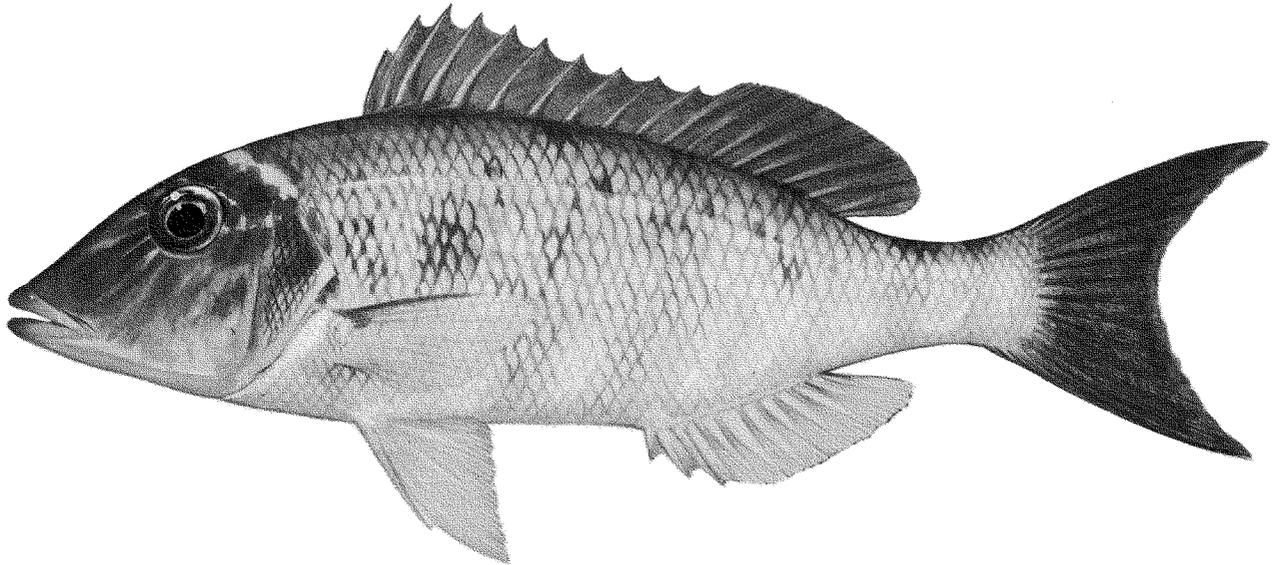


Lethrinus amboinensis Bleeker, 1854

Fig. 99, Plate II, 11

LETH Leth 21***Lethrinus amboinensis*** Bleeker 1854d, Nat.Tijdsch.Ned.Indië., 6:490 (Ambon).**Synonyms:** None**FAO Names:** En - Ambon emperor.**Fig. 99**

Diagnostic Features: Body moderately elongate, its depth 3.1 to 3.4 times in standard length. Head length 1.1 to 1.3 times in body depth, 2.6 to 2.8 times in standard length, dorsal profile in front of eye with a distinct hump in large individuals; snout moderately long, its length about 1.7 to 1.9 times in head length, measured without the lip the snout is 0.7 to 0.9 times in cheek height, its dorsal profile concave, snout angle relative to upper jaw between 45 and 55 degrees; interorbital space convex; posterior nostril an oblong longitudinal opening, about halfway between orbit and anterior nostril; eye not situated close to dorsal profile, its length 4.9 to 6.2 times in head length; cheek not very high, its length 2.6 to 2.9 times in head length; lateral teeth in jaws conical; outer surface of maxilla smooth, or with a longitudinal ridge. Dorsal fin with 10 spines and 9 soft rays, the third dorsal spine usually the longest, its length 2.4 to 2.7 times in body depth; anal fin with 3 spines and 8 soft rays, the first soft ray usually the longest, its length much less than the base of the soft portion of the anal fin and 0.5 to 0.6 times in the length of the entire anal fin base; pectoral rays 13; pelvic fin membranes between the rays closest to the body with dense melanophores. Lateral-line scales 47 to 48; cheek without scales; 4 ½ scale rows between lateral line and base of middle dorsal fin spines; usually 16 or 17 scale rows in transverse series between origin of anal fin and lateral line; 15 or 16 (usually 15) rows in lower series of scales around caudal peduncle; 9 to 11 scales in supratemporal patch; inner surface of pectoral fin without scales; posterior angle of operculum fully scaled. **Colour:** Body yellowish with scattered indistinct dark blotches; head brown, sometimes with light streaks; lips reddish; the pectoral axil orangish; the basal portion of the center rays of pectoral fin white, the outer edges yellow; pelvic and anal fins white or yellowish; dorsal and caudal fins mottled brown or yellow with an orange or reddish edge.

Geographical Distribution: Indonesia, northwest Australia, Philippines to southern Japan, eastward through the Marshall Islands, Solomons, Samoa and the Marquesas (Fig. 100).

Habitat and Biology: Inhabits deeper waters of coral reefs and adjacent sandy bottoms. Feeds primarily on fishes and crustaceans. Very little is known of the biology of this fish, perhaps because it is easily mistaken (particularly larger individuals) for either *L. microdon* or *L. olivaceus*.

Size: Maximum reported size to about 70 cm total length, commonly 30 to 50 cm total length.

Interest to Fisheries: Caught primarily with handlines. Marketed fresh.

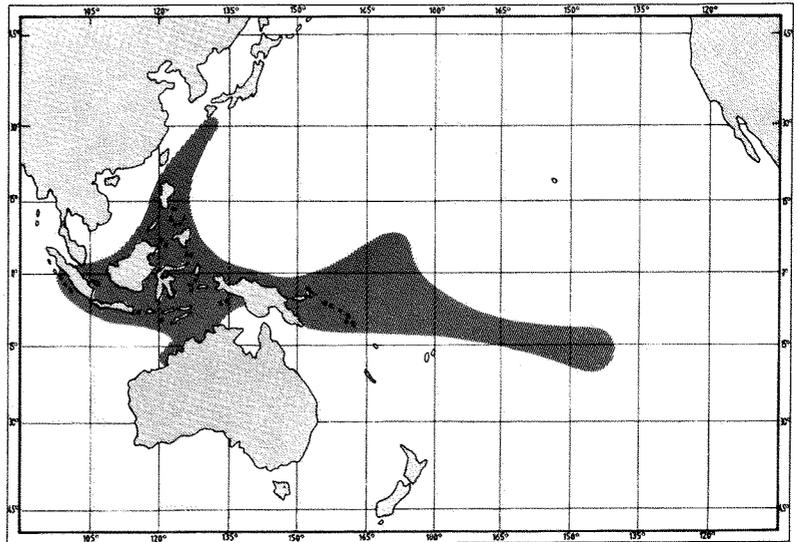


Fig. 100

Local Names: JAPAN: Yokoshima fuefuki; PHILIPPINES: Batilya, Kilawan, Katambak.

Literature: Masuda *et al.* (1984); Sainsbury *et al.* (1985, as *L. microdon*).

Remarks: This species is easily confused with *L. microdon* although it can be distinguished on the basis of snout length and, when specimens are fresh, the axil of the pectoral fin is red in *L. amboinensis*, while *L. microdon* lacks this red mark.

The type specimens of this species are small (3 syntypes, 56.0 to 83.7 mm SL) but their characteristics agree well with a number of specimens of this species that I recently collected in the Philippines.

***Lethrinus atkinsoni* Seale, 1909**

Fig. 101, Plate III, 12

LETH Leth 22

Lethrinus atkinsoni Seale, 1909, *Phil.Jour Sci.*, 4(6):515, pl.11 (Philippines).

Synonyms: None

FAO Names: En - Pacific yellowtail emperor.

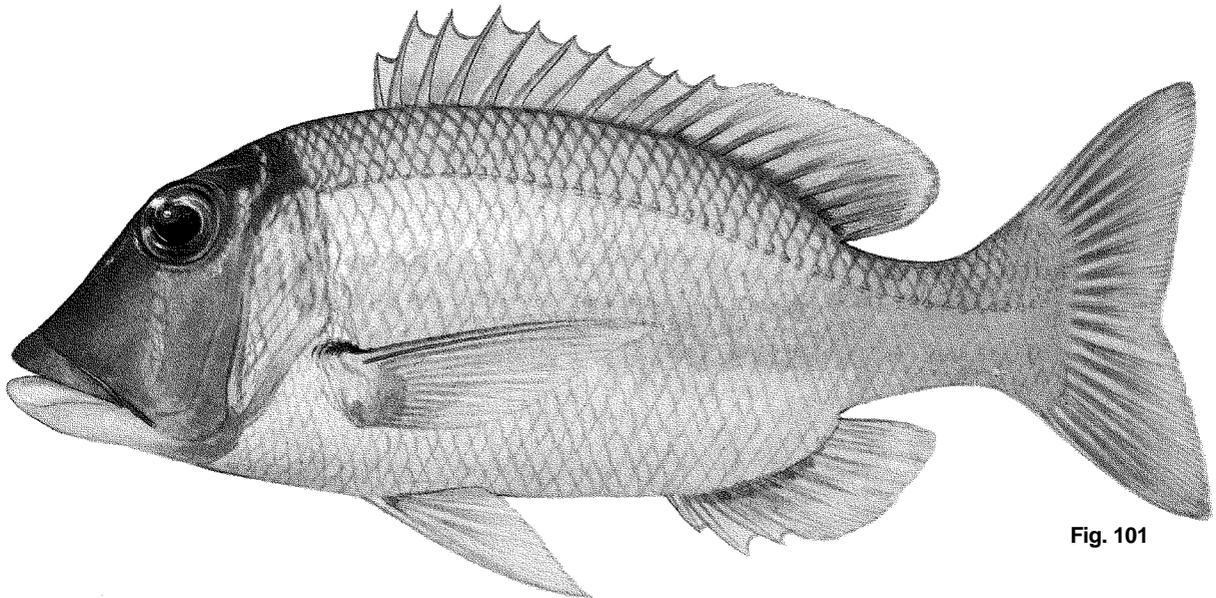


Fig. 101

Diagnostic Features: Body moderately deep, its depth 2.3 to 2.6 times in standard length. Head length 0.8 to 0.9 times in body depth, 2.7 to 3.0 times in standard length, dorsal profile near eye distinctly convex; snout moderately short and blunt, its length about 1.7 to 2.6 times in head length, measured without the lip the snout is 0.9 to 1.1 times in cheek height, its profile steep and nearly straight, snout angle relative to upper jaw between 65 and 70 degrees; interorbital space convex or slightly convex; posterior nostril an oblong longitudinal opening, closer or slightly closer to orbit than to anterior nostril; eye situated close to dorsal profile (except in very large individuals), its length 3.2 to 5.0 times in head length; cheek high, its length 2.0 to 2.9 times in head length; lateral teeth in jaws rounded or molars; outer surface of maxilla smooth, or with a slight longitudinal ridge. Dorsal fin with 10 spines and 9 soft rays, the third or fourth dorsal spine usually the longest, its length 2.6 to 4.0 times in body depth; anal fin with 3 spines and 8 soft rays, the first soft ray usually the longest, its length longer than the base of the soft portion of the anal fin and 0.7 to 0.9 times in the length of the entire anal fin base; pectoral rays 13; pelvic fin membranes between the rays closest to the body without dense melanophores. Lateral-line scales 46 to 47; cheek without scales; 4 ½ scale rows between lateral line and base of middle dorsal fin spines; usually 15 or 16 scale rows in transverse series between origin of anal fin and lateral line; 13 to 15 (usually 14) rows in lower series of scales around caudal peduncle; 4 to 8 (usually 6 or 7) scales in supratemporal patch; inner surface of pectoral fin densely covered with scales; posterior angle of operculum fully scaled. **Colour:** upper sides bluish-grey, tan or yellowish, white ventrally, the caudal peduncle and sometimes a broad indistinct band on sides yellow; head brown, lips reddish; fins pale, yellowish, orange or reddish; the base of pectoral fin, basal membranes of anal fin and edges of pelvic, dorsal, anal and caudal fins often reddish.

Geographical Distribution: Indonesia, northern Australia, Philippines to southern Japan, widespread throughout West Pacific to the Tuamotus (Fig. 102).

Habitat and Biology: Inhabits outer reef slopes, sandy areas in lagoons and seagrass beds to depths of around 30 m. Reported as both typically solitary and swimming in schools. Feeds primarily on crustaceans, molluscs and fish.

Observations of maximum age (t_{max}), and estimates of asymptotic length ($L_{infinity}$), coefficient of growth (K), and rate of natural mortality (M) have been made for *L. atkinsoni* in New Caledonia: t_{max} = 23 years for males and 24 years for females, $L_{infinity}$ = 32.7 cm standard length, K = 0.28, M = 0.73.

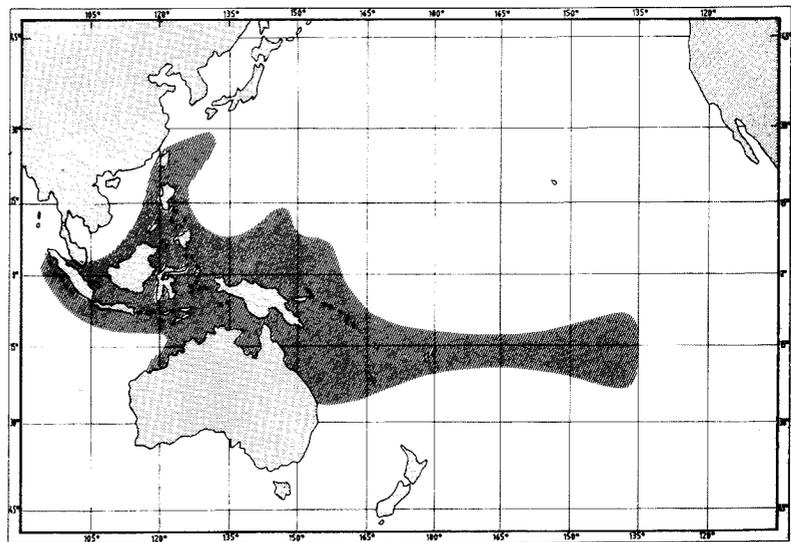


Fig. 102

Size: Maximum size reported as around 40 to 50 cm total length, commonly 30 to 35 cm total length.

Interest to Fisheries: Caught primarily by handline, trawl, shore seine and gillnet. Marketed mostly fresh. Good eating but not as sought after as outer emperors in some areas due to its small size. Puts up a good fight on a handline. Reported to contribute around 4% to the total commercial catch in New Caledonia.

Local Names: AUSTRALIA: Yellow-tailed emperor, Tricky snapper, Yellow morwong, Reticulated emperor; JAPAN: Iso-fuefuki; NEW CALEDONIA: Bossu doré; PHILIPPINES: Batilya, Katambak, Kilawan, Madas, Sapingan; POLYNESIA: Tamure, Tuamotu emperor

Literature: Bagnis *et al.* (1972, as *L. mahsena*); Coleman (1981, as *L. reticulatus*); Fourmanoir & Laboute (1976, as *L. mahsena*); Gloerfelt-Tarp & Kailola (1984, as *L. mahsena*); Grant (1982, as *L. mahsena*); Lee (1986, as *L. mahsena*); Masuda *et al.* (1984, as *L. mahsena*); Sainsbury *et al.* (1985, as *L. mahsena*); Schroeder (1980, as *Lethrinus* sp.)

Remarks: This species has most frequently been named *L. mahsena*. There are many consistent differences however, in colour, body shape and meristic counts. Although these forms appear to be allopatric, there is little doubt that they represent different species. It is surprising that an earlier name for this species has not been found, because it is widespread and common in the Western and Central Pacific Ocean.

Lethrinus atlanticus Valenciennes, 1830

Fig. 103, Plate III, 13

LETH Leth 8

Lethrinus atlanticus Valenciennes in C. & V. 1830, Hist.nat.poiss, 6:275 (Cape Verde Islands).

Synonyms: None.

FAO Names: En - Atlantic emperor.

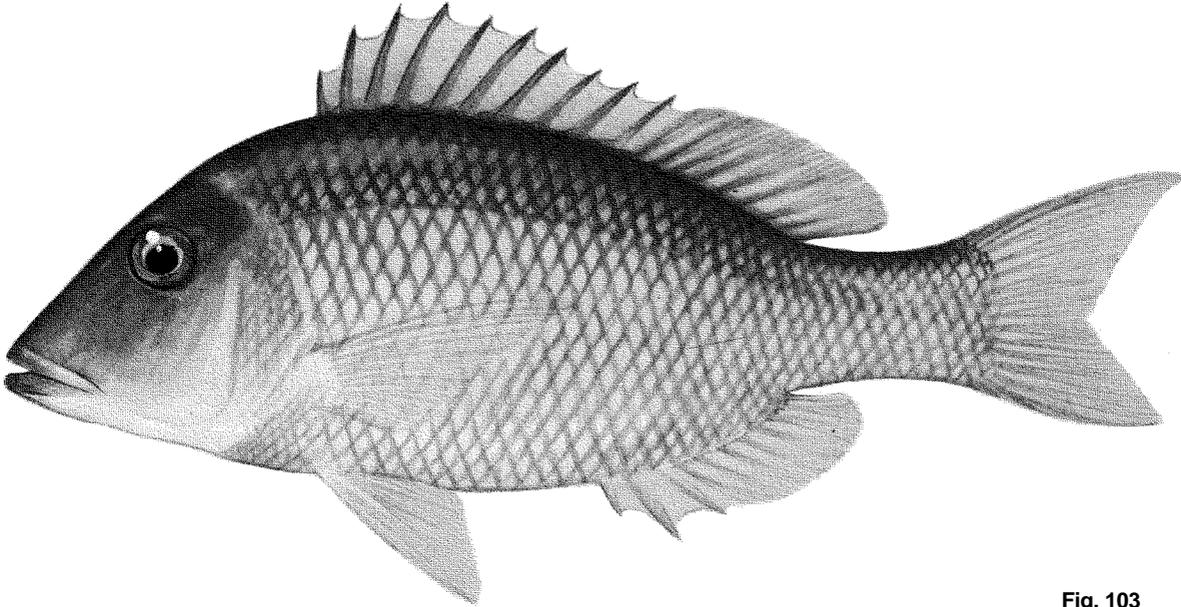


Fig. 103

Diagnostic Features: Body moderately deep, its depth 2.5 to 2.8 times in standard length. Head length 0.9 to 1.0 in body depth, 2.7 to 3.0 times in standard length, dorsal profile near eye nearly straight or slightly convex; snout moderately long and pointed, its length 1.9 to 2.4 times in head length, measured without the lip the snout is 0.8 to 1.0 times in cheek height, its profile fairly steep and straight, snout angle relative to upper jaw between 55 and 60 degrees; interorbital space nearly flat or slightly convex; posterior nostril an oblong longitudinal opening, closer to orbit than to anterior nostril; eye situated close to dorsal profile, its length 3.4 to 4.3 times in head length cheek moderately high, its length 2.6 to 3.3 times in head length; lateral teeth in jaws all conical; outer surface of maxilla smooth, without a knob or pronounced longitudinal ridge. Dorsal fin with 10 spines and 9 soft rays, the fourth dorsal spine usually the longest, its length 2.4 to 3.0 times in body depth; anal fin with 3 spines and 8 soft rays, the first soft ray the longest, its length greater than the base of the soft portion of the anal fin and 0.7 to 0.8 times in the length of the entire anal fin base; pectoral rays 13; pelvic fin membranes usually with fairly dense melanophores, except the membranes between the rays closest to the body. Lateral-line scales 42 to 46; cheek without scales; 4 ½ scale rows between lateral line and base of middle dorsal fin spines; 13 or 14 scale rows in transverse series between origin of anal fin and lateral line; 13 or 14 rows in lower series of scales around caudal peduncle; 4 to 7 scales in supratemporal patch; inner surface of pectoral fin axil scaleless; posterior angle of operculum fully scaled. **Colour:** olive green or brown and pinkish, cheeks with a network of fine reticulations below the eye.

Geographical Distribution: West coast of Africa from Senegal to Gabon, Cape Verde Islands, Principe Islands, Sao Tomé Islands and Rôlas Islands (Fig. 104).

Habitat and Biology: Inhabits shallow coastal waters to about 50 m. It feeds primarily on bottom-living invertebrates.

Size: Maximum total length to about 50 cm; common to around 30 cm.

Interest to Fisheries: Caught with bottom trawls, set nets, purse seines and on hook-and-lines. Usually marketed fresh, smoked, and dried salted.

Local Names: JAPAN: Taiseiyo-fuefuki; GERMANY: Atlantikkehrer; PORTUGUESE: Bica.

Literature: Fischer, Bianchi and Scott (eds) (1981).

Remarks: The combination of teeth types, body shape and scale counts for this species are very different from other species of *Lethrinus*. Moreover, this unique combination of characters was found to be consistent among all specimens of *Lethrinus* examined from many locations in the tropical West Atlantic Ocean; there is little doubt that only a single species of *Lethrinus* exists in this ocean.

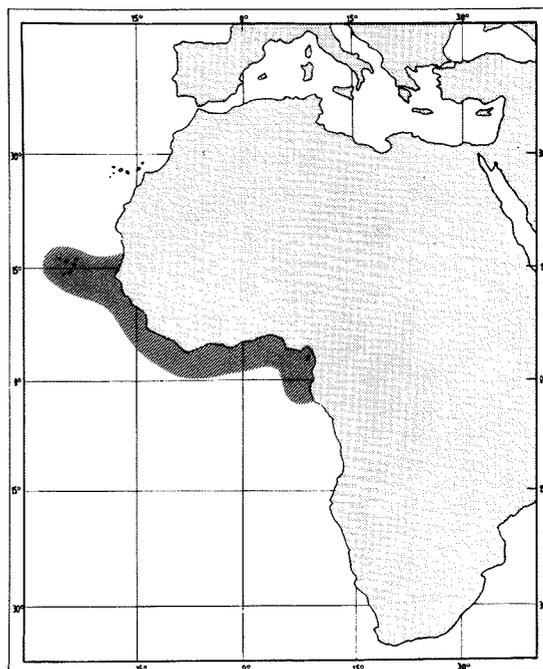


Fig. 104

Lethrinus borbonicus Valenciennes, 1830

Fig. 105, Plate 111, 14

LETH Leth 13

Lethrinus borbonicus Valenciennes in C. & V., 1830, *Hist. nat. poiss.*, 6:303 (Réunion).

Synonyms: *Lethrinus bungus* Valenciennes (1830).

FAO Names: En - Snubnose emperor.

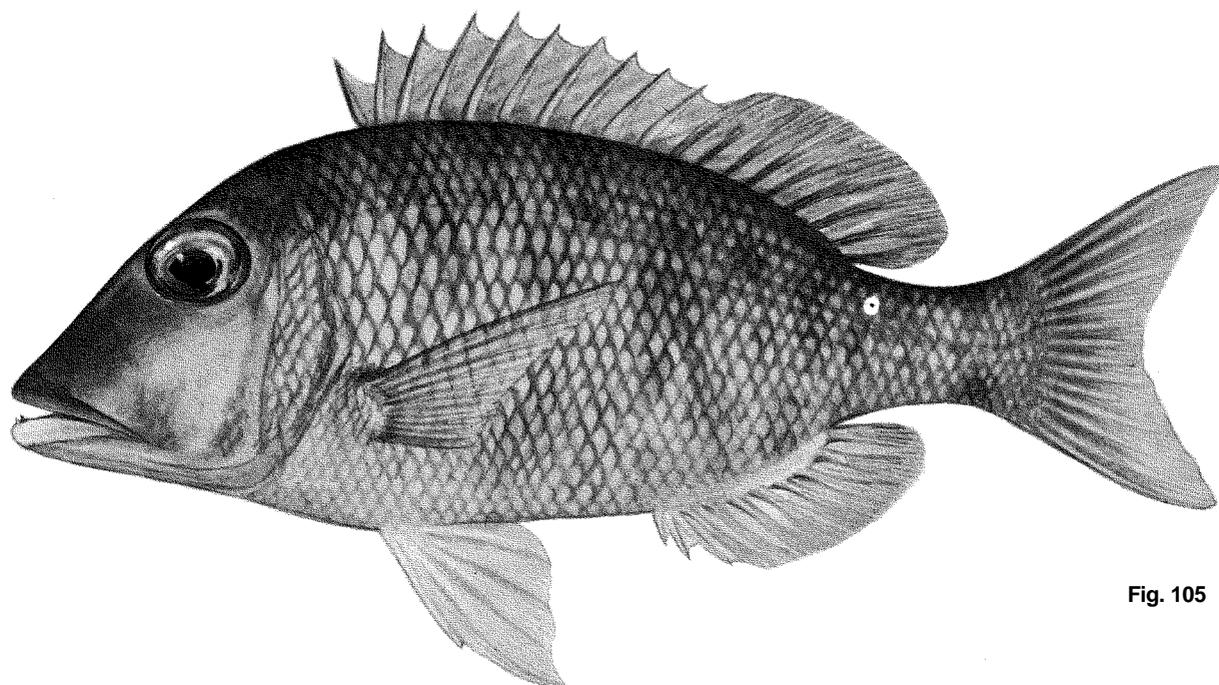


Fig. 105

Diagnostic Features: Body moderately deep, its depth 2.5 to 2.8 times in standard length. Head length 0.9 to 1.0 times in body depth, 2.7 to 2.9 times in standard length, dorsal profile near eye nearly straight or slightly convex; snout moderately short and blunt, its length about 2.0 to 2.2 times in head length, measured without the lip the snout is 0.9 to 1.0 times in cheek height, its dorsal profile nearly straight, snout angle relative to upper jaw between 55 and 70 degrees; interorbital space usually convex; posterior nostril an oblong longitudinal opening, closer to orbit than to anterior nostril; eye usually situated close to dorsal profile, its length 3.5 to 4.0 times in head length; cheek moderately high, its length 2.4 to 2.9 times in head length; lateral teeth in jaws with strong molars; outer surface of maxilla with a distinct longitudinal ridge. Dorsal fin with 10 spines and 9 soft rays, the fourth or fifth dorsal spine the longest, its length 2.5 to 3.1 times in body depth; anal fin with 3 spines and 8 soft rays, the first soft ray usually the longest, its length almost equal to the length of the base of the soft-rayed portion of the anal fin and 0.6 to 0.8 times in the length of the entire anal fin base; pectoral rays 13; pelvic fin membranes between the rays closest to the body without dense melanophores. Lateral-line scales 46 to 48; cheek without scales; 5 1/2 scale rows between lateral line and base of middle dorsal fin spines; usually 15 or 16 scale rows in transverse series between origin of anal fin and lateral line; 13 or 14 (rarely 15) rows in lower series of scales around caudal peduncle; 6 to 8 scales in supratemporal patch; inner surface of pectoral fin densely covered with scales; posterior angle of operculum fully scaled. **Colour:** body dark grey or yellow-brown, the centers of scales lighter, sometimes an irregular pattern of broken dusky bars, whitish on lower body; head brown-grey; pectoral and pelvic fins white or pinkish; dorsal and anal fins mottled white or yellowish with reddish edge; caudal with indistinct reddish bands.

Geographical Distribution: Western Indian Ocean, including the Red Sea and Arabian (Persian) Gulf to Reunion (Fig. 106). Reports of this species elsewhere are probably due to misidentification.

Habitat and Biology: Found in sandy areas near reefs during daytime, to depths of around 40 m, sometimes in small groups. During night-time they are solitary and range over reef-flats and slopes in depths as shallow as 1 m where they feed primarily on echinoderms, molluscs and crustaceans.

Estimates of asymptotic length (L_{∞}) and coefficient of growth (K), have been made for *L. borbonicus* in the Gulf of Aden: $L_{\infty} = 42.6$ cm total length, and $K = 0.48$.

Size: Maximum size around 40 cm total length, commonly to 20 to 30 cm total length.

Interest to Fisheries: Captured mostly in traps, trawls and handlines. A minor component of fisheries catch in most countries where it is landed.

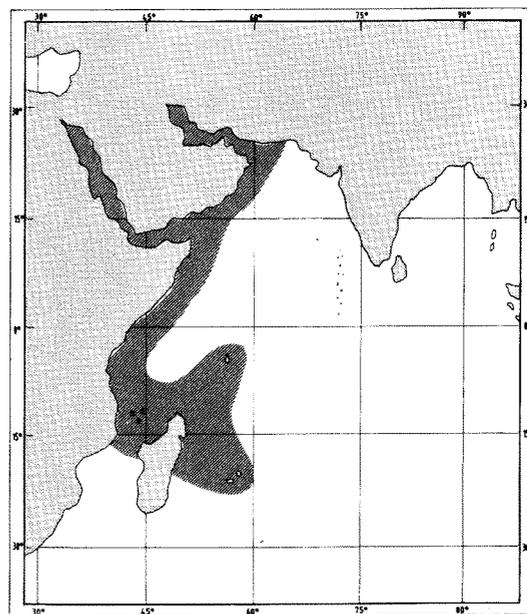


Fig. 106

Local Names: JAPAN: Nise-hana-fuefuki; KUWAIT: Sheiry; SOUTH AFRICA: Snubnose emperor, Stompneus-keiser; TANZANIA: Changu, Changu chole, Changu kidogo.

Literature: Kuronuma & Abe (1972, 1986, as *L. fletus* and *L. kallopterus*); Randall, (1983, as *L. mahsenoides*); Sato in Fischer & Bianchi (eds) (1984, as *L. mahsenoides*); Smith, J.L.B. (1959); Smith, M.M. (1986); Wheeler (1961, as *L. choerorhynchus*).

Remarks: The taxonomy of this species has been considerably confused. Smith (1959) listed *L. mahsenoides* as a junior synonym of *L. borbonicus*. Valenciennes (1830) named *L. mahsenoides* from a description and specimen collected by Ehrenberg, and *L. borbonicus* from a Gaimard description and type. The name *L. borbonicus* is clearly available according to the present Code of Zoological Nomenclature. Sato (1978) however, later used the name *L. mahsenoides* as the senior synonym and *L. borbonicus* as the junior synonym. As first revisor, Smith's use of the name *L. borbonicus* takes precedence. There is additional justification to reject the use of *L. mahsenoides* because there appears to have been confusion in the designation of types for this nominal species. There is no doubt that the types currently listed as *L. mahsenoides* and *L. borbonicus* are in fact, the same species. The type description of *L. mahsenoides* however, clearly describes the colours of the Red Sea species that we recognize here as *L. lentjan*. This description includes mention of the red margin of the opercle, greenish body colour and the white spots in the angle of scales that are characteristic of *L. lentjan* and uncharacteristic of *L. borbonicus*. This description is perhaps the reason why some recent accounts of *L. mahsenoides* (in reference to the form recognized here as *L. borbonicus*) mention that the species sometimes has a red margin of the opercle when in fact, it never does. It is possible that Ehrenberg's specimens and description somehow became confused. To complicate matters further, after examination

of the type and translation of the description, it became evident that another Valenciennes' name, *L. bungus* is synonymous with *L. borbonicus*. *L. bungus* has most frequently been synonymized with *L. mahsena*, but it is clearly not this species. In addition, it is likely that a third Valenciennes' name, *L. ehrenbergii*, is also attributable to this species. *L. bungus* has page preference over *L. borbonicus*; however, in order to maintain some semblance of stability, I choose to follow Smith in recognizing *L. borbonicus* as the name to represent this form.

Lethrinus conchyliatus (Smith, 1959)

Fig. 107, Plate III, 15

LETH Leth 9

Lethrinella conchyliatus Smith, 1959, Rhodes Univ. Ichth. Bull., 17:292, pl.22 fig. E (Pinda).

Synonyms: *Lethrinus floridus* Wheeler, 1961.

FAO Names: En - Redaxil emperor.

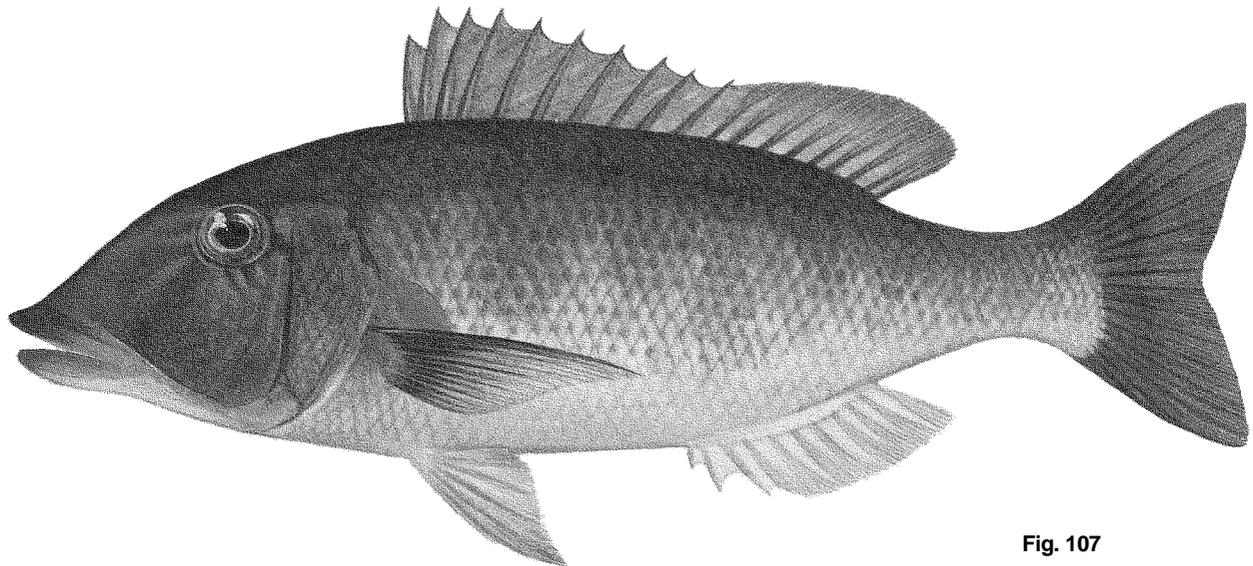


Fig. 107

Diagnostic Features: Body fairly elongate, its depth 3.2 to 3.4 times in standard length. Head length about 1.1 times in body depth, around to 2.8 times in standard length, dorsal profile near eye convex; snout length about 1.7 to 1.8 times in head length, measured without the lip the snout is around 0.8 to 0.9 times in cheek height, its dorsal profile concave with a hump in front of eye, snout angle relative to upper jaw between 50 and 60 degrees; interorbital space convex; posterior nostril a longitudinal oblong opening, closer to orbit than to anterior nostril; eye removed from dorsal profile, its length around 4.6 times in head length; cheek length around 2.6 times in head length; lateral teeth in jaws conical; outer surface of maxilla smooth. Dorsal fin with 10 spines and 9 soft rays, the third or fourth dorsal spine the longest; anal fin with 3 spines and 8 soft rays, the first soft ray usually the longest, its length shorter than the length of the base of the soft-rayed portion of the anal fin and around 0.6 times in the length of the entire anal fin base; pectoral rays 13; pelvic fin membranes between the rays closest to the body without dense melanophores. Lateral line scales 47 or 48; cheek without scales; 4 1/2 scale rows between lateral line and base of middle dorsal fin spines; usually 15 scale rows in transverse series between origin of anal fin and lateral line; usually 15 rows in cower series of scales around caudal peduncle; about 8 scales in supratemporal patch; inner surface of pectoral fin without scales; posterior angle of operculum fully scaled. **Colour:** body and head brownish or grey, lighter ventrally; lips, base and patch above base of pectoral fin, and edge of operculum red; fins orangish, dusky or mottled.