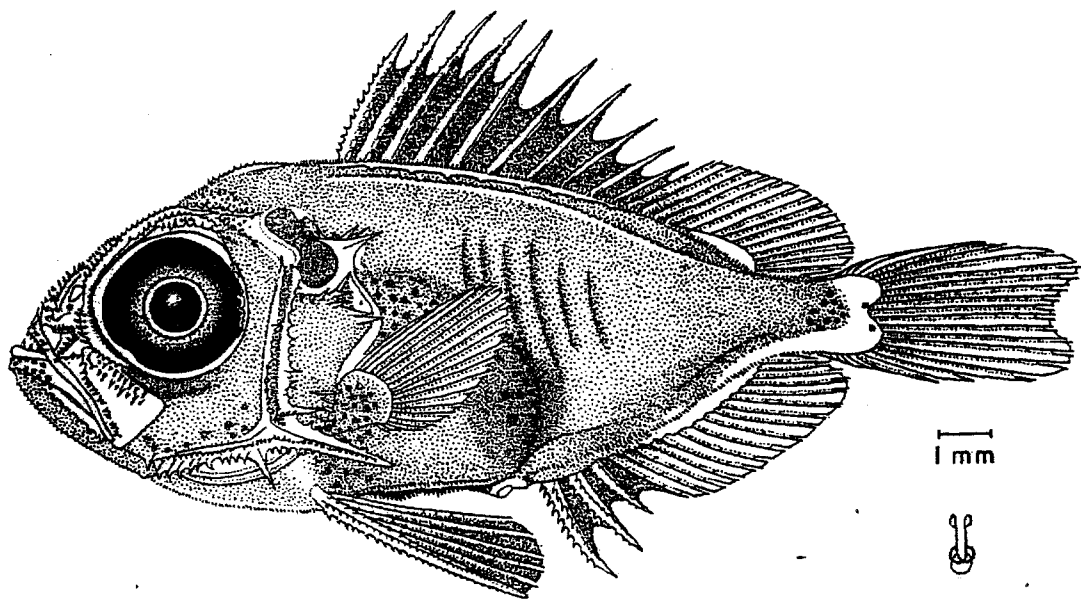




PRELIMINARY GUIDE TO THE IDENTIFICATION OF THE EARLY LIFE HISTORY STAGES OF
PRIACANTHID FISHES OF THE WESTERN CENTRAL ATLANTIC

BY

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The family Priacanthidae contains four genera and four species that occur in the western central North Atlantic (Starnes, 1988). *Pristigenys alta* is distributed in the Caribbean, Gulf of Mexico and along the east coast of North America. Although juveniles have been reported from as far north as southern New England waters, adults are not reported north of Cape Hatteras, NC. *Priacanthus arenatus* is distributed in tropical and tropically influenced areas of the western central North Atlantic in insular and continental shelf waters. Adult *P. arenatus* are distributed north to North Carolina and Bermuda, juveniles have been collected as far north as Nova Scotia. *Cookeolus japonicus* and *Heteropriacanthus cruentatus* are circumglobally distributed species and are both common in insular habitats. In the western central North Atlantic, *C. japonicus* ranges from New Jersey to Argentina; *H. cruentatus* from New Jersey and northern Gulf of Mexico to southern Brazil (Starnes, 1988).

Adult priacanthids are small to medium size fishes that are characterized by large eyes, which have a brilliant reflective layer, extremely rough scales and bright red live coloration. They are epibenthic predatory fishes that inhabit primarily rocky or coral habitats in depths from 5 to at least 400 m (Robins and Ray, 1986; Starnes, 1988).

Priacanthids in the western central North Atlantic appear to spawn in summer and fall; *P. alta*: late June-mid September; *C. japonicus*: May-September in the Caribbean; *H. cruentatus*: late spring-early summer in the Caribbean; and *P. arenatus*: fall in the Caribbean. Priacanthid eggs are pelagic, but egg size and size at hatching are unknown. Flexion occurs at 4-5 mm NL and the dorsal and anal rays are completed at approximately 7 mm SL. Larval priacanthids have a large head that has well developed spination consisting of a series of parallel serrated ridges on the dorsal surface of the frontals, and a large vaulted, serrated crest that is well developed in preflexion larvae soon after hatching. Other head spination includes serrate

preopercle marginal spines, opercle, subopercle, interopercle, tabular, posttemporal, supracleithrum, lacrimal, circumorbital, nasal, dentary and branchiostegal spines. Spine lengths attain their greatest relative size during the preflexion stage and the diagnostic supraoccipital crest and spine disappears in the pelagic juvenile stage (approximately 30 mm TL). Priacanthid larvae are heavily pigmented in the head and gut region and with development on the lateral surfaces of the body. Priacanthids have a pelagic juvenile stage that is usually barred and mottled and undergoes considerable change in appearance during settlement to their demersal habitat (Caldwell, 1962a,b; Johnson, 1984; Starnes, 1988; Watson, 1996).

Larval priacanthids are distinctive in both pigmentation and spination and are not likely to be confused with any other larvae in the western central North Atlantic. They may superficially resemble holocentrids or scombroids, which exhibit a supraoccipital crest and spine, but if confused they can be separated from these taxa by myomere counts (scombroids and holocentrids have 26 vertebrae, priacanthids have 23). Furthermore larval holocentrids attain a characteristic rostral spine that is apparent at approximately 2.8 mm TL (Keene and Tighe, 1984).

Descriptions of *Pristigenys alta* are available (Caldwell 1962a), but illustrations were probably developed from faded specimens and were not included here. The only larval priacanthids identified from North Carolina waters (from meristic characters) were *P. alta* (Powell and Robbins 1998). Although Powell and Robbins were unable to confirm the identification of larvae that had not developed meristic characters, it is likely that the small larvae were dominated by *P. alta*. Observations (A. B. Powell) indicate these larvae resemble *P. serrula* (Watson 1996). I have included illustrations of the four species, but it is not feasible to comment on specific identifications until size series become available for each (see Figure Priacanthidae 1).

Table Priacanthidae 1. Meristic characters for the priacanthid species that occur in the western central North Atlantic. All species have 10+13 vertebrae, 8+8 principal fin caudal rays, I,5 pelvic fin rays, and 6 branchiostegal rays. Data are from Watson (1996), Caldwell (1962b) and Starnes (1988).

Species	Fin Rays			
	Dorsal	Anal	Pectoral	Gill Rakers
<i>Cookeolus japonicus</i>	X,13 (12-14)	III,13 (12-14)	18 (17-19)	5-8+17-20=23-27
<i>Heteropriacanthus cruentatus</i>	X,13 (12-13)	III,14 (13-14)	18 (18-19)	4-6+16-20=20-25
<i>Priacanthus arenatus</i>	X (XI),14 (13-15)	III,15 (14-16)	18 (17-19)	6-8+21-26=27-33
<i>Pristigenys alta</i>	X,11 (10-12)	III,10 (9-11)	17-18 (16-19)	6-9+17-21=23-30

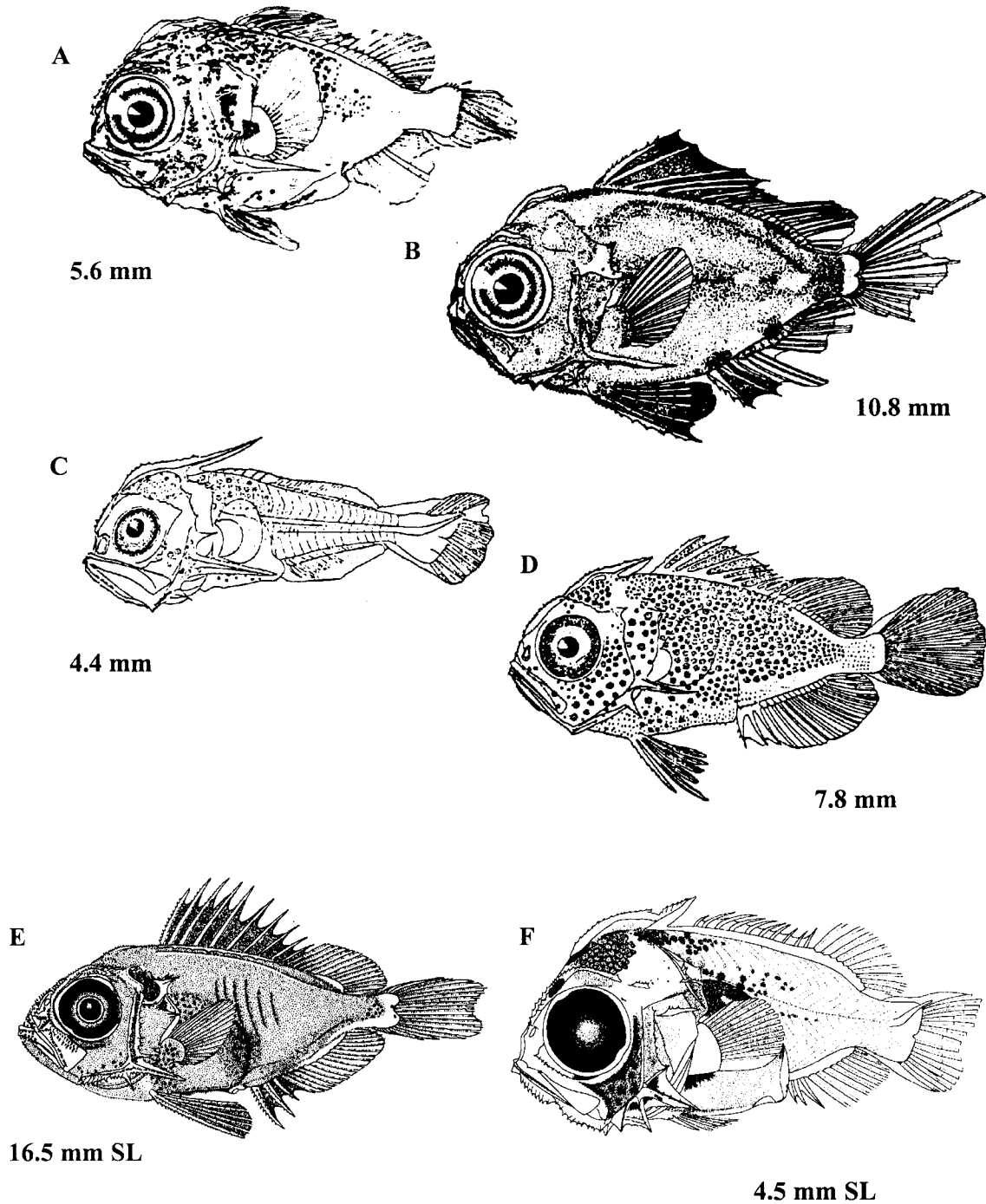


Figure Priacanthidae 1. A) *Cookeolus japonicus* (top) posiflexion larvae, 5.6 mm, B) 10.8 mm; C) *Heteropriacanthus cruentatus* (middle) flexion larvae, 4.4 mm and D) postflexion larvae, 7.8 mm (Kinoshita, 1988; in Watson, 1996); E) *Priacanthus arenatus* (bottom) posiflexion larvae, 16.5 mm (original illustration by C. Ulanoff); and F) *Pristigenys alta* postflexion larvae, 4.3 mm (original illustration by J. Javech)