

***Lethrinus genivittatus*** Valenciennes, 1830

Fig. 117, Plate IV, 22

LETH Leth 6

*Lethrinus genivittatus* Valenciennes in C. & V., 1830 Hist.nat.poiss. , 6: 306, pl. 159 (Indian Ocean).

**Synonyms:** *Lethrinus nematacanthus* Bleeker (1854c).

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

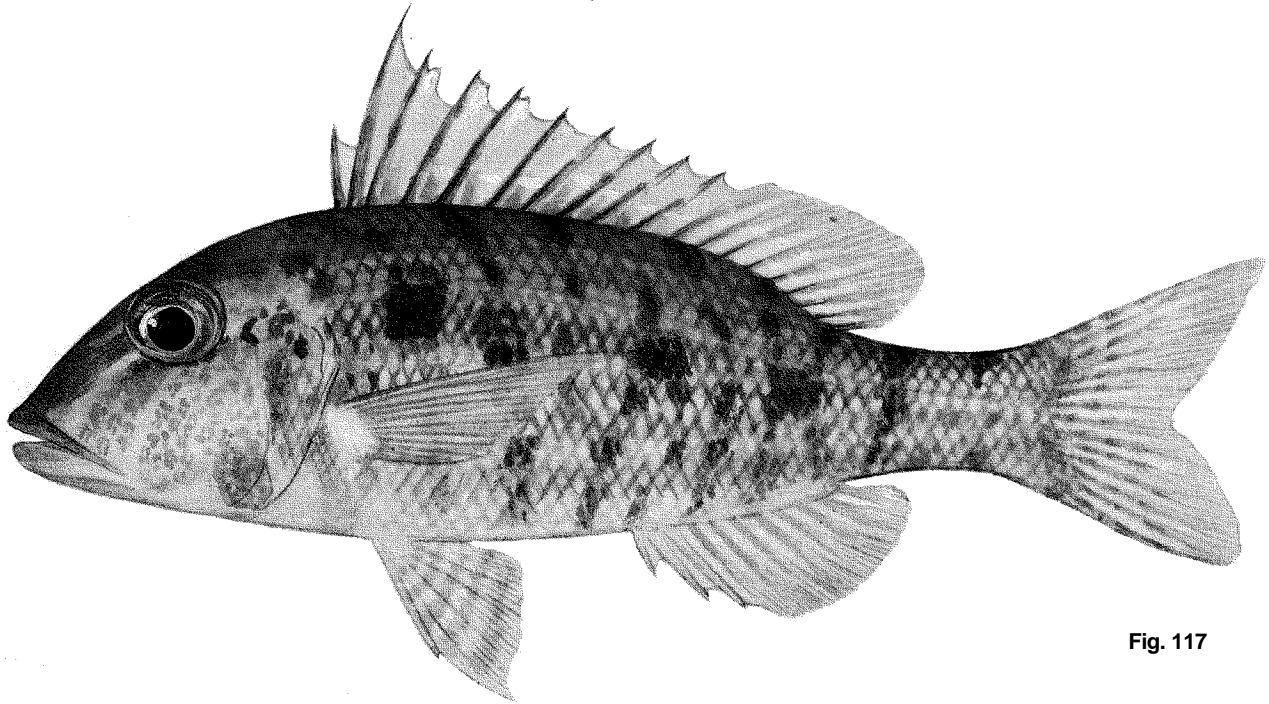


Fig. 117

**Diagnostic Features :** Body moderately slender, its depth 2.9 to 3.5 times in standard length. Head length 1.0 to 1.2 times in body depth, 2.8 to 3.0 times in standard length, dorsal profile near eye slightly convex; snout moderately short and blunt, its length about 2.3 to 2.5 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 60 and 70 degrees; interorbital space convex to flat; posterior nostril an oblong nearly vertical opening, about halfway between orbit and anterior nostril; eye situated close to dorsal profile, its length 3.6 to 4.0 times in head length; cheek not high, its length 2.6 to 3.1 times in head length; lateral teeth in jaws conical; outer surface of maxilla with a distinct knob. Dorsal fin with 10 spines and 9 soft rays, the second dorsal spine the longest, sometimes much longer than other dorsal spines, its length 1.3 to 1.9 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 shorter 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 without dense melanophores. Lateral-line scales 46 or 47; cheek without scales; 4 1/2 scale rows between lateral line and base of middle dorsal fin spines; 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 8 scales in supratemporal patch; inner surface of pectoral fin without scales, partially covered with scales or, densely covered with scales; posterior angle of operculum fully scaled. **Colour:** body tan or brown on upper sides, lower sides white with three brown or tan stripes, sides often with scattered irregular black oblique bars and a square black blotch above the pectoral fin and bordering below the lateral line; head brown or tan sometimes with several broad, somewhat indistinct vertical and oblique bands (the bands sometimes composed of fine reticulations); fins pale, speckled with small white blotches.

**Geographical Distribution:** Eastern Indian Ocean and Western Pacific, including Indonesia, northern Australia, the Philippines, southern Japan, Papua New Guinea and the Caroline Islands (Fig. 118).

**Habitat and Biology:** Inhabits primarily shallow sandy and seagrass areas, and also found in mangrove swamps, lagoons, channels and outer reefs slopes at depths of 5 to 25 m; reportedly penetrates in rivers in some areas. Feeds mostly on crustaceans and small fish. A prolonged peak spawning period from July to December is reported in New Caledonia. Their eggs are spherical and pelagic with a diameter of 0.8 mm; hatching time is 1.6 days at a temperature of around 20 degrees centigrade. Significantly more and smaller females than males has been confirmed in populations in Australia.

Estimates of maximum age ( $t_{max}$ ), asymptotic length ( $L_{infinity}$ ), coefficient of growth ( $K$ ), and rate of natural mortality ( $M$ ) have been made for the population in New Caledonia:  $t_{max} = 7$  years for both males and females,  $L_{infinity} = 16.0$  cm standard length for males and 14.0 cm standard length for females,  $K = 0.87$  for males and 0.86 for females, and  $M = 1.82$  for males and 1.87 for females.

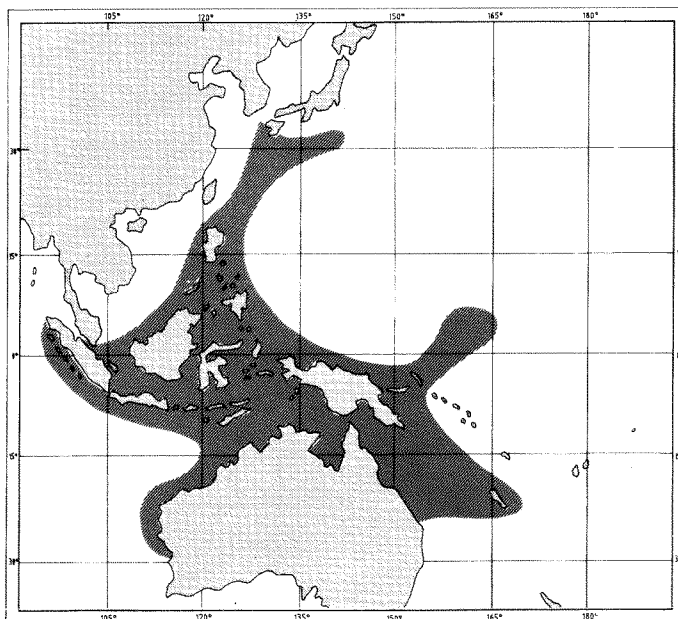


Fig. 118

**Size:** Maximum total length to around 25 cm, commonly to around 15 cm total length.

**Interest to Fisheries:** Caught mostly by shore spines. This species is of minor importance in fisheries due to its small average size. Marketed fresh.

**Local Names:** AUSTRALIA: Lancer; JAPAN: Ito-fuefuki; NEW CALEDONIA: Communard; PHILIPPINES: Kutot, Laway-laway, Lumo-an, Palutput.

**Literature:** The following listed as *L. nematacanthus*: Fourmanoir & Laboute (1976); Gloerfelt-Tarp & Kailola (1984); Grant (1982); Masuda *et al.* (1984); Sainsbury *et al.* (1985).

**Remarks :** This species has long been recognized as *L. nematacanthus* and the name *L. genivittatus* misassociated with many other species. There are two characteristics of the type of *L. genivittatus* that have contributed to this misconception: (1) there are no scales in the pectoral axil and, (2) the second dorsal-fin spine is broken. The populations of "*nematacanthus*" that previous authors have worked with typically possess scales in the pectoral axil. I have examined several populations of this species and found the presence of pectoral axil scales to be variable. This accounts for the Jack of scales in the pectoral axil of the type of *L. genivittatus*. The most easily recognizable character of this species is the elongate second dorsal-fin and obviously, if this spine is broken, the species will not be readily recognizable. Despite the lack of the key character of the elongate second dorsal spine, I have confirmed the identity of this species using three separate characters and have examined the type of *L. genivittatus* on two separate occasions to confirm my diagnosis. The type of *L. genivittatus* has a distinctive knob on the surface of the maxilla. The only other species aside from "*nematacanthus*" that consistently has this distinctive knob is *L. obsoletus* but there are numerous other characters which confirm that *L. genivittatus* cannot be *L. obsoletus*. The third dorsal spine becomes the longest dorsal spine in "*nematacanthus*" if the second dorsal spine is broken (in many cases there is not much difference in length of the second and third dorsal spine in specimens of this species), and this spine is elongate compared to other species of *Lethrinus*. The ratio of the longest dorsal spine to body depth in the type of *L. genivittatus* is much less than all other species of *Lethrinus* (i.e. "*nematacanthus*" have generally longer dorsal spines) except perhaps *L. variegatus*, and there are other characters which can confirm that *L. variegatus* is not the same as *L. genivittatus*. The most convincing character that confirms *genivittatus* = *nematacanthus* is the shape of the canines in the anterior part of the lower jaw. In the type, these flare outward distinctively, such that the teeth noticeably protrude out of the mouth. In all other species of *Lethrinus*, the teeth curve posteriorly and slightly outward (a little more perhaps in *L. borbonicus*), but the outward flare is only noticeable on very large individuals. The type of *L. genivittatus* is 159 mm standard length and I have only observed a distinctive outward flare of the lower canines in specimens of "*nematacanthus*", never in specimens of other *Lethrinus* of comparable size to the type of *L. genivittatus*. The smallest individuals of *L. nematacanthus* do not always exhibit this flare of the lower canines but it is consistently present in large specimens and individuals as small as about 100 mm standard length. The description and figure given by Valenciennes for *L. genivittatus* are consistent with this species, considering that the elongate second dorsal-fin spine of the type has been broken.

***Lethrinus haematopterus*** Temminck & Schlegel, 1844

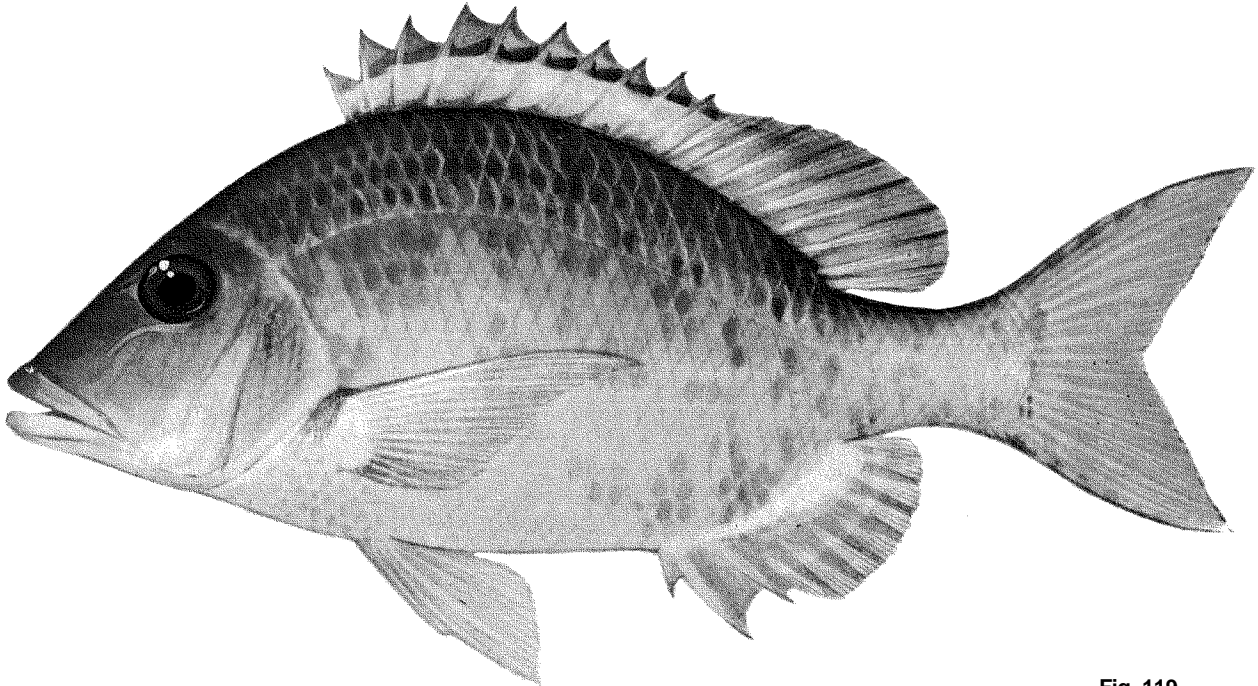
Fig. 119, Plate IV, 23

**LETH Leth 24**

*Lethrinus haematopterus* Temminck & Schlegel, 1844, Pisces, in Von Siebold, *Fauna Japonica*, 3:74, pl.38 (Japan).

**Synonyms:** *Lethrinus richardsoni* Günther (1859).

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



**Fig. 119**

**Diagnostic Features:** Body relatively deep, its depth 2.2 to 2.5 times in standard length. Head length 0.8 to 0.9 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 1.9 to 2.3 times in head length, measured without the lip the snout is 0.8 to 1.0 times in cheek height, its dorsal profile nearly straight, snout angle relative to upper jaw between 60 and 70 degrees; interorbital space convex; posterior nostril an oblong longitudinal opening, closer to orbit than to anterior nostril; eye situated close or fairly removed from dorsal profile, its length 3.2 to 4.4 times in head length; cheek not very high, its length 2.4 to 3.0 times in head length; lateral teeth in jaws conical; outer surface of maxilla smooth or with a slight longitudinal ridge. Dorsal fin with 10 spines and 9 soft rays, the fourth dorsal spine usually the longest, its length 2.8 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 with or without dense melanophores. Lateral-line scales 47 to 49; 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 cower series of scales around caudal peduncle; 5 to 8 scales in supratemporal patch; inner surface of pectoral fin base without scales; posterior angle of operculum fully scaled. **Colour:** body olive-grey with scattered irregular dark blotches; head grey, sometimes two blue stripes radiating forward from eye; fins pale or grey, the dorsal with a reddish edge.

**Geographical Distribution:** Restricted to waters around southern China and southern Japan (Fig. 120).

**Habitat and Biology:** Nothing is recorded for this species.

**Size:** Attains 45 cm total length.

**Interest to Fisheries:** Of minor importance to fisheries in China.

**Local Names:** CHINA: Tseen tsuy tso, Tseen tsuy la; JAPAN: Fuefuki-dai.

**Literature:** Lee (1986); Masuda et al. (1984); Shen (1984, as *Gymnocranius griseus*, including 329-1a,b,c).

**Remarks:** Sato (1978) listed *L. genivittatus* as a senior synonym of this species but as explained above, *L. genivittatus* clearly is not attributable to this species. There has been some speculation that the Australian species *L. laticaudis* may be included with this species but there are trenchant morphological differences between them. This species is clearly distinct and restricted to the seas around China and southern Japan.

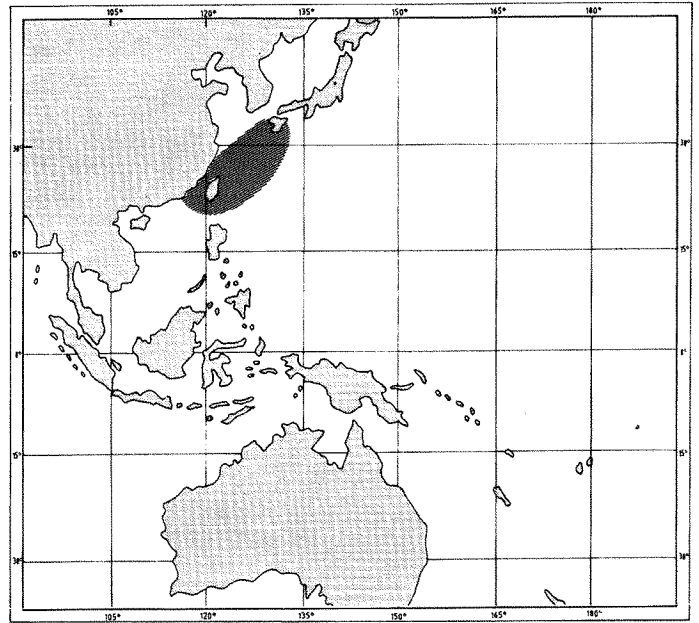


Fig. 120

***Lethrinus harak*** (Forsskål, 1775)

Fig. 121, Plate IV, 24

LETH Leth 2

*Sciaena harak* Forsskål, 1775, Descrip.Animal., :xi, 52 (Arabia).

**Synonyms:** *Lethrinus azureus* Valenciennes (1830); *Lethrinus rhodopterus* Bleeker, 1852; *Lethrinus johnii* Castelnau (1873); *Lethrinus bonhamensis* Günther (1873); *Lethrinus papuensis* Alleyne & Macleay (1877); *Lethrinus bleekeri* Klunzinger (1884).

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

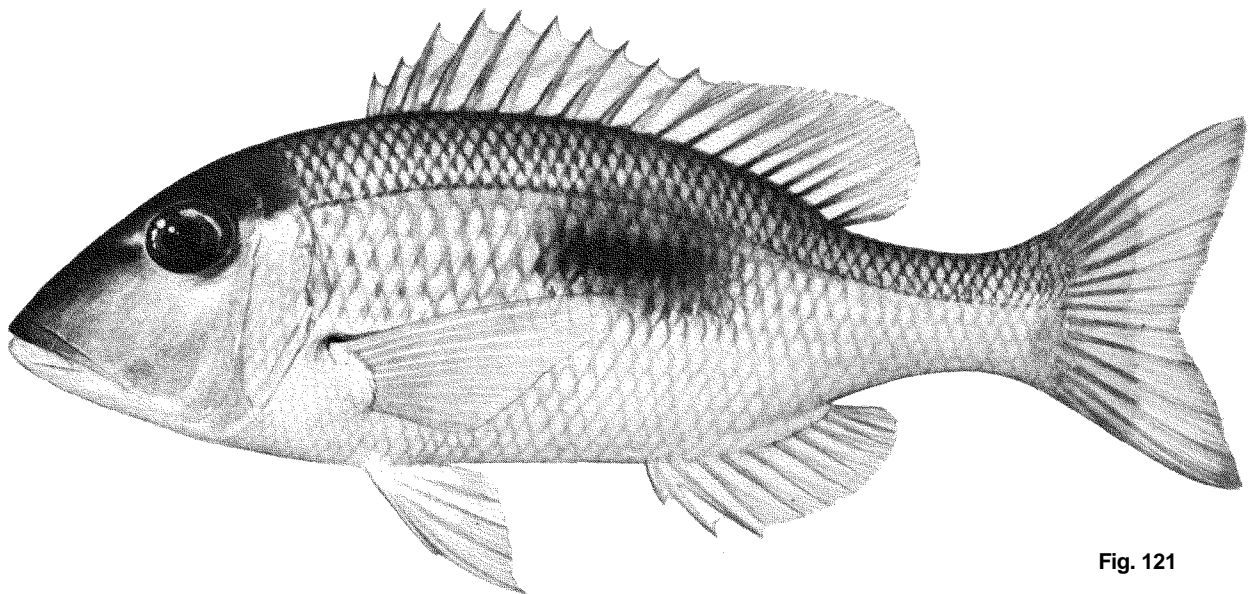


Fig. 121

**Diagnostic Features:** Body moderately deep, its depth 2.6 to 2.8 times in standard length. Head length 0.9 to 1.0 times in body depth, 2.7 to 3.0 times in standard length, dorsal profile near eye distinctly or slightly convex; snout short and blunt, its length about 2.1 to 2.6 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 60 and 70 degrees; interorbital space convex or almost flat; posterior nostril a narrow longitudinal slit, closer to orbit than to anterior nostril; eye situated close to dorsal profile, its length 3.6 to 4.2 times in head length; cheek not very high, its length 2.5 to 3.0 times in head length; lateral teeth in jaws of adults molars or rounded; 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 2.5 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 or longer or shorter than 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 usually 46 or 47; cheek without scales; usually 5 ½ but sometimes 4 ½ 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; 13 or 14 rows in lower series of scales around caudal peduncle; 4 to 7 scales in supratemporal patch; inner surface of pectoral fin densely covered with scales; posterior angle of operculum fully scaled. **Colour:** olive or grey above, shading to silvery white below; a large elliptical black spot, often broadly edged in yellow, on side directly below lateral line and centered at a vertical near the posterior tip of the pectoral fin; sometimes tight blue dots bordering lower rim of eye and around nostrils; pectoral, pelvic, dorsal and anal fin white to pinkish; caudal fin orange or reddish; vertical fins sometimes lightly mottled or striped.

**Geographical Distribution:** Indian Ocean and western Pacific, including the Red Sea, East Africa, Seychelles, Maldives, Sri Lanka, Andamans, Indonesia, the Philippines, southern Japan, northeast Australia, Papua New Guinea, the Caroline Islands, Solomons, Vanuatu, Fiji and Samoa (Fig. 122).

**Habitat and Biology:** Inhabits shallow sandy, coral rubble, mangroves, lagoons, channel and seagrass areas inshore and adjacent to coral reefs. Feeds on polychaetes, crustaceans, molluscs, echinoderma and small fishes. Most often observed solitary but sometimes in small schools. Reported to spawn throughout the year during the first five days of the lunar month in large aggregations in lagoons at Belau. Maximum age reported for this fish is 15 years.

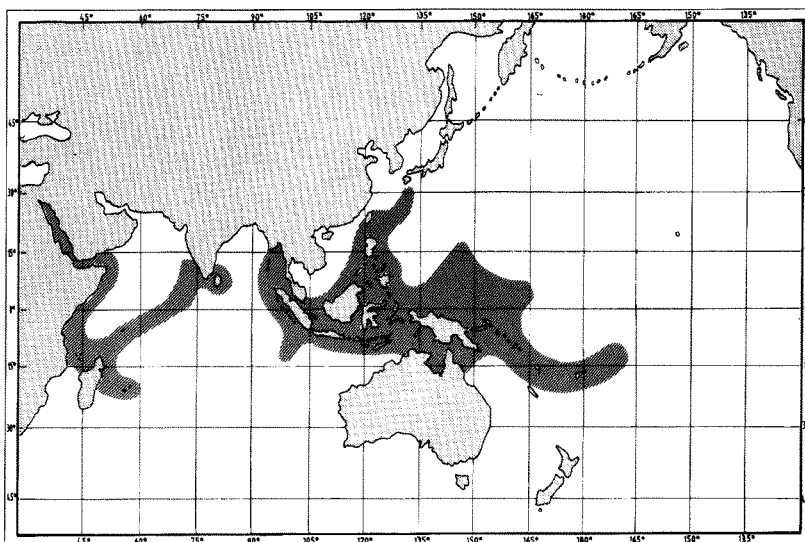


Fig. 122

**Size:** Maximum total length to around 50 cm (although one unconfirmed report of over 60 cm), most commonly 20 to 30 cm total length.

**Interest to Fisheries:** Caught mostly by shore seines, gillnets, traps, and handlines. Marketed mostly fresh.

**Local Names:** AUSTRALIA: Thumbprint emperor; BELAU: Itotch; GUAM: Black-blotch emperor, Mafuti; JAPAN: Mato-fuefuki; KENYA: Kawa, M'cha kufa; LACCADIVES: Filolu, Makarimas, Metti, Chuttommette; MAURITIUS: Batarde, Berri batarde, Battadet, NEW CALEDONIA: Bossu taché; PAPUA NEW GUINEA: Gwasawa, Tabutu; PHILIPPINES: Bitilya, Kilawan, Katambak; SAMOA: Mata'ele'ele; SAUDI ARABIA: Blackspot emperor, Shaoor, Sheiry; SEYCHELLES: En-bas-la-cendre, Lascar creole, Portrait; SOMALIA: Gahash-al-haraq, Gahash ma haraq, Sinagub; SOUTH AFRICA: Blackspot emperor, Swarkoi-keiser; TANZANIA: Changu doa, Changu kabaka, Changu kidra, Changu kole, Changu ndizi, Kibaba; YEMEN: Gahash harak.

**Literature:** Allen & Steene (1987); Amesbury & Myers (1982); Gloerfelt-Tarp & Kailola (1984); Lee (1986); Masuda et al. (1984); Myers (1989); Randall (1983); Sato in Fischer & Bianchi (eds) (1984); Schroeder (1980, as *L. rhodopterus*); Smith (1959); Smith (1986).

**Remarks:** Sato (1978) expressed doubt about the identity of *L. azureus* Valenciennes. Despite the absence of the dark lateral spot, the combination of characters unique to *L. harak* are readily recognizable on the type of *L. azureus*. The dark lateral spot is very persistent in many but not all old specimens of *L. harak* and, this spot is sometimes only barely visible on fresh specimens of this species.

***Lethrinus laticaudis*** Alleyne & Macleay, 1877

Fig. 123, Plate V, 25

**LETH Leth 25**

*Lethrinus laticaudis* Alleyne & Macleay, Proc.Linn.Soc. New South Wales, 1: 276, pl. 8, fig. 2 (Percy Island, Queensland).

**Synonyms:** *Lethrinus fletus* Whitley (1943); *Lethrinus anarhynchus* Postel (1965).

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

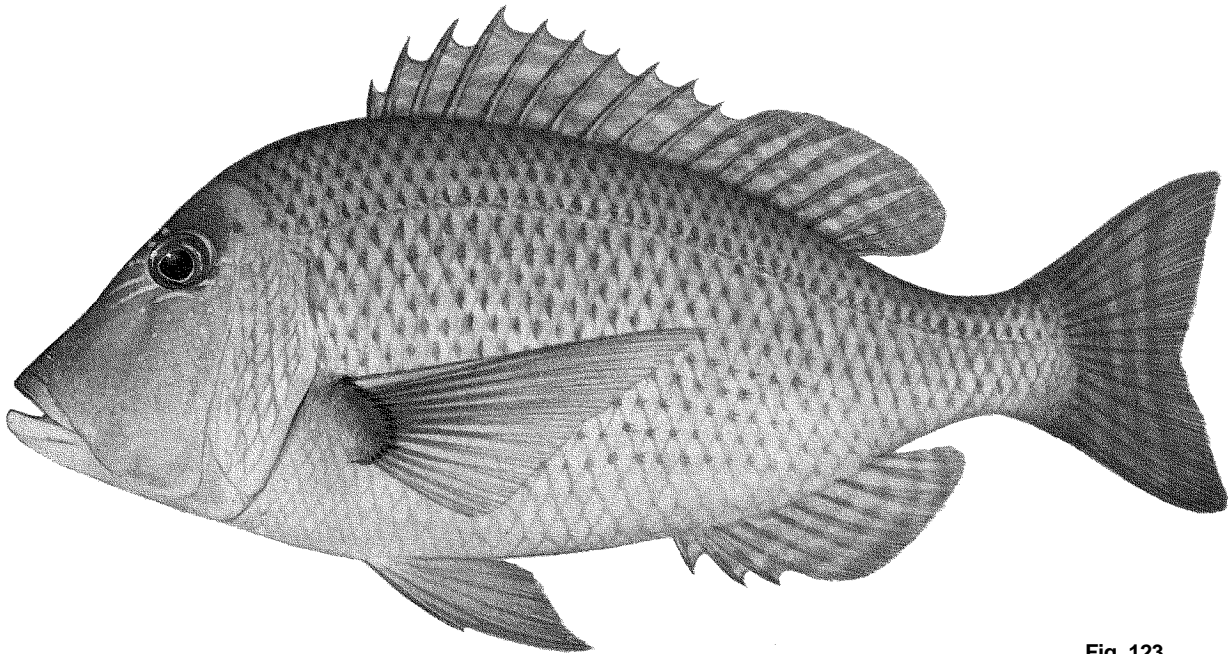


Fig. 123

**Diagnostic Features:** Body relatively deep, its depth 2.2 to 2.4 times in standard length. Head length 0.8 to 0.9 times in body depth, 2.7 to 2.9 times in standard length, dorsal profile near eye nearly straight or, concave in large individuals; snout 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 concave, snout angle relative to upper jaw between 60 and 70 degrees; interorbital space usually convex; posterior nostril an oblong longitudinal opening, closer to orbit than to anterior nostril; eye removed from dorsal profile, its length 4.2 to 5.1 times in head length; cheek moderately high, its length 2.2 to 2.5 times in head length; lateral teeth in jaws conical; outer surface of maxilla with a longitudinal ridge. Dorsal fin with 10 spines and 9 soft rays, the fourth dorsal spine usually the longest, its length 3.0 to 3.4 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 shorter 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 48; cheek without scales; 5 ½ 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; 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:** body tan, brown or yellow with scattered irregular dark blotches; head brown or yellow with blue dots on cheeks and short blue stripes radiating in front and behind eye, sometimes a number of blue cross stripes between the eyes; fins pale or yellow, the vertical fins mottled.

**Geographical Distribution:** Southern Indonesia, northwestern and northeastern Australia, Papua New Guinea and the Solomons (Fig. 124).

**Habitat and Biology:** Juveniles inhabit seagrass beds and mangrove swamps while adults are found mostly on coral reefs. Feeds mainly on crustaceans and fishes. Significantly more and smaller females than males has been confirmed in populations in Australia.

**Size:** Maximum reported total length reported as 56 cm, commonly from 30 to 40 cm total length.

**Interest to Fisheries:** Caught primarily by handlines. Mostly important as a sport fish and in handline fisheries in Australia. A good food fish. Marketed fresh.

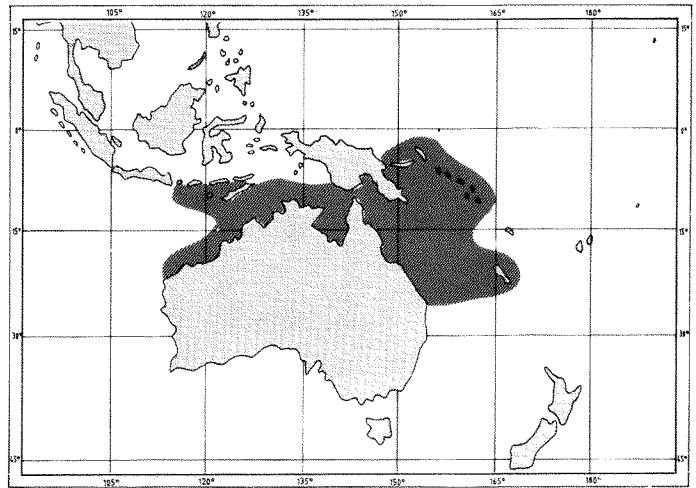


Fig. 124

**Local Names:** AUSTRALIA: Grass sweetlip, Brown kelp-fish, Coral bream, Grey sweetlip, Piggy, Red-throat, Red-finned emperor, Snapper bream; JAPAN: Kamoguchi-fuefuki; PAPUA NEW GUINEA: Carr-carri.

**Literature:** Gloerfelt-Tarp & Kailola (1984, as *L. fraenatus*); Grant (1982, as *L. fletus*); Sainsbury *et al.* (1985, as *L. fraenatus*).

**Remarks:** There has been considerable confusion in the use of names for this species, most often in recent literature it is referred to as *L. fraenatus*, or *L. fletus*. The former name is clearly a junior synonym of *L. nebulosus* however and the latter a junior synonym of *L. laticaudis*; Walker (1975) was correct in his assessment of the earliest name for this species as *L. laticaudis*. I have been unable to confirm the presence of this species outside Indonesian or Australian waters. The name *L. anarhynchus* was used by Sato (1978) to represent this species, which was named by Postel (1965) from New Caledonia. There does not appear to be a type for *L. anarhynchus* and the drawing and description in Postel's publication appears to be of an individual of *L. nebulosus* that has a distended belly due to an expanded air bladder, hence the deeper body profile. The specimen that Sato attributes to the name *L. anarhynchus* is indeed *L. laticaudis*, but the specimen is from Australia, not a Postel specimen.

**Lethrinus lentjan** (Lacepède, 1802)

Fig. 125, Plate V, 26,27

LETH Leth 4

**Bodianus lentjan** Lacepède, 1802, *Hist.nat.pois.*, 4: 281, 293 (Java).

**Synonyms:** *Lethrinus argenteus* Valenciennes (1830); *Lethrinus cinereus* Valenciennes (1830); *Lethrinus croceopterus* Valenciennes (1830); *Lethrinus flavescens* Valenciennes (1830); *Lethrinus geniguttatus* Valenciennes (1830); *Lethrinus mahsenoides* Valenciennes (1830); *Lethrinus opercularis* Valenciennes (1830); *Lethrinus virescens* Valenciennes (1830); *Lethrinus nubilis* Cantor (1849); *Lethrinus cocosensis* Bleeker (1854a); *Lethrinus glyphodon* Günther (1859); *Lethrinus fusciceps* Macleay (1878).

**FAO Names:** En - Pink ear emperor.

**Diagnostic Features:** Body moderately deep, its depth 2.6 to 2.8 times in standard length. Head length 0.9 to 1.0 times in body depth, 2.6 to 3.0 times in standard length, dorsal profile near eye nearly straight; snout moderately short, its length about 2.0 to 2.4 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 60 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 3.9 to 4.8 times in head length; cheek not high, its length 2.5 to 3.0 times in head length; lateral teeth in jaws either rounded, rounded with tubercles, simple molars or molars with tubercles; outer surface of maxilla with a longitudinal ridge. Dorsal fin with 10 spines and 9 soft rays, the fourth dorsal spine usually the longest, its length 2.7 to 3.4 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 shorter than the length of the base of the soft-rayed

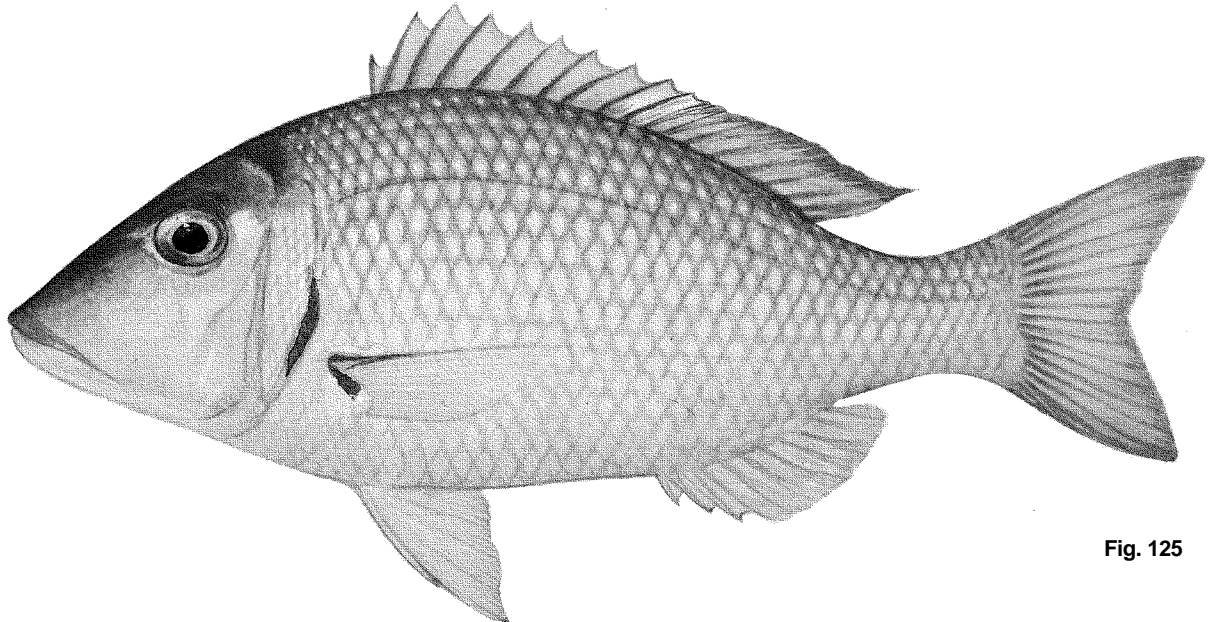


Fig. 125

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 without dense melanophores. Lateral-line scales usually 46 or 47; cheek without scales; 5 1/2 scale rows between lateral line and base of middle dorsal fin spines; 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; 4 to 9 scales in supratemporal patch; inner surface of pectoral fin densely covered with scales, with a few scales or, naked; posterior angle of operculum fully scaled. **Colour:** body greenish or grey, shading to white below, centers of scales on upper sides often white; posterior margin of opercle and sometimes base of pectoral fin red; pectoral fin white, yellow or pinkish; pelvic and anal fins white to orange; dorsal fin white and orange mottled with a reddish margin; caudal fin mottled orange or reddish.

**Geographical Distribution:** Widespread in the Indo-West Pacific, including the Red Sea, Arabian (Persian) Gulf, East Africa to the Ryukus and Tonga (Fig. 126).

**Habitat and Biology:** Found over sandy bottom in coastal areas, deep lagoons and near coral reefs, to depths of around 50 m. Juveniles and small adults commonly in loose aggregations over seagrass beds, mangrove swamps and shallow sandy areas while adults are generally solitary and found in deeper waters. Crustaceans and molluscs are the primary food item but echinoderma, polychaetes and fishes are also consumed in considerable quantities.

Peaks in spawning have been reported in January, April and May in the Red Sea, from December to February and June to August in southern India and, from September to December in New Caledonia. Size and age at maturity were found to be 30 cm standard length and three years respectively in India. Average length at 50% maturity was determined at 3.8 years in the Red Sea. A single female is estimated to release between 12,000 and 78,000 eggs per year. Spawning in Belau is reported to take place during the first half of the lunar month. Significantly more and smaller females than males have been observed in populations in Australia.

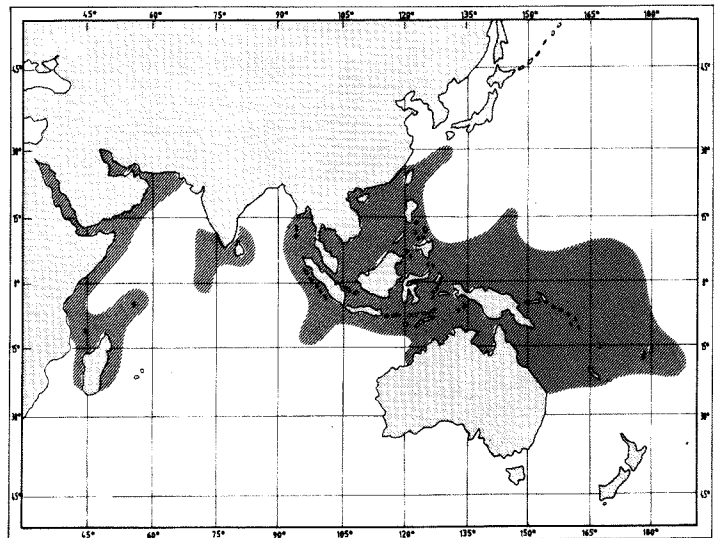


Fig. 126

Maximum observed age ( $t_{max}$ ), asymptotic length ( $L_{infinity}$ ), coefficient of growth ( $K$ ) and, rate of natural mortality ( $M$ ) have been determined for a number of populations of *L. lentjan*. In the Red Sea these were calculated as:  $t_{max} = 9$  years,  $L_{infinity} = 51.1$  cm TL,  $K = 0.17$  and,  $M = 0.42$ . In southern India, estimates were:  $t_{max} = 5$  years,  $L_{infinity} = 64$  cm total length and,  $K = 0.27$ . In New Caledonia these were estimated as:  $t_{max} = 11$  years,  $L_{infinity} = 29.2$  cm standard length,  $K = 0.33$  and,  $M = 0.82$ . The weight - length relationship was determined as  $W (g) = 0.0107 * L^{3.0904}$  ( $L =$  standard length in cm) for the Red Sea population.