

*Cephalopholis aitha* Randall and Heemstra, 1991

Fig. 69; Pl. ID

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*Cephalopholis aitha* Randall and Heemstra, 1991:29, pl. 1c, figs 5-6 (type locality: Nagada Harbor, Madang, Papua New Guinea).

**Synonyms:** None.

**FAO Names:** En - Rusty hind; Fr - Vielle rouillé; Sp - Cherna herrumbrosa.

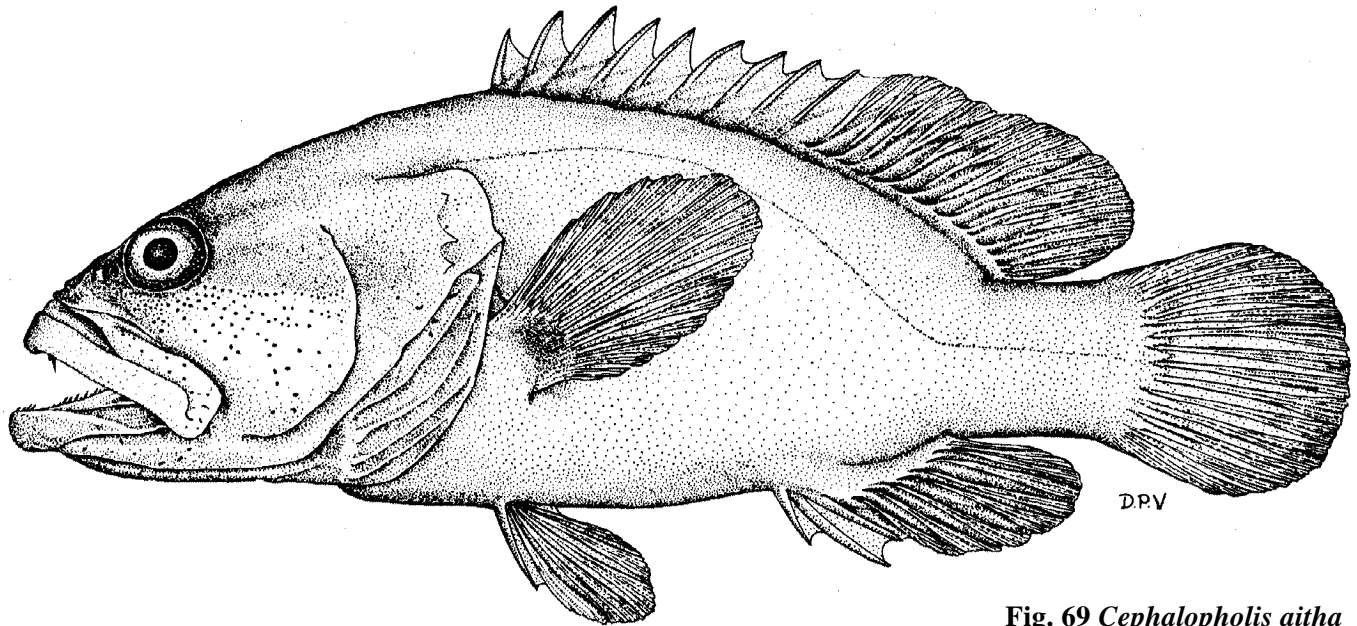


Fig. 69 *Cephalopholis aitha*  
(125 mm standard length)

**Diagnostic Features:** Body depth contained 2.5 to 2.9 times in standard length. Head length contained 2.1 to 2.3 times in standard length; preopercle rounded, the posterior edge finely serrate, the lower edge fleshy; upper edge of operculum very convex; maxilla extends past eye; teeth noticeably large. Gill rakers 8 to 9 on upper limb and 16 to 19 on lower limb. Dorsal fin with IX spines and 14 rays; anal fin with III spines and 8 rays; pectoral-fin rays 15 or 16; pelvic-fin length contained 2.3 to 2.45 times in head length. Midlateral-body scales ctenoid; lateral-line scales 46 to 49; lateral-scale series 82 to 99. **Colour:** Reddish, the edges of dorsal body scales dark brown; snout dark brown; postorbital head with pale blue network; pale blue line along rear edge of orbit; upper jaw and cheeks with scattered pale blue dots and short lines; fins reddish; margin of soft-dorsal, anal, and caudal fins pale bluish.

**Geographic Distribution:** Papua New Guinea, Indonesia (Sulawesi, Flores), and the Philippines (Fig. 70).

**Habitat and Biology:** *C. aitha* has been found in protected or silty reef areas at depths of 5 to 33 m.

**Size:** Attains 14 cm standard length.

**Interest to Fisheries:** None.

**Local Names:**

**Literature:** Randall and Heemstra (1991).

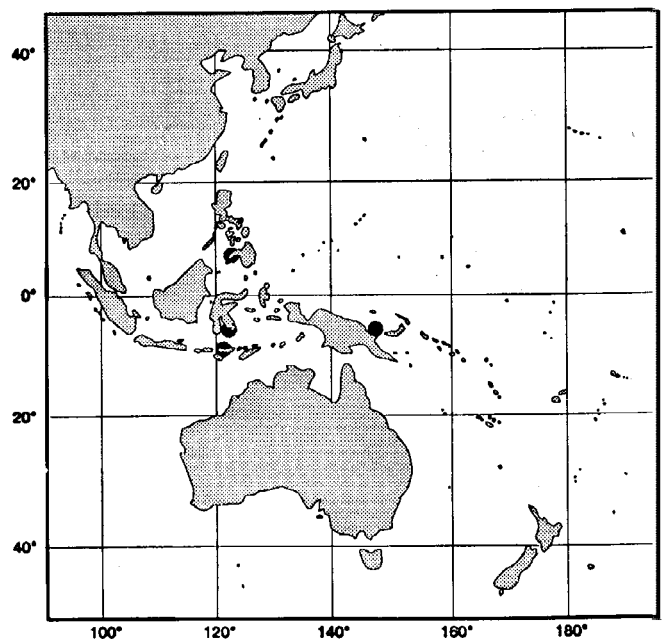


Fig. 70

*Cephalopholis argus* Bloch and Schneider, 1801

Fig. 71; Pl. IE

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*Cephalopholis argus* Bloch and Schneider, 1801:311, pt. 61 (type locality: East Indies).

**Synonyms:** *Bodianus guttatus* Bloch, 1790:36, pl. 224 (type locality: "Japan"; preoccupied in *Epinephelus* by *Perca guttata* Linnaeus, 1758; placed on Official List of Rejected and Invalid Specific Names in Zoology [International Commission on Zoological Nomenclature, 1987, Opinion 14391]). *Bodianus jacob-evertsen* Lacepède, 1802:296 (in part). *Serranus myriaster* Valenciennes in Cuv. and Val., 1828:365 (type locality: Bora Bora). ?*Serranus immunerur* Thiollière, 1857:144 (type locality: Woodlark Island).

**FAO Names:** En - Peacock hind; Fr - Vielle la pruda; Sp - Cherna pavo real.

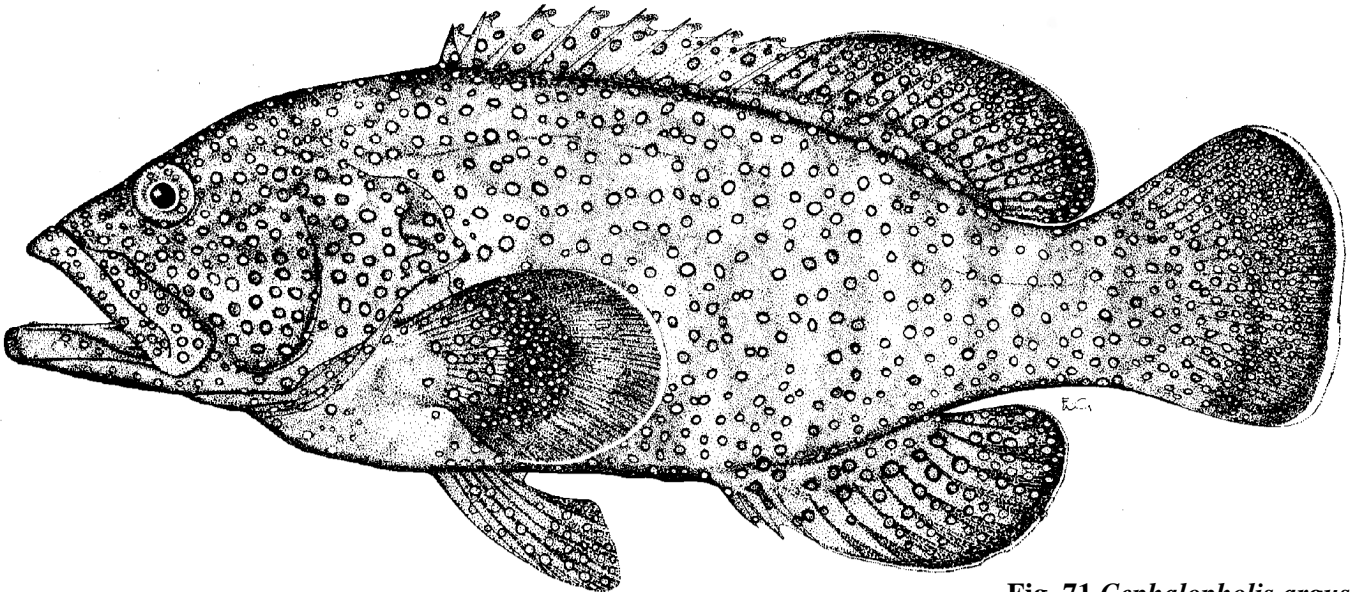


Fig. 71 *Cephalopholis argus*  
(216 mm standard length)

**Diagnostic Features:** Body depth distinctly less than head length, body depth contained 2.7 to 3.2 times in standard length (for fish 10 to 40 cm standard length). Head length contained 2.4 to 2.7 times in standard length: eye small, its diameter distinctly less than snout length; interorbital area flat to slightly convex; preopercle rounded, finely serrate in young, virtually smooth in large adults, the lower edge fleshy; subopercle and interopercle smooth, maxilla scaly, reaching well past eye. Gill rakers 9 to 11 on upper limb, 17 to 19 on lower limb, the rudimentary rakers on lower limb difficult to distinguish from intercalated bony plates. Dorsal fin with IX spines and 15 to 17 rays, the membranes indented between the spines; anal fin with III spines and 9 rays; pectoral-fin rays 16 to 18; pectoral fins clearly longer than pelvic fins, pectoral-fin length contained 1.4 to 2.0 times in head length; pelvic fins not reaching anus, their length contained 1.9 to 2.4 times in head length; caudal fin well rounded. Lateral-body scales ctenoid, with a few auxiliary scales in adults; lateral-line scales 46 to 51; lateral-scale series 95 to 110. **Colour:** Dark brown, covered with small black-edged blue ocelli; often with 5 or 6 pale bars on rear part of body and a large pale area over the chest; posterior margin of median fins usually with a narrow white edge; distal part of pectoral fins sometimes maroon brown; triangular membranes at tips of dorsal-fin spines orange-gold.

**Geographical Distribution:** *C. argus* is the most widely distributed of the groupers, occurring from the Red Sea to South Africa and east to French Polynesia and the Pitcairn group, including northern Australia, Lord Howe Island, and Japan. Recently introduced to the Hawaiian Islands (Fig. 72).

**Habitat and Biology:** A common tropical species found in a variety of coral reef habitats from tide pools to depths of at least 40 m. In the Gulf of Aqaba, *C. argus* is found in social units comprising up to

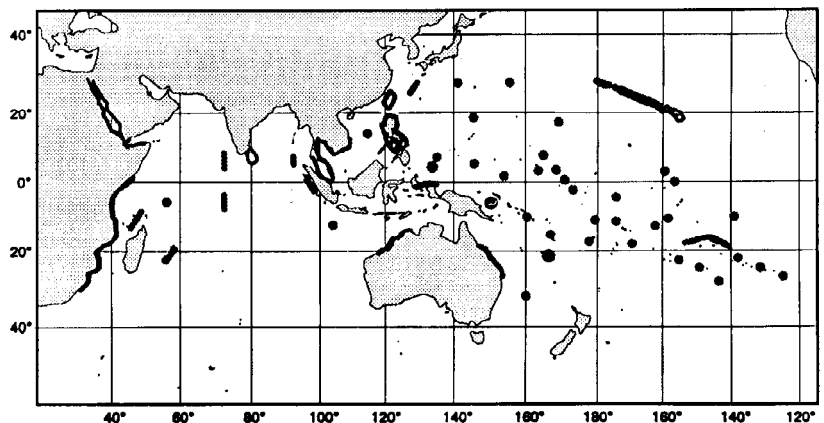


Fig. 72

12 adults, including one dominant male. Each group occupies a specific area (up to 2 000 m<sup>2</sup>) that is defended by the territorial male and subdivided into secondary territories, each inhabited by a single female (Shpigel and Fishelson, 1989b, 1991). The preferred habitat of *C. argus* is the 1 to 10 m reef zone. Primarily (75 to 95%) piscivorous, *C. argus* has been blamed for numerous cases of ciguatera in the Pacific region. In the Red Sea, Shpigel and Fishelson (1989a) found that this species feeds mainly in the early morning and late afternoon; but at Madagascar (Harmelin-Vivien and Bouchon, 1976), it appears to feed more at night.

**Size:** Maximum total length 55 cm.

**Interest to Fisheries:** This common and widespread species is important to artisanal fisheries throughout the Indo-West Pacific region. Caught with hook-and-line, spear, and with traps.

**Local Names:** COMORO ISLANDS: Shenbandro; INDIA: Balufana (Lakshadweep Islands); JAPAN: Aonome-hata; KENYA: Chewa (Swahili); MADAGASCAR: Alovo; MAURITIUS: Vielle cuisnier; PALAU: Mengardelucheb, Mengardeluu, Mardelucheb; SEYCHELLES: Vielle cecille; SINGAPORE: Kerapu bunga; SOMALIA: Summan, Mushenzi; TAHITI: Roi; TANZANIA: Chewa (Swahili).

**Literature:** Randall and Brock (1960); Morgans (1982); Randall and Ben-Tuvia (1983); Heemstra and Randall (1984, 1986); Myers (1989); Randall and Heemstra (1991).

**Remarks:** *C. argus* has been confused with *C. cyanostigma*, which has a generally similar colour pattern of small blue ocelli on a dark brown or reddish background. *C. cyanostigma* differs in having the pectoral fins yellow-orange at least distally, with a black margin and blue spots only proximally; also, the body often has pale spots containing 1 to 3 small blue spots and 5 or 6 chain-like dark bars. In addition to these differences in colour pattern, *C. cyanostigma* has only 8 anal-fin rays and fewer gill rakers (7 to 9 on upper limb and 14 to 18 on lower limb).

*Cephalopholis aurantia* (Valenciennes, 1828)

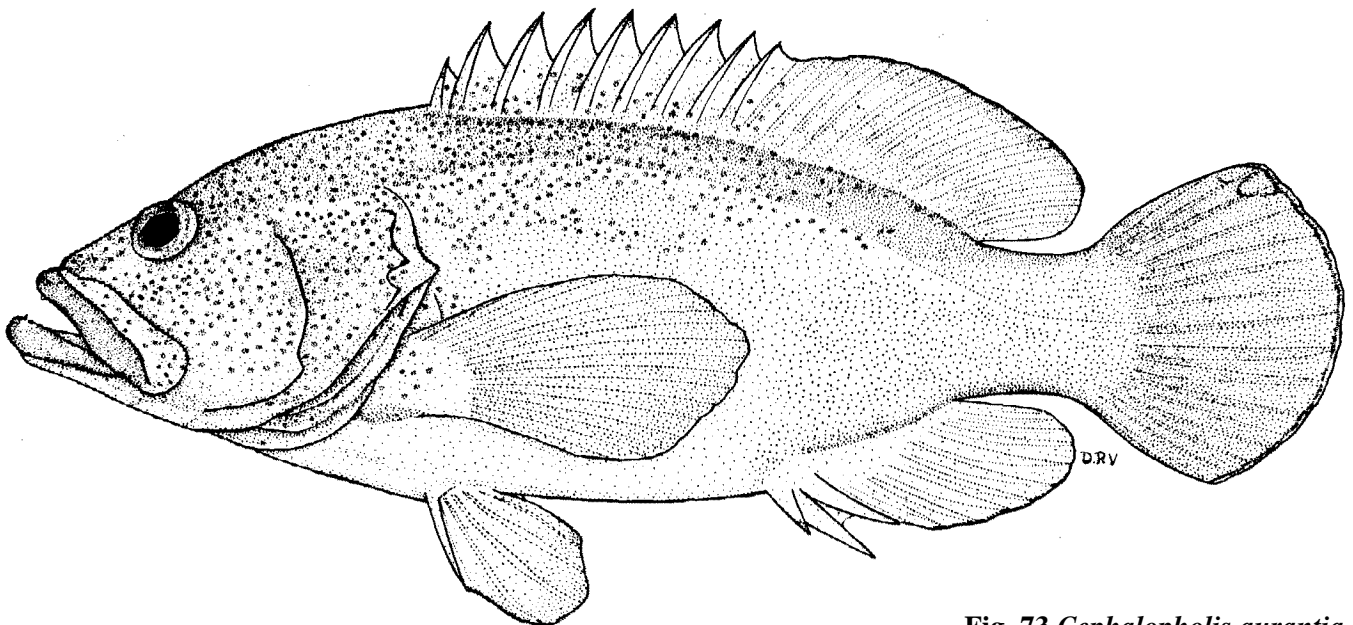
Fig. 73; Pl. IF

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*Serranus aurantius* Valenciennes in Cuv. and Val., 1828:305 (type locality: Seychelles).

**Synonyms:** *Serranus analis* Valenciennes in Cuv. and Val., 1828:307 (type locality: New Ireland). ?*Serranus rufus* Hombron and Jacquinet in Jacquinet and Guichenot, 1853:35, pl. 1, fig. 4 (locality unknown). *Epinephelus miltostigma* Bleeker, 1874:43 (type locality: Amboina [Ambon, Indonesia]). *Bodianus indelebilis* Fowler, 1904:521, Pl. 12, lower fig. (type locality: Sumatra). *Cephalopholis obtusauris* Evermann and Seale, 1907a:77, fig. 12 (type locality: Bacon, Sorsogon, Philippines).

**FAO Names:** **En** - Golden hind; **Fr** - Vielle dorée; **Sp** - Cherna dorada.



**Fig. 73** *Cephalopholis aurantia*  
(225 mm standard length)

**Diagnostic Features:** Body depth less than head length, depth contained 2.6 to 2.9 times in standard length (for fish 12 to 22 cm standard length). Head length contained 2.4 to 2.6 times in standard length; interorbital area flat; preopercle rounded, finely serrate, the lower edge fleshy; subopercle and interopercle serrate; maxilla scaly, reaching to or beyond vertical at rear edge of eye. Gill rakers 7 to 9 on upper limb, 14 to 17 on lower limb. Dorsal fin with IX spines and 14 to 16 rays, the membranes distinctly incised between the spines; anal fin with III spines and 9 (rarely 8) soft rays; pectoral-fin rays 17 to 19; pectoral fins distinctly longer than pelvic fins, pectoral-fin length contained 1.3 to 1.5 times in head length; pelvic fins reach to or slightly short of anus, their length contained 1.6 to 2.0 times in head length; caudal fin well rounded. Lateral-body scales ctenoid; lateral-line scales 47 to 53; lateral-scale series 94 to 121, **Colour:** Pale orange-red to orange-yellow or golden with red or yellow dots on head, anterodorsally on body, and on base of dorsal fin. Posterior margin of caudal fin with a pale blue edge and black submarginal line; posterior parts of dorsal and anal fins often with a narrow pale blue edge.

**Geographical Distribution:**

South Africa and islands of the western Indian Ocean to the central Pacific and Japan (Fig. 74). Except for a single specimen caught off the coast of Natal, South Africa, we know of no confirmed records from continental localities. The report of *C. aurantia* from east Africa (Morgans, 1982) is based on misidentifications of *C. nigripinnis*.

**Habitat and Biology:** *C. aurantia* is a deep-water grouper usually caught in depths over 100 m. Specimens are rare in museums.

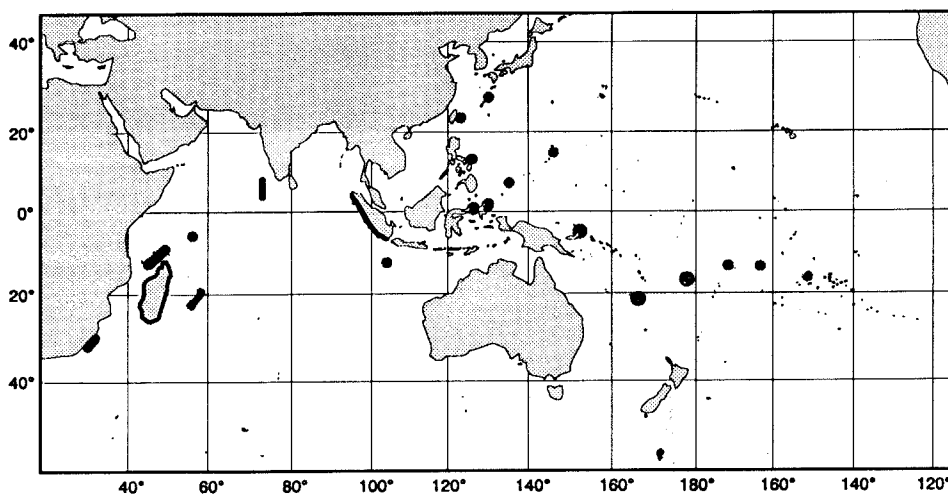


Fig. 74

**Site:** Maximum total length probably about 30 cm; the maximum size of 60 cm given by Heemstra and Randall (1984, 1986) is probably an exaggeration.

**Interest to Fisheries:** Because of its small size and occurrence in moderately deep water, *C. aurantia* is of little commercial importance as a food fish.

**Local Names:** JAPAN: Hana-hata; MAURITIUS: Mama rouge; SEYCHELLES: Maconde.

**Literature:** Heemstra and Randall (1984, 1986); Randall and Heemstra (1991).

**Remarks:** *C. aurantia* is similar to *C. spiloparaea*, which differs in colour (generally pale reddish, mottled and blotched with dark red or brownish red) and usually has shorter pelvic fins (not reaching anus, their length 1.9 to 2.2 times in head length). *C. sonnerati* differs in colour pattern and in having a greater body depth (2.3 to 2.7 times in standard length) and more numerous scales (lateral-line scales 66 to 80).

Randall (1986, 1987a) recognized *C. analis* of the central and western Pacific as distinct from the closely related *C. aurantia* of the western Indian Ocean. Indian Ocean fish have a black submarginal line in the caudal fin and were thought to have more gill rakers and more rounded dorsal and anal fins than specimens from the Pacific. Examination of additional specimens, including a series of 4 fish from Christmas Island in the eastern Indian Ocean, has shown that the number of gill rakers and the shape of the dorsal and anal fins are not significantly different in these two populations. In view of the great similarity in the morphology and colour patterns of fish from the Indian and Pacific Oceans, Randall and Heemstra (1991) synonymized these two nominal species.

The account of "*Cephalopholis analis*" by Heemstra and Randall (1984) in the *FAO Species Identification Sheets for the Western Indian Ocean* (Fischer and Bianchi, 1984) is a misidentification of *C. spiloparaea*.

*Cephalopholis boenak* (Bloch, 1790)

Fig. 75; Pl. IIA

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*Bodianus boenak* Bloch, 1790:43, pl. 226 (type locality: "Japan" [probably Java, as indicated by the native name that Bloch used for this species]; spelt "*boenack*" on the plate).

**Synonyms:** *Serranus pachycentron* Valenciennes in Cuv. and Val., 1828:295 (locality unknown). ?*Serranus boelang* Valenciennes in Cuv. and Val., 1828:308 (type locality: East Indies). *Serranus stigmapomus* Richardson, 1846:232 (type locality: Canton, China), *Serranus nigrofasciatus* Hombron and Jacquinot in Jacquinot and Guichenot, 1853:36, pl. 2, fig. 1 (locality unknown).

**FAO Names:** En - Chocolate hind; Fr - Vielle chocolat; Sp - Cherna chocolate.

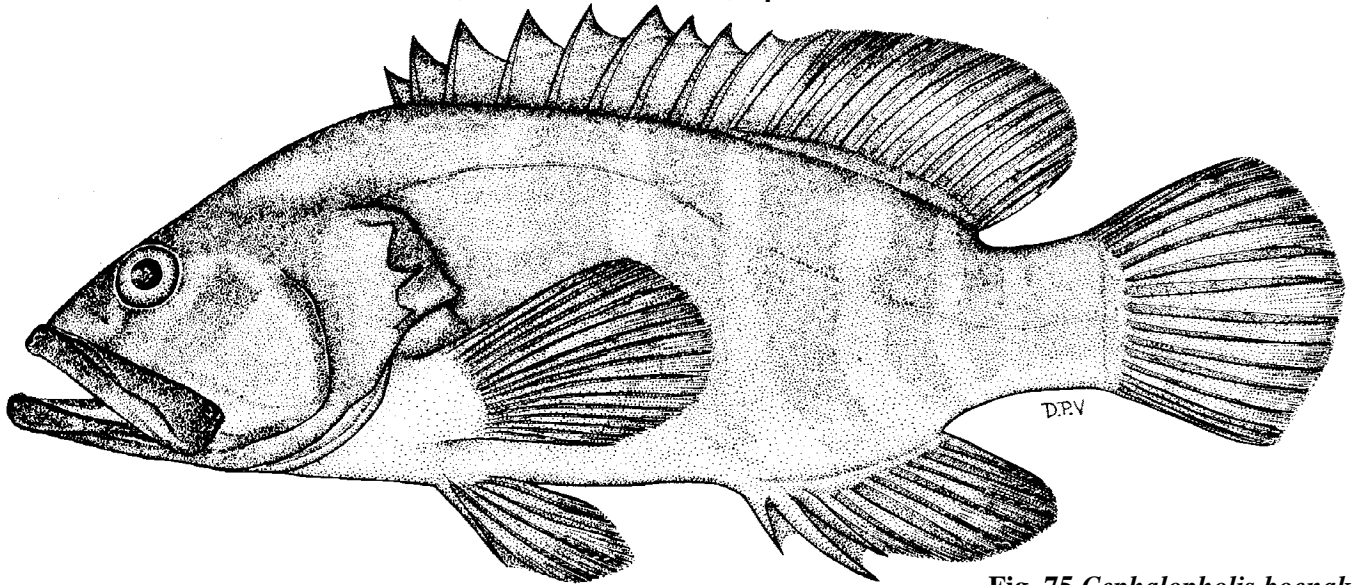


Fig. 75 *Cephalopholis boenak*  
(204 mm standard length)

**Diagnostic Features:** Body depth less than head length, body depth contained 2.6 to 3.0 times in standard length (for fish 10 to 19 cm standard length). Head length contained 2.3 to 2.7 times in standard length; preorbital depth usually less than half maxilla width, 2.5 to 3.6% of standard length; interorbital area flat; preopercle rounded, very finely serrate; no enlarged spines at angle, the lower edge fleshy; subopercle and interopercle weakly serrate; maxilla naked, reaching about to vertical at rear edge of eye. Gill rakers 7 to 9 on upper limb, 14 to 17 on lower limb. Dorsal fin with IX spines and 15 to 17 rays; the membranes indented between the spines; anal fin with III spines and 8 rays, the second spine 15 to 18% of standard length, reaching past tip of third spine; pectoral-fin rays 16 or 17; pectoral fins longer than pelvic fins, pectoral-fin length contained 1.3 to 1.6 times in head length; pelvic fins usually reaching to or beyond anus, pelvic-fin length contained 1.7 to 2.2 times in head length; caudal fin well rounded. Body scales ctenoid, without auxiliary scales; lateral-line scales 46 to 51; lateral-scale series 86 to 100. **Colour:** Dark brown (occasionally dark reddish brown), usually with 7 or 8 dark bars on body; some fish with dark brown bands radiating from eye; black spot between upper and middle opercular spines; soft dorsal, anal, and caudal fins darker distally, with a pale bluish line on the edge (except central part of caudal fin).

**Geographical Distribution:** *C. boenak* is primarily continental in its distribution, occurring from Kenya to southern Mozambique and eastward to the western Pacific (Ryukyu Islands, Taiwan, China, Philippines, Indonesia, Papua New Guinea, New Caledonia, and eastern Australia) (Fig. 76). It has not been reported from oceanic islands in the Indian Ocean, except for Aldabra, Madagascar, and the Comoro, Andaman, and Lakshadweep islands. The record from the Seychelles (Smith and Smith, 1963) is apparently erroneous, the illustrated fish being from Delagoa Bay (Mozambique). It is not known from the Red Sea, Persian Gulf, nor the islands of Micronesia or Polynesia, except for Palau.

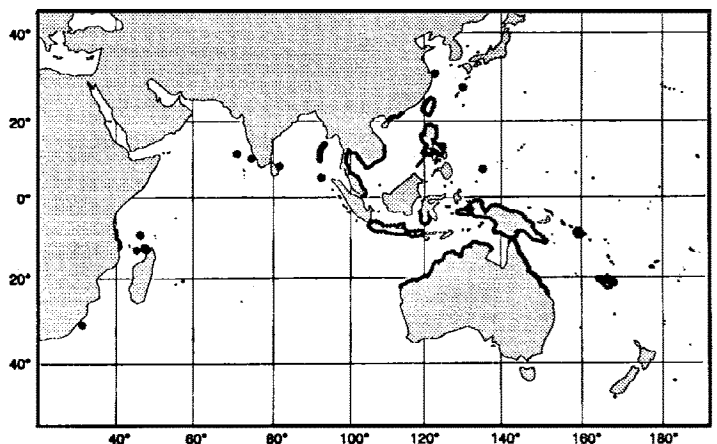


Fig. 76

**Habitat and Biology:** *C. boenak* is usually found in 4 to 30 m on silty dead reefs in protected waters; also taken in trawls to depths of 64 m. According to Myers (1989), it feeds primarily on crustaceans. Donaldson (1989) observed courtship and pair spawning at Papua New Guinea.

**Size:** Maximum total length 26 cm.

**Interest to Fisheries:** *C. boenak* is too small to be of commercial importance. Caught with hook-and-line, traps, and in trawls.

**Local Names:** HONG KONG: Woo-size, Brown coral cod; SINGAPORE: Shi-hou.

**Literature:** Chan (1968); Morgans (1982); Heemstra and Randall (1984, 1986).

**Remarks:** Before 1984, most authors referred to this species as *C. pachycentron*, and the name *C. boenak* (usually spelt *boenack*) was erroneously applied to the bluelined hind (*C. formosa*). The latter differs in colour pattern and in having a shorter second anal-fin spine (12.0 to 14.6% of standard length, not reaching past tip of third spine) and the preorbital depth is more than half of the maxilla width. The holotype of *Serranus boelang* Valenciennes, 1828 is not (as listed by Bauchot et al., 1984) in the Muséum National d'Histoire Naturelle in Paris; it is a dry stuffed specimen, 142 mm standard length (RMNH 120) in the Rijksmuseum van Natuurlijke Historie, Leiden and appears to be a specimen of *C. boenak*.

*Cephalopholis cruentata* (Lacepède, 1802)

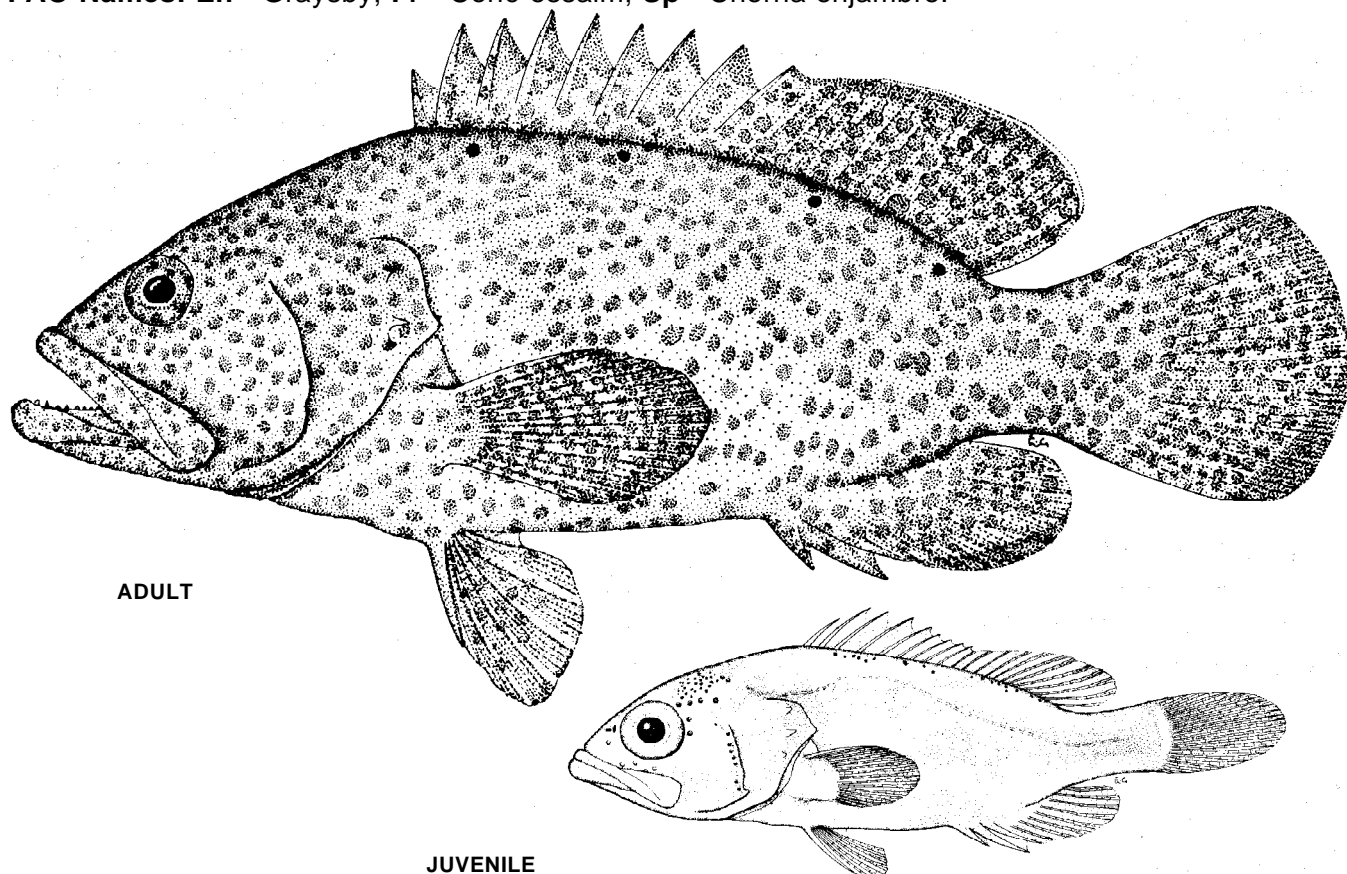
Fig. 77; Pl. IIB

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*Sparus cruentatus* Lacepède, 1802, 2:156, pl. 4, fig. 1 (based on *Perca guttata* Linnaeus [Gmelin edition]).

**Synonyms:** *Serranus coronatus* Valenciennes in Cuv. and Val., 1828:371 (substitute name for *Perca guttata* Bloch, 1792:89, pl. 312 = *Sparus cruentatus* Lacepède, 1802:157, pl. 4, fig. 1; type locality: Martinique). *Serranus nigriculus* Valenciennes in Cuv. and Val., 1828:375 (type localities: Martinique and Dominican Republic). *Serranus apiarius* Poey, 1860:143 (type locality: Cuba). *Bodianus stellatus* Blosser, 1909:297 (type locality: St. Croix). Also many references under the names *Petrometopon cruentatus* or *Epinephelus cruentatus*.

**FAO Names:** En - Graysby; Fr - Coné essaim; Sp - Cherna enjambre.



**Fig. 77** *Cephalopholis cruentata*  
(adult 200 mm standard length, juvenile 21 mm standard length)



**Diagnostic Features:** Body depth distinctly less than head length, body depth contained 2.5 to 2.9 times in standard length (for fish 13 to 26 cm standard length). Head length contained 2.4 to 2.6 times in standard length; interorbital area flat to slight convex; preopercle rounded, finely serrate, with shallow notch above the angle; nostrils small, subequal; maxilla scaly, reaching past vertical at rear edge of eye. Gill rakers 18 to 25 (total). Dorsal fin with IX spines and 13 to 15 rays, the fourth or fifth spines longest and the membrane distinctly indented between all the spines; anal fin with III spines and 8 rays; pectoral-fin rays 16; caudal fin rounded. Lateral-body scales distinctly ctenoid; lateral-line scales 47 to 51; lateral-scale series 69 to 81. **Colour:** Head, body, and fins pale grey, brown, or olive green, covered with orange-brown or reddish spots; 4 distinct spots, which can change rapidly from black to white or back again, at base of dorsal fin; a middorsal white stripe sometimes present from tip of lower jaw to nape.

**Geographical Distribution:** Caribbean, Gulf of Mexico, North Carolina to southern Florida, Bahamas and Bermuda (Fig. 78).

**Habitat and Biology:** *C. cruentata* is found in *Thalassia* beds and on coral reefs from shore to depths of 170 m. In the eastern Gulf of Mexico, it occurs on the rocky reef ledge in depths greater than 27 m. Thompson and Munro (1978) observed that graysby were more abundant in heavily fished areas than in unexploited areas and presumed that it "benefits in some way from reduced competition or predation in the exploited areas, or that its catchability is significantly less than that of other groupers." A similar increase in the population of graysby in the absence of competitors and predators occurred after the 1971 red tide killed most of the groupers on shallow-water reefs off the west coast of Florida. Before 1971, *C. cruentata*

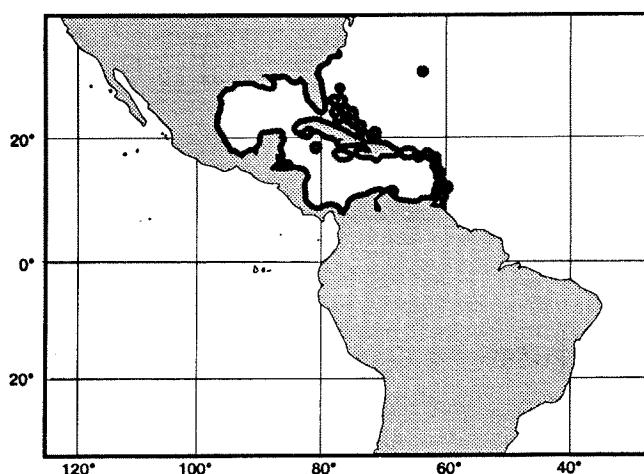


Fig. 78

was never observed or collected in less than 29 metres, but after the red tide of that year, it became common on reefs in 12 to 18 m until the summer of 1974 when it disappeared abruptly (Bullock and Smith, 1991).

Nagelkerken (1979) found that at the end of their first year; graysby were 8 cm long (standard length) and had formed 7 growth rings in their otoliths. Females mature at 16 cm (total length) and most change sex between 20 and 23 cm (ages 4 and 5), with sexual transition occurring immediately after spawning in August and September. Thompson and Munro (1978) estimated the number of eggs per spawning at 262 604 for a fish of 29 cm total length.

Graysby are small, secretive fish that usually stay near hiding places in the reef during the day. They are crepuscular predators, and adults feed mainly on fishes, with a preference for *Chromis multilineata* where this species is abundant. Graysby have also been seen following moray eels in order to capture fishes disturbed from their hiding places by the foraging eels (Dubin, 1982). After sunset a greater proportion of crustacean prey is taken because of their increased nocturnal availability. Juveniles feed more on shrimps than on fishes.

Johnson and Keener (1984) illustrated the distinctive second dorsal- and pelvic-fin spines of the larvae. Both dorsal- and pelvic-fin spines have large, widely-spaced spinelets along their entire length, and those along the proximal part of the pelvic-fin spine are distinctly bifurcate.

**Size:** Maximum total length 32 cm.

**Interest to Fisheries:** Because of its small size, the graysby is of little commercial importance, but it undoubtedly represents a significant source of protein for local people. Caught with hook-and-line and in traps.

**Local Names:** CUBA: Enjambre; VENEZUELA: Cuna cabrilla.

**Literature:** Randall (1967); Smith (1971); Thompson and Munro (1978); Nagelkerken (1979); Bullock and Smith (1991).

**Remarks:** C.L. Smith (1971) reckoned that *C. cruentata* and *C. panamensis* were geminate species that have evolved as a result of the isolation of their parent population by the emergence of the Central American Isthmus. The colour patterns of these two species are quite distinct, but morphological differences are minor. In both species, the dorsal surface of the cranium has converging transverse ridges running from the lateral