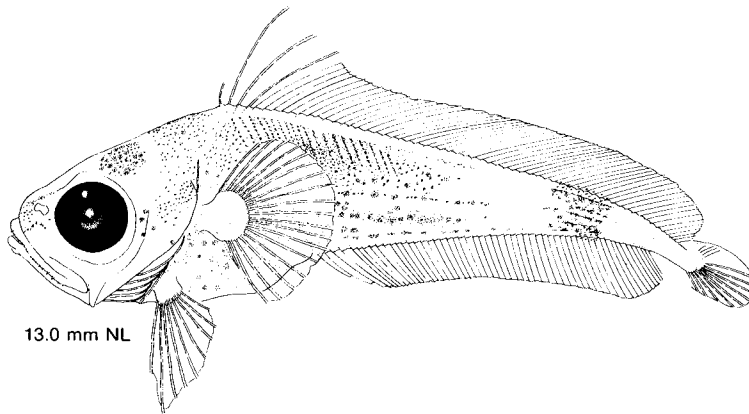


MISCELLANEOUS**Other Larvae**

The larvae in this section are distinctive and most are well-known, but they are either inadequately described, described from areas other than the western North Atlantic, or rarely caught in the geographic area encompassed by this guide.

Moridae (see table on p. 169)

- Found on continental slope and deeper.
- Two dorsal fins (anterior part of fin elevated in larvae, divides later).
- One anal fin (may be divided by low midsection).
- Pelvic fin develops early, moderately elongate; 6–9 rays (number increases with development, then may decrease at transformation).
- Body tapers to narrow caudal peduncle; caudal fin very small.
- Barbel forms on lower jaw in some species.



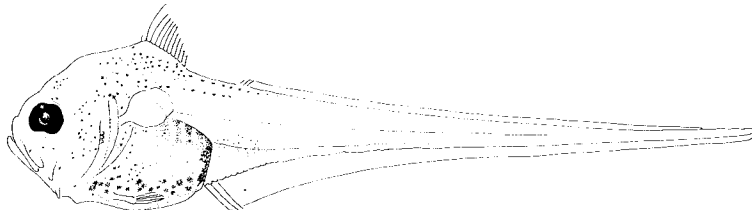
13.0 mm NL

Species unidentified
M. P. Fahay (see p. 11)

Ref. — deGaetani 1928; d'Ancona 1933; Leim and Scott 1966; Cohen 1978.

Macrouridae (see table on p. 169)

- Found on continental slope and deeper.
- Two dorsal fins (first very short, second long with many rays).
- One long anal fin; no caudal fin.
- Pectoral and pelvic fins develop on stalks; 5–17 pelvic fin rays.
- Body long and tapered; 10–16 precaudal plus 70–100+ caudal vertebrae.
- Barbel forms on lower jaw in most genera.



5.1 mm HL

Coryphaenoides rupestris Gunnerus
(Merrett 1978) (redrawn)

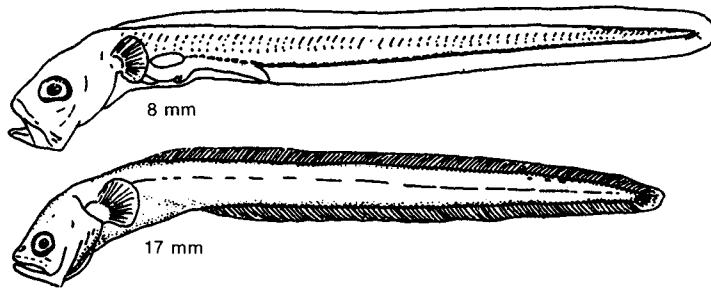
Ref. — Sanzo 1933a; Marshall 1965, 1973.

Other Larvae

MISCELLANEOUS

Ophidiidae

- Body elongate, preanus length <50% SL.
- Range in myomere counts ~50–80 in western North Atlantic.
- Long dorsal and anal fins with high numbers of rays; confluent with caudal fin.
- Elongate pelvic rays positioned on chin.
- Angle of jaw typically protrudes ventrally in larvae.
- Air bladder conspicuous in larvae.
- Pigment light and scattered in most species.
- Adult taxonomy not resolved in western North Atlantic.
- Superficially-similar Zoarcidae are oviparous (European species are viviparous), the larvae hatching at 30+ mm; vertebral numbers are high (i.e. 131–144).



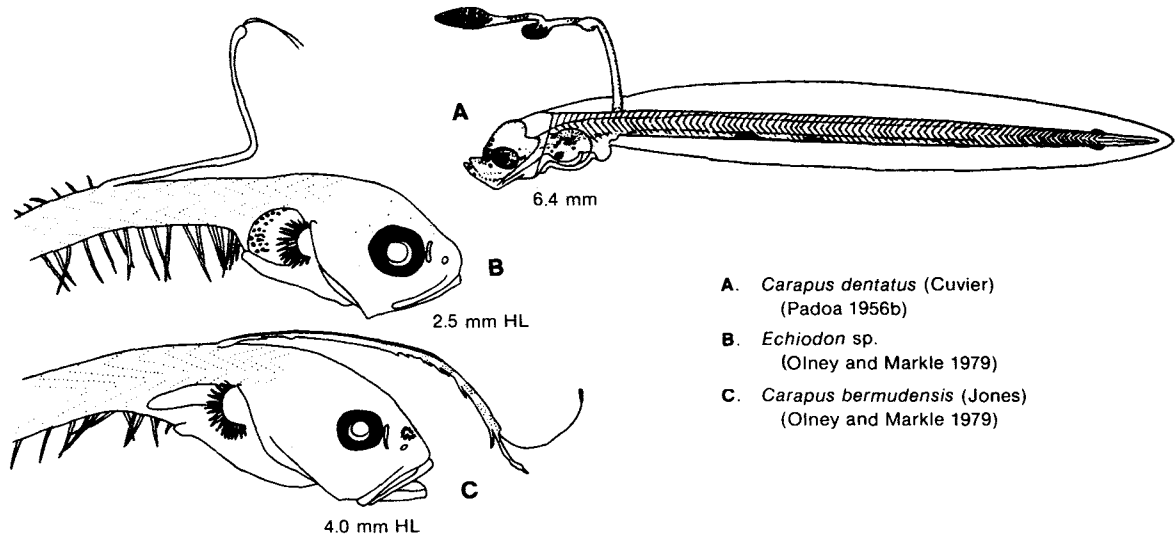
Ophidion vassali (Risso)
(Padoa 1956c)

(eastern Atlantic material)

Ref. — Cohen and Nielsen 1978.

Carapidae

- Body elongate and tapered, with very short preanus length; 100+ myomeres.
- Long filamentous structure anterior to dorsal fin; location of attachment varies among species.
- Long dorsal and anal fins with high numbers of rays; anal rays longer than dorsal rays; no pelvic fins.
- Air bladder conspicuous in larvae; pigment sparse.



A. *Carapus dentatus* (Cuvier)
(Padoa 1956b)

B. *Echiodon* sp.
(Olney and Markle 1979)

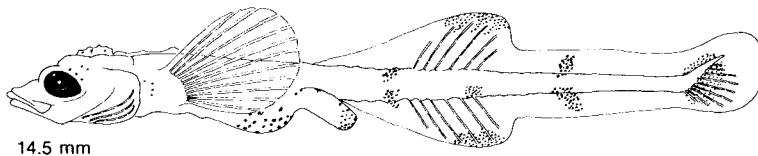
C. *Carapus bermudensis* (Jones)
(Olney and Markle 1979)

A (eastern Atlantic specimen)

Ref. — Sparta 1926; Arnold 1956; Strasburg 1961, 1965; Robertson 1975; Cohen and Nielsen 1978.

MISCELLANEOUS**Other Larvae****Agonidae**

- *Aspidophoroides monopterygius* (Bloch) ranges south of Scotian Shelf.
- Body elongate and shallow; preanus length <50% SL; anus moves anteriorly with development.
- Characteristic constriction in gut.
- One or 2 dorsal fins with few rays (2 fins in *Agonus*, 1 in *Aspidophoroides*).
- Dorsal and anal fins directly opposite each other (or dorsal slightly posterior to anal in some species).
- Large fan-shaped pectoral fin.
- Spinous scales develop on body and spiny crest on head.
- Bands of pigment cross body and enter onto fins.



14.5 mm

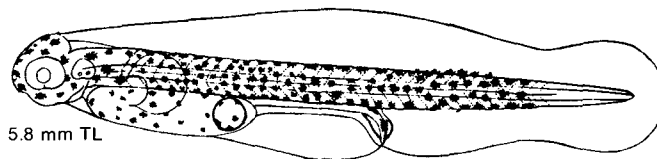
(Barents Sea specimen)

Aspidophoroides olriki Lütken
(Rass 1949) (redrawn)

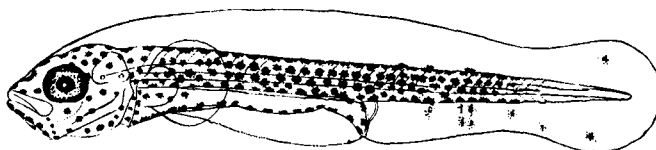
Ref. — Steenstrup and Lütken 1862; Ehrenbaum 1905; Schmidt 1908; Jensen 1942; Dunbar 1947; Leim and Scott 1966; Russell 1976.

Coryphaenidae

- Most collections from the Gulf Stream.
- Eye large, forehead blunt, preanus length >50% TL.
- Head spines develop after 10 mm SL; sphenotic, supratemporal, preopercle (in 2 groups), supraorbital and at angle of lower jaw.
- Scattered dark pigment spots cover entire head and body (except peduncle area) in early larvae.
- Pigment pattern differs between 2 species in later larvae:
 - *C. hippurus*: alternating light and dark bands cross body and fins, pelvic fin darkly pigmented, caudal fin dark except for white tips of lobes.
 - *C. equiselis*: body uniformly dark, pelvic fin unpigmented, entire posterior margin of caudal fin white. (Some specimens barred on body, especially over anal fin.)
- Vertebral counts differ in the 2 species.
 - *C. hippurus*: 13-14+17-18 = 30-31
 - *C. equiselis*: 13-14+19-21 = 33-34



5.8 mm TL



5.7 mm TL

(Pacific material)

Coryphaena hippurus Linnaeus
(Mito 1960)

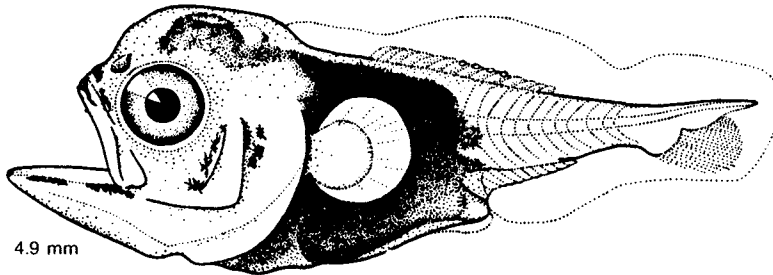
Ref. — Gibbs and Collette 1959; Collette *et al.* 1969; Potthoff 1971, 1980.

Other Larvae

MISCELLANEOUS

Uranoscopidae

- Body deep anterior to anus; mouth large.
- Dense pigment between head and anus.
- Eyes migrate dorsally at 20+ mm, mouth becomes more vertical.
- Rounded protuberances project from temporal regions of head.
- Myomeres: 25.

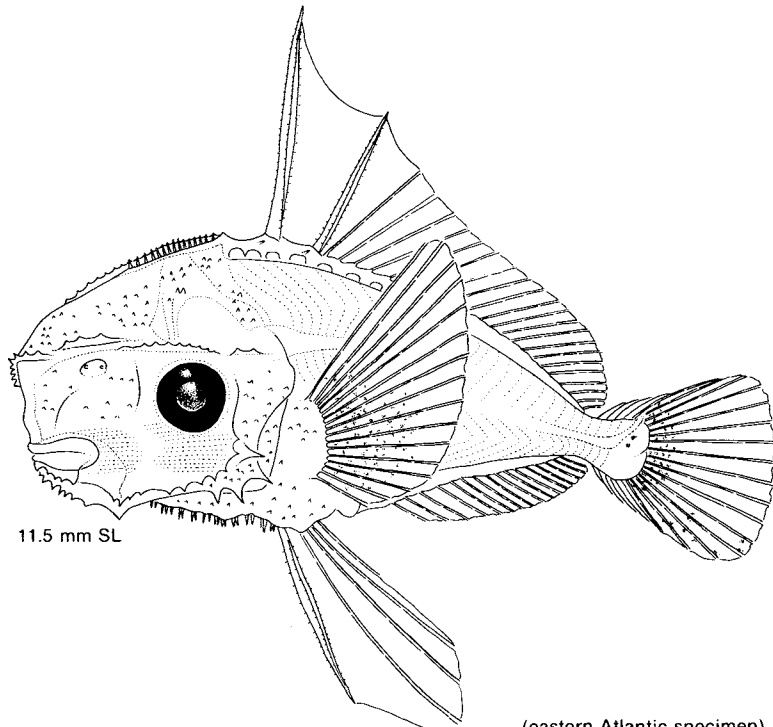


Astroscopus guttatus Abbott
(Pearson 1941)

Ref. — Berry and Anderson 1961.

Luvaridae

- Rare oceanic scombroid (?); ordinal position in doubt.
- Head large with flat area between eye and small terminal mouth.
- Spines and ridges on head and preopercle.
- Serrated dorsal and pelvic spines.
- Myomeres: 22.



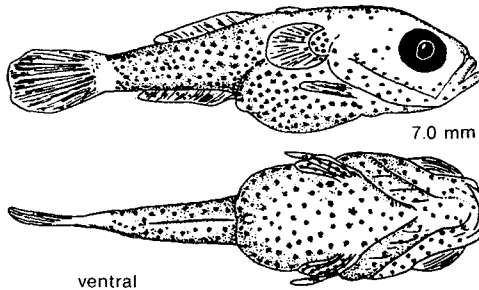
Luvarus imperialis Rafinesque
(Blache 1964) (redrawn)

(eastern Atlantic specimen)

Ref. — Roule 1924; deGaetani 1930.

MISCELLANEOUS**Other Larvae****Callionymidae**

- Body tadpole-shaped, with small terminal mouth.
- Well-developed, branched preopercle spines.
- Short-based second dorsal and anal fins opposite each other; few rays.
- Notochord tip remains in caudal finfold after flexion.
- Postanal pigment usually heavy.
- Early larvae may resemble *Menticirrhus* sp. (Sciaenidae) larvae, but mouth larger in sciaenids and early callionymids very small (~1 mm) in total length.
- *Callionymus bairdi* and *C. pauciradiatus* may occur near Cape Hatteras or Scotian Shelf.



7.0 mm

Callionymus maculatus Rafinesque-Schmaltz
(Fage 1918)

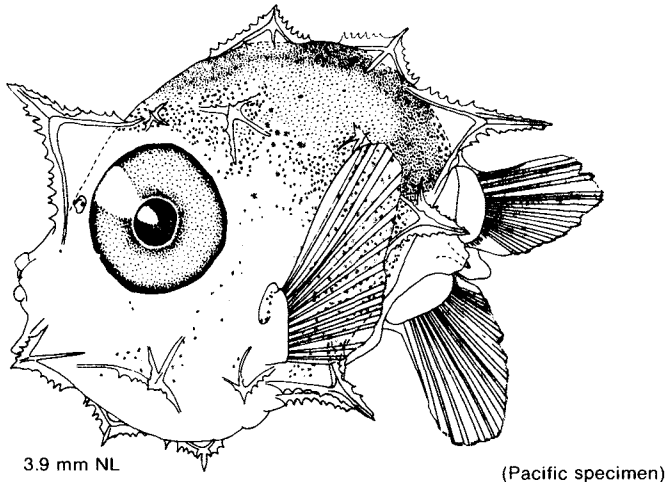
ventral

(eastern Atlantic material)

Ref. — Ehrenbaum 1905; Padoa 1956a; Davis 1966; Demir 1976; Markle *et al.* 1980; J. E. Olney and G. R. Sedberry (pers. comm., 1982); E. D. Houde (pers. comm., 1982).

Molidae

- Body inflated, with depth subequal to length in early stages.
- Series of spines form early over head and body (spines decrease in size after formation of dorsal and anal fin rays).
- Pectoral fin rays first to form; caudal fin rays last to form.
- Unique caudal fin structure, the "clavus".
- Low myomere number (8+11 = 19 in *Ranzania laevis*)



3.9 mm NL

(Pacific specimen)

Ranzania laevis (Pennant)
(Leis 1977)

Note: See Leis (1978) for description of larval *Diodon holocanthus*, in which the body is covered with small spines, not arranged in serrated ridges as in molids.

Ref. — Schmidt 1921a, 1921b; Tortonese 1956.