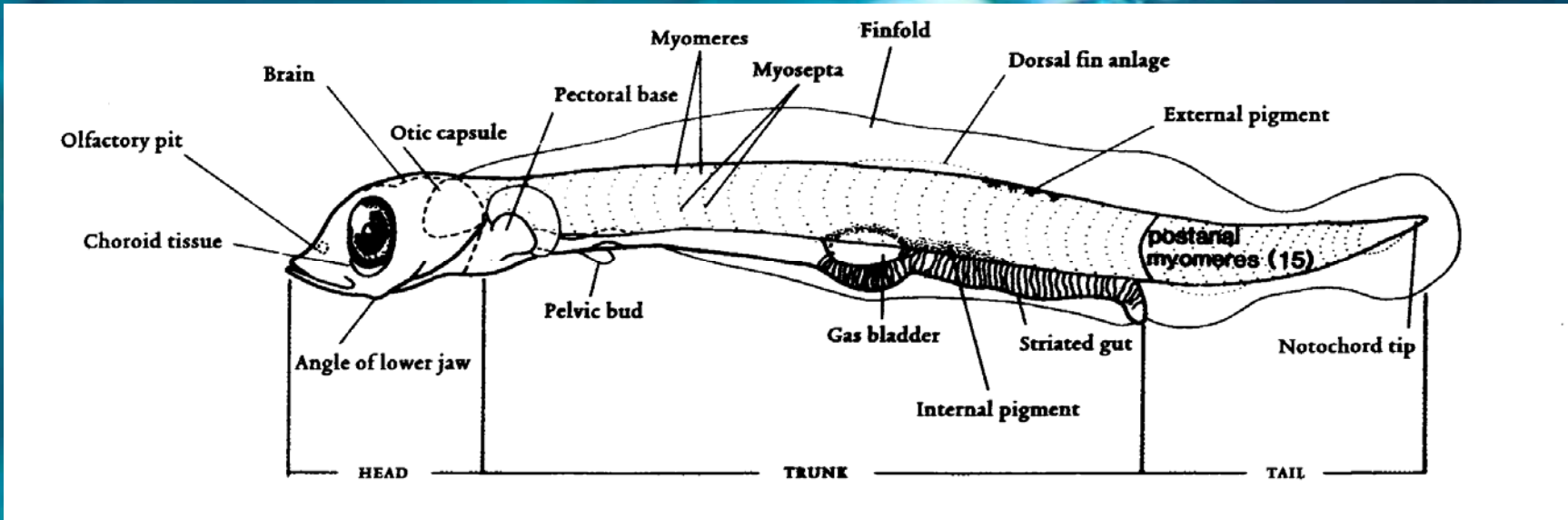
POST
FLEXION

Early life history stages of fishes

“juvenile stage”: completion of fin ray counts and beginning of squamation until fish enters adult population or attain sexual maturity.



Major morphological characters





Main characters used in identifying fish larvae

- 1. Body shape**
- 2. Myomeres**
- 3. Gut**
- 4. Gas bladder**
- 5. Head spination**
- 6. Fin formation**
- 7. Size and morphometrics measurements**
- 8. Pigment**
- 9. Fin ray counts**

Main characters used in identifying fish larvae

Body shape

Descriptions of the general body shape

Categories that relate body depth (BD) to body length (BL)

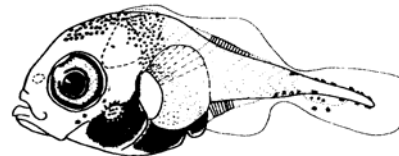
Very elongate	Elongate	Moderate	Deep to very deep
BD <10% BL	BD 10-20% BL	BD 20-40% BL	BD > 40 % BL



Engraulidae



Mullidae



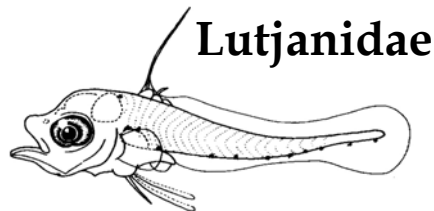
Balistidae



Diodontidae



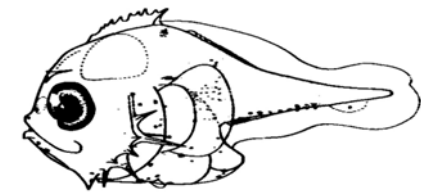
Synodontidae



Lutjanidae



Callanthidae



Drepaneidae



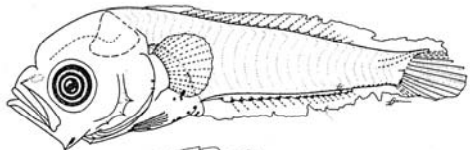
Trichiuridae

Main characters used in identifying fish larvae

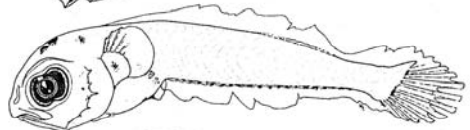
Myomeres

B₁ Myomeres typically 30–50 (range 28–198)

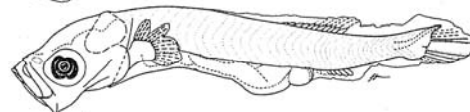
Group 4 Pelvic fins not early forming; gut without striations; body lightly to moderately pigmented



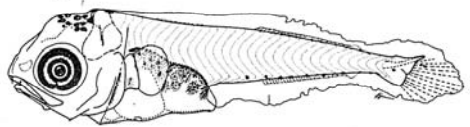
Pinguipedidae 29–34 myomeres
(p. 362)



Blenniidae 30–40 myomeres (28–135)
(p. 368)



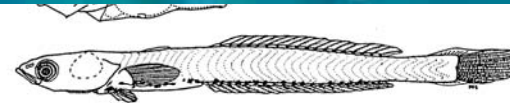
Odacidae 30–54 myomeres
(p. 326)



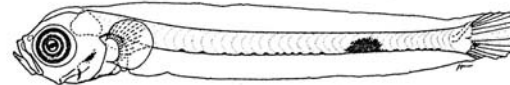
Scombridae 31–46 (30–66)
(p. 412)



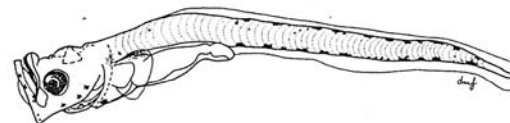
Bovichtidae 37–42 myomeres
(p. 338)



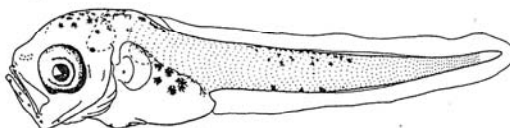
Bovichtidae 37–42 myomeres
(p. 338)



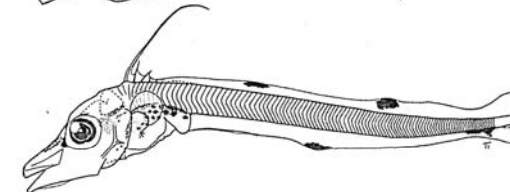
Leptoscopidae 42–48 myomeres
(p. 354)



Ophidiidae 48–87 myomeres
(p. 80)






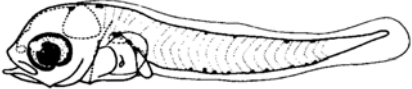


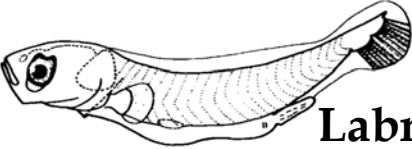

Macruronidae 78–81 myomeres
(p. 88)



Trichiuridae 84–198 myomeres
(p. 416)

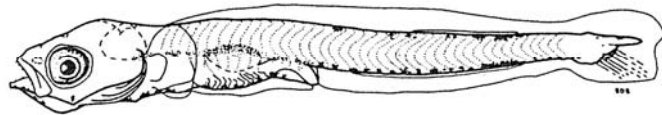
Main characters used in identifying fish larvae

Gut

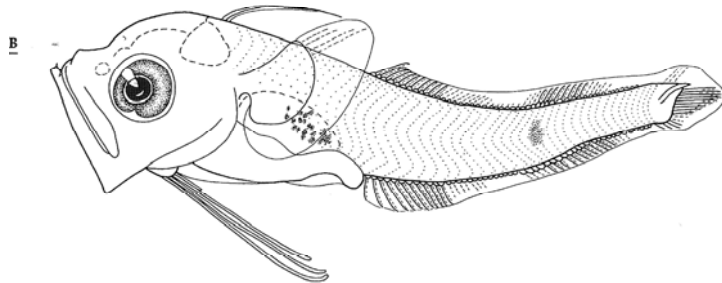
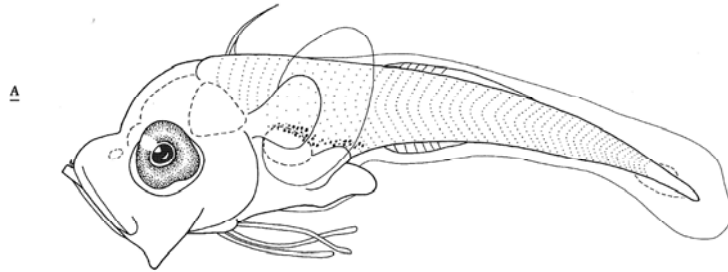
- Very long (PAL >70% BL)  Engraulidae
- Moderate length (PAL = 50-70% BL)  Ammodytidae
- Short (PAL < 50% BL)  Blenniidae
- Gut coiled and compact early  Pomacentridae
- Gut coiled early but not compact  Bregmacerotidae
- Gut initially uncoiled but coiling before flexion  Gobiidae
- Gut initially uncoiled but coiling during or after flexion  Labridae
- Gut initially uncoiled and remaining uncoiled until hidden by body wall  Hemiramphidae

Main characters used in identifying fish larvae

Gas bladder (air bladder/swim bladder)

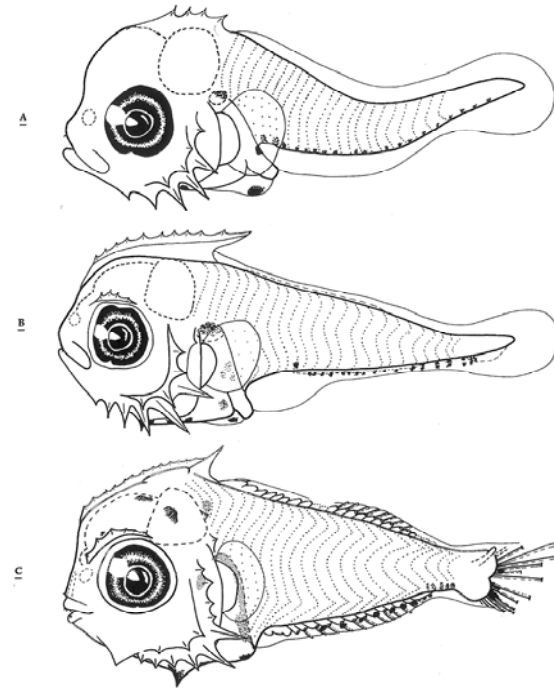


Sillaginidae



Bregmacerotidae

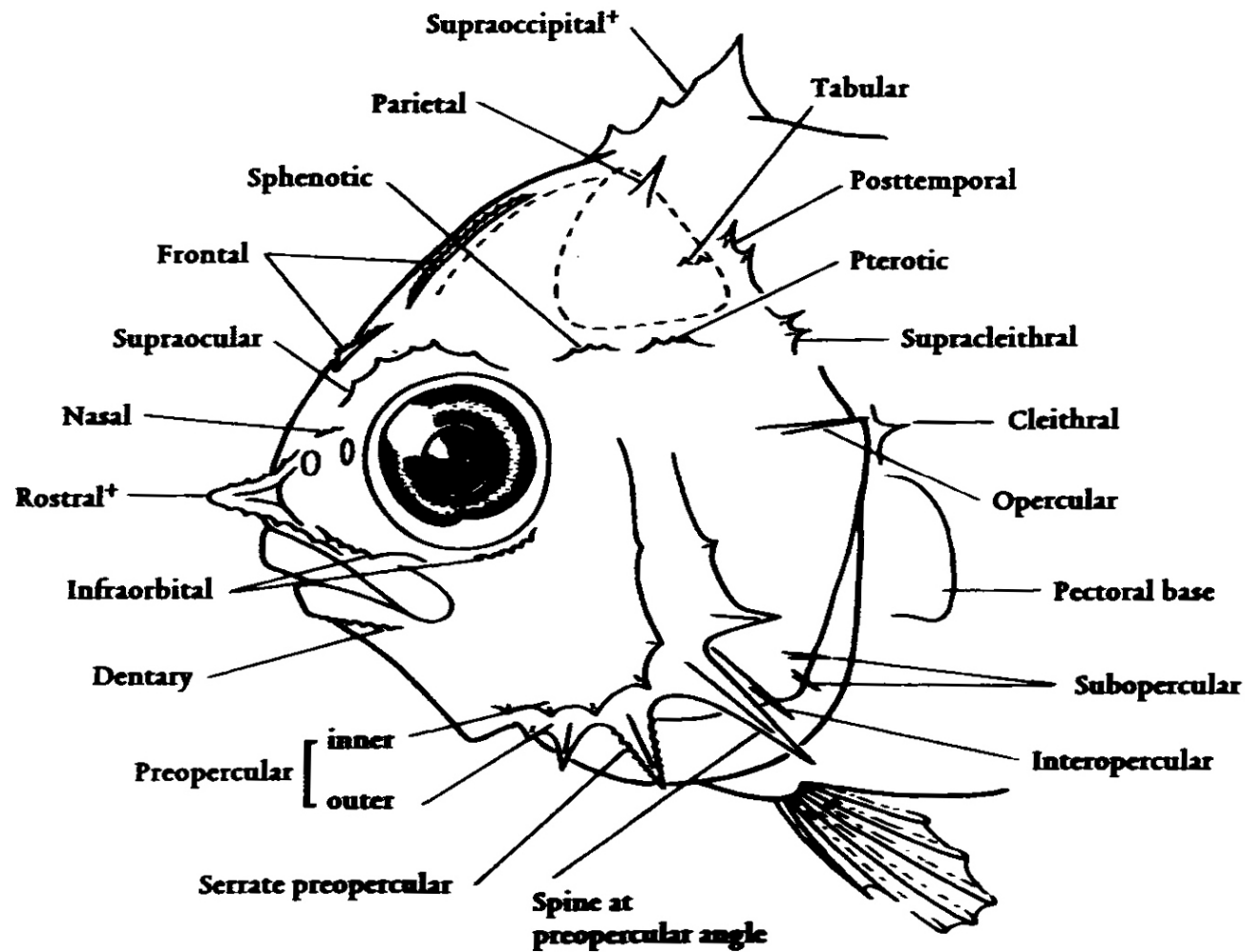
FIGURE 76
Larvae of the leiognathid genus *Leiognathus* (morph 2) from plankton tows in the Great Barrier Reef Lagoon; A-C from off Lizard Island, D-F from off Cape York.
A 1.9 mm — B 2.6 mm — C 3.0 mm (dorsal fin damaged) — D 5.8 mm — E 8.3 mm — F 12.3 mm.



Leiognathidae

Main characters used in identifying fish larvae

Head spination

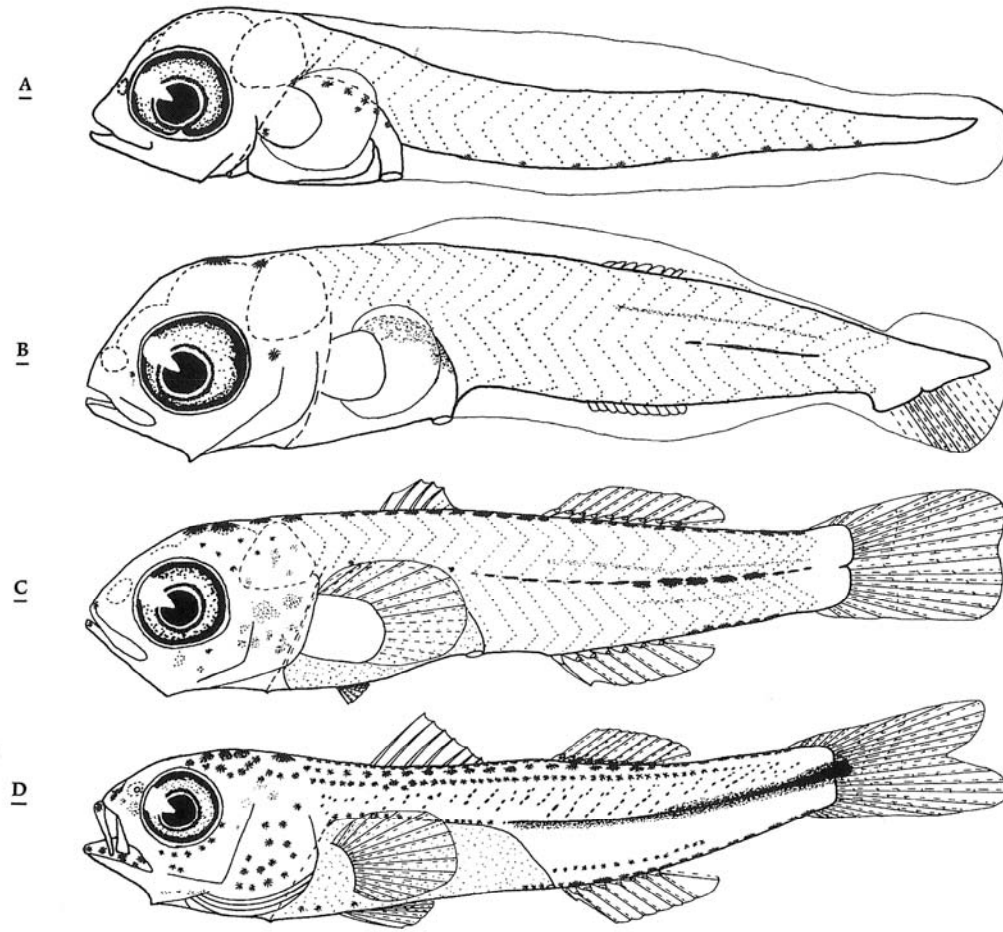


Main characters used in identifying fish larvae

Fin formation

Larvae of the mullid *Upeneus tragula* Richardson (M.I. McCormick, pers. comm.) from plankton tows taken near Lizard Island in the Great Barrier Reef Lagoon.

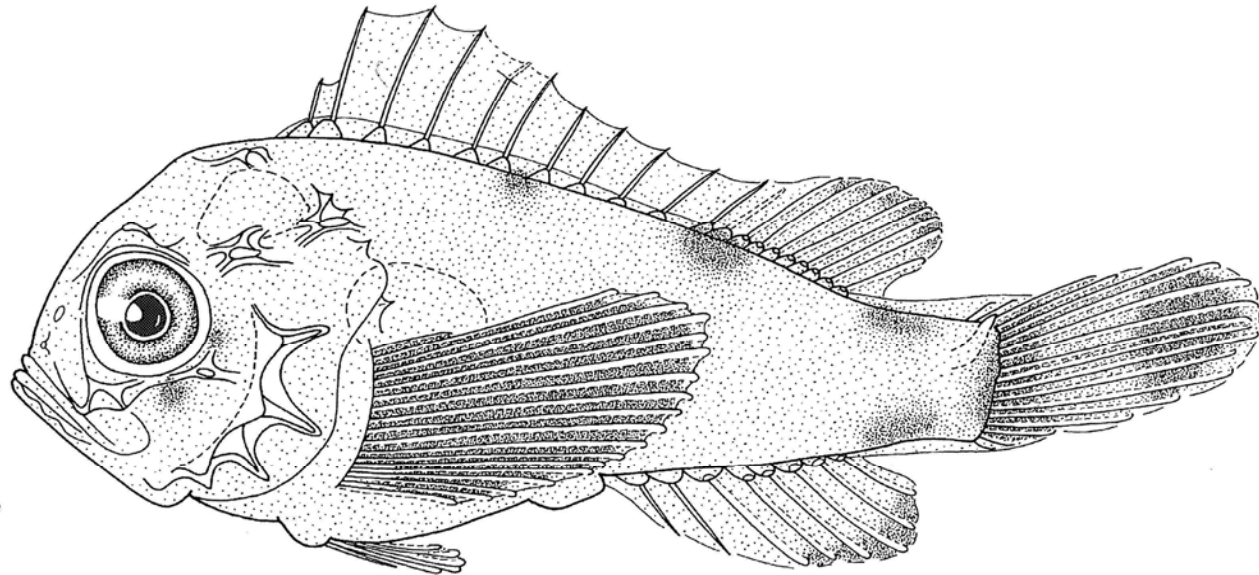
A 2.6 mm — B 3.9 mm — C 6.3 mm — D 10.1 mm (^{NOTE} teeth are present but not visible, and myomeres are obscured by pigment).



Main characters used in identifying fish larvae

Fin ray counts

Larva of a 5.1 mm morph A scorpaenid, the synanceiine scorpaenid *Synanceia verrucosa* Bloch & Schneider, from a plankton tow in Opunohu Bay, Moorea, Society Islands. ^{NOTE} myomeres obscured by thick skin and heavy pigment.



Synanceia verrucosa

D XII-XVII,4-7

A III,4-7

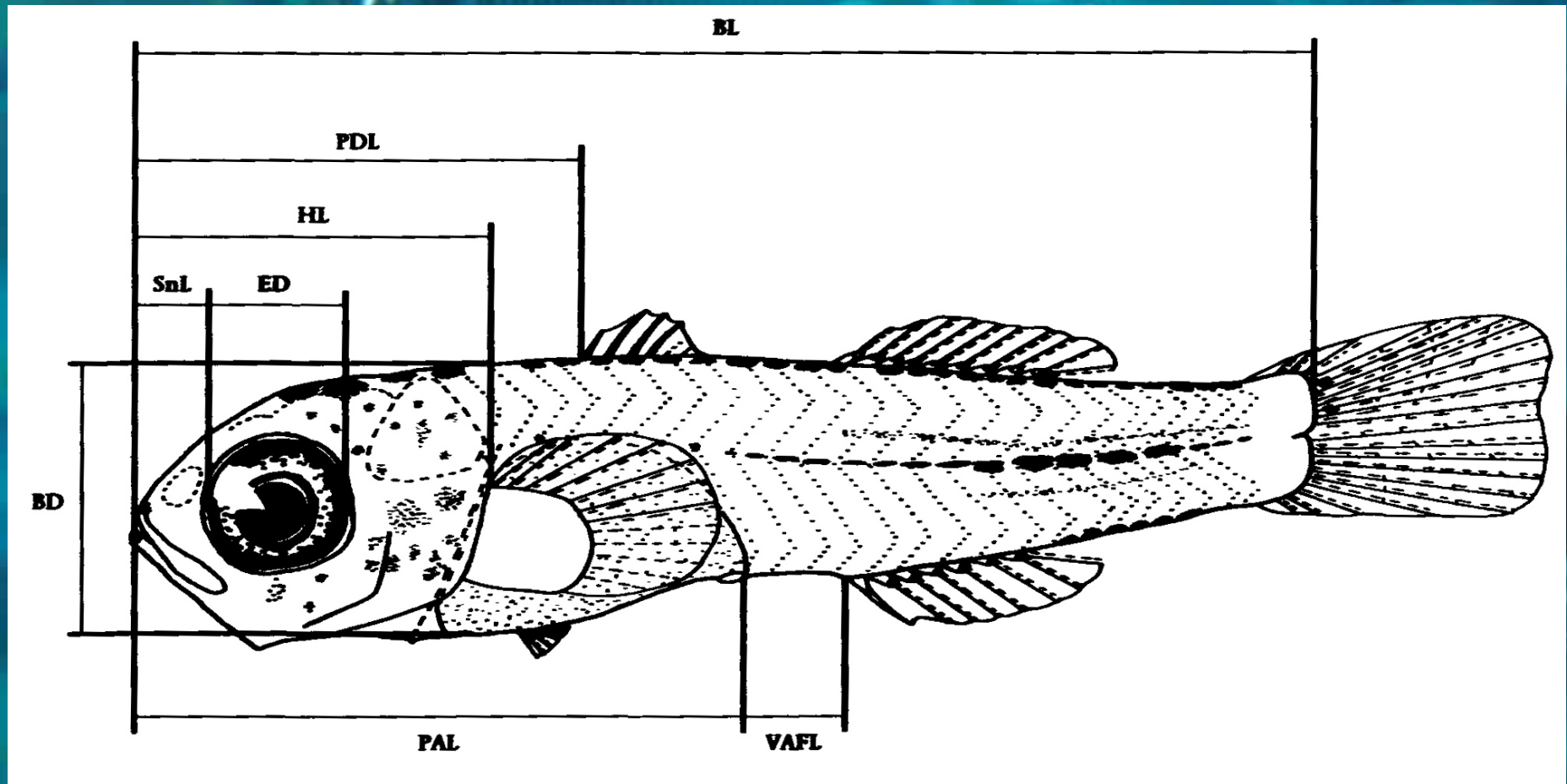
P₁ 11-19

P₂ I,4-5

C 4+5

Main characters used in identifying fish larvae

Size and Morphometrics measurement



Measurements of fish larva

Main characters used in identifying fish larvae

Pigment

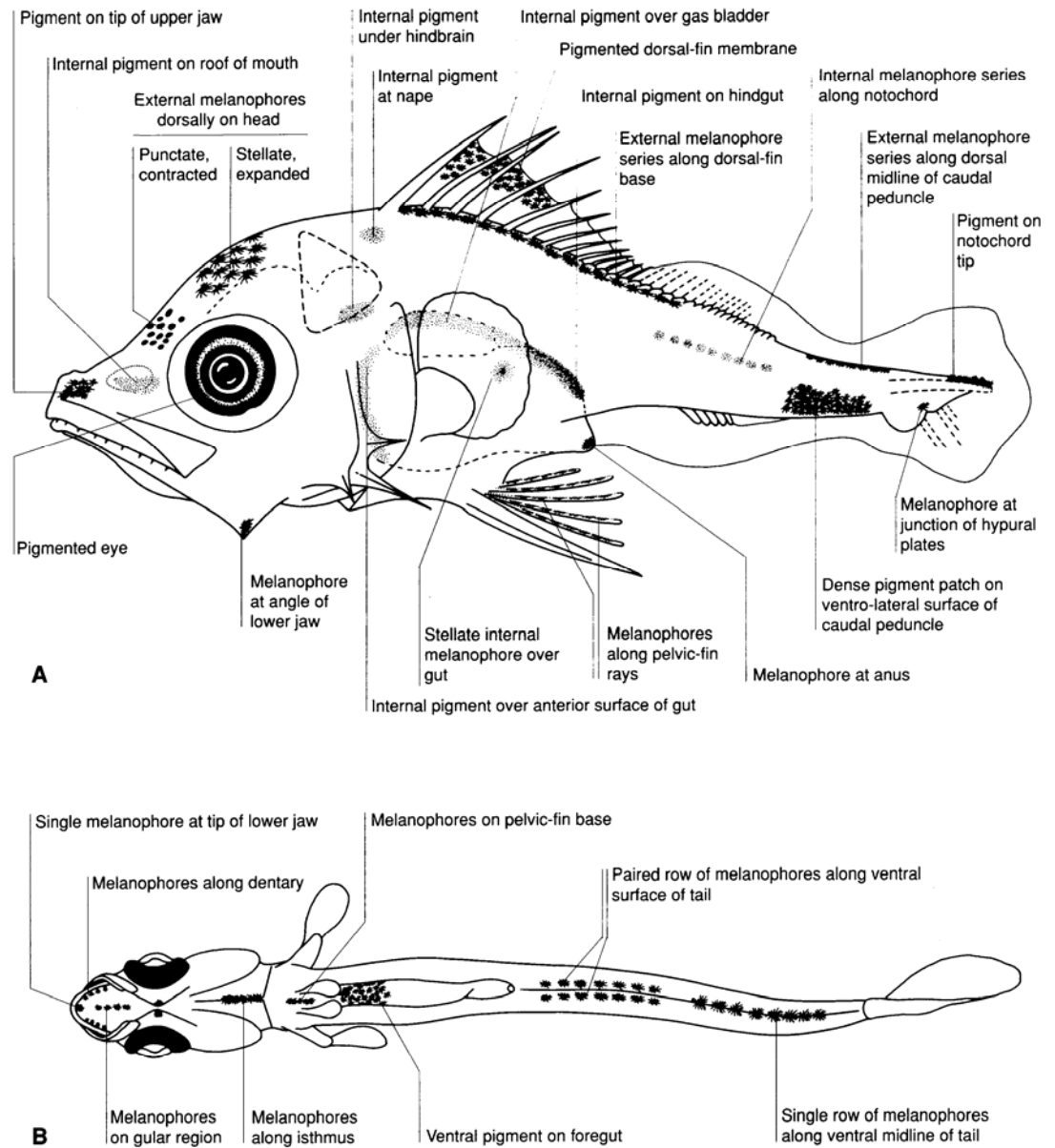


Figure 4 Hypothetical larvae showing major pigment characters used to describe larvae in this book: **A** lateral view; **B** ventral view (see text for explanations).