

**Diagnostic Features:** Body depth distinctly less than head length, depth contained 2.7 to 2.9 times in standard length (for fish 13 to 64 cm standard length). Head length contained 2.4 to 2.6 times in standard length; interorbital area convex; preopercle angular, the serrae at angle distinctly enlarged and, in large fish, the angle is produced into a flat serrate lobe; eye diameter equal to or greater than interorbital width in fish less than 45 cm standard length; nostrils subequal. Gill rakers 8 or 9 on upper limb and 15 to 17 on lower limb, total 23 to 25. Dorsal fin with XI spines and 13 to 15 rays, the third or fourth spine longest and the membranes only slightly incised between the anterior spines; anal fin with III spines and 9 rays; pectoral-fin rays 17 or 18; rear margin of caudal fin convex in fish less than 30 cm standard length, truncate or slightly concave in larger fish. Lateral-body scales ctenoid; lateral-line scales about 65; lateral-scale series 82 to 99. **Colour:** Head and body buff or greyish brown, whitish ventrally; margins of dorsal and pectoral fins, and sometimes anal and caudal fins yellow (yellow margins reduced or absent in large adults); pale blue line from eye to corner of preopercle (very faint in adults). Juveniles 5 to 10 cm standard length with pearly spots arranged in 4 longitudinal rows and 7 vertical columns; dorsal fin with broad yellow margin; caudal fin white; anal and pelvic fins blackish; black saddle on peduncle (if present) ends abruptly at lateral line. Adults generally immaculate, but sometimes they may (momentarily) display the white-spotted grid pattern of juveniles.

**Geographical Distribution:** Western Atlantic from North Carolina to southern Brazil, including Gulf of Mexico and Caribbean; not known at Bermuda (Fig. 312).

**Habitat and Biology:** The yellowedge grouper is found in rocky areas and on sand/mud bottom in depths of 64 to 275 m. On soft bottoms they are often seen in or near trenches or burrow-like excavations. Females attain maturity at 52 to 60 cm total length and are thought to change sex at a total length of about 75 cm; the maximum age is at least 20 years. This species feeds on a wide variety of invertebrates (mainly brachyuran crabs) and fishes.

**Size:** Maximum total length about 115 cm; maximum weight at least 14 kg.

**Interest to Fisheries:** *E. flavolimbatus* is one of the two most important species of groupers in the deep-water longline fishery in the eastern Gulf of Mexico. It is also of some importance in sport and commercial fisheries off the southeastern coast of the USA. This species seems to be rare in the Caribbean area.

**Local Names:** CUBA: Mero de aletas amarillas; MEXICO: Cherna del alto.

**Literature:** Rivas (1964); Smith (1971); Manooch (1984); Jones et al. (1989); Bullock and Smith (1991).

**Remarks:** *E. flavolimbatus* is similar to *E. niveatus* in fin counts and colour pattern of the juveniles; but juveniles of *E. flavolimbatus* have a blue line from eye to the corner of the preopercle, fewer white spots on the body, and the black saddle on the peduncle does not extend below the lateral line. In large juveniles and small adults of *E. flavolimbatus*, the spinous dorsal fin has a yellow or yellowish green margin, and the membrane is only slightly indented between the spines; but in *E. niveatus* the spinous part of the dorsal fin is uniformly coloured or with a blackish margin, and the interspinous dorsal-fin membranes are distinctly indented.

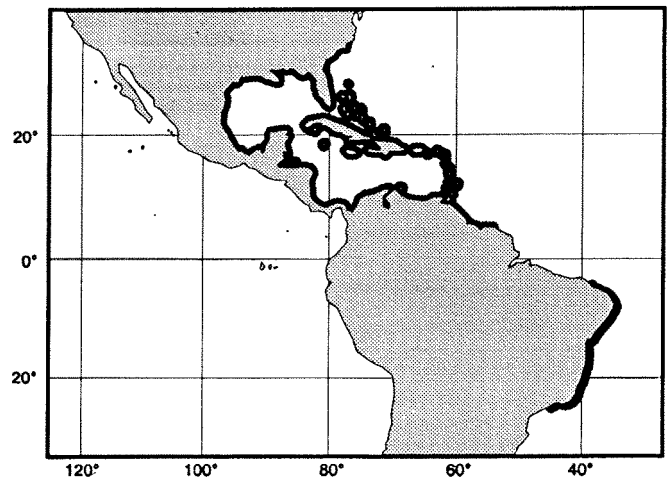


Fig. 312

*Epinephelus fuscoguttatus* (Forsskål, 1775)

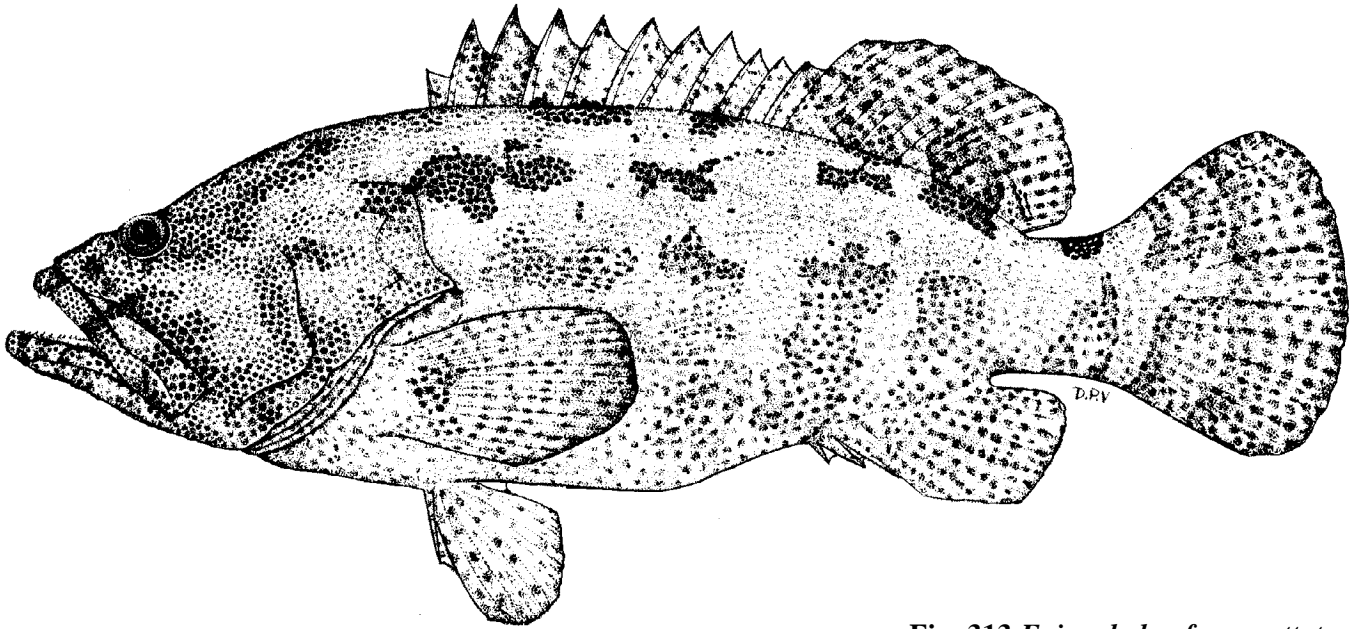
Fig. 313; Pl. XIVE

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*Perca summana* var. *fusco-guttata* Forsskål, 1775:41 (type locality: Suerens and Jeddah).

**Synonyms:** *Serranus horridus* Valenciennes in Cuv. and Val., 1828:321 (type locality: Jawa). *Serranus taeniocheirus* Valenciennes, in Cuv. and Val., 1830:518 (type locality: unknown). *Serranus lutra* Valenciennes in Cuv. and Val., 1831:474 (type locality: Mauritius).

**FAO Names:** En - Brown-marbled grouper; Fr - Mérou marron; Sp - Mero manchado.

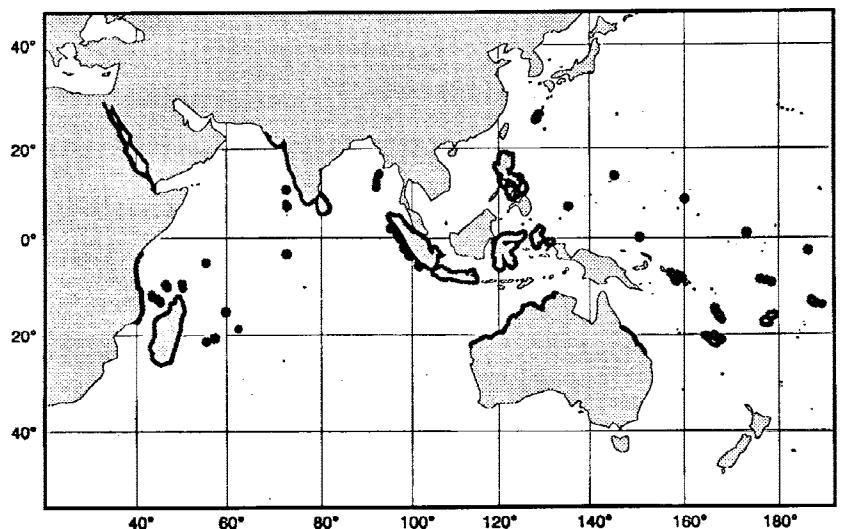


**Fig. 313** *Epinephelus fuscoguttatus*  
(551 mm standard length)

**Diagnostic Features:** Body depth contained 2.6 to 2.9 times in standard length (for fish 11 to 55 cm standard length). Head length contained 2.3 to 2.5 times in standard length; interorbital area flat or slightly concave; dorsal head profile of adults indented at eyes and distinctly convex from there to dorsal-fin origin; preopercle rounded, finely serrate; upper edge of operculum distinctly convex, descending almost vertically to rear end of operculum; anterior edge of preorbital bone deeply indented below nostrils; posterior nostrils triangular, 4 to 7 times larger than anteriors in adults; maxilla extends well posterior to eye; midlateral part of lower jaw with 3 or 4 rows of teeth, the inner teeth about twice longer than outer teeth; canines inconspicuous; nostrils close together. Gill rakers 10 to 12 on upper limb, 17 to 21 on lower limb (but rudiments often difficult to count); gill rakers short and stout, raker at angle subequal to longest gill filaments, other rakers distinctly shorter. Dorsal fin with XI spines and 14 or 15 rays, the third or fourth spine longest, its length contained 2.9 to 3.5 times in head length and distinctly shorter than longest dorsal-fin rays, the interspinous membranes distinctly incised; anal fin with III spines and 8 rays; pectoral-fin rays 18 to 20; pectoral-fin length contained 1.7 to 2.1 times in head length; pelvic fins not reaching anus, their length contained 2.0 to 2.5 times in head length; caudal fin rounded. Lateral-body scales of fish more than 10 cm standard length smooth, with auxiliary scales; lateral-line scales 52 to 58; lateral-scale series 102 to 115. **Colour:** Pale yellowish brown, with 5 vertical series of dark brown blotches that are very irregular in outline; head, body, and fins covered with close-set small brown spots, those on the dark blotches much darker than spots in-between blotches; small black saddle spot on rear half of peduncle; 2 or 3 faint, dark bars at side of jaws.

**Geographical Distribution:** Widely distributed in the Indo-Pacific region, including the Red Sea, but not known from the Persian Gulf, Hawaii, or French Polynesia. *E. fuscoguttatus* occurs at most (probably all) of the tropical islands of the Indian and west-central Pacific oceans (east to Samoa and the Phoenix Islands) along the east coast of Africa to Mozambique, and it has also been reported from Madagascar, India, Thailand, Indonesia, tropical coast of Australia, Japan, Philippines, New Guinea, and New Caledonia (Fig. 314).

**Habitat and Biology:** Shallow coral reefs and rocky bottoms to depths of 60 m; juveniles are found in seagrass areas. Reported stomach contents include fishes, crabs, and cephalopods. Although *E. fuscoguttatus* has been implicated in ciguatera



**Fig. 314**

fish poisonings at some localities in the Pacific, it has recently attracted interest as a candidate for aquaculture in Singapore.

**Size:** Maximum size at least 95 cm total length (120 cm in the Philippines according to Schroeder, 1980) and 11 kg.

**Interest to Fisheries:** Separate statistics are not reported for this species. Adults are not common, but this species is seen in local markets. Caught with hook-and-line, traps, and spear.

**Local Names:** AUSTRALIA: Flowery cod; INDIA (Lakshadweep Islands): Fana, Chammam; JAPAN: Aka-madarahata; PHILIPPINES: Garopa (Tagalog), Pugapo (Visayan); SEYCHELLES: Vieille crabbe, Vieille machatta; SINGAPORE: Tiger grouper, Marble grouper.

**Literature:** Morgans (1959, 1982); Randall (1964); Randall and Ben-Tuvia (1983); Heemstra and Randall (1984, 1986); Randall and Heemstra (1991).

**Remarks:** *E. fuscoguttatus* is often confused with *E. polyphkadion* (= *E. microdon* of recent authors; e.g., Kyushin et al., 1977; Grant, 1975), which has fewer pectoral-fin rays (16 or 17) usually fewer lower gill rakers (16 to 18), smoothly convex dorsal head profile, and interspinous dorsal-fin membranes less deeply incised.

*Epinephelus gabriellae* Randall and Heemstra, 1991

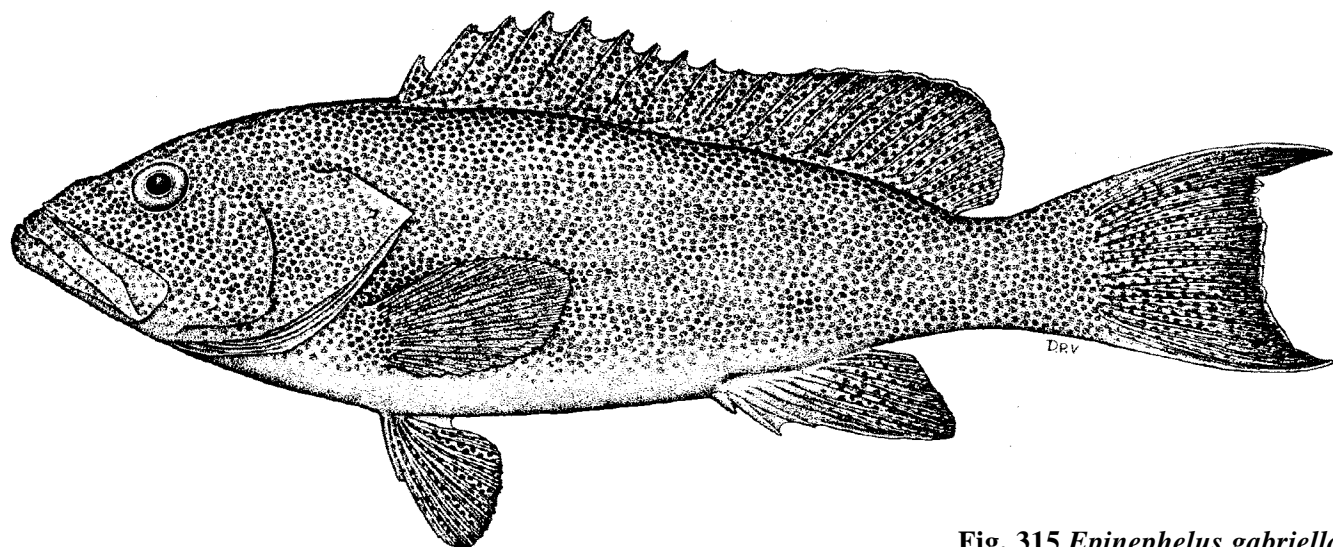
Fig. 315; Pl. XVIF

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*Epinephelus gabriellae* Randall and Heemstra, 1991:145, pl. 14, fig. A; pl. 36, figs A and B; fig. 78 (type locality: Arabian Sea, Oman, near Mirbat; 16°58'0"N, 54°42'50"E).

**Synonyms:** *Epinephelus* sp. Amaoka et al., 1976:131, fig. "Arb-25" (Somalia).

**FAO Names:** En - Multispotted grouper; Fr - M rou passoire; Sp - Mero pintitas.



**Fig. 315** *Epinephelus gabriellae*  
(331 mm standard length)

**Diagnostic Features:** Body depth contained 3.2 to 3.6 times in standard length (for fish 11 to 39 cm standard length). Head length contained 2.4 to 2.6 times in standard length; interorbital area flat to slightly convex, the dorsal head profile with slight indentation above nostrils; preopercle angular, with enlarged serrae at angle and a shallow notch just above angle; upper edge of operculum straight; posterior nostrils slightly larger than anteriors; maxilla reaches vertical at rear edge of eye; ventral edge of maxilla with a low step-like bend an orbit diameter from rear end of bone; midlateral part of lower jaw with 2 rows of teeth. Gill rakers 10 to 12 on upper limb, 17 to 19 on lower limb, no rudiments. Dorsal fin with XI spines and 14 or 15 rays, the third or fourth spine longest, contained 2.7 to 3.6 times in head length, slightly shorter than longest rays; anal fin with III spines and 8 rays, the fin margin angular; pectoral-fin rays 17 or 18; pectoral-fin length contained 1.6 to 2.1 times in head length; pelvic fins not reaching anus, their length contained 2.0 to 2.4 times in head length; caudal-peduncle depth contained 3.5 to 3.9 times in head length, 10.5 to 11.3% of standard length; caudal fin emarginate to concave, the concavity 5 to 15 times in head length. Lateral-body scales ctenoid, with numerous auxiliary scales; lateral-line scales 52 to 54; lateral-scale series 106 to 126. Pyloric caeca about 76. **Colour:** Head and body pale brownish grey, densely covered (except ventrally) with tiny, close-set dark orange-brown spots; median and paired fins spotted like body; caudal, soft dorsal, and anal fins with white edge and submarginal blackish zone.

**Geographical Distribution:** Northern Indian Ocean from Somalia to Oman (Fig. 316).

**Habitat and Biology:** *E. gabriellae* occurs on rocky bottom in depths 40 to 88 m; a 22 cm standard length immature female was taken in 6 to 8 m with rotenone. Another specimen was caught trolling, presumably near the surface, off the coast of Somalia.

**Size:** Attains at least 39 cm standard length.

**Interest to Fisheries:** Probably of some importance along the coasts of Oman, Yemen and Somalia, but *E. gabriellae* has only recently been described as a new species, hence records of landings are wanting. Juveniles and subadults are the second most common species of grouper on inshore rocky areas along the southern coast of Oman. Caught with trawls and hook-and-line.

**Local Names:**

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

**Remarks:** *E. gabriellae* is closely related to *E. chlorostigma*, which also has a similar colour pattern, subangular preopercle with serrae not much enlarged at the angle, gill arches with numerous small platelets, maxilla with a low step on the ventral edge, operculum with a straight upper edge, 2 rows of teeth on sides of lower jaw, anal fin angular in adults, caudal fin truncate or emarginate, and similar scale counts. But *E. chlorostigma* differs in having more dorsal-fin rays (16 to 18), deeper body (depth contained 2.8 to 3.3 times in standard length), deeper caudal peduncle (peduncle depth contained 3.0 to 3.6 times in head length), shorter pelvic fins (length contained 1.7 to 2.25 times in head length), and minor differences in colour pattern: spots dark brown and slightly larger, outer surface of pectoral fins distinctly spotted, and no white margins on the median fins. *E. polylepis* also has a similar colour pattern and an emarginate caudal fin. But it has more scales (lateral-line 65 to 72, lateral-scale series 126 to 142), 16 or 17 dorsal-fin rays, a deeper body (depth contained 2.6 to 3.3 in standard length), and the caudal fin of adults is usually less concave (concavity 9 to 33 times in head length).

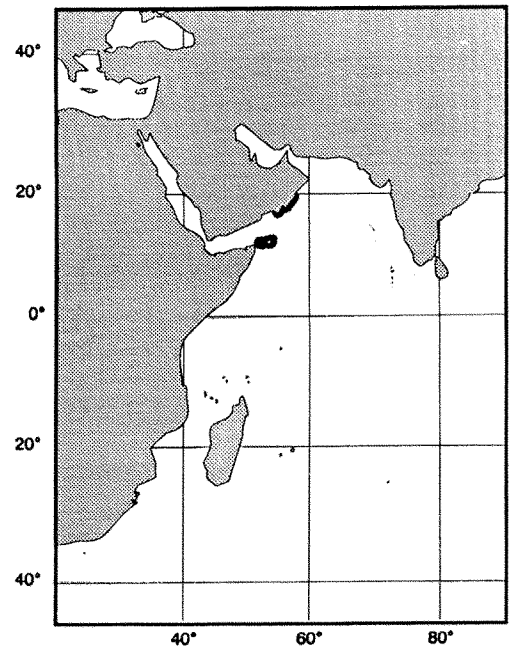


Fig. 316

*Epinephelus goreensis* (Valenciennes, 1830)

Fig. 317; Pl. XVA

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*Serranus goreensis* Valenciennes in Cuv. and Val., 1830:511 (type locality: Gorée [Dakar] Sénégal; syntypes MNHN 7323, 7324).

**Synonyms:** None.

**FAO Names:** En - Dungat grouper; Fr- Mérrou de Gorée (formerly: Mérrou dungat); Sp - Mero de Gorea.

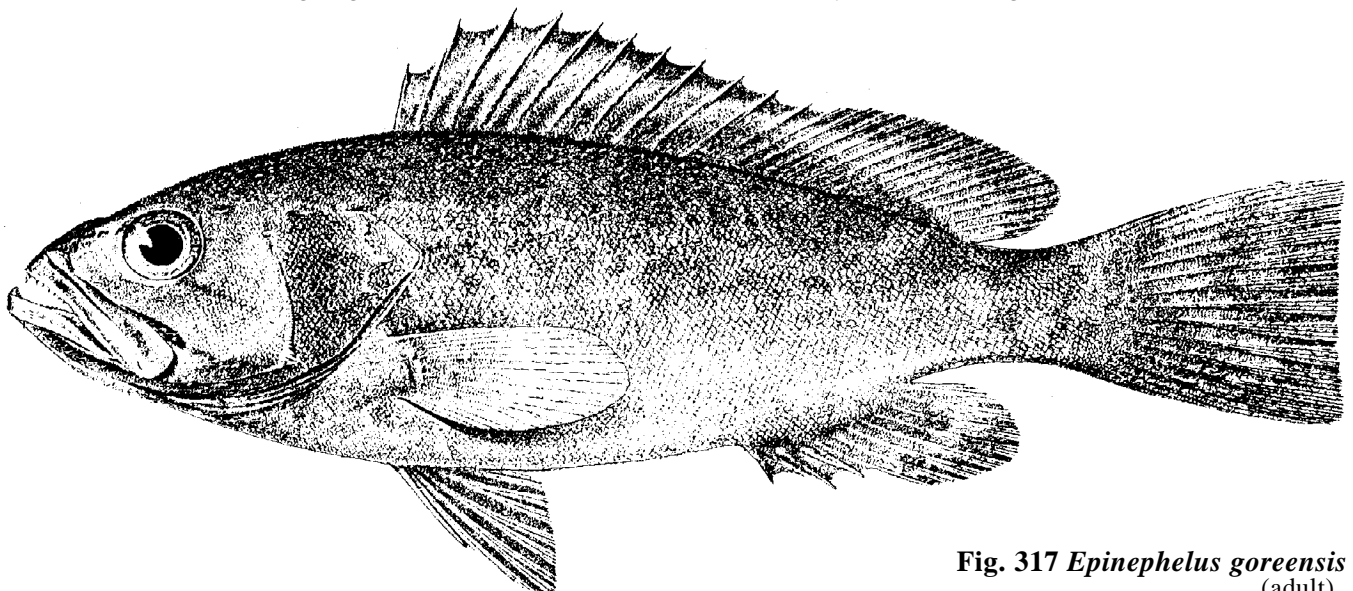


Fig. 317 *Epinephelus goreensis*  
(adult)

**Diagnostic Features:** Body depth less than head length, depth contained 2.9 to 3.2 times in standard length (for fish 22 to 50 cm standard length). Head length contained 2.5 to 2.7 times in standard length; interorbital area flat or slightly convex; preopercle angular, with 3 or 4 enlarged serrae at the angle, the lowermost directed ventrally; interopercle and subopercle serrate; middle and lower opercular spines well developed, the upper spine not apparent; upper edge of operculum approximately straight; maxilla reaches vertical at rear edge of eye; no step on ventral edge of maxilla; maxilla naked or with a few minute scales dorsally; midlateral part of lower jaw with 2 rows of teeth; rear nostrils about twice the size of anterior nostrils. Gill rakers 8 or 9 on upper limb, 16 or 17 on lower limb, total 24 to 26; longest gill raker longer than longest gill filaments. Dorsal fin with XI spines and 16 rays, the third or fourth spine longest but shorter than longest ray, the fin membrane incised between the spines; anal fin with III spines and 8 rays; pectoral-fin rays 17 to 19, pectoral-fin length contained 1.8 to 2.1 times in head length; pelvic fins shorter than or equal to pectoral fins: caudal fin slightly concave, truncate or slightly convex. Lateral-body scales ctenoid; no auxiliary scales; lateral-line scales 68 to 74; lateral-scale series 120 to 129. Pyloric caeca 13, long and slender. **Colour:** Head and body brownish; 3 or 4 broad, oblique, dark bars on dorsal part of body and another on dorsal half of peduncle; 2 narrow, faint dark bands extending posteriorly from lower half of eye: dark moustache streak present, but not extending past rear end of maxilla.

**Geographical Distribution:** *E. goreensis* is known from the tropical coast of west Africa from Senegal to southern Angola. The species has also been reported from the Canary and Cape Verde Islands, but Alberto Brito informed us that *E. goreensis* has never been caught in the Canary Islands (Fig. 318).

**Habitat and Biology:** Poll (1954) reported this species from a variety of habitats (rock, mud and sand) at depths of 80 to 100 m. No information has been published on the biology of *E. goreensis*.

**Size:** Maximum size unknown; attains at least 55 cm total length.

**Interest to Fisheries:** Probably of importance to subsistence fisheries where it occurs.

**Local Names:** ANGOLA: Garopa petto; CAPE VERDE ISLANDS: Peisce bodi; MAURITANIA: Ma-deijja; SENEGAL: Sandovika, Doï.

**Literature:** Steindachner (1882); Boulenger (1895); Heemstra (1991).

**Remarks:** The dark markings that help to identify juveniles are probably not visible on large adults. *E. goreensis* is most similar to *E. costae*. Juveniles of *E. costae* have 3 to 5 narrow dark stripes paralleling the lateral line (no dark stripes in *E. goreensis*), and adults often have a large golden yellow blotch on body below the spinous dorsal fin. *E. goreensis* is readily separated from *E. caninus*, which has only 13 or 14 dorsal-fin rays and usually a larger head (length contained 2.3 to 2.5 times in standard length). In addition to the characters in the key to Eastern Atlantic species of *Epinephelus* (given above), *E. goreensis* differs from *E. marginatus* in having a smaller head (length contained 2.5 to 2.7 versus 2.3 to 2.5 times in standard length), more lower-limb gill rakers (16 or 17 versus 14 to 16), and a ventrally directed spine at the angle of the preopercle.

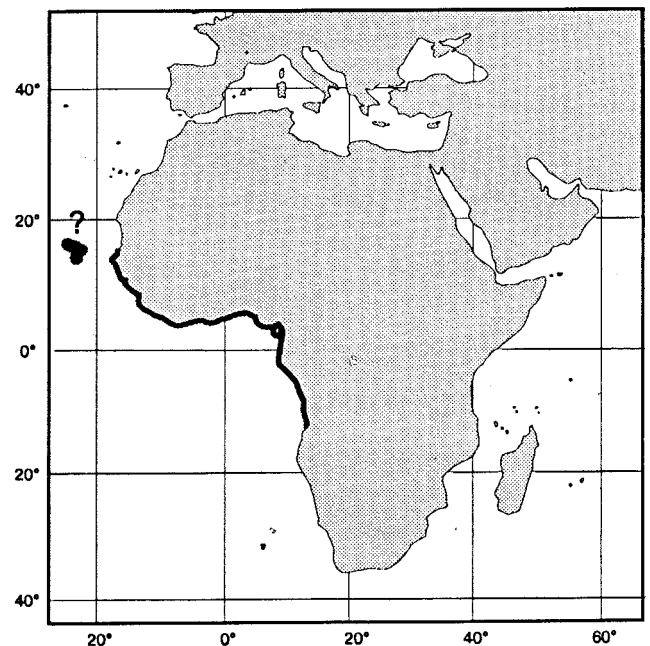


Fig. 318

*Epinephelus guttatus* (Linnaeus, 1758)

Fig. 319; Pl. XV B

SERRAN Epin 16

*Perca guttata* Linnaeus, 1758:292 (type locality: America).

**Synonyms:** ?*Holocentrus punctatus* Bloch, 1790:88, pl. 241 (after Marcgrave, type locality probably Brazil). *Lutianus lunulatus* (non Park) Parra in Bloch and Schneider, 1801:329 (based on *Cabrilla* Parra, 1787:93, pl. 36, fig. 1; type locality: Cuba). *Serranus maculosus* Valenciennes in Cuv. and Val., 1828:31 (type locality unknown). *Serranus catus* Valenciennes in Cuv. and Val., 1828:373 (type locality: Martinique). *Serranus arara* Valenciennes in Cuv. and Val., 1828:377 (type locality: Cuba). *Epinephelus cubanus* Poey, 1866:202 (type locality: Cuba). *Serranus Stathouderi* Vaillant, 1877:69 in Vaillant and Bocourt, 1874-I 915, (substitute for *Serranus maculosus* Valenciennes, 1828; type locality: unknown).

**FAO Names:** En - Red hind; Fr - Mérou couronné; Sp - Mero colorado.

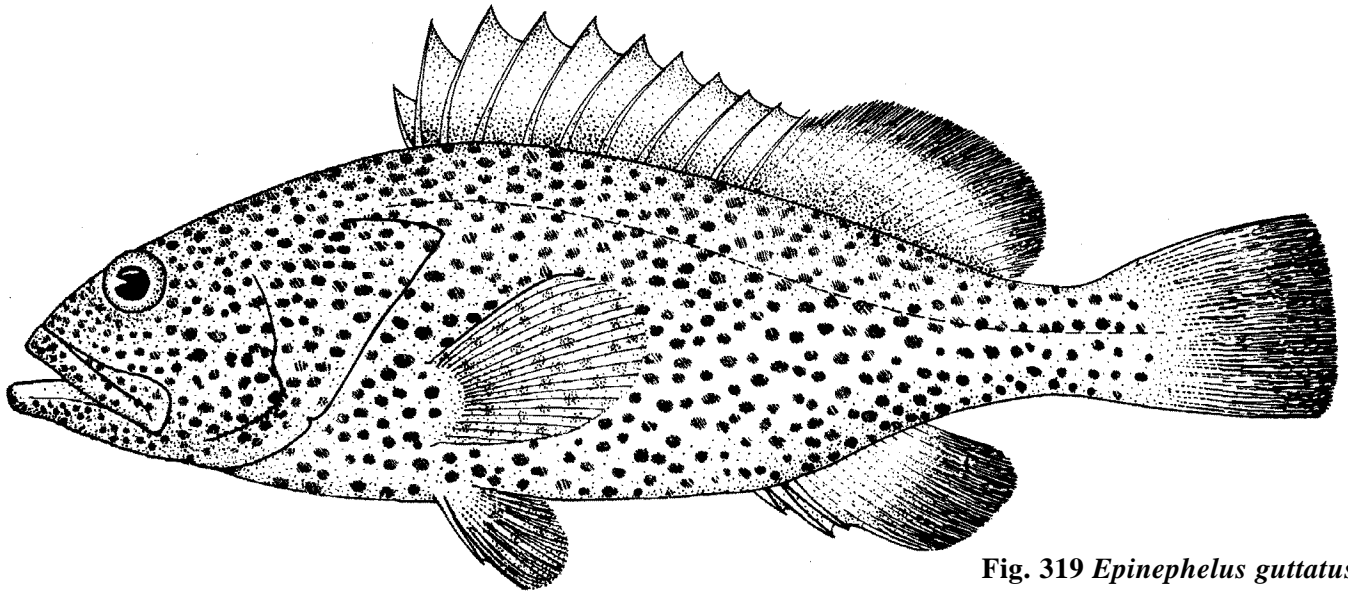


Fig. 319 *Epinephelus guttatus*  
(about 240 mm total length)

**Diagnostic Features:** Body depth distinctly less than head length, depth contained 2.7 to 3.1 times in standard length (for fish 17 to 38 cm standard length). Head length contained 2.3 to 2.4 times in standard length; preopercle evenly serrate, without salient angle; posterior nostrils larger than anteriors. Gill rakers 8 or 9 on upper limb, 16 to 18 on lower limb, total 24 to 26. Dorsal fin with XI spines and 15 or 16 rays, the third or fourth spine longest, the interspinous membrane incised and produced into a short flag behind tip of each spine; anal fin with III spines and 8 rays; pectoral-fin rays 16 to 18; rear edge of caudal fin rounded. Lateral-body scales ctenoid, 92 to 104 lateral-scale series. **Colour:** Ground colour buff, greenish white, or pale reddish brown, the head and body covered with bright red spots, the dorsal spots reddish brown; spinous dorsal fin olive with yellow flags at tips of the spines; soft dorsal, caudal, and anal fins olivaceous, with a broad blackish submarginal band and narrow pale edge; pectoral fins pale orange-red with darker red spots on the base; pelvic fins coloured like body but darker distally and along leading edge.

**Geographical Distribution:** Tropical western Atlantic, ranging north to North Carolina and south to Venezuela; the most common species of *Epinephelus* in the West Indies (Fig. 320).

**Habitat and Biology:** Shallow reefs and rocky bottoms in depths of 2 to at least 100 m. According to Randall (1,967) red hind feed mainly on crabs (40%), other crustaceans (27%), fishes (21%), and octopus (7%). The crabs taken belong to the genera *Calappa* and *Mithrax*, the other crustaceans are mainly alpheid shrimps and scyllarid lobsters; preferred reef fishes are labrids and haemulids. Luckhorst et al. (1992) reported a 72 cm total length specimen from Bermuda that was estimated to be 22 years old. Females become mature at 22 to 24 cm total length, and sexual inversion occurs for some fish at 28 cm total length; most fish larger than 40 cm are males.

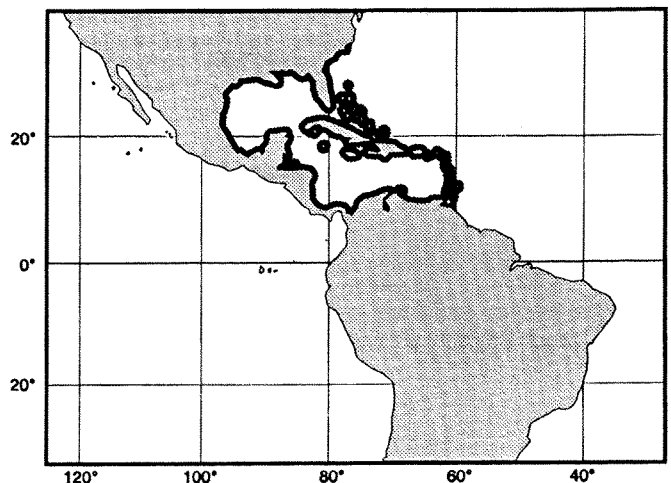


Fig. 320



Colin et al. (1987) observed spawning aggregations of *E. guttatus* on the outer reef top in 20 m off the south coast of Puerto Rico. Spawning occurred during the full moon in January and February. Ripe females were recognized by their swollen abdomens and colour pattern of dark spots on a white background; males displayed a darker mottled pattern with an area of dark vertical bars or squares on the body above the anal fin. Females rested on or close to the bottom, while males patrolled around an area that included 1 to 5 females and defended this territory from other males. On two occasions, spawning was initiated by a female swimming about 0.5 m up off the bottom and being joined by a male; gametes were released without any upward rush or rapid movement. In one case, another female joined the pair above the bottom and spawned with them. The ripe eggs are buoyant, clear, nearly spherical (0.97 x 0.96 mm) and usually contain a single oil globule 0.22 mm in diameter; some eggs had multiple smaller oil globules. The perivitelline space was about 0.01 mm in width. Hatching occurred 27 h after fertilization at 26.5°C; after 6 or 7 days mortality greatly increased, and no larva survived through metamorphosis (Colin et al., 1987). Fecundity varies from 90 thousand for a 26 cm (total length) fish to over 3 million eggs in a 45 cm (total length) female (Manooch, 1984).

**Size:** Maximum total length 76 cm; maximum weight 8.3 kg.

**Interest to Fisheries:** Although red hind do not grow as large as some other species, it is one of the most important commercial species in the Caribbean in terms of numbers caught and total weight of landings. Red hind landings comprised between 21 and 39% of the total commercial grouper landings from 1985 to 1989 at Bermuda. Caught with hook-and-line, traps, and spear.

**Local Names:** VENEZUELA: Tofia; WEST INDIES: Cabrilla morja, Strawberry grouper.

**Literature:** (Additional references not cited above.) Menzel (1960); Randall (1967); Brownell and Rainey (1971); Carpenter and Nelson (1971); Smith (1971); Thompson and Munro (1978); Bauchot et al. (1984); Bullock and Smith (1991).

**Remarks:** According to Bullock and Smith (1991), commercial fishermen report catching *Epinephelus guttatus* and *E. adscensionis* from the same reefs in the eastern gulf of Mexico.

*Epinephelus haifensis* Ben-Tuvia, 1953

Fig. 321; Pl. XVC

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*Epinephelus haifensis* Ben-Tuvia, 1953:21, fig. 14 (type locality: Mediterranean coast of Israel, off Caesarea; 120 fms.).

**Synonyms:** ?*Perca gigas* Brünnich, 1768:65 (type locality: Marseille, France). ?*Cerna sicana* Doderlein, 1882:250 (type locality: Palermo, Sicily).

**FAO Names:** En - Haifa grouper; Fr - M erou d'Haifa; Sp - Mero de Haifa.

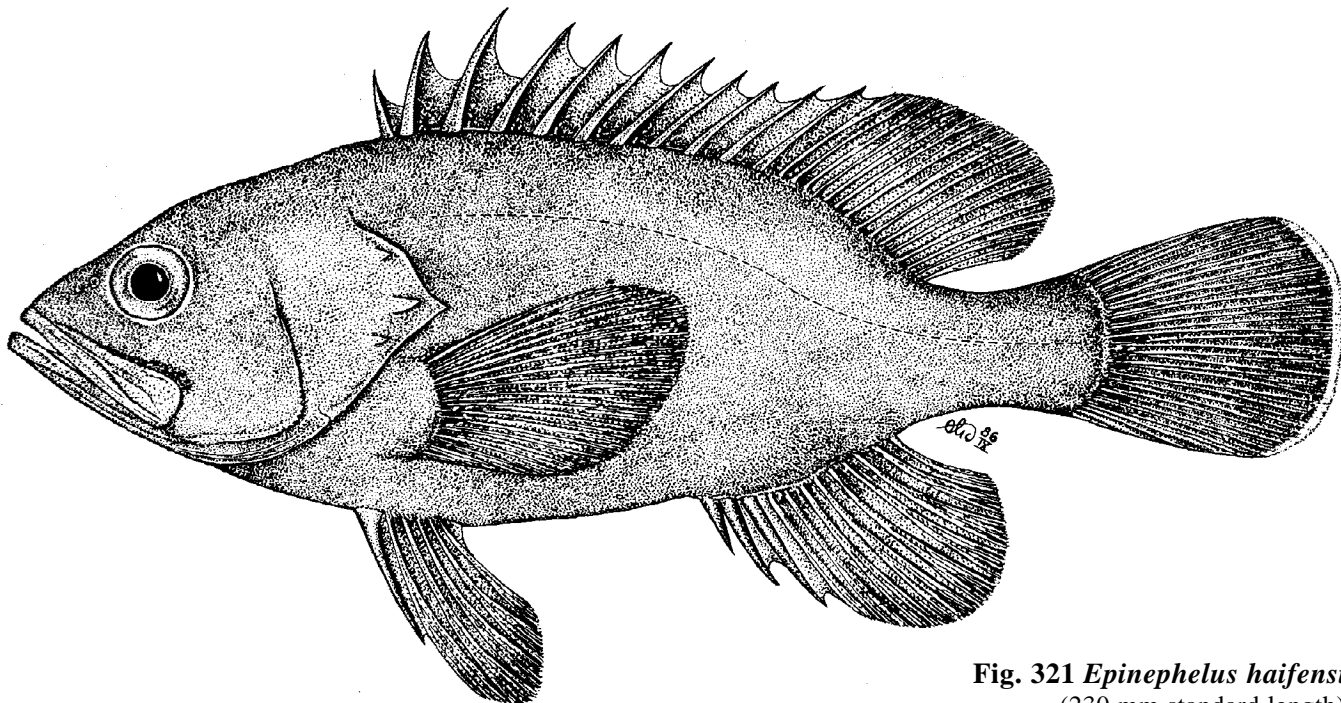


Fig. 321 *Epinephelus haifensis*  
(230 mm standard length)

**Diagnostic Features:** Body depth contained 2.4 to 2.8 times in standard length (for fish 10 to 39 cm standard length). Head length contained 2.2 to 2.4 times in standard length; interorbital area convex; eye diameter greater than interorbital width in fish less than 30 cm standard length, distinctly less than interorbital width in a fish of 39 cm standard length; preopercle subangular, with the serrae at angle enlarged, and 1 to 6 small serrae (usually covered by skin) on lower edge; rear nostrils 2 or 3 times larger than front ones; maxilla naked, not reaching posterior to eye; midlateral part of lower jaw with 2 rows of teeth, the inner teeth distinctly larger than outer teeth. Gill rakers 7 to 10 on upper limb, 13 to 15 on lower limb, total 20 to 25. Dorsal fin with XI spines and 14 or 15 rays, the third or fourth spine longest, the interspinous membranes deeply incised; anal fin with III spines and 9 rays; pectoral-fin rays 18 to 21, the fin length contained 1.4 to 1.9 times in head length; pelvic fins subequal to pectoral fins, reaching to or beyond anus; caudal fin rounded. Body scales distinctly ctenoid, without auxiliary scales; lateral-line scales 64 to 75; lateral-scale series 104 to 112. Pyloric caeca very numerous, forming a large dendritic mass. **Colour:** Head and body dark brown; soft dorsal, caudal, and anal fins blackish distally (where there are no scales), the basal (scaly) part of these fins not so dark; caudal and pectoral fins with white edge; pelvic fins blackish; prominent black streak on cheek at upper edge of maxilla.

**Geographical Distribution:** Eastern Mediterranean to southern Angola (14°S). We have examined specimens from the coasts of Israel, Togo, Nigeria, Cameroun, Congo, and Angola (Fig. 322).

**Habitat and Biology:** Found on bottoms of mud, sand, or rock in depths of 90 to 220 m (Poll, 1954).

**Size:** According to Poll (1954), *E. haifensis* (identified as “*E. gigas*”) attains 110 cm total length and a weight of 25 kg.

**Interest to Fisheries:** Possibly of importance to fisheries in the Mediterranean and along the west coast of Africa, but the catch of *E. haifensis* is uncertain because of its confusion with *E. marginatus*.

#### Local Names:

**Literature:** Poll (1954, as “*Epinephelus gigas*”) and Heemstra (1991). Poll (1954) confirms their identification as *E. haifensis*,

**Remarks:** In the literature on Mediterranean and west African groupers (Cadenat, 1935; Tortonese, 1970; Bauchot and Pras, 1980; etc.) *E. haifensis* may have been confused with *E. marginatus* under the name of “*Epinephelus guaza*” or “*Epinephelus gigas*.” Although we have examined only 19 specimens of *E. haifensis*, they all have 9 anal-fin rays; whereas, 79 of the 80 specimens of *E. marginatus* that we have seen have 8 anal-fin rays. Consequently, references to *E. guaza* with 8 or 9 anal-fin rays could apply to both species.

The species described as *Perca gigas* by Brünnich (1768) may be the same as *E. haifensis*, but the pectoral-fin count of 16 given by Brünnich is too low, and the colour description (“*corporis ochraceus, obscuro fuscoque nebulosus; caput subtus rubrum ut + pinnae pectorales extrorsum.*” [body yellowish, with indistinct dark blotches; lower part of head and margin of pectoral fins reddish]) is more similar to the colour pattern of *E. marginatus*. Without a type specimen, *Perca gigas* is probably best regarded as a *nomen dubium*.

The stuffed holotype of *Cerna sicana* Doderlein from Sicily has only X dorsal-fin spines. Tortonese (1956) redescribed this specimen and concluded that it was not the western Atlantic species *E. nigrinus*, which normally has X dorsal-fin spines. Except for having only X dorsal-fin spines, this specimen fits the description of *E. haifensis* given above. *Cerna sicana* may represent a rare species with X dorsal-fin spines that is known from only a single specimen, but it seems more likely that this holotype is simply an abnormal specimen of *E. haifensis*. Since we are reluctant to use *E. sicana* as the valid name for a species that normally has XI dorsal-fin spines, we here accept *Epinephelus haifensis* as the valid name for this species.

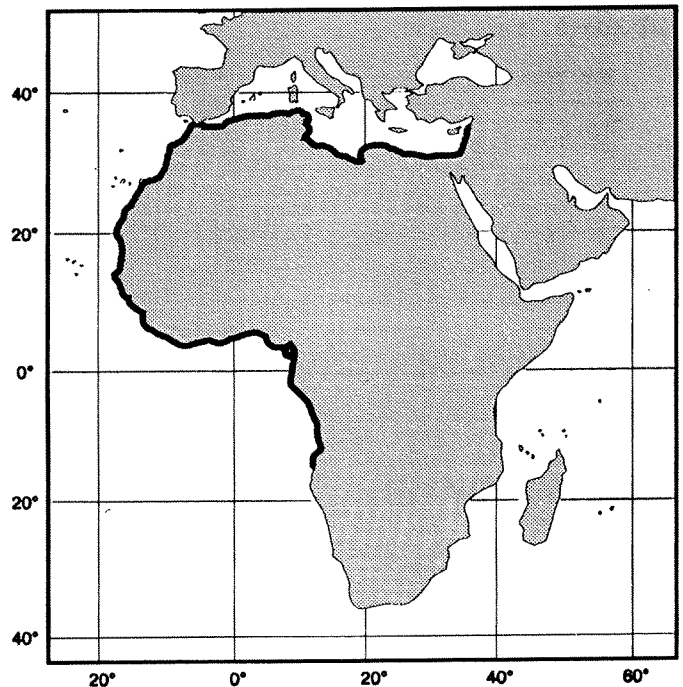


Fig. 322