Epinephelus spilotoceps Schultz, 1953 Fig. 407; Pl. XXIIE **SERRAN Epin 54**

Epinephelus spilotoceps Schultz, 1953:332, 357, figs 56 and 57 (type locality: Bikini Atoll, Marshall Islands).

Synonyms: ***Epinephelus salonotus*** Smith and Smith, 1963:15, pl. 14, fig. I (type locality: Cape Delgado, Mozambique).

FAO Names: En - Foursaddle grouper; **Fr** - Mérou quatre selles; **Sp -** Mero cuatro monturas.

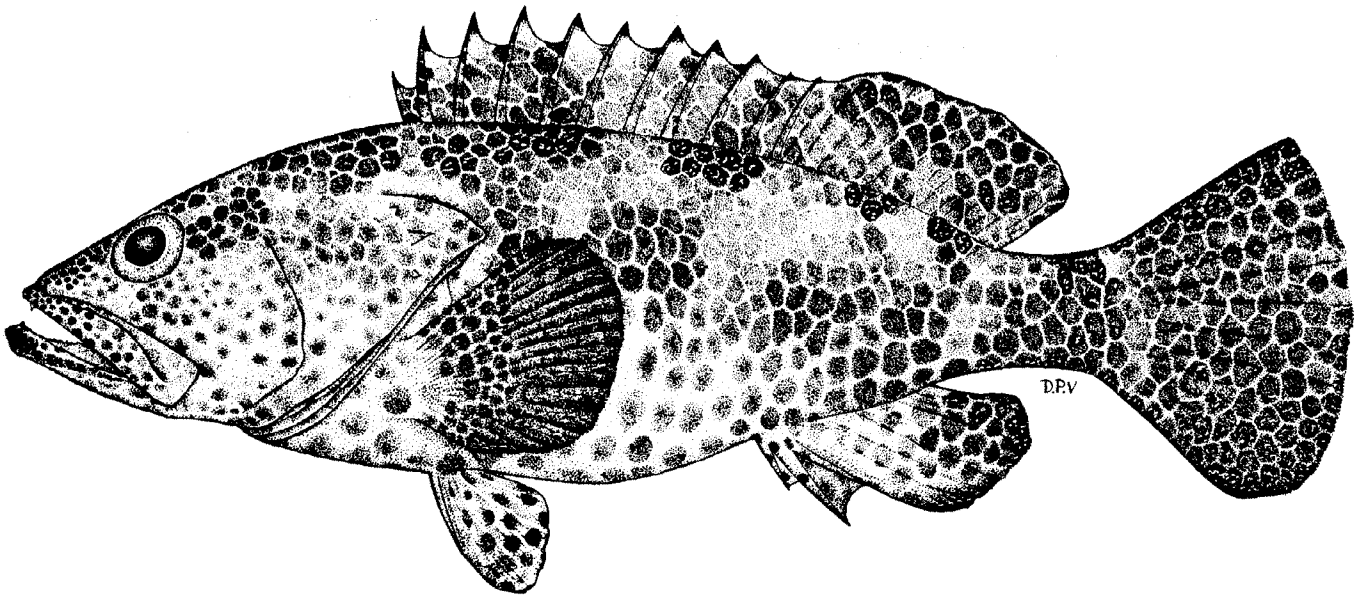

Fig. 407 *Epinephelus spilotoceps*
(300 mm standard length)

Diagnostic Features: Body depth contained 3.1 to 3.6 times in standard length (for fish 10 to 25 cm standard length). Head length contained 2.2 to 2.6 times in standard.length; interorbital area flat or concave; dorsal head profile convex; preopercle rounded, with a shallow notch, below which the serrae are enlarged but covered with skin; upper edge of operculum almost straight; nostrils subequal; maxilla reaches to or beyond vertical at rear edge of eye; midlateral part of lower jaw with 2 to 4 rows of teeth: lower jaw projecting in front of upper jaw. Gill rakers 6 to 9 on upper limb, 16 to 18 on lower limb. Dorsal fin with XI spines and 14 to 16 rays, the third or fourth spine longest, its length 2.8 to 3.6 times in head length and distinctly shorter than longest dorsal-fin ray; anal fin with III spines and 8 rays, the second spine usually longest, its length contained 2.4 to 3.7 times in head length and usually more than peduncle depth; pectoral-fin rays 17 to 19; pectoral-fin length 21 to 24% of standard length, contained 1.7 to 2.1 times in head length; pelvic-fin length contained 1.9 to 2.4 times in head length; caudal-peduncle depth contained 3.5 to 4.1 times in head length: caudal fin rounded; middle caudal-fin rays contained 1.7 to 2.0 times in head length. Lateral-body scales ctenoid, with auxiliary scales; lateral-line scales 59 to 69; lateral-scale series 86 to 100. **Colour:** Head, body, and median fins pale, mostly covered with close-set dark brown, olive, or reddish brown spots, those on dorsolateral parts of head and body and on median fins polygonal and close-set, the pale interspaces forming a white reticulum; spots on ventral part of head and body more rounded, more separated and often more reddish; large dark brown to black saddle blotch on body at base of last 4 dorsal-fin spines and extending onto basal part of fin; 2 similar but smaller dark blotches at base of soft dorsal-fin rays and a third on rear end of peduncle; these dark saddle blotches uniformly pigmented (on juveniles) or comprising a group of extra dark body spots separated by the white reticulum (on adults); spots on head progressively smaller and darker anteriorly, those on snout blackish brown and about size of nostrils, with 3 or 4 irregular rows along front of upper lip; pectoral fins with close-set reddish brown spots, larger and more distinct towards base of pectoral fins, the distal part dull yellowish green; tips of dorsal-fin spines blackish, with a short white filament.

Geographical Distribution: ***E. spilotoceps*** is widely distributed in the tropical Indo-Pacific region, from the east coast of Africa (from Zanzibar south to Ponta Zavora, Mozambique) to the Line Islands in the central Pacific (Fig. 408). Except for its occurrence along the African coast, it seems to be primarily an insular species; we examined one specimen from Hong Kong, but there are no other records from the Asian mainland. It is not known from the Red Sea, Persian Gulf, Sri Lanka, Philippines, Taiwan, Japan, or Australian waters (although it is found at Rowley Shoals off Western Australia). It occurs at most (probably all) of the islands of the tropical Indian and west-Central Pacific oceans.

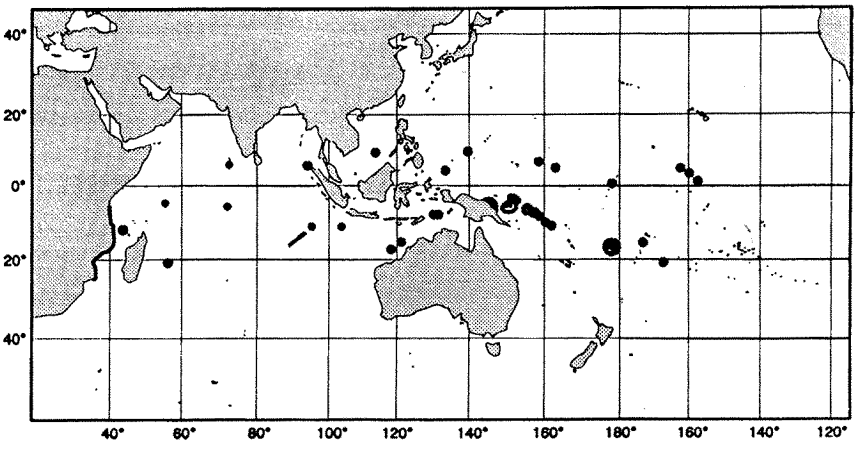

Fig. 408

Habitat and Biology: Like the other "reticulated groupers," ***E. spilotoceps*** is a shallow-water coral-reef species. Nothing has been published on the biology of this species.

Size: Maximum known, 25 cm standard length (31 cm total length).

Interest to Fisheries: ***E. spilotoceps*** is probably of importance to artisanal fisheries where it is common, but there are no statistics available for this species.

Local Names:

Literature: Randall and Heemstra (1991).

Remarks: ***E. spilotoceps*** is one of 9 shallow-water coral-reef species that have a rounded caudal fin and close-set dark brown spots with the pale interspaces forming a network on the body. These "reticulated groupers" have been much confused in the literature, and many museum specimens have been misidentified. The other species differ from ***E. spilotoceps*** as follows:

E. bilobatus has 3 bilobed dark brown blotches or close-set pairs of dark spots on body at base of dorsal fin but no dark saddle on peduncle, dorsal-fin rays 17 or 18, and lateral-line scales 48 to 52.

E. faveatus has the lateral-body scales smooth (except for area covered by pectoral fins), dorsal-fin rays 16 to 18, 2 oblique dark bands on sides of chest, 2 rows of teeth at sides of lower jaw, and lateral-line scales 48 to 52.

E. hexagonatus has conspicuous white dots on body between the dark spots (white dots not apparent on some preserved specimens) and a large, irregular, dark brown or olive spot behind eye; second anal-fin spine distinctly longer than third, length of second anal-fin spine contained 2.1 to 2.5 times in head length; length of fifth dorsal-fin spine contained 2.5 to 2.8 times in head length; and pelvic-fin length contained 1.8 to 2.1 times in head length.

E. macrospilos has the lateral-body scales mostly smooth, pectoral fins dusky with narrow white edge, no large black blotch at base of last 4 dorsal-fin spines (although 2 or 3 adjacent spots here may be darker than other brown spots on body), dark spots on snout much larger than nostrils, and lateral-line scales 48 to 52.

E. maculatus has the third or fourth dorsal-fin spine longest, its length contained 2.1 to 2.6 times in head length and usually longer than dorsal-fin rays, the interspinous dorsal-fin membranes not or only slightly incised; and small juveniles are yellowish brown, with well separated small black spots (mainly on head and fins) and a few irregular white spots and blotches on body and dorsal fin.

E. melanostigma has a single black blotch at base of last 4 dorsal-fin spines, dark spots on snout distinctly larger than nostrils, and caudal-peduncle depth contained 3.2 to 3.8 times in head length and usually more than length of second anal-fin spine.

E. merra has pectoral fins covered with conspicuous, small black spots largely confined to the rays, no dark saddle blotches at base of dorsal fin, and lateral-line scales 48 to 54.

E. quoyanus has no black blotches at base of dorsal fin (although some brown body spots may be darker here), sides of chest with 2 oblique dark brown bands, dorsal-fin rays 16 to 18, body depth contained 2.8 to 3.2 times in standard length, caudal-peduncle depth contained 3.1 to 3.6 times in head length, and pectoral-fin length contained 1.2 to 1.7 times in head length.

Epinephelus stictus Randall and Allen, 1987 | Fig. 409; Pl. XXIIF | **SERRAN Epin 94**

Epinephelus stictus Randall and Allen, 1987:394, fig. 1 (type locality: 20 km south of Heywood Shoals, Western Australia; 13º33'S, 124º2'E; depth 138 to 142 m).

Synonyms: Often misidentified as ***"Epinephelus diacanthus."***

FAO Names: En - Black-dotted grouper; **Fr** - Mérou points noirs; **Sp** - Mero punteado negro.

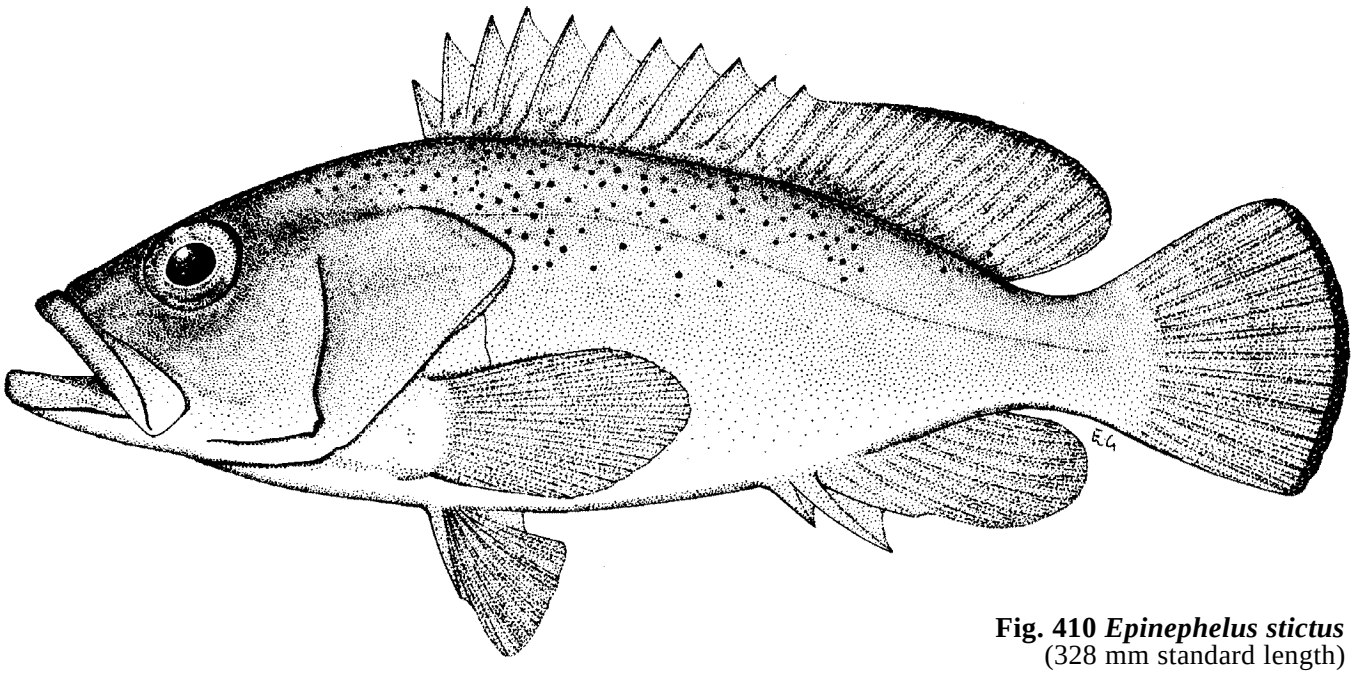

Fig. 410 ***Epinephelus stictus***
(328 mm standard length)

Diagnostic Features: Body depth contained 2.9 to 3.4 times in standard length (for fish 12 to 33 cm standard length). Head large, its length contained 2.2 to 2.4 times in standard length; interorbital region flat, the dorsal head profile slightly convex; preopercle with 1 to 4 distinctly enlarged serrae at the angle; upper edge of operculum straight; nostrils subequal; maxilla reaches to or slightly past vertical at rear edge of eye: midlateral part of lower jaw with 2 rows of teeth. Gill rakers 7 or 8 on upper limb, 14 to 16 on lower limb. Dorsal fin with XI spines and 15 or 16 rays, the third or fourth spine longest, its length contained 2.7 to 3.4 times in head length and shorter than longest rays, the interspinous membranes incised; anal fin with III spines and 8 rays; pectoral fins not fleshy, with 18 to 20 rays; pectoral-fin length contained 1.7 to 1.9 times and pelvic-fin length contained 2.1 to 2.6 times in head length; caudal fin rounded; caudal-peduncle depth contained 3.8 to 4.2 times in head length. Lateral-body scales ctenoid, without auxiliary scales; lateral-line scales 48 to 51; lateral-scale series 84 to 96. Pyloric caeca 12. **Colour:** Body and head yellowish brown dorsally: belly and rear part of bodv whitish ventrally; chest and ventral parts of head pale reddish orange; body with 5 faint oblique dark bars (may be lost in preservative); midlateral part of each bar may be darker, representing a series of squarish dark blotches continued from the dark band running from eye to end of operculum; numerous dark brown to black dots on dorsolateral parts of head and body, sometimes concentrated within dark bars and bands. Fins pale, the rays darker than membranes; soft dorsal and caudal fins with narrow dark brown margin; pelvic and anal fins often darker than other fins; anal fin may also have a narrow dark margin; dark line at base of dorsal fin (indistinct anteriorly).

Geographical Distribution: ***E. stictus*** is known only from southern Japan, Hong Kong, Hainan Island, Viet Nam, "South China Sea", Java, and northwest Australia (Fig. 410). The Japanese records (Katayama, 1960, 1988, as ***"Epinephelus diacanthus"***) may be based on the single specimen reported from Kochi City by Kamohara (1954). The record from Taiwan (Katayama, 1960:168 "Formosa") is dubious, as neither Shen (1984) nor Lee (1990) report this species in their surveys of Taiwanese serranids.

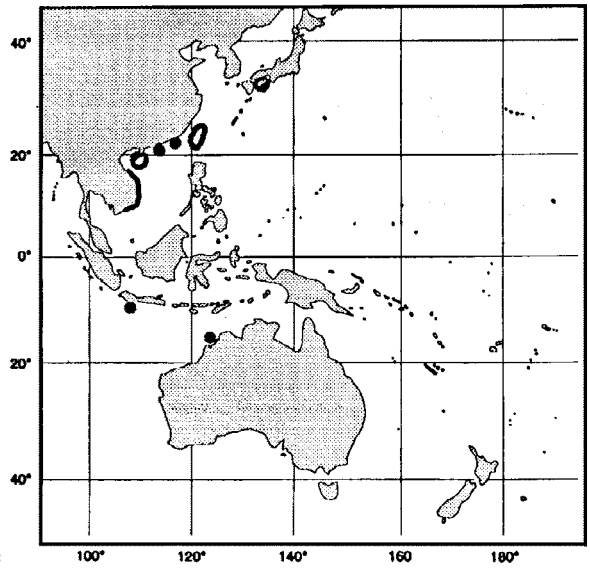

Fig.409

Habitat and Biology: ***E. stictus*** is found on mud or sand bottom in depths of 60 to 142 m.

Size: Attains at least 33 cm standard length (41 cm total length).

Interest to Fisheries: Although this species was one of the most common species of grouper caught by trawlers in the vicinity of Hong Kong, Chan (1968) reported that it was not of much commercial importance. The small size and poor edible quality of this species probably accounts for its low value in the markets.

Local Names: HONG KONG: Six-banded grouper, Cheung-pei-paan; JAPAN: Aohata-modoki.

Literature: Randall and Heemstra (1991).

Remarks: ***E. stictus*** is most similar to ***E. diacanthus*** of the northern Indian Ocean. These two species have a large head, similar shaped body, distinctly enlarged serrae at the angle of the preopercle, the same fin-ray counts, a colour pattern of 5 dark bars on body, and both species are found on sedimentary bottoms. ***E. diacanthus*** differs from ***E. stictus*** in lacking black dots on the body and in having 52 to 60 lateral-line scales, lateral-scale series 103 to 21, and more gill rakers (8 to 10 on upper limb, 15 to 17 on lower limb).

Epinephelus stoliczkae (Day, 1875) Fig. 411; Pl. XXIIIA **SERRAN Epin 55**

Serranus stoliczkae Day, 1875:11, pl. 1, fig. 3 (type locality: coast of Sind, Pakistan).

Synonyms: None.

FAO Names: En - Epaulet grouper; **Fr** - Mérou épaulette; **Sp** - Mero hombrero

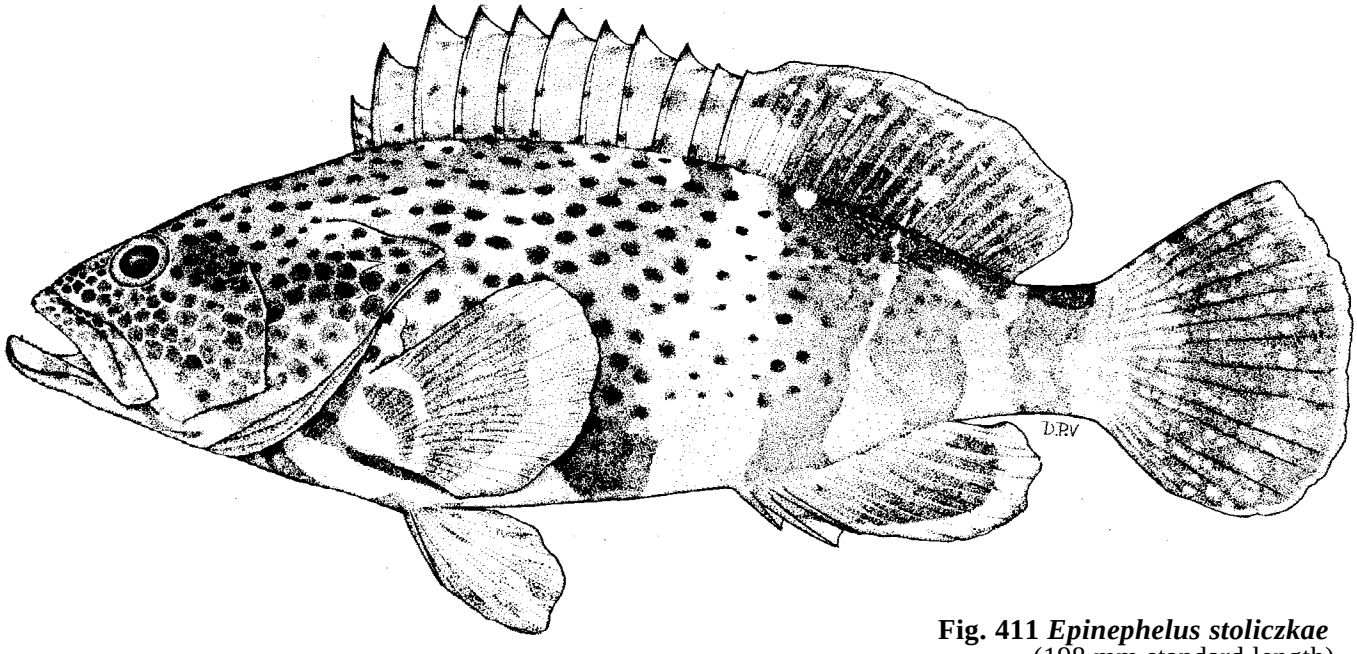

Fig. 411 ***Epinephelus stoliczkae***
(198 mm standard length)

Diagnostic Features: Body robust, the depth contained 2.8 to 3.3 times in standard length (for fish 10 to 26 cm standard length). Head length contained 2.3 to 2.6 times in standard length; interorbital slightly to moderately convex; serrae at corner of preopercle moderately enlarged; upper edge of operculum almost straight; nostrils subequal or posterior nostrils slightly larger; maxilla reaches past vertical at rear edge of eye; midlateral part of lower jaw with 2 rows of teeth. Gill rakers 6 to 8 on upper limb, 13 to 15 on lower limb, total 20 to 23. Dorsal fin with XI spines and 16 to 18 rays, the fourth spine usually longest, its length contained 2.4 to 3.1 times in head length and subsqual to longest ray, the interspinous membranes incised; anal fin with III spines and 8 rays, the second and third spines subequal; pectoral-fin rays 17 to 19; pectoral-fin length contained 1.6 to 2.0 times, pelvic-fin length contained 2.0 to 2.5 times in head length; caudal fin rounded.Body scales smooth except for area covered by pectoral fin; lateral-line scales 48 to 53; lateral-scale series 93 to 106. **Colour:** Head and body yellowish grey, with dark orange-red or reddish brown spots except ventrally and posteriorly; a dark grey bar below posterior dorsal-fin spines, 2 more dark bars below soft dorsal fin and another on caudal peduncle (forming a black saddle dorsally); pectoral-fin base pale, with a dark oval or semicircular blotch across base, central part of fin dark brownish grey, distal third of fin yellowish: chest pale, with dark bands; spinous dorsal fin yellowish, with a row of dark red spots along the base and 2 faint dark longitudinal bands; other fins dark yellowish grey-brown; median fins with a broad yellowish margin posteriorly.

Geographical Distribution: ***E. stoliczkae*** is known from the Red Sea (including Gulf of Suez) and northwestern Indian Ocean to the coast of Pakistan. We have examined specimens from the Red Sea, Gulf of Aden, Somalia, Gulf of Oman, and Pakistan (Fig. 412). It has not been reported from the Gulf of Aqaba or the Persian Gulf.

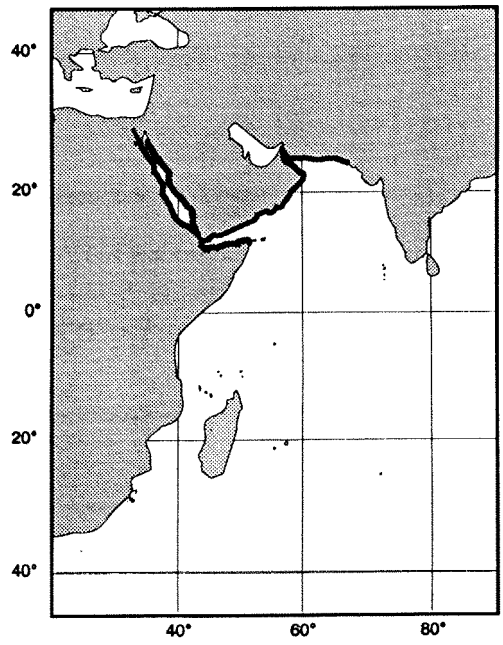

Fig. 412

Habitat and Biology: This species occurs on shallow sandy bottoms near small coral heads: it is not known from well-developed coral reefs. Nothing has been published on the biology of this species.

Size: ***E. stoliczkae*** attains at least 38 cm total length.

Interest to Fisheries: No published information is available for this species. Caught with hook-and-line and in traps. Sold fresh in local markets.

Local Names:

Literature: Randall and Heemstra (1991).

Remarks: The distinctive colour pattern of ***E. stoliczkae*** is unlikely to be confused with other species. Although ***E. rivulatus*** is vaguely similar, it lacks dark reddish brown spots on the head and body, and each body scale has a small bluish white spot.

Epinephelus striatus (Bloch, 1792) Fig. 413; Pl. XXIIIB **SERRAN Epin 22**

Anthias striatus Bloch, 1792:6:125, pl. 324 (type locality: Atlantic Ocean).

Synonyms: ***Anthias cherna*** Bloch and Schneider, 1801:310 (after Parra, 1787:pl. 24, fig. 1; type locality: Cuba). ***Sparus chrysomelas*** Lacepéde, 1802:160 (based on a drawing by Plumier; type locality: Martinique). ***Serranus gymnopareius*** Valenciennes in Cuv. and Val., 1828:248 (locality unknown).

FAO Names: En - Nassau grouper; **Fr** - Mérou rayé **Sp** - Cherna criolla.

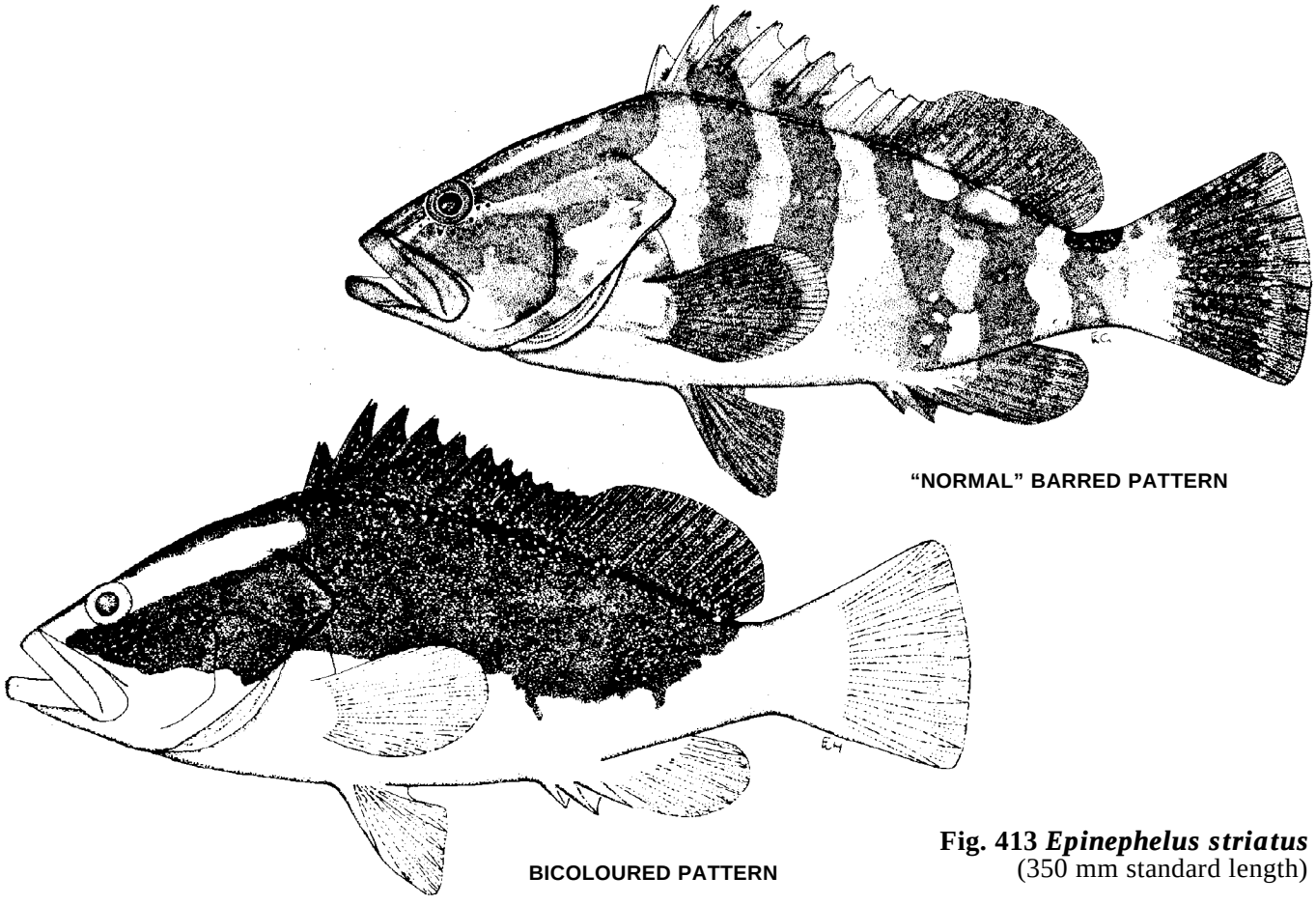

Fig. 413 *Epinephelus striatus*
(350 mm standard length)

Diagnostic Features: Body depth distinctly less than head length, depth contained 2.6 to 2.9 times in standard length (for fish 16 to 33 cm standard length). Head length contained 2.4 to 2.6 times in standard length; interorbital convex; preopercle evenly serrate, without salient angle; posterior nostrils somewhat enlarged and elongated or comma-shaped in large adults. Gill rakers 8 or 9 on upper limb and 15 to 17 on lower limb, total 23 to 26. Dorsal fin with XI spines and 16 to 18 rays, the third or fourth spine longest and the interspinous membranes distinctly incised; anal fin with III spines and 8 rays; pectoral-fin rays 17 to 19; caudal fin rounded in juveniles, convex in adults. Scales ctenoid, about 50 lateral-line scales and 98 to 108 lateral-scale series. **Colour:** Ground colour generally buff, with 5 dark brown vertical bars and a large black saddle blotch on top of caudal peduncle; a row of black dots below and behind eye. Distinctive dark tuning fork mark beginning at front of upper jaw, extending dorsally along interorbital region, and bifurcating on top of head behind the eyes; another dark band from tip of snout through eye and then curving upward to meet its fellow just before dorsal-fin origin. Some fish have irregular pale spots and blotches all over the head and body; specimens from deep water are somewhat pinkish or reddish ventrally. The colour pattern can change in a few minutes from almost white to uniformly dark brown depending on the mood of the fish.

Adistinctive bicoloured pattern is seen when two adults or an adult and large juvenile meet. In such instances the smaller fish (which usually turns laterally and swims away) displays a bicoloured pattern, with the dorsolateral parts of the head dark brown or blackish, the ventral parts, caudal peduncle and all fins except the dorsal are white, and there is an oblique white band from the tip of the snout through the eye and continued posteriorly towards the dorsal fin. After turning away, the bicoloured fish usually resumes its "normal" barred pattern in a few seconds. Colin (1992) observed that this bicoloured pattern predominates in aggregations of spawning fishes (both males and females) and suggested that this pattern may indicate a submissive or non-aggressive state that facilitates the peaceful aggregation of these normally solitary, territorial fish.

Geographical Distribution: Western North Atlantic: Bermuda, Florida, Bahamas, Yucatan Peninsula, and throughout the Caribbean to southern Brazil (Fig. 414). Not known from the Gulf of Mexico except at the Campeche Bank off the coast of Yucatan, at Tortugas, and off Key West.

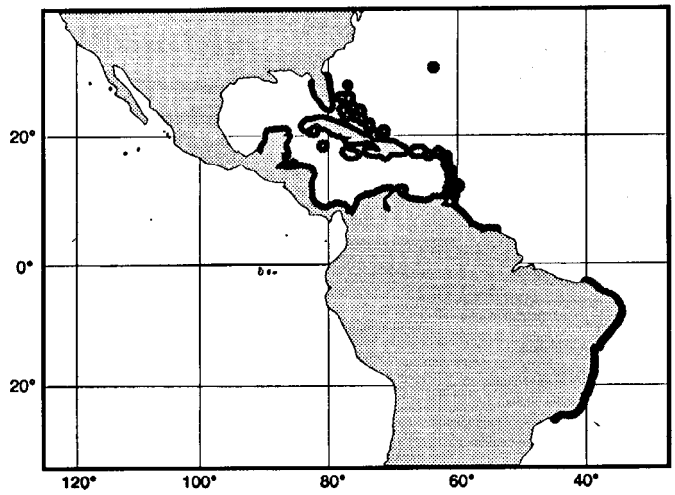

Fig. 414

Habitat and Biology: This species is common on shallow coral reefs throughout the West Indies and Caribbean region, with a depth range extending to at least 90 m. Juveniles are common in seagrass beds. Its diet comprises mainly fishes (54%) and crabs (23%), with lesser amounts of other crustaceans and molluscs (Randall, 1967). Juveniles feed mostly on crustaceans, and large adults mostly on fishes (Lee, 1974).

Spawning aggregations of a few dozen to perhaps as many as 100 000 individuals have been reported from the Bahamas, Jamaica, Cayman Islands, Belize, and the Virgin Islands. Virtually all islands or banks in the Caribbean have, or had in the past, spawning aggregations; unfortunately many have been fished to commercial "extinction." These aggregations occur in depth of 20 to 40 m at specific locations of the outer reef shelf edge in December, January and/or February at or near the time of the full moon (Thresher, 1984; Smith, 1972; Olsen and La Place, 1979; Colin et al., 1987; Colin, 1992). During spawning, most fish (males and females) display the bicoloured (non-aggressive) pattern and hover above the bottom. Some females remain in the barred pattern, becoming very dark as mating approaches and were closely followed by bicoloured fish during courtship. The bicoloured fish may also swim in circles beside the dark barred female. Spawning occurs at sunset, in groups of 3 to about 25 fish. Release of gametes is preceded by various movements of the courting groups: vertical spirals, short vertical runs followed by rapidly crowding together then rapidly dispersing, and horizontal runs near the bottom. Mating is initiated by a dark phase fish (presumed female) dashing forward and upward, the female is closely followed by bicoloured males releasing a white cloud of sperm, and other bicoloured fish (presumably females, which are also releasing eggs) (Colin, 1992).

The supposed protogynous mode of grouper reproduction in ***Epinephelus striatus*** is complicated by the recent discovery of some males that have not gone through a previous female stage. These primary males are smaller than the secondary males, which are fish that have spawned one or more times as females and then changed sex (Y. Sadovy and P.L. Colin, personal communication). According to C.L. Smith (1971), females at Bermuda were said to transform to males between 30 and 80 cm standard length. But it now

seems possible that the smallest males may have developed directly as adult males, without going through an initial period as functional females.

Eggs and larvae of ***Epinephelus striatus*** that had spawned in captivity were described by Guitart Manday and Fernandez (1966) and Powell and Tucker (1992).

Olsen and LaPlace (1979) studied age and growth and breeding aggregations of ***E. striatus*** at St. Thomas in the Virgin Islands. Their calculated von Bertalanffy growth equation is $L_t = 97.4(1\text{-}e^{-0.183(t+0.488)})$ where Lt is total length in mm and A_{95} (age at which 95% of asymptotic size is attained) = 15.9 years (90 cm standard length). The breeding aggregation at St. Thomas was subjected to increasing fishing pressure for 20 years, and in the 1973-74 season, the catch declined sharply. This decline was attributed to a combination of intense fishing pressure and increased predation by sharks attracted to the breeding aggregation and the struggling fish caught by hook-and-line.The breeding aggregation was observed over coral ridges at a depth of 50 m and comprised a conical mass of 1 000 to 2 000 fish extending upwards about 30 m. The fish at the bottom were actively swimming and exhibited both the bicoloured and normal barred colour patterns; the fish in midwater were stationary.

Size: Attains at least 100 cm total length and 25 kg.

Interest to fisheries: One of the most important food fish in the West Indies and throughout the Caribbean. Caught with hook-and-line and in traps.

Local names: CUBA: Cherna criolla; VENEZUELA: Mero gallina.

Literature: Smith (1971); Bauchot et al. (1984); Colin (1992).

Epinephelus suborbitalis Amaoka and Randall, 1990 | Fig. 415 | **SERRAN Epin 95**

Epinephelus suborbitalis Amaoka and Randall, 1990:1, figs l-5 (type locality: Minami-Koho Seamount, Kyushu-Palau Ridge, western Pacific, 26º10'N, 135º47'E).

Synonyms: ***Epinephelus*** sp. Amaoka in Okamura et al., 1982:374, fig. 148.

FAO Names: En - Seamount grouper; **Fr** - Mérou guyot; **Sp** - Mero de Minami-Koho.

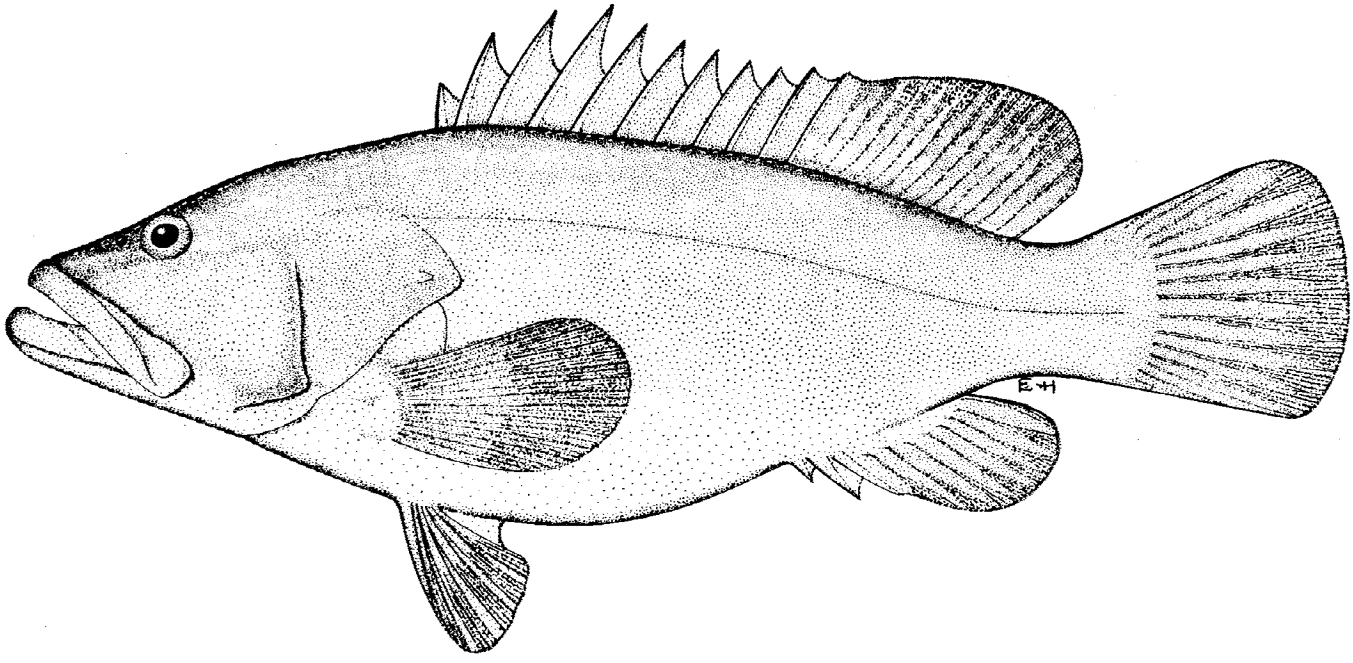

Fig. 415 *Epinephelus suborbitalis*
(950 mm standard length)

Diagnostic Features: (Known only from a single large adult.) Body robust, the depth contained 2.7 times in standard length (95 cm standard length); body width contained 2.25 times in the depth. Head length contained 2.4 times in standard length; interorbital area slightly convex, the width contained 4.4 times in head length; upper edge of operculum convex: posterior nostril of large adults broadly oval, its diameter about 3 times that of anterior nostril; ventral edge of maxilla with a step-like expansion distally; midlateral part of lower jaw with 3 rows of teeth; inner symphyseal teeth of upper jaw not enlarged. Gill rakers 8 on

upper limb, 15 on lower limb. Dorsal fin with XI spines and 14 rays; the fourth spine longest, its length contained 3.1 times in head length, the interspinous membranes deeply incised; anal fin with III spines and 8 rays; pectoral-fin rays 19; caudal-peduncle depth contained 3.3 times in head length; caudal fin slightly rounded. Lateral-body scales ctenoid; no auxiliary scales on body; lateral-line scales 63; lateral-scale series 122. **Colour:** Uniform greyish brown, the fins darker.

Geographical Distribution: ***E. suborbitalis*** is known only from Kyushu Palau Ridge south of Japan (Fig. 416).

Habitat and Biology: The only known specimen was collected in a trawl at a depth of 360 to 570 m.

Size: Attains at least 95 cm standard length (118 cm total length).

Interest to Fisheries: None.

Local Names:

Literature: Amaoka and Randall (1990); Okamura et al. (1982) illustrated this specimen in colour.

Remarks: ***E. suborbitalis*** is known only from a single large adult.

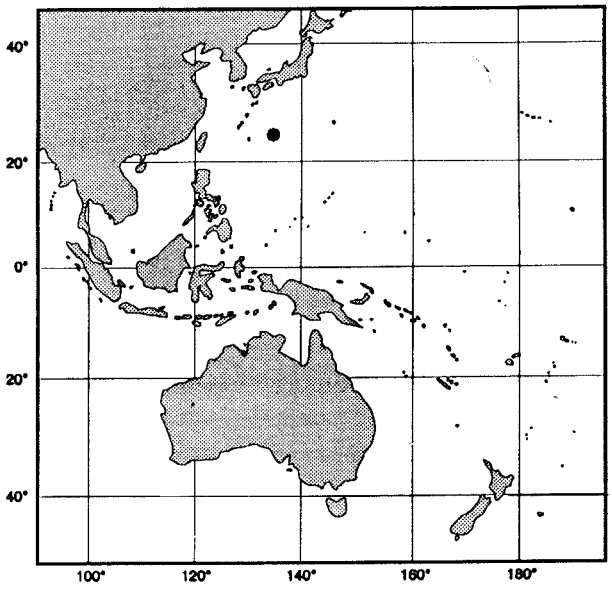

Fig. 416

Epinephelus summana (Forsskål, 1775) Fig. 417; PI. XXIIIC **SERRAN Epin 11**

Perca summana Forsskål, 1775:xi, 42 (type locality: Red Sea).

Synonyms: ***Serranus leucostigma*** Valenciennes in Cuv. and Val.,1828:346 (type locality: Massaua, Red Sea coast of Arabia). ***Sebastes meleagris*** Peters, 1865c:392 (type locality:Massaua).

FAO Names: En - Summan grouper; **Fr** - Mérou summan; **Sp** - Mero sumán.

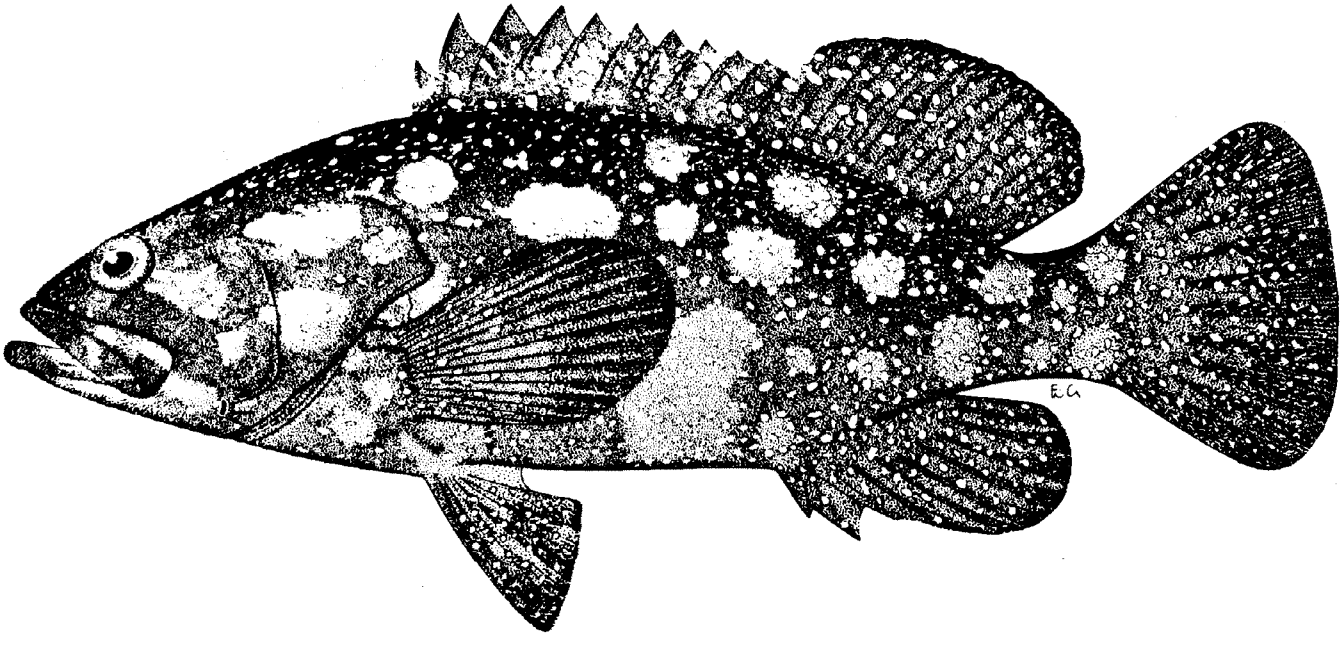

Fig. 417 *Epinephelus summana*
(334 mm standard length)

Diagnostic Features: Body depth contained 2.7 to 3.1 times in standard length (for fish 15 to 43 cm standard length); body width contained 1.8 to 2.3 times in the depth. Head length contained 2.2 to 2.6 times in standard length; interorbital area flat or slightly concave; serrae at corner of preopercle slightly enlarged; upper edge of operculum strongly convex; posterior nostril of adults vertically elongate, its length contained 2 to 4 times diameter of anterior nostril; maxilla extends to vertical at rear edge of orbit; midlateral part of lower jaw with 2 to 4 rows of subequal teeth. Gill rakers 8 to 10 on upper limb, 14.to 17 on lower limb. Dorsal fin with XI spines and 14 to 16 rays, the third or fourth spine longest, its length contained 2.7 to 3.2 times in head length and subequal to longest dorsal-fin rays; interspinous dorsal-fin membranes incised; anal fin with III spines and 8 (rarely 9) rays; pectoral-fin rays 16 to 18; pectoral-fin length contained 1.65 to 2.1 times, pelvic-fin length contained 2.15 to 2.7 times in head length; caudal fin rounded. Lateral-body scales ctenoid, with auxiliary scales; lateral-line scales 49 to 54; lateral-scale series 95 to 110. **Colour:** Dark olive-brown to dark brownish grey; head and body with large pale botches (most larger than eye) and numerous small white spots overlying this pattern: on the head the small white spots are confined to the pale blotches; fins covered with small white spots, except for pectoral fins where the white spots are usually confined to the base; black maxillary streak present; blackish brown blotches sometimes visible at base of dorsal fin and on top of peduncle. Juveniles dark grey, with large dark-edged white spots of variable size on head, body, and fins; juveniles less than 4 cm standard length with irregular black bands across pectoral fins.

Geographical Distribution: ***E. summana*** is known only from the Red Sea and Gulf of Aden (Fig. 418).

Habitat and Biology: Usually found on shallow coral reefs in lagoons or brackish water environments. We have not found any published information on the biology of this species.

Size: Attains 43 cm standard length, 52 cm total length.

Interest to Fisheries: No fishery information for ***E. summana*** is available. Caught with hook-and-line, spear, and in traps. Sold fresh in local markets.

Local Names:

Literature: Randall (1983); Randall and Ben-Tuvia (1983); Randall and Heemstra (1991).

Remarks: ***E. summana*** is closely related to the allopatric ***E. ongus*** of the Indo-west Pacific. Most authors have misidentified ***E. ongus*** as ***E. summana. E. ongus*** has longer pectoral fins (length 1.4 to 1.7 times in head length), longer pelvic fins (length 2.0 to 2.3 times in head length) and adults do not have the rear nostrils vertically elongated. Also, ***E. ongus*** has a narrow white margin and broad blackish submarginal band posteriorly on the median fins (these markings are absent or poorly developed in ***E. summana***), and the white spots on adult ***E. ongus*** tend to coalesce posteriorly to form narrow wavy longitudinal stripes.

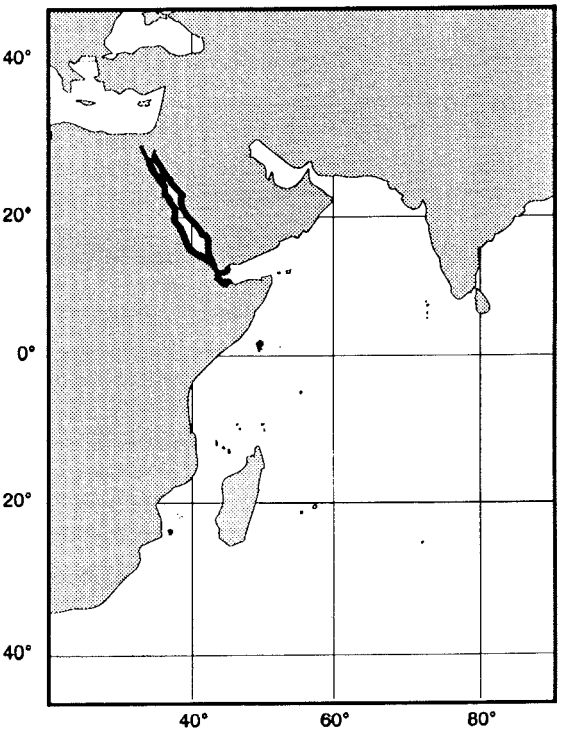

Fig. 418

E. caeruleopunctatus, which does not occur in the Red Sea, is also similar to ***E. summana;*** it differs in having the upper edge of the operculum straight, sinuous or slightly convex, pectoral-fin rays 17 to 19, and it has only a few white spots on the fins.