

Literature: Walford (1937).

Remarks: Rosenblatt and Zahuranec (1967) question the place of origin of the holotype: "Although the type locality of *M. xenarcha* is James Island, Galapagos Islands, the species has not been taken at the Galapagos since, despite much subsequent collecting. It may be of some significance that the only Peruvian record of *M. olfax* [otherwise known only from the Galapagos] is a specimen also taken on the Hassler Expedition. It is tempting to speculate that locality labels were somehow switched on these two specimens. However, there is nothing in the catalogues at the Museum of Comparative Zoology to confirm this speculation. Although the two are in the same bottle, each bears what appears to be an original field label indicating James island as the locality for the holotype of *M. xenarcha* and Paita, Peru as the locality for the *M. olfax*."

M. jordani differs in having a projecting bony lobe at the corner of the preopercle, fewer gill rakers (total 21 to 26), and no exserted median fin rays. *M. prionura* has more gill rakers (total 34 to 38) and the body covered with small, dark reddish brown spots. *M. rosacea* has more gill rakers (38 to 43) and no exserted fin rays.

Paranthias Guichenot, 1868

SERRAN Parant

Paranthias Guichenot, 1868:87; type species, *Serranus furcifer* Valenciennes, 1828 by monotypy.

Synonyms: *Brachyrhinus* Gill, 1863:236; type species, *Serranus creolus* Valenciennes, 1828 (= *Paranthias furcifer*) by monotypy; preoccupied by *Brachyrhinus* Latreille, 1802. *Creolus* Jordan and Gilbert, 1883:36; type species, *Serranus furcifer* Valenciennes by monotypy; listed in Table of Contents as if in Addenda, but replaced on page 973 by *Paranthias* Guichenot.

Diagnostic Features: Body oblong, fusiform, dorsal and ventral profiles almost equally curved, the depth contained 2.7 to 3.4 times in standard length, the body width contained 1.8 to 2.5 times in the depth. Head length contained 3.2 to 4.0 times in standard length; snout short, subequal to eye diameter (except in large adults); dorsal head profile convex; preorbital depth less than half eye diameter, preorbital depth contained 10 to 14 times in head length; interorbital area flat or slightly convex; preopercle subangular, with vertical limb and rear half of lower limb finely serrate; upper edge of operculum slightly convex; nostrils subequal; mouth small, the maxilla not reaching past vertical at centre of eye; no knob or step on ventral edge of maxilla; supramaxilla vestigial or absent; jaws with rudimentary canines; teeth present on palatines and in an oval patch on vomer. Dorsal fin with IX spines and 17 to 21 rays, the fin origin posterior to vertical at pectoral-fin base; the interspinous membranes slightly indented; no dorsal-fin spines or rays elongated; base of spinous dorsal-fin part shorter than base of soft-rayed part; soft dorsal-fin margin rounded; anal fin with III spines and 8 to 11 rays, the fin margin straight; pectoral fins distinctly longer than pelvic fins, pectoral-fin length contained 0.9 to 1.2 times in head length, the middle rays longest; caudal fin distinctly forked, the middle rays less than half length of upper or lower caudal lobes, with 8 branched rays and 12 or 13 procurrent rays in upper part and 7 branched rays and 11 or 12 procurrent rays in lower part. Midlateral-body scales ctenoid. Supraneural bones 2, the second about two-thirds length of first; epipleural ribs on first 9 vertebrae; dorsal and anal fins with 3 to 5 trisegmental pterygiophores at rear end of fin; rear edge of first dorsal pterygiophore not excavated for tip of third neural spine; cranium short and wide, the least interorbital width more than half width at lateral ethmoids and twice width of vomer; frontals separated anteriorly by supraethmoid; well developed median crest on frontals, continuous with supraoccipital crest, but the frontal part of crest not visible in lateral view because interorbital area is recessed (concave dorsally); parasphenoid distinctly bent upwards anteriorly.

Habitat and Biology: *Paranthias* is a unique genus of groupers that have a "small mouth [with upper jaw more protr'usile than in other groupers], small teeth, numerous [long] gill rakers, fusiform body, and deeply forked caudal fin - all representing departures from the typical grouper morphology, and all specializations for feeding in mid-water on zooplankton" (Randall, 1967). *Paranthias* feed mainly on small planktonic animals that are picked individually from the water, and their shortened snout (compared to other groupers), which facilitates close-range binocular vision, is thus another specialization for this type of plankton feeding. They are usually seen in feeding aggregations well above the reef, but they will retreat to the reef at the approach of danger. They are found in depths of 10 to 70 m.

Geographical Distribution: Tropical and subtropical waters of the Atlantic and eastern Pacific oceans: In the eastern Atlantic known only from Ascension Island and islands in the Gulf of Guinea. In the western Atlantic, *P. furcifer* is known from Bermuda, south Florida, Gulf of Mexico, Cuba, southern Bahamas, and

Caribbean to southern Brazil. In the eastern Pacific, *P. colonus* occurs from the Gulf of California to Peru, including the offshore islands (Clipperton, Galapagos, etc.).

interest to Fisheries: The species of *Paranthias* are too small to be of commercial importance as a food fish. Probably of some interest to local fisheries at islands where they are common.

Remarks: Although Smith (1971) regarded the eastern Pacific species *P. colonus* and *P. pinguis* as synonyms of the Atlantic *P. furcifer*, our data indicate that the Atlantic and Pacific populations are sufficiently distinct to be considered separate species. In his tables of meristic data, Smith gave counts for only 8 or 9 *P. furcifer* (apparently the 3 specimens from the Galapagos and 6 from Bermuda listed in his Table 2 of measurements for *P. furcifer*; and he gave no indication that he analysed meristic data from any of the numerous specimens that he listed as having examined, other than the 9 specimens mentioned above. Our counts from 10 *P. furcifer* and 112 *P. colonus* show significant differences in the mean number of dorsal- and anal-fin rays for these two species (see key below). Johnson and Keener (1984) compared the configuration of the spinlets on the elongated second dorsal- and pelvic-fin spines of the larvae of Atlantic and Pacific specimens and found notable differences that “seem to offer morphological evidence for taxonomic separation of the Atlantic and Pacific populations of *P. furcifer*.”

There are slight differences in some meristic and morphometric character&between the populations of *P. colonus* at the Galapagos, American mainland, and Clipperton Island. But, in view of the considerable overlap in the ranges of all these characters, we have decided not to recognize these populations as distinct subspecies.

Key to the Species of *Paranthias*

- 1a. Dorsal-fin rays 17 to 19 (usually 18); anal-fin rays 8 to 10 (usually 9) (Fig. 486; Plate XXIX) (Atlantic Ocean) *P. furcifer*
- 1b. Dorsal-fin rays 18 to 21 (usually 19 or 20); anal-fin rays 9 to 11 (mean 10) (Fig. 487) (Eastern Pacific Ocean) *P. colonus*

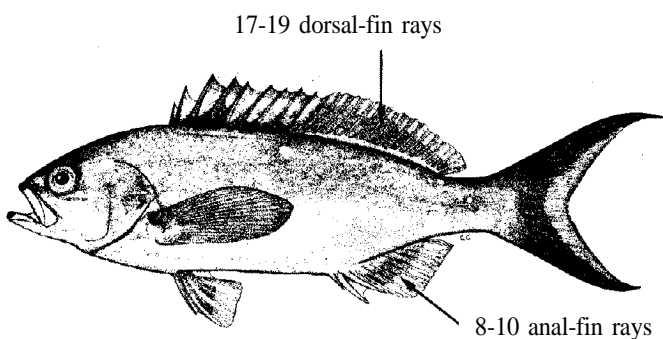


Fig. 486 *Paranthias furcifer*

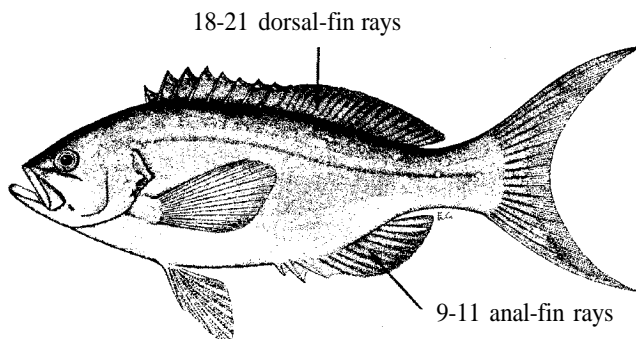


Fig. 487 *Paranthias colonus*

Paranthias colonus (Valenciennes, 1855)

Fig. 488

SERRAN Parant 2

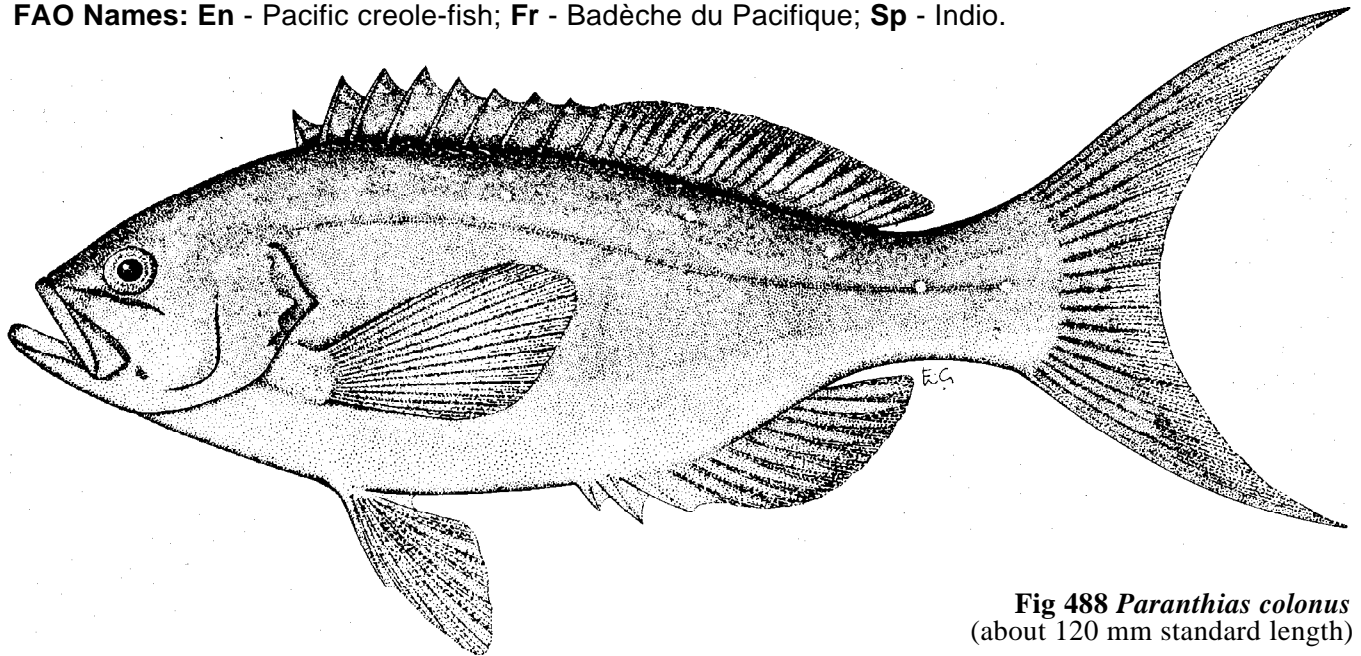
Serranus colonus Valenciennes, 1855:300, pl. 2, fig. 1 (type locality: Galapagos).**Synonyms:** *Paranthias pinguis* Walford, 1936:2 (type locality: Guayamas, Mexico).**FAO Names:** En - Pacific creole-fish; Fr - Badèche du Pacifique; Sp - Indio.

Fig 488 *Paranthias colonus*
(about 120 mm standard length)

Diagnostic Features: Body depth contained 2.9 to 3.4 times in standard length (for fish 11 to 30 cm standard length). Head length contained 3.2 to 4.0 times in standard length; interorbital area convex; preopercle subangular, with a shallow notch, the vertical edge and rear half of lower edge finely serrate; nostrils subequal. Gill rakers 12 to 15 on upper limb, 24 to 29 on lower limb, total 37 to 44. Dorsal fin with IX spines and 18 to 21 rays, the interspinous membranes indented; anal fin with III spines and 9 to 11 rays; pectoral-fin rays 19 to 23; caudal fin deeply forked. Midlateral-body scales ctenoid; lateral-line scales 68 to 86; lateral-scale series 95 to 146. **Colour:** Reddish or reddish grey, with 2 or 3 bright blue or violet spots on dorsal part of body and another 2 on midlateral part of caudal peduncle; pectoral-fin axil with a bright blue spot; dorsal-fin base dark, the fin margin reddish green. Some fish with 2 blue lines on cheek, one approximately horizontal and tangent to lower edge of eye, the other along upper edge of maxilla and continued onto lower part of cheek. Juveniles pinkish yellow, with bright blue dorsal spots.

Geographical Distribution: Eastern Pacific from the Gulf of California to Peru; also at the Revillagigedo, Galapagos, Clipper-ton, Cocos, and Malpelo islands (Fig. 489).

Habitat and Biology: See account of the genus above.

Size: Attains at least 30 cm standard length.

Interest to Fisheries: *P. colonus* (identified as "*Paranthias furcifer*") was said to be abundant in the Galapagos (Snodgrass and Heller, 1905).

Local Names:

Literature: Hildebrand (1946, in part). Identified as *Paranthias furcifer*: Snodgrass and Heller (1905); Smith (1971); Thomson et al. (1979).

Remarks: Kendall (1979) described and illustrated an 8.6 mm *Paranthias* larva from the eastern Pacific (SSE of the tip of Baja California). Johnson and Keener (1984) illustrated the second dorsal- and pelvic-fin spines of this specimen and remarked that it had a "notably different spinelet configuration" (compared with Atlantic specimens of *P. furcifer*).

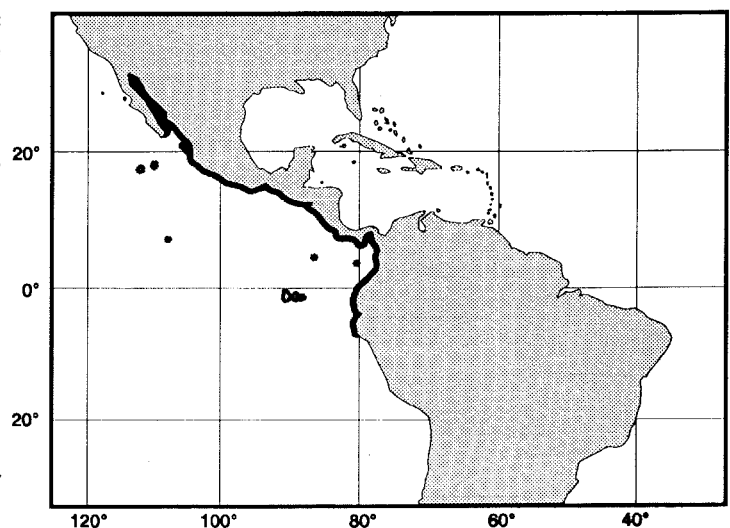


Fig. 489

Paranthias furcifer (Valenciennes, 1828)

Fig. 490; Pl. XXIXA

SERRAN Parant 1

Serranus furcifer Valenciennes in Cuv. and Val., 1828:264 (type locality: Brazil).

Synonyms: *Serranus creolus* Valenciennes in Cuv. and Val., 1828:265 (type localities, Haiti, Dominican Republic, Martinique). *Corvina oxyptera* DeKay, 1842:77, pl. 30, fig. 96 (type locality: "New York"). *Centropristes nebulosus* Castelnau, 1855:5, pl. 1, fig. 4 (type locality: Rio de Janeiro). *Serranus castelnaui* Jordan and Eigenmann, 1890:409 (type locality: Rio de Janeiro; replacement for *Centropristes nebulosus*, preoccupied in *Serranus*).

FAO Names: En - Creole-fish; Fr - Badèche creole; Sp - Cuna lucero.

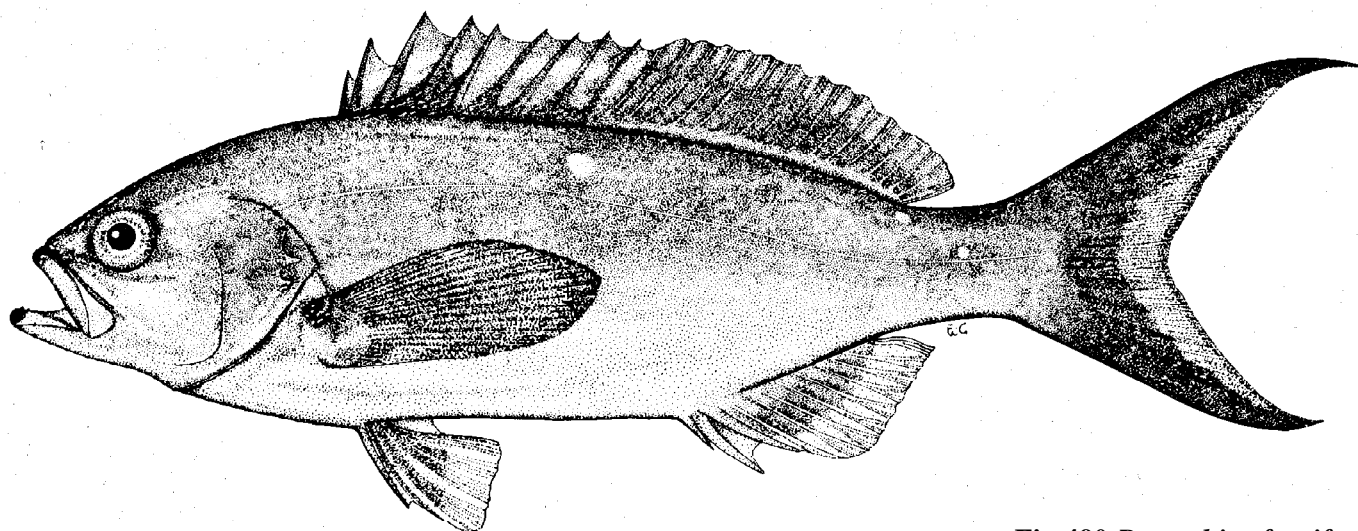


Fig 490 *Paranthias furcifer*
(19.1 mm standard length)

Diagnostic Features: Body depth greater than head length, depth contained 2.9 to 3.4 times in standard length (for fish 19 to 28 cm standard length). Head length contained 3.5 to 3.8 times in standard length; preopercle subangular, the vertical edge and rear half of lower edge finely serrate; nostrils subequal. Gill rakers 12 to 14 on upper limb, 24 to 26 on lower limb, total 38. Dorsal fin with IX spines and 17 to 19 (rarely 19) rays, the interspinous membranes slightly indented; length of dorsal-fin base 56 to 58% of standard length; anal fin with III spines and 8 to 10 (rarely 10) rays; anal-fin base 16 to 19% of standard length; pectoral-fin rays 19 or 20; caudal fin deeply forked. Midlateral-body scales ctenoid; lateral-line scales 69 to 77; lateral-scale series 124 to 129. **Colour:** Head and body reddish brown, paler ventrally; bright orange-red spot at upper end of pectoral-fin base; 3 widely-spaced white spots between lateral line and dorsal-fin base; 2 blue lines on cheek, one approximately horizontal and tangent to lower edge of eye, the other along upper edge of maxilla and continued onto lower part of cheek; yellow-green spot on each interspinous dorsal-fin membrane and continued on soft-rayed part of fin as a dark green submarginal line.

Geographical Distribution: Tropical and subtropical waters of the Atlantic Ocean. In the eastern Atlantic, *P. furcifer* has been reported from Ascension Island (Lubbock, 1980), and the Gulf of Guinea islands of Principe, São Tome, and Annobon (Osorio, 1893). In the western Atlantic, it is known from Bermuda, Florida, Gulf of Mexico, Campeche Bank, and throughout the Caribbean (except absent in the northern Bahamas) to São Paulo Brazil (Fig. 491).

Habitat and Biology: *P. furcifer* is known from coral reefs and hard bottom areas in depths of 10 to 64 m. Randall (1967) observed *P. furcifer* in feeding aggregations well above the reef. He examined the stomach contents of 13 specimens, 162 to 198 mm standard length. The principal food items were zooplankton: copepods (62%), pelagic tunicates (12%), shrimps and shrimp larvae (12%). Bullock and Smith (1991) listed histological evidence for protogyny in *Paranthias furcifer*, but they

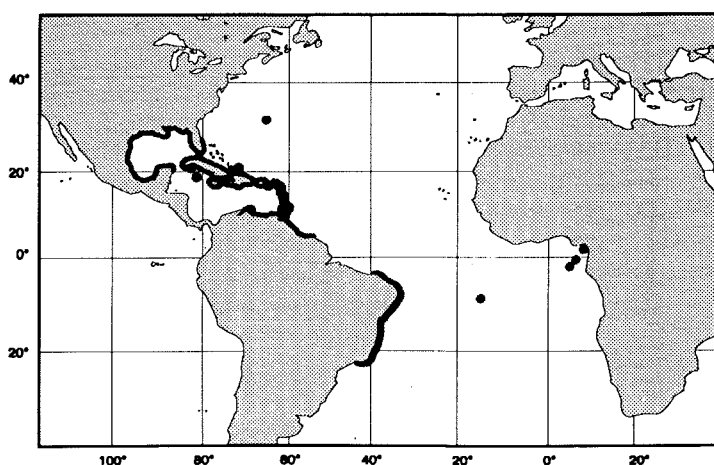


Fig. 491

did not find any sexually transitional fish. C.L. Smith (1958) found ripe specimens on May 31 st at Bermuda. Thompson and Munro. (1983) reported ripe fish in January and March at the Jamaican Banks. Bullock and Smith (1991) found ripe specimens at the Florida Middle Ground from April to October. Batch fecundity estimates for two females (218 and 289 mm standard length) were 177 378 and 640 066 oocytes respectively.

Size: Maximum about 35 cm fork length.

Interest to Fisheries: Because of its small size, *P. furcifer* is not of much interest as a food fish, but it is commonly used for bait. According to Cervigón (1966), *P. furcifer* is usually caught with traps, which is unexpected for a fish that feeds on zooplankton..

Local Names: BERMUDA: Barber; VENEZUELA: Cunaro de piedra.

Literature: Smith (1971); Dennis and Bright (1988); Heemstra (1991).

Remarks: Johnson and Keener (1984) illustrated the second dorsal- and pelvic-fin spines and found that Atlantic specimens (*P. furcifer*) differed notably in spinelet configuration from Pacific specimens (here recognized as *P. colonus*).

Plectropomus Oken, 1817

SERRAN Plect

Plectropomus Oken, 1817:1182 (page number misprinted as 1781); type species, *Bodianus maculatus* Bloch, by subsequent designation of Jordan, Tanaka and Snyder, 1913.

Synonyms: *Plectropoma* Quoy and Gaimard, 1824:318; type species, *Plectropoma punctatum* Quoy and Gaimard, 1824 by monotypy. *Puracanthistius* Bleeker, 1874:13; type species, *Plectropoma leopardinus* Cuvier (= *Holocentrus leopardus* Lacepède) by original designation. *Pleuroperca* Fowler and Bean, 1930:195, 201; type species, *Plectropoma oligacanthus* Bleeker, by original designation; proposed as a subgenus.

Diagnostic Features: Body robust, elongate, the depth less than head length and contained 2.9 to 3.9 times in standard length; body width contained 1.6 to 2.1 times in its depth. Head length contained 2.8 to 3.2 times in standard length; snout distinctly longer than eye diameter, snout length 2.8 to 3.6 times in head length; preorbital depth contained 5.6 to 10 times in head length; interorbital area concave or flat, the dorsal head profile convex; preopercle broadly rounded, with 3 large, ventrally directed spines (hidden by skin) along lower half; lower part of dorsal half of preopercle finely serrate; interopercle and subopercle smooth; opercle with 3 flat spines, the upper and lower spines covered by skin; nostrils set in a shallow groove running forward from eye, the openings subequal or rear nostrils notably larger; lower jaw projecting; maxilla reaches to or beyond vertical at centre of eye; supramaxilla present; no bony knob or step on ventral edge of maxilla; a pair of stout curved canines at front of jaws; midlateral part of lower jaw with 1 to 4 enlarged, fixed canines; 2 or 3 rows of long slender depressible teeth along front half of jaws, shortening to a band of villiform teeth posteriorly; vomer and palatines with a narrow band of villiform :teeth. Dorsal fin with VII or VIII slender spines and 10 to 12 rays, the fin membranes distinctly incised between the spines, the third or fourth spine usually longest, its length contained 3.2 to 4.2 times in head length and distinctly shorter than the longest dorsal-fin ray; base of spinous part of dorsal fin subequal to that of soft-rayed part; anal fin with III slender spines and 8 rays, the first 1 or 2 spines embedded and difficult to see in large fish; pectoral fins short and rounded, with 14 to 18 rays, the middle rays longest, pectoral-fin length contained 1.7 to 2.4 times in head length; flap of skin joining base of upper pectoral-fin rays to body rudimentary or absent; pelvic fins subequal to pectoral fins; caudal fin truncate, emarginate, or concave, with 7 branched rays in upper part and 6 branched rays in lower part. Scales weakly ctenoid or smooth; auxiliary scales present. A single supraneural bone, the distal end more or less expanded, located above and anterior to tip of first neural spine; epipleural ribs on first 8 or 9 vertebrae; 1 or 2 trisegmental pterygiophores at rear end of dorsal and anal fins; cranium high posteriorly, the frontals inclined at an angle of about 40° to the parasphenoid; greatest width of cranium contained about 0.5 times in its length; least interorbital width of frontals contained about 0.5 times in postorbital width of frontals; parietal crests well developed, but not extending onto frontals; dorsal edge of supraoccipital crest subhorizontal. Characters of the larvae (Leis, 1986): Pelvic-fin spines with 3 ridges; no dorsal-fin spine develops first as a soft-ray and all are present on larvae of 7.7 mm; anal-fin spine development completed only after settlement (larger than 22 mm standard length); supraocular ridge with 2 to 4 weak spinules; spines on lower limb of preopercle not serrate.

Habitat and Biology: *Plectropomus* species are large (some species reaching at least 1 m total length) coral-reef fishes that occur in shallow tropical and subtropical waters. Like most *Mycteroperca* species (their ecological equivalents in Atlantic and eastern Pacific waters), *Plectropomus* are less sedentary than species of *Epinephelus* or *Cephalopholis*, and they are primarily piscivorous.

Geographical Distribution: The genus *Plectropomus* is confined to the Indo-Pacific region.

Interest to Fisheries: *Plectropomus* species are of considerable importance to artisanal fisheries, but they are often the cause of ciguatera fish poisonings (Randall, 1980). They are caught with hook-and-line, spear, and in fish traps.

Species: Randall and Hoese (1986) revised the genus and recognized 7 species.

Remarks: Leis (1986) discussed the phylogenetic relationships of *Plectropomus* based on his comparison of the larval development in four species with that of other known epinepheline larvae. He suggested that *Plectropomus* is the primitive sister group of all of the other epinepheline genera for which larvae are known (i.e., *Gonioplectrus*, *Cephalopholis*, *Mycteroperca*, *Epinephelus* [including *Alphestes* and *Dermatolepis* as subgenera of *Epinephelus*]), and *Paranthias*. Although Leis mentioned (p. 528) that the monotypic genus *Saloptia* "is closely related to and perhaps synonymous with *Plectropomus* ..." he did not explain this hypothesis, except to note that these two genera are the only epinepheline species with a single supraneural (predorsal) bone and a dorsal fin with VIII spines and 11 rays. Two additional characters shared by *Saloptia* and *Plectropomus* (not mentioned by Leis) that may indicate a close phylogenetic relationship of these two genera are the large antrorse spines on the lower edge of the preopercle and the reduced number of branched caudal-fin rays (13, versus 15 in other epinephelines). But the polarity of these latter two characters is unclear. *Nippon*, *Dicentrarchus*, and several anthiines also have 3 large antrorse spines on the lower edge of the preopercle; and several anthiines also have only 13 branched caudal-fin rays. We agree with Leis (1986) and J.L.B. Smith (1963) that *Plectropomus* and *Saloptia* are closely related (sister groups).

Johnson (1988) criticized Leis' polarization of certain characters, but he did not question Leis' hypothesis of *Plectropomus* as the primitive sister group of the five other grouper genera for which the larvae are known.

Key to the Species of *Plectropomus*

- 1a.** Anterior rays of soft dorsal and anal fins elevated, the fin margin with a distinct lobe anteriorly; longest dorsal-fin ray 1.5 to 2.1 times in head length; pectoral-fin rays 14 to 16; adults with vertical blue lines anteriorly on side of body and head (Fig. 492, Plate XXX) (Philippines and East Indies) *P. oligacanthus*
- 1b.** Anterior rays of dorsal and anal fins not elevated to form a lobe; longest dorsal-fin ray 2.2 to 3.2 times in head length; pectoral-fin rays 15 to 18; adults not coloured as in 1a.....→ 2

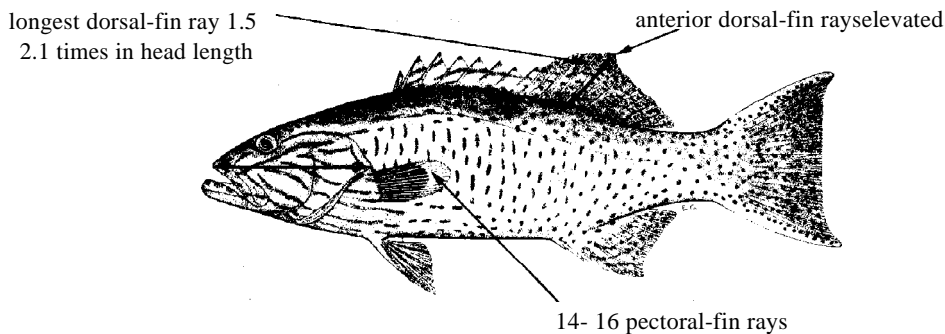


Fig. 492 *Plectropomus oligacanthus*

- 2a. Body uniform brown or brown marbled with olive green, brownish orange or white; juveniles brownish with pale horizontally elongate spots and streaks; pectoral-fin rays 16 to 18 (Fig. 493, Plates XXX and XXXI) (western Indian Ocean) *P. punctatus*
- 2b. Body with numerous blue spots or with saddle-like black bars and blotches and a few blue spots: pectoral-fin rays 15 to 18 → 3

adult uniform brown or brown marbled

juveniles with pale elongate spots and streaks

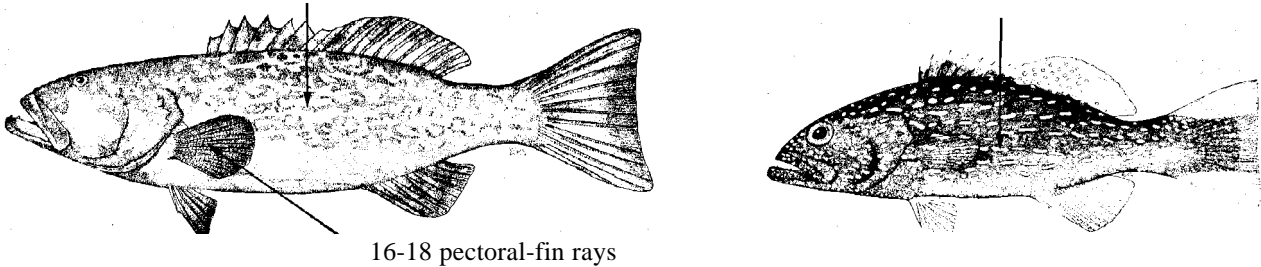


Fig. 493 *Plectropomus punctatus*

- 3a. Caudal fin truncate to slightly emarginate, the caudal concavity (difference between lengths of longest [upper] ray and shortest [middle] rays) more than 13 times in head length; interorbital area with small embedded scales; head, body (including ventral parts) and median fins covered with close-set, round to slightly oval, dark-edged blue spots; distance between spots subequal to spot diameters; developed gill rakers on lower limb of first gill arch 2 to 7 (Fig. 494, Plate XXIX) (Red Sea to central Pacific) *P. areolatus*
- 3b. Caudal fin emarginate, the caudal concavity 5 to 12 times in head length; no scales on interorbital area; blue spots round to oblong; lower developed gill rakers 4 to 10 → 4

interorbital area with small embedded scales

caudal fin truncate to slightly emarginate

2-7 developed gill rakers on lower limb

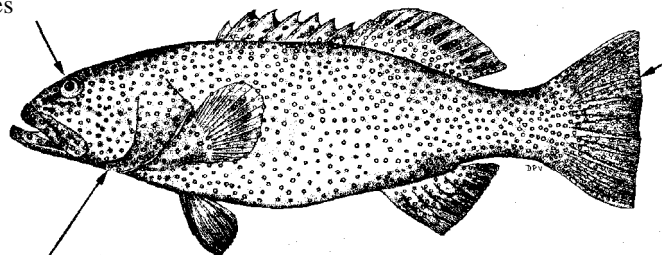


Fig. 494 *Plectropomus areolatus*

- 4a. Pectoral-fin rays 16 to 18; caudal-fin length 1.5 to 1.8 times in head length; pectoral-fin and pelvic-fin length 2.1 to 2.4 times in head length: head and body pale, with large saddle-like dark brown or black bars and a few small blue spots, the fins yellow; or head and body brownish with numerous small blue spots and with or without faint dark bars (Fig. 495, Plate XXIX) (Indo-Pacific) *P. laevis*
- 4b. Pectoral-fin rays 15 to 17; caudal-fin length 1.3 to 1.5 times in head length; pectoral-fin and pelvic-fin length 1.7 to 2.3 times in head length: no broad dark saddle-like bars on body → 5

body with large saddle-like dark bars

caudal-fin length 1.5-1.8 times in head length

body with small blue spots

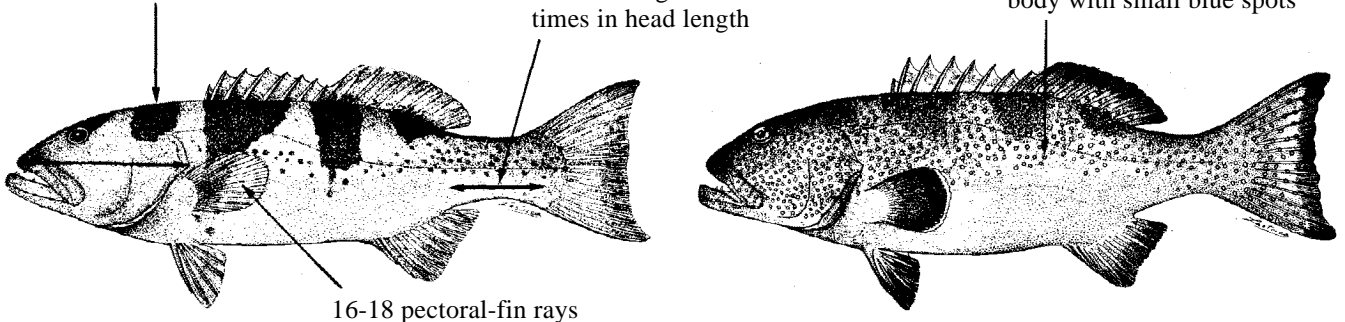


Fig. 495 *Plectropomus laevis*

- 5a. Head and body covered (except ventrally) with minute round blue spots, which are about the size of the nostrils, the distance between the spots more than twice their diameter; median fins also covered with blue spots (Fig. 496, Plate XXIX) (Western Australia and western Pacific) *P. leopardus*
- 5b. Most blue spots on head and body more than twice the size of nostrils; some spots on head and body elongate (except juveniles) → 6

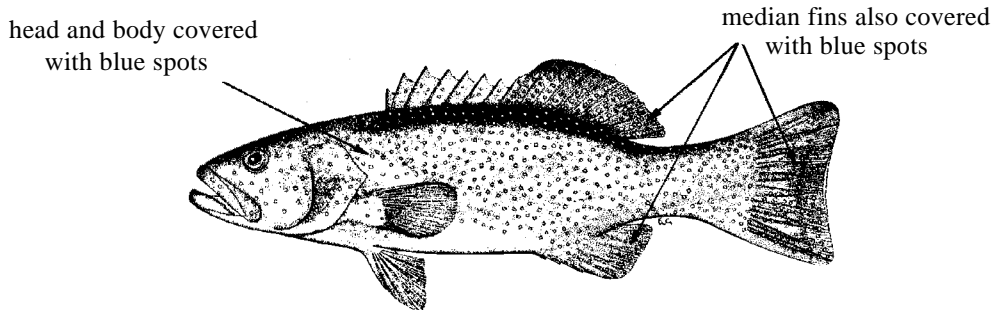


Fig. 496 *Plectropomus leopardus*

- 6a. Pelvic fins without blue spots; some spots on body of adults horizontally elongate; gill raker at angle of first gill arch longer than longest gill filament; pelvic-fin length 1.7 to 2.1 times in head length; nostrils subequal (Fig. 497, Plate XXIX) (Philippines to Australia) *P. maculatus*
- 6b. Pelvic fins with blue spots: some spots on body of adults vertically elongate; gill raker at angle of first gill arch shorter than longest gill filaments; pelvic-fin length 1.9 to 2.3 times in head length; rear nostrils of adults over 40 cm standard length distinctly larger than anterior nostrils (Fig. 498, Plate XXX) (Red Sea to Fiji) *P. pessuliferus*

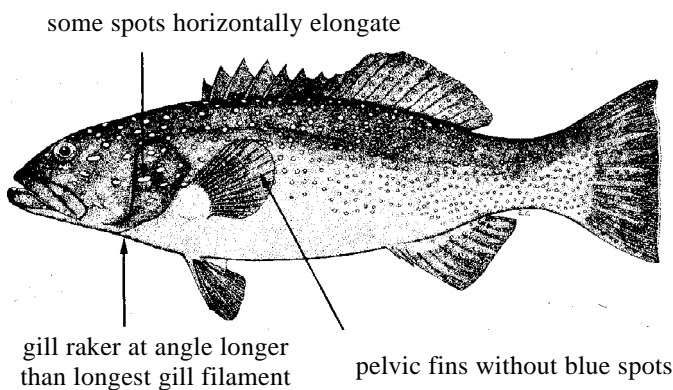


Fig. 497 *Plectropomus maculatus*

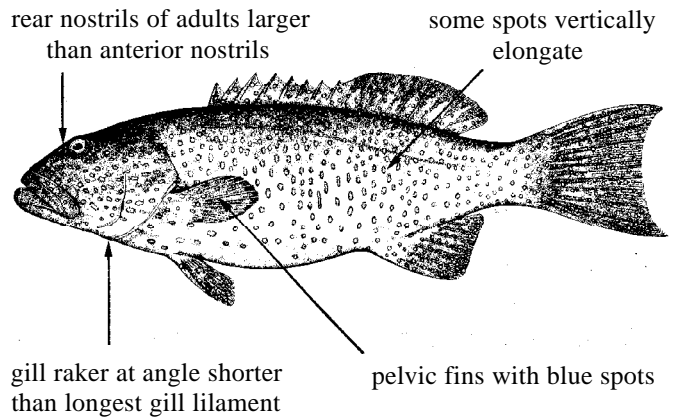


Fig. 498 *Plectropomus pessuliferus*

Plectropomus areolatus Rüppell, 1830

Fig. 499; Pl. XXIXB

SERRAN Plect 2

Plectropoma areolatum Rüppell, 1830: footnote on page 2 of index (type locality: Mohila, Red Sea).

Synonyms: *Plectropoma maculatum*? (non Bloch): Rüppell, 1830:110 (Mohila, Red Sea; authorship attributed to Cuvier). *Plectropomus truncatus* Fowler and Bean, 1930:195, 196, fig. 5 (type locality: Atulayan Island, Lagonoy Gulf, east coast of Luzon).

FAO Names: **En** - Squaretail coral grouper (formerly: Squaretail coral trout); **Fr** - M  rou queue carr  e; **Sp** - Mero tronc  n.

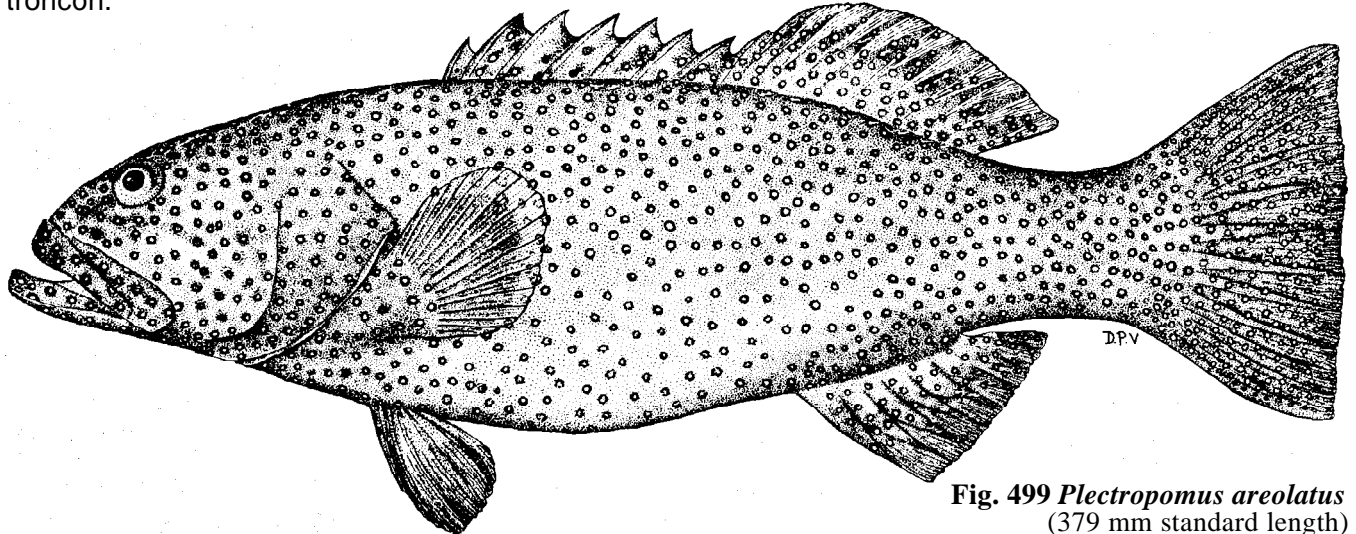


Fig. 499 *Plectropomus areolatus*
(379 mm standard length)

Diagnostic Features: Body elongate, robust, the depth contained 2.9 to 3.9 times in standard length (for fish 15 to 48 cm standard length). Head length contained 2.7 to 3.1 times in standard length; snout length contained 2.8 to 3.6 times in head length; suborbital depth contained 5.6 to 10 times in head length; interorbital area flat (rounded at edges of orbits), with small, embedded scales; preopercle broadly rounded, with 3 large, ventrally-directed spines along lower half; interopercle and subopercle smooth; opercle with 3 flat spines, the upper and lower spines covered by skin; nostrils subequal, set in a shallow groove running forward from eye; midlateral part of upper jaw with 1 to 4 enlarged fixed canines. Lower limb developed gill rakers 2 to 7, gill raker at angle shorter than gill filaments at angle. Dorsal fin with VII or VIII slender spines and 10 to 12 rays, the third or fourth spine longest, its length contained 3.2 to 4.2 times in head length, the longest ray contained 2.3 to 2.6 times in head length; base of spinous part of dorsal fin subequal to that of soft-rayed part; anal fin with III slender spines and 8 rays, the first 1 or 2 spines embedded and difficult to see in large fish; pectoral-fin rays 15 or 16; pectoral fins subequal to pelvic fins, pectoral-fin length contained 2.0 to 2.4 times in head length; caudal fin truncate to slightly emarginate, the caudal concavity contained more than 13 times in head length. Lateral-line scales 83 to 97. **Colour:** Head, body, and median fins greenish grey to brown or brownish red, with numerous round to oval dark-edged blue spots (the largest about equal to pupil); most spots within a spot diameter of adjacent spots; pelvic fins with dark brown to blackish membranes; rear margin of caudal fin with a white edge and often with a blackish submarginal band.

Geographical Distribution: Indo-Pacific; except for the Red Sea and Australia, records of *P. areolatus* are limited to insular localities: Chagos, Maldives, Cocos-Keeling Islands, Rowley Shoals (Western Australia), Indonesia, Philippines, Taiwan, Ryukyu Islands, Paracel Islands (South China Sea), Palau Islands, Great Barrier Reef, Caroline Islands, Marshall Islands, Samoa Islands, and the Phoenix Islands (Fig. 500).

Habitat and Biology: *P. areolatus* is shy and difficult for a diver to approach. It is found in lagoons and on the outer reef at depths of 2 to 20 m. Hiatt and Strasburg (1960) reported a squirrelfish from the stomach of one specimen. According to Myers (1989): "For a few days before new moon in May, large numbers gather in the seaward end of Ulong Channel, Belau to spawn. At

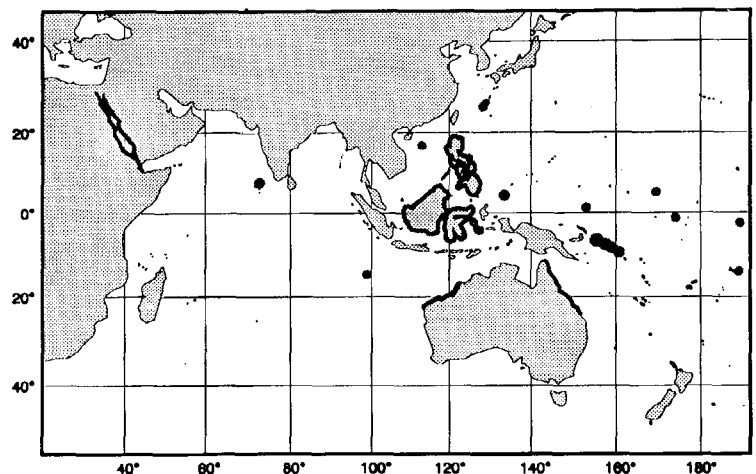


Fig. 500

this time, males may display light bodies with about five irregular dark saddles and dark dorsal and anal fins.”

Size: Attains at least 60 cm standard length (1 m standard length according to Katayama, 1988).

Interest to Fisheries: Undoubtedly of interest to artisanal fisheries, but no statistics are available for *P. areolatus*. Caught with hook-and-line.

Local Names: JAPAN: O-aonome-ara; MICRONESIA: Squaretail coral trout; SAMOA: Ata'ata-utu.

Literature: Randall and Hoese (1986); Randall and Heemstra (1991).

Remarks: Leis (1986) gave some descriptive information on the larvae.

Plectropomus laevis (Lacepède, 1801)

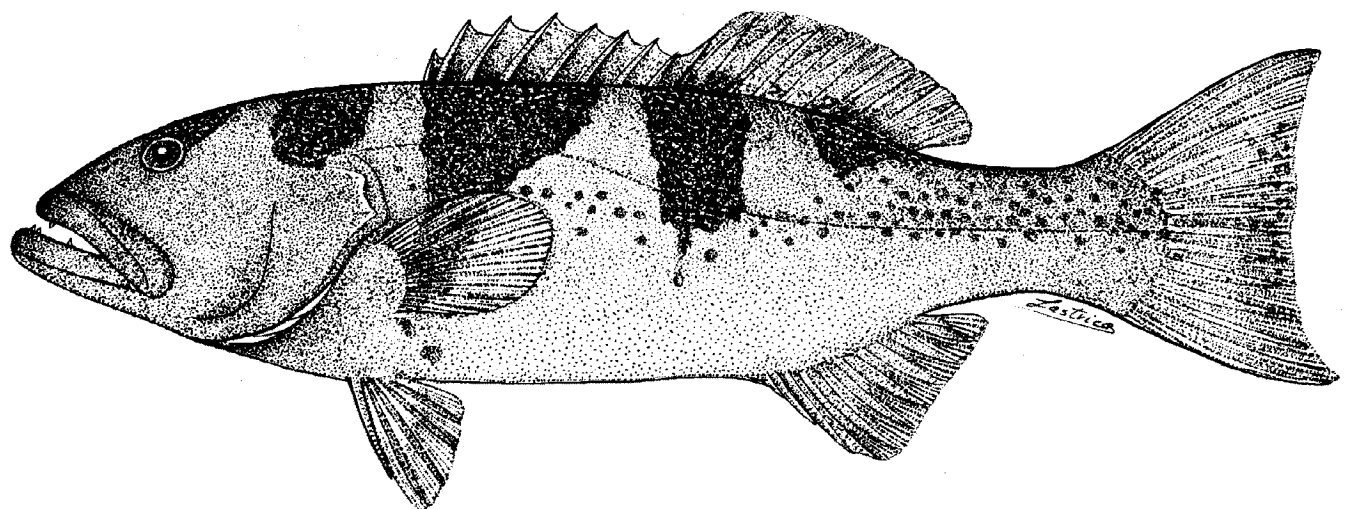
Fig. 501; Pl. XXIXC,D

SERRAN Plect 3

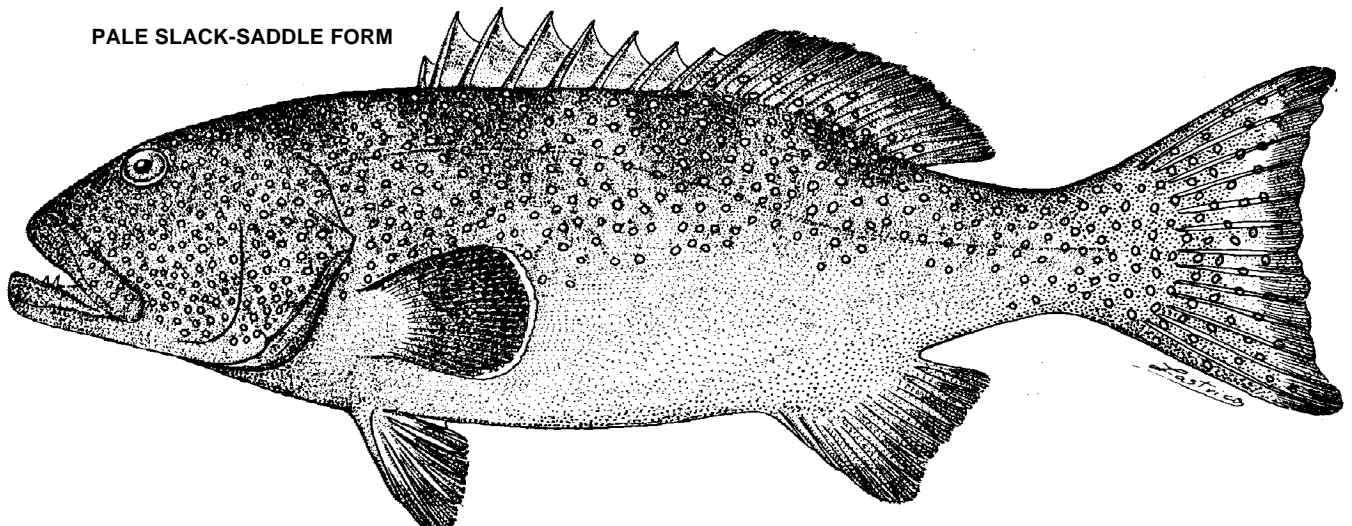
Labrus laevis Lacepède, 1801:431, 477, pl. 23, fig. 2 (type locality: Indian Ocean).

Synonyms: *Bodianus cyclostomus* Lacepède, 1802:282, 293 (1801 :pl. 20, fig. 3, labelled “Bodian Cyclostome”; no locality given). *Bodianus melanoleucus* Lacepède, 1802:283, 296 (type locality: Mauritius). *Plectropoma maculatum* varieties A to C Playfair in Playfair and Gunther, 1867:13 (Zanzibar). *Plectropoma maculatum* varieties C and D: Boulenger, 1895:161 to 162 (Zanzibar, Mauritius, Sri Lanka, and Palau Islands). Often misidentified as “*Plectropomus maculatus*.”

FAO Names: En - Blacksaddled coral grouper (formerly: Blacksaddled coraltrout); Fr - Mérou sellé; Sp - Mero ensillado.



PALE SLACK-SADDLE FORM



DARK FORM

Fig. 501 *Plectropomus laevis*
(pale black-saddle form 492 mm standard length, dark form 475 mm standard length)