

**Geographical Distribution:** Indian Ocean, from Tanzania, northern Madagascar, Chagos, Andamans and southwestern Indonesia (Fig. 108).

**Habitat and Biology:** Inhabits reefs to depths of 220 m. Feeds primarily on fish and crustaceans. Gonads in spawning state have been recorded for this fish during the month of October.

**Size:** Maximum size to 76 cm, common to 50 cm.

**Interest to Fisheries:** Caught mostly by handlines, traps and trawls.

**Local Names:** JAPAN: Kataaka -fuefuki; MAURITIUS: Gueule de vin; SOUTH AFRICA: Redaxil emperor, Rooisko f-keiser; SEYCHELLES: Kaya la gueule rouge; Gueule de vin.

**Literature:** Gloerfelt-Tare & Kailola (1984); Sato in Fischer & Bianchi (eds) (1984); Smith, J.L.B. (1959); Smith, M.M. (1986).

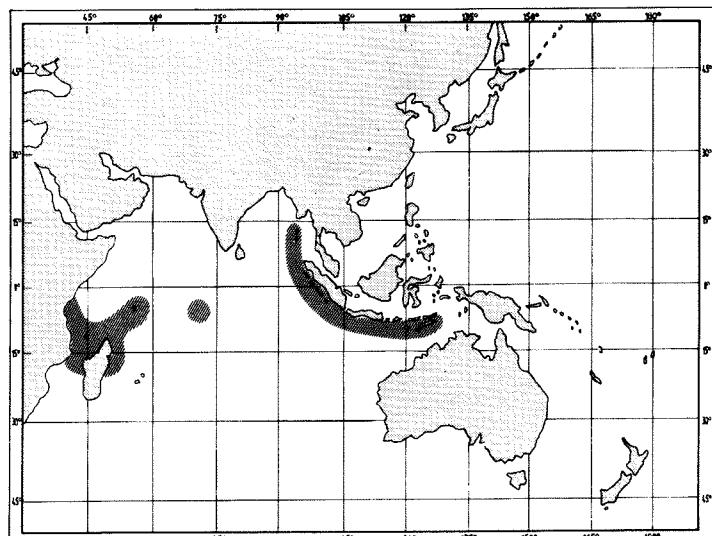


Fig. 108

**Remarks :** This species is not well represented in museums due to the relatively large capture size for most specimens.

***Lethrinus crocineus* Smith, 1959**

Fig. 109, Plate III, 16

**LETH Leth 10**

***Lethrinus crocineus* Smith, 1959, Rhodes Univ., Ichth. Bull., 17:290, pl.21 figs. F,G (Pinda).**

**Synonyms:** None.

**FAO Names:** En - Yellowtail emperor.

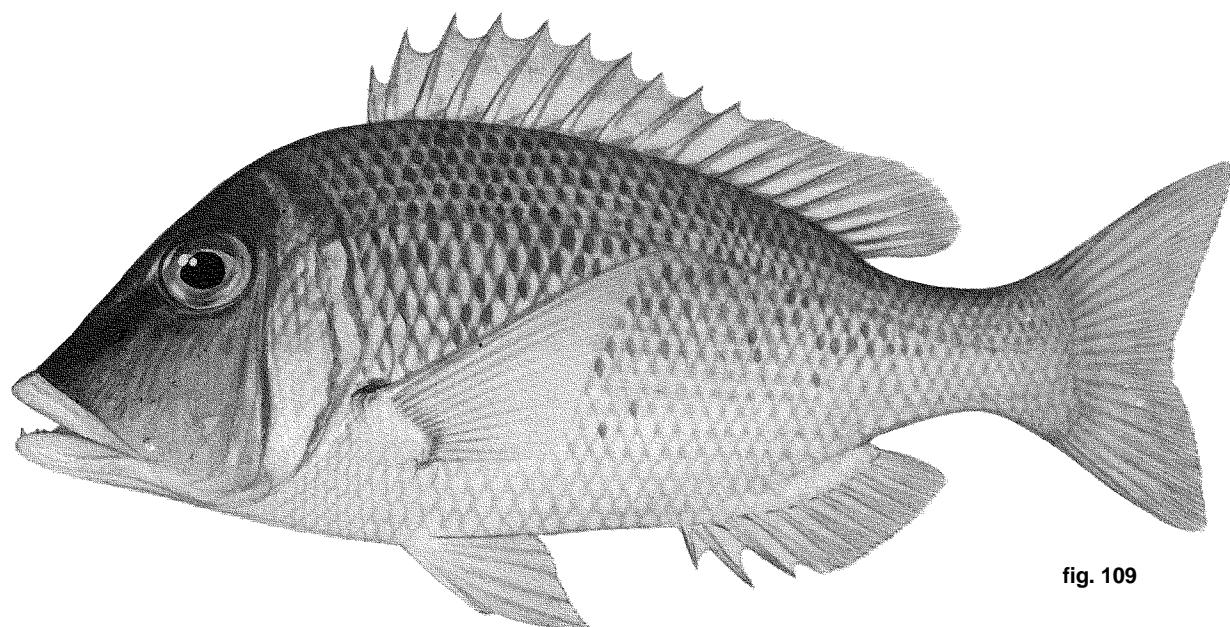


fig. 109

**Diagnostic Features:** Body fairly deep, its depth 2.3 to 2.4 times in standard length. Head length 0.8 to 0.9 times in body depth, 2.6 to 2.8 times in standard length, dorsal profile near eye nearly straight; snout moderately short, its length about 1.9 to 2.1 times in head length, measured without the lip the snout is 1.0 to 1.1 times in cheek height, its dorsal profile nearly straight, snout angle relative to upper jaw between 65 and 75 degrees; interorbital space convex; posterior nostril an oblong longitudinal opening, closer to orbit than to anterior nostril or about halfway between orbit and anterior nostril; eye situated close or relatively removed from dorsal profile, its length 3.8 to 4.6 times in head length; cheek high, its length 2.0 to 2.4 times in head length; lateral teeth in jaws rounded or molars; outer surface of maxilla smooth or with a longitudinal ridge. Dorsal fin with 10 spines and 9 soft rays, the fourth dorsal spine usually the longest, its length 3.2 to 3.6 times in body depth; anal fin with 3 spines and 8 soft rays, the first or second soft ray usually the longest, its length almost equal to or slightly less than the length of the base of the soft-rayed portion of the anal fin and 0.6 to 0.7 times in the length of the entire anal fin base; pectoral rays 13; pelvic fin membranes between the rays closest to the body with or without dense melanophores. Lateral line scales 46 to 47; cheek without scales; 5  $\frac{1}{2}$  scale rows between lateral line and base of middle dorsal fin spines; 15 to 17 scale rows in transverse series between origin of anal fin and lateral line; 15 or 16 (usually 15) rows in cower 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 or sometimes with a wide scaleless area. **Colour:** body tan or yellowish, the base of scales sometimes black; head brown; fins pale or yellowish, the edge of the dorsal fin reddish or yellowish.

**Geographical Distribution:** Western Indian Ocean, from Natal to the Seychelles and Sri Lanka (Fig. 110), possibly more widespread.

**Habitat and Biology:** Inhabits coastal areas and reefs to depths of around 150 m.

**Size:** Maximum size around 45 cm total length.

**Interest to Fisheries:** Caught mainly with handlines. Marketed mostly fresh.

**Local Names:** MOZAMBIQUE: Changu; SEYCHELLES: Lascar.

**Literature:** Sato in Fischer & Bianchi (eds) (1984); Smith (1959).

**Remarks:** This species is similar in body shape to *L. mahsena* and has previously been synonymized with it. Scale counts are consistently different in many respects with *L. mahsena*, and there is little doubt that these are two distinct species.

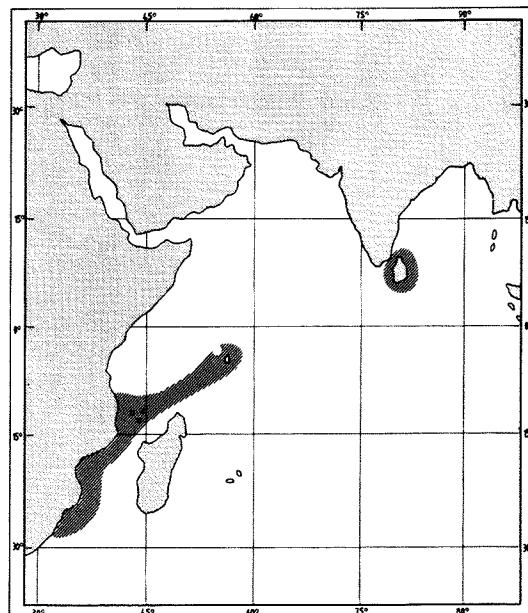


Fig. 110

***Lethrinus enigmaticus* Smith, 1959**

Fig. 111, Plate III, 17

LETH Leth 23

*Lethrinus enigmaticus* Smith, 1959, Rhodes Univ., Ichth. Bull., 17:291, pl.21 fig. E (Seychelles).

**Synonyms:** None

FAO Names: En - Blackeye emperor.

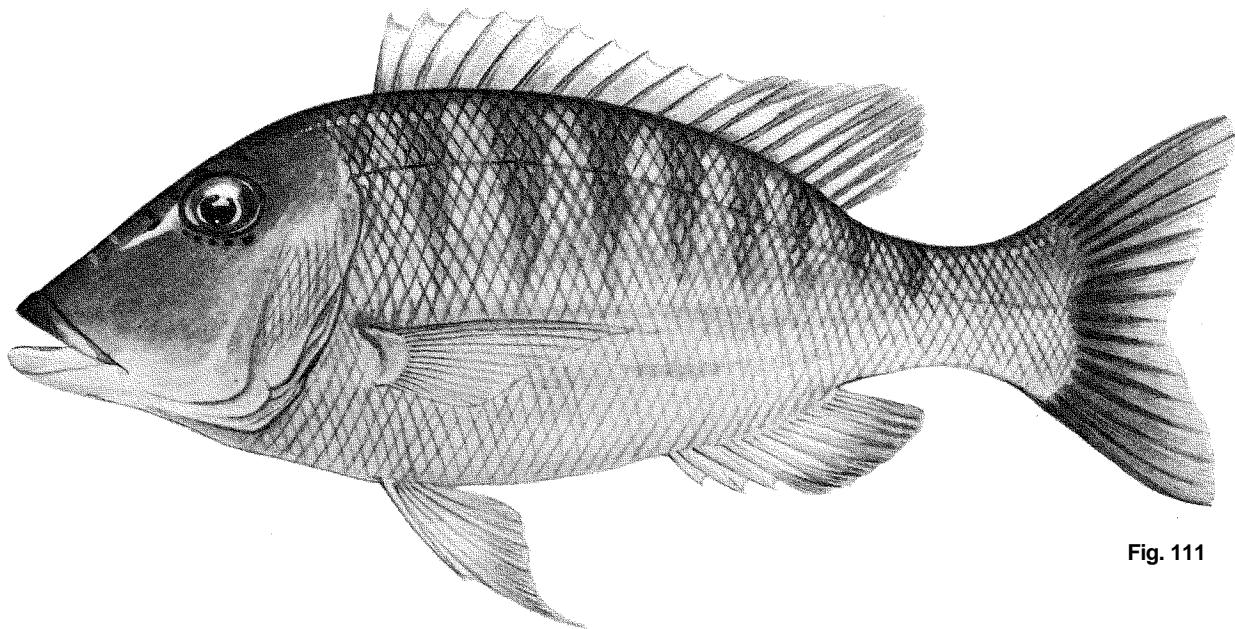


Fig. 111

**Diagnostic Features:** Body moderately deep, its depth 2.4 to 2.7 times in standard length. Head length 0.9 to 1.0 times in body depth, 2.6 to 2.9 times in standard length, dorsal profile near eye nearly straight; snout moderately short, its length about 1.8 to 2.0 times in head length, measured without the lip the snout is 0.8 to 1.0 times in cheek height, its dorsal profile slightly concave, snout angle relative to upper jaw between 65 and 75 degrees; interorbital space convex; posterior nostril an elongate oblong longitudinal opening, closer to orbit than to anterior nostril or about halfway between orbit and anterior nostril; eye situated fairly removed from dorsal profile, its length 3.9 to 4.9 times in head length; cheek moderately high, its length 2.1 to 2.6 times in head length; lateral teeth in jaws rounded; outer surface of maxilla with a longitudinal ridge. Dorsal fin with 10 spines and 9 soft rays, the third or fourth dorsal spine the longest, the longest spine 3.0 to 3.7 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 or slightly longer than the length of the base of the soft-rayed 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 between the rays closest to the body without dense melanophores. Lateral-line scales 47 or 48; cheek without scales; 4 1/2 or 5 1/2 scale rows between lateral line and base of middle dorsal fin spines; 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; 4 to 6 scales in supratemporal patch; inner surface of pectoral fin densely covered with scales; posterior angle of operculum fully scaled. Colour: body yellowish bronze or grey, lighter ventrally sometimes with three bronze stripes on lower sides and seven to nine dark bars on upper sides; head grey, brown or bronze sometimes with a series of yellowish cross stripes on upper head and snout, a light streak radiating from eye to anterior nostril; the lower edge of the orbit with dark purplish spots; maxilla reddish; fins pale, yellowish or bronze.

**Geographical Distribution:** Known so far only from the Seychelles region (Fig. 112).

**Habitat and Biology:** Inhabits seagrass beds, coral reefs and adjacent sandy areas to depths of 50 m. Feeds primarily on echinoderms, crustaceans and fish, and to a lesser extent on molluscs. A peak in spawning was noted in October in Saya de Malha, but this study did not sample all periods throughout the year. Smaller, more abundant females than males have been confirmed for the Saya de Malha population.

Estimates of asymptotic length ( $L_{\infty}$ ) and coefficient of growth (K) have been made for *L. enigmatus* at Saya de Malha:  $L_{\infty}$  = 53.9 cm standard length for males and 45.4 cm total length for females, and K = 0.15 for males and 0.18 for females.

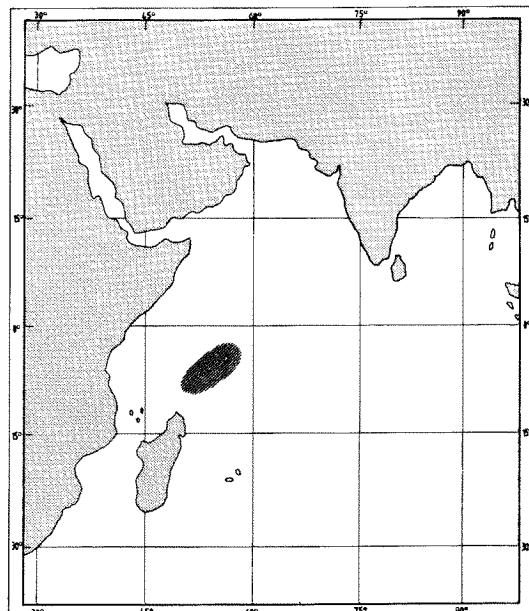


Fig. 112

**Size:** Maximum size to around 55 cm total length, commonly 25 to 40 cm total length.

**Interest to Fisheries:** Caught mostly by handlines and traps. Marketed mostly fresh. Contributes substantially to fisheries in Mauritius and Saya de Malha.

**Local Names:** SEYCHELLES: Lascar.

**Literature:** Allen & Steene (1987); Smith (1959).

**Remarks:** Sato synonymized this species with *L. mahsena*. I examined one of Smith's (1959) specimens which was included in his type description of this species together with an excellent series of specimens and photographs from the Indian Ocean, taken by L. Knapp of the Smithsonian Oceanographic Sorting Center. It is clear that this species, with its unique colour and combination of characters is distinct.

***Lethrinus erythracanthus*** Valenciennes, 1830

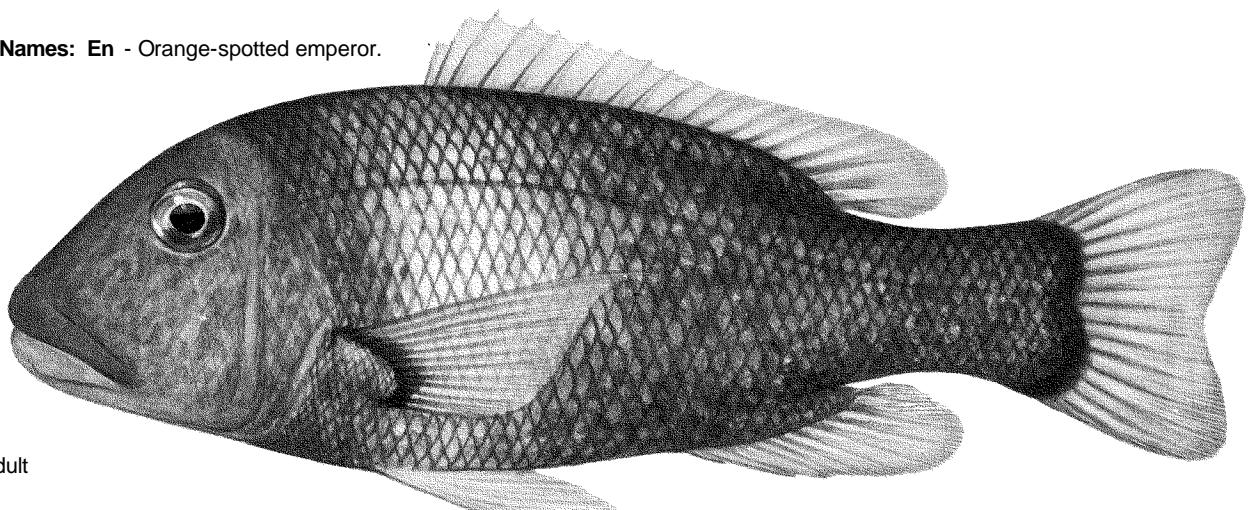
Fig. 113, Plate IV, 18-20

LETH Leth 3

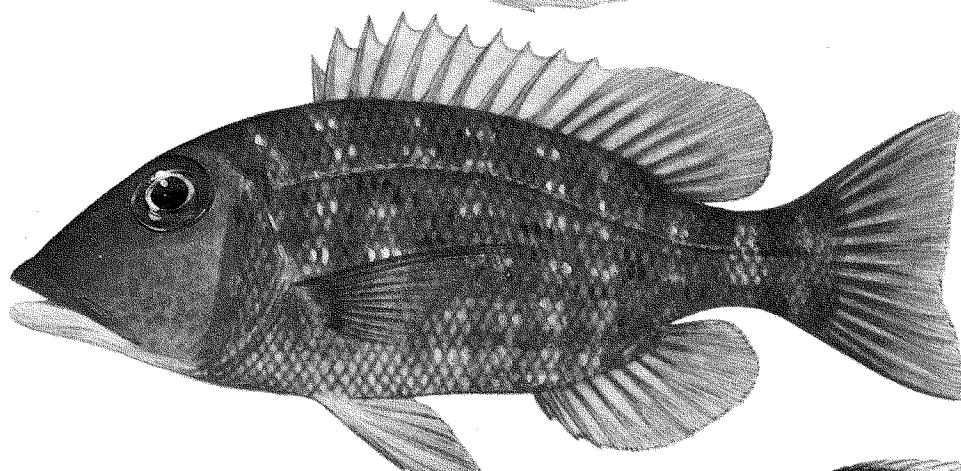
***Lethrinus erythracanthus*** Valenciennes in C. & V., 1830 Hist.nat.poiss., 6: 314 (Luganor).

**Synonyms:** *Lethrinus cinnabarinus* Richardson (1843); *Lethrinus kallopterus* Bleeker (1856).

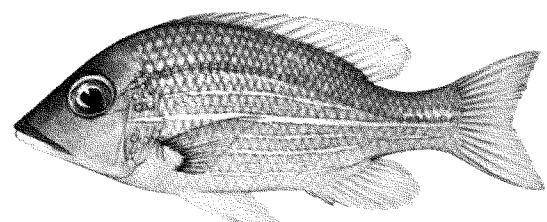
**FAO Names:** En - Orange-spotted emperor.



a. adult



b. subadult



c. juvenile

Fig. 113

**Diagnostic Features:** Body moderately deep, its depth 2.5 to 2.7 times in standard length. Head length 0.9 to 1.0 times in body depth, 2.5 to 2.8 times in standard length, dorsal profile near eye convex; snout moderately short, its length about 1.8 to 2.4 times in head length, measured without the lip the snout is 0.8 to 1.1 times in cheek height, its dorsal profile distinctly concave in large individuals and nearly straight in smaller individuals, snout angle relative to upper jaw between 55 and 70 degrees; interorbital space convex; posterior nostril an oblong longitudinal opening, closer to orbit than to anterior nostril; eye situated close to or far removed from the dorsal profile, its length 3.2 to 5.0 times in head length; cheek moderately high, its length 2.0 to 3.3 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 fourth or fifth dorsal spine the longest, its length 2.4 to 3.4 times in body depth; anal fin with 3 spines and 8 soft rays, the third, fourth or fifth soft ray usually the longest, its length much longer than the length of the base of the soft-rayed portion of the anal fin and 0.9 to 1.2 times in the length of the entire anal fin base; pectoral rays 13; pelvic fin membranes between the rays closest to the body with or without dense melanophores. Lateral-line scales usually 47 or 48; cheek without scales; 4 1/2 scale rows between lateral line and base of middle dorsal fin spines; 15 to 17 scale rows in transverse series between origin of anal fin and lateral line; usually 15 rows in lower series of scales around caudal peduncle; 5 to 7 scales in supratemporal patch; inner surface of pectoral fin densely covered with scales; posterior angle of operculum fully scaled. **Colour:** body brown dark grey, with indistinct scattered small dark and light spots, with irregular light stripes sometimes on lower sides; head brown or grey, often with many small orange spots on cheeks in small adults; pectoral and pelvic fin white to orangish, dorsal and anal fin mottled orange and bluish; caudal fin often bright orange, especially in subadults.

**Geographical Distribution:** Western Indian Ocean to the Central Pacific, from East Africa, Seychelles, Chagos and Maldives, to Thailand, Philippines, Ryukyu, Micronesia, northeastern Australia, Samoa, Society Islands and Tuamotus (Fig. 114); previously recorded only as far east as Samoa, I have examined specimens of this species from Tahiti and the Tuamotus.

**Habitat and Biology:** Inhabits deep lagoons and channels, and outer reef slopes and adjacent soft-bottom areas at depth of 20 to 120 m. It feeds mostly on echinoderms, crustaceans and molluscs.

**Size:** Maximum total length to 70 cm, common to 50 cm total length.

**Interest to Fisheries:** Caught by handline, vertical longline, traps and trawls. Marketed mostly fresh. This species was found to be ciguatoxic in the Marshall Islands.

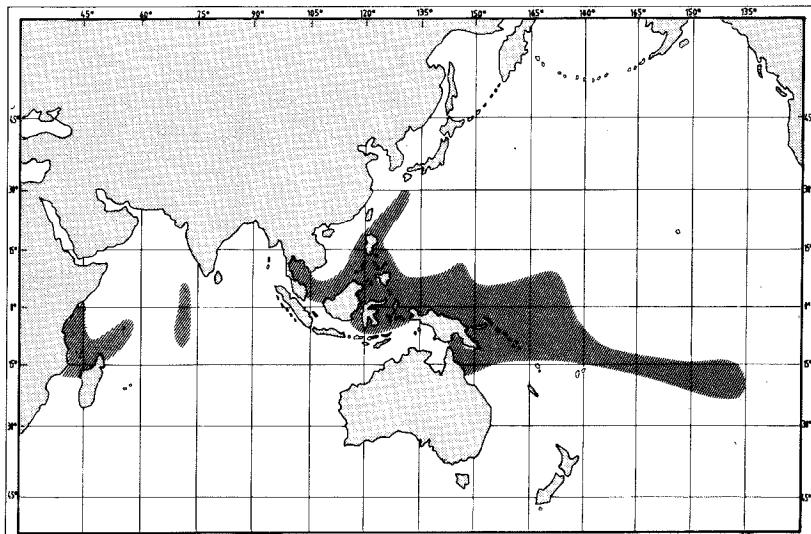


Fig. 114

**Local Names:** AUSTRALIA: Yellow-spotted emperor; JAPAN: Ama-kuchibi; KENYA: Changu tuku-mwani; PHILIPPINES: Bakuktuk, Katambak; SEYCHELLES: Capitaine rouge; SOUTH AFRICA: Orange-spotted emperor; Oranjekol-keiser; TANZANIA: Changu, Changu tuku-mwani.

**Literature:** All the following listed as *L. kallopterus*: Allen & Steene (1987); Masuda *et al.* (1984); Myers (1989); Sato in Fischer & Bianchi (eds) (1984); Smith, J.L.B. (1959); Smith, M.M. (1986).

**Remarks:** The name *L. kallopterus* has long been applied to this species but the description and manuscript drawing of *L. erythracanthus* is clearly diagnostic. In addition, *L. cinnabarinus* Richardson also appears to be synonymous with this species. See Remarks below under *L. erythropterus* for a further explanation concerning the taxonomy of this species.

***Lethrinus erythropterus* Valenciennes, 1830**

Fig. 115, Plate IV, 21

**LETH Leth 11***Lethrinus erythropterus* Valenciennes, 1830, in C. & V., 1830 Hist.nat.poiss., 6: 313 (Ulea).Synonyms: *Lethrinus striatus* Steindachner (1866); *Lethrinus hypselopterus* Bleeker (1873).

FAO Names: En - Longfin emperor.

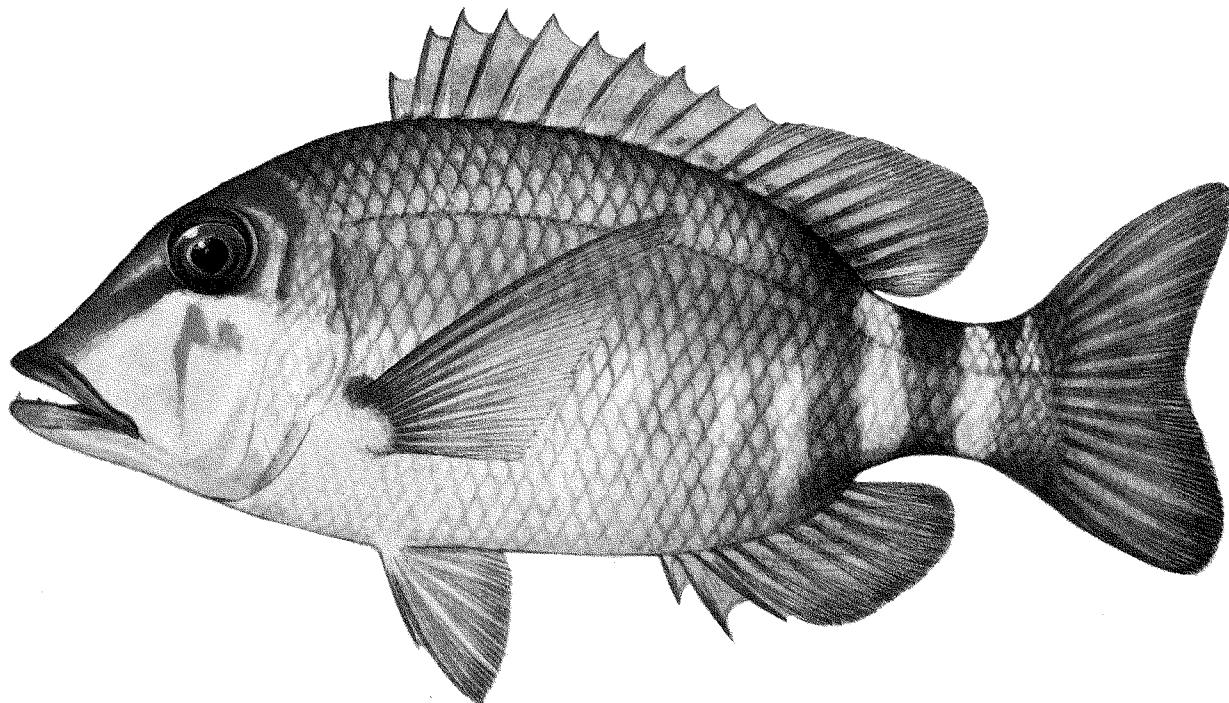


Fig. 115

**Diagnostic Features:** Body fairly deep, its depth 2.3 to 2.6 times in standard length. Head length 0.8 to 0.9 times in body depth, 2.5 to 2.8 times in standard length, dorsal profile near eye distinctly convex; snout moderately short, its length about 1.9 to 2.2 times in head length, measured without the tip the snout is 0.9 to 1.0 times in cheek height, its dorsal profile distinctly concave, snout angle relative to upper jaw between 55 and 60 degrees; interorbital space convex or almost flat; posterior nostril an oblong longitudinal opening, closer to orbit than to anterior nostril; eye situated close to or slightly removed from the dorsal profile, its length 3.6 to 4.6 times in head length; cheek moderately high, its length 2.1 to 2.6 times in head length; lateral teeth in jaws of adults molars or rounded; outer surface of maxilla usually smooth. Dorsal fin with 10 spines and 9 soft rays, the fourth or fifth dorsal spine the longest, its length 2.8 to 3.3 times in body depth; anal fin with 3 spines and 8 soft rays, the third, fourth or fifth soft ray usually the longest, its length much longer than the length of the base of the soft-rayed portion of the anal fin and 0.9 to 1.0 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 44 to 46; cheek without scales; 4 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; usually 15 rows in lower series of scales around caudal peduncle; 5 to 9 scales in supratemporal patch; inner surface of pectoral fin densely covered with scales; posterior angle of operculum fully scaled. **Colour:** head and body brown or rust red, lighter ventrally; sometimes two tight bars on caudal peduncle; area around eye, a broad streak from eye to tip of snout, lips, and base of pectoral fin red; all fins reddish, often a bright red or orange.

**Geographical Distribution:** Western Indian Ocean and West Pacific; Tanzania and Mozambique, Chagos, Celebes, the Philippines, Papua New Guinea, Palau, and Caroline Islands (Fig. 116).

**Habitat and Biology:** Inhabits mostly coral reefs and adjacent sandy areas. Occurs singly or in small groups. Feeds on echinoderms, molluscs, crustaceans and small fish.

**Size:** Maximum size to around 50 cm total length, commonly around 30 cm.

**Interest to Fisheries:** Limited interest to fisheries in the countries where it occurs. Caught mostly by handlines and traps. Marketed fresh.

**Local Names:** JAPAN: Kuchibeni-fuefuki; PHILIPPINES: Batilya, Katambak; SOUTH AFRICA: Mozambique emperor, Mosambiekse keiser.

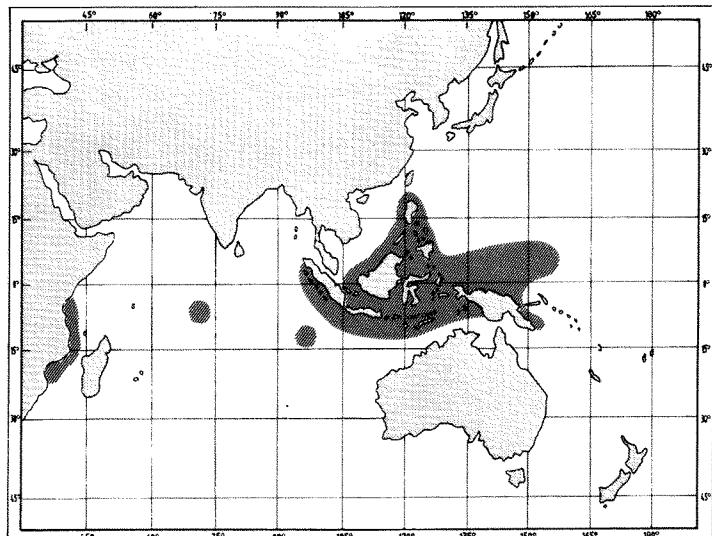


Fig. 116

**Literature:** The following listed as *L. hypselopterus*: Gloerfelt-Tarp & Kailola (1984); Myers (1989); Sato in Fischer & Bianchi (eds) (1984); Smith (1986).

**Remarks :** The name *L. hypselopterus* has long been applied to this species. There are however, two older names: *L. erythropterus* Valenciennes and *L. striatus* Steindachner. There is no type specimen for *L. erythropterus*, the description was based on a painting by the explorer, Mertens. Valenciennes made a copy of this painting and described the colours in the "Histoire naturelle des poissons" (1830). The description of the colours of the fins alone in Valenciennes' account are sufficiently diagnostic to demonstrate that this is the same species as *L. hypselopterus*. The drawing in Valenciennes' manuscript confirms this; no other species of *Lethrinus* of the specimen size stated has the fin colours and snout profile other than "*hypselopterus*". Sato (1978) placed both *L. erythropterus* and *L. erythracanthus* as synonymy of *L. kalopterus*. It is true that "*kalopterus*" has a similar fin colour, although this is typically mottled bluish as is clearly indicated in the description and manuscript painting of *L. erythracanthus*. The fin colour of "*hypselopterus*" is typically all red with dark red or brown blotches on the basal fin membranes; this is depicted in the manuscript painting and in the description. Moreover, the snout profile is straight in the painting of *L. erythracanthus*, which is also characteristic of "*kalopterus*" of the specimen size stated while "*hypselopterus*" has a concave snout profile, also shown in the painting of *L. erythropterus*. It is clear that Mertens did in fact recognize and paint two distinct species.

Steindachner's (1866) description and drawing of *L. striatus* also is clearly diagnostic of the species that has long been called "*hypselopterus*". His drawing shows the long dorsal and anal soft rays and a slightly concave profile of the snout (*L. erythracanthus* has a concave profile of the snout only in very large specimens), that are typical of *L. erythropterus*. The description mentions molar teeth in the lateral jaws, and dark banding between the eyes and on the snout that is characteristic of *L. erythropterus*.

Sato (1978) placed the names *L. erythracanthus* and *L. erythropterus* in synonymy with *L. kalopterus* and designated the name *L. kalopterus* as the senior synonym, claiming that neither *L. erythracanthus* or *L. erythropterus* had been used for a long time. The current Code on Zoological Nomenclature no longer recognizes long periods of disuse as a justification for relegating a name to junior synonymy. It is possible to apply for conservation of the names "*hypselopterus*" and "*kalopterus*" based on an appeal of common use and disuse. The presence of two older names for "*hypselopterus*" and two older names for "*kalopterus*" makes this sort of appeal tenuous. For the sake of long-term stability in this difficult and confused genus, I choose to forego appeal and apply the simpler and more concrete rule of seniority.