

2. SYSTEMATIC CATALOGUE

2.1 Diagnostic Features of the Family Lethrinidae

Perchlike sparoid marine coastal fishes of the tropical Indo-West Pacific and West Africa. Dorsal fin continuous with 10 spines and nine to 10 soft rays; anal fin with three spines and eight to 10 soft rays; pectoral fin with 13 to 15 soft rays; pelvic fin thoracic, with 1 spine and 5 rays; caudal fin emarginate or forked, with seven to nine procurrent caudal rays. Scales finely ctenoid and moderate in size. Mouth small to moderate, terminal, lips often soft and fleshy; the upper jaw protrusible, the ascending process of the premaxilla confluent with articular process, usually longer than or almost equal to the alveolar ramus; postmaxillary process absent; palato-premaxillary ligament very well developed; maxilla mostly concealed below infraorbital bones, not articulating broadly with the distal tip of the premaxilla, without a supplementary bone; ethmo-maxillary ligament absent; an outer row of canine teeth in front of both jaws, on sides the teeth are conical or molarlike; an inner row of villiform teeth anteriorly; vomer and palatine toothless. Gill membranes broadly united to one another but separated from isthmus; gills four, slit behind the fourth present; pseudobranchs present; gillrakers short and knoblike; four branchiostegal rays inserting on the ceratohyal, the fifth at the interspace between the ceratohyal and the epihyal, the sixth on the epihyal; second epibranchial toothplate present, the third absent. Two openings in pars jugularis; subocular shelf reduced or absent. Three predorsal bones present in the following configuration: first predorsal, first neural spine, second and third predorsal, second neural spine, first pterygiophore supporting the first two dorsal spines and second pterygiophore supporting the third dorsal spine, third neural spine, third pterygiophore supporting fourth dorsal spine, fourth neural spine; two to three trisegmental pterygiophores in the dorsal and anal fins; 11 epipleural ribs; accessory subpelvic keel absent; postpelvic process well developed. Pyloric caeca few, usually 3.

2.2 Illustrated Key to Genera and Species of Monotypic Genera

- 1a. Cheek with 4 to 6 vertical rows of scales (Fig. 19); 10 soft rays in dorsal fin; usually 9 or 10 soft rays in anal fin
- 2a. Usually 9 soft rays in anal fin

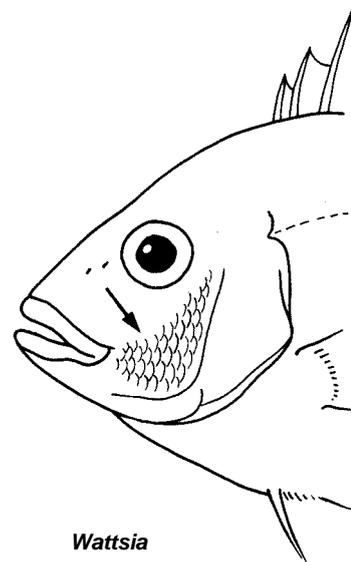
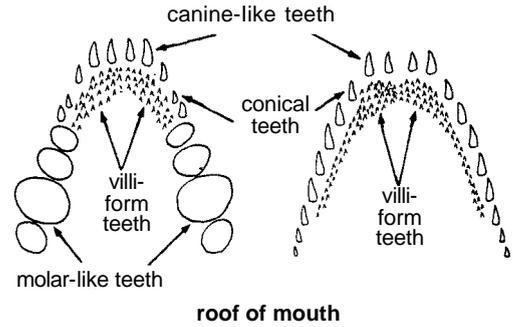


Fig. 19

3a. Sides of jaws with round, fiat molars preceded by a patch of small teeth and an anterior series of canines (Fig. 20a); profile of head in front of eye strongly convex; pectoral fin with 14 soft rays, inner surface of pectoral fin base scaled (Fig. 21a) no longitudinal stripes on body ***Monotaxis grandoculis*** (Fig. 22, Plate VIII, 47-49)

3b. Each jaw with a narrow band of villiform teeth, an outer series of conical teeth, and a series of canines at the front of both jaws (Fig. 20b); profile of head in front of eye slightly convex or straight; pectoral fin with 15 soft rays; inner surface of pectoral fin base scaleless (Fig. 21b); yellow longitudinal stripes on body ***Gnathodentex aurolineatus*** (Fig. 23, Plate I, 1)

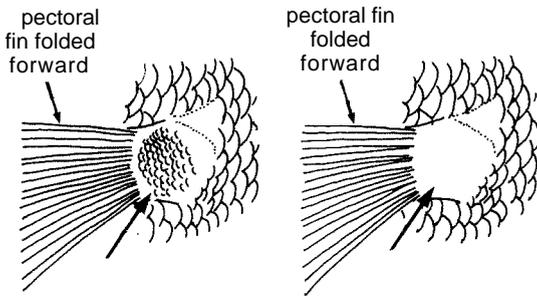


a. *Monotaxis*

b. *Gnathodentex*

Fig.20

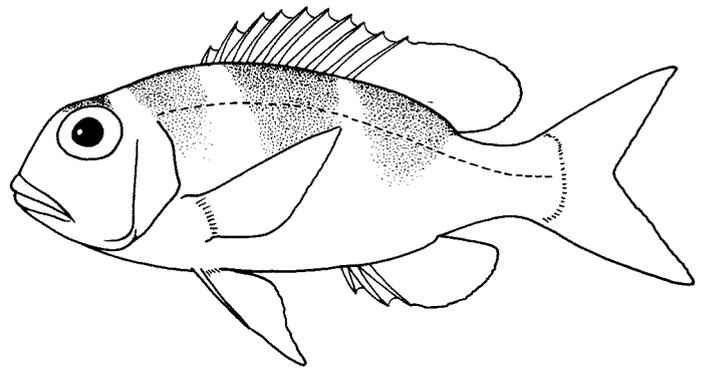
2b. Usually 10 soft rays in anal fin



a. scales on inner base

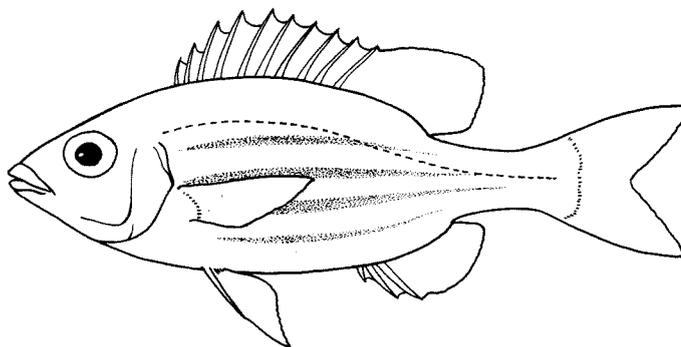
b. no scales on inner base

Fig. 21



Monotaxis grandoculis

Fig. 22



Gnathodentex aurolineatus

Fig. 23

- 4a. Maxilla with a strong denticulated longitudinal ridge (Fig. 24); caudal fin lobes rounded **Wattsia mossambica** (Fig. 25, Plate VIII, 50)
- 4b. Maxilla surface smooth; caudal fin lobes more or less pointed **Gymnocranius** (Fig. 26)
- 1.b Cheek naked (Fig. 27); 9 soft rays in dorsal fin; 8 soft rays in anal fin **Lethrinus** (Fig. 28)

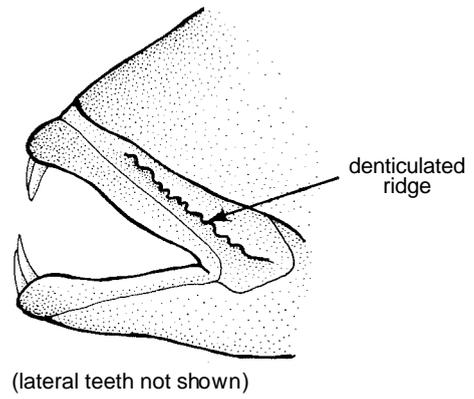
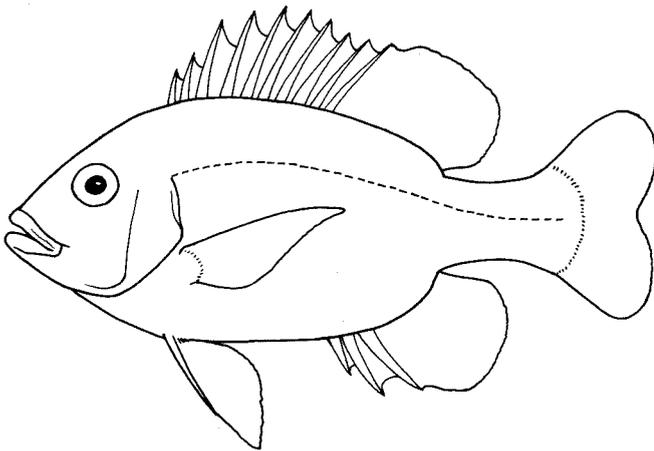
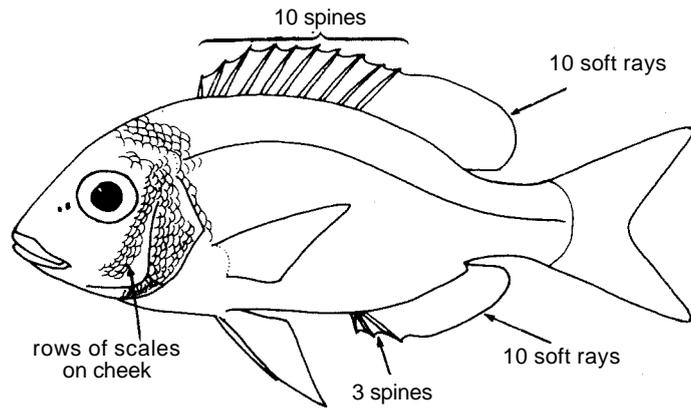


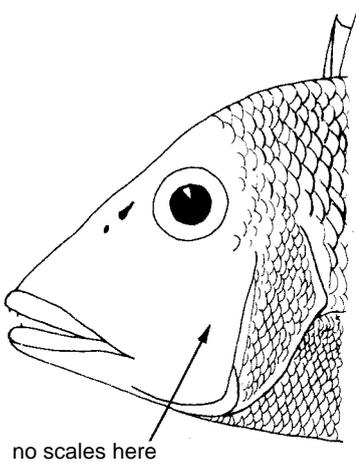
Fig. 24



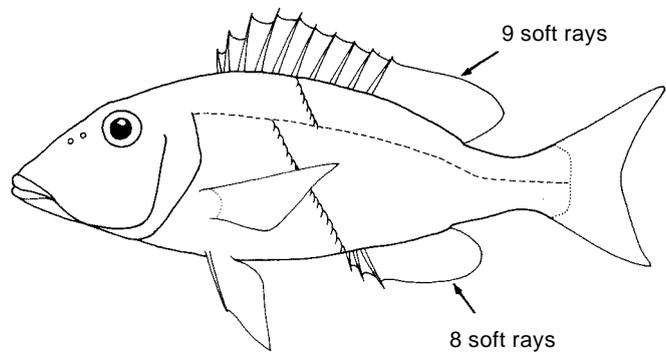
Wattsia mossambica Fig. 25



Gymnocranius Fig. 26



Lethrinus Fig. 27



Lethrinus Fig. 28

2.3 Information by Species

Gnathodentex Bleeker, 1873

LETH Gnath

Genus : *Gnathodentex* Bleeker, 1873a: 41. Type-species *Sparus aurolineatus* Lacepède, 1803, by original designation.

Synonyms : None, but the single species in the genus has been assigned to *Dentex*, *Pentapus*, and *Pentapodus* by various authors.

A single species in the genus - see *Gnathodentex aurolineatus*.

Gnathodentex aurolineatus (Lacepède, 1802)

Fig. 29, Plate I, 1

LETH Gnath 1

Sparus aureo-lineatus Lacepède, 1802, Histoire nat. poissons, Vol. IV: 42, 132 (no locality given).

Synonyms: *Dentex lycogenis* Bennett (1831); *Gnathodentex ocumaculatus* Herre (1935).

FAO Names: En - Striped large-eye bream.

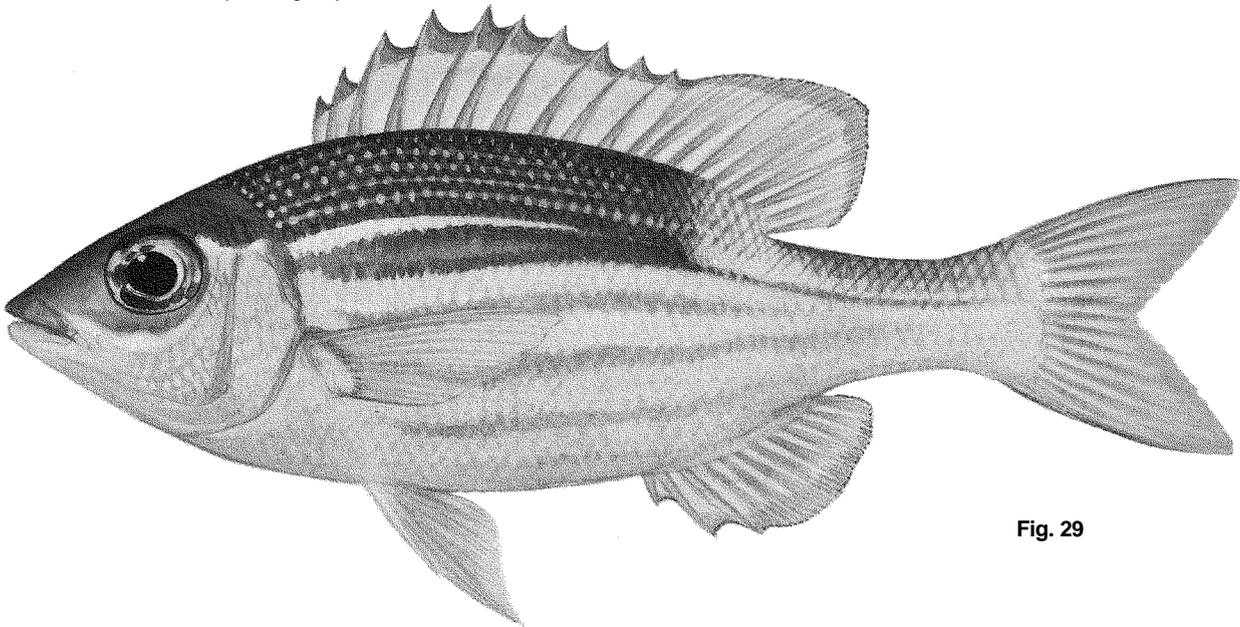
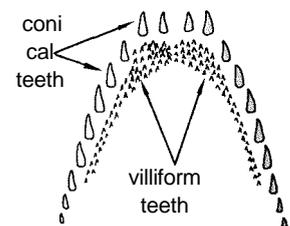


Fig. 29

Diagnostic Features: Body oblong, its depth 2.3 to 2.8 times in standard length. Dorsal profile of head moderately sloped; eye relatively large, its diameter about equal to length of snout; jaw teeth in a narrow villiform band bordered by an outer series of conical teeth; 4 moderate-sized canines at front of upper jaw and 6 at front of lower jaw (Fig. 30); maxilla (upper jaw) with a longitudinal denticulated ridge (Fig. 31); a pair of close-set, round nasal openings on each side of snout in front of eyes. Dorsal fin with 10 slender spines and 10 soft rays, the first to fourth spines increasing in length, the remaining spines about equal; anal fin with 3 stender spines and 8 or 9 (usually 9) soft rays; pectoral rays 15 (including small splint-like uppermost element); caudal fin strongly forked with pointed tips. Lateral-line scales about 68 to 74; 5 scale rows between lateral line and base of middle dorsal fin spines; inner surface of pectoral fin axil scaleless. **Colour:** upper one-third of side (i.e. back region) dark brown with narrow silvery stripes, corresponding with each horizontal scale row; remainder of head and body mainly silver to grey except 4 or 5 brownish-orange stripes on lower two-thirds of side, uppermost stripe is the widest and originates at upper corner of gill flap (operculum); a prominent golden-yellow to orange blotch directly below posterior part of dorsal fin and just in front of caudal fin base; snout and lips often with a yellowish tinge; iris golden; a broad pearly stripe on preorbital region, continuing below eye to its posterior margin; fins mainly clear, although dorsal, anal, and caudal sometimes light reddish; yellow-orange spot at upper base of pectoral fin.



roof of mouth

Fig. 30

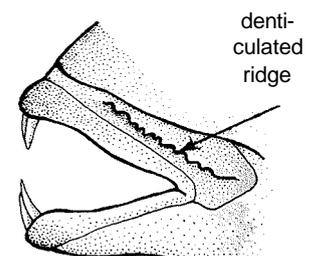


Fig. 31

Geographical Distribution: Wide-spread in the Indo-west and Central Pacific (excluding the Hawaiian Islands) from the Tuamotu Islands to the east coast of Africa, and from Australia northwards to Japan (Fig. 32).

Habitat and Biology: Generally found on coral reefs, sometimes in aggregations containing one hundred or more individuals. The depth range is between about 3 and 20 m. Feeds chiefly on bottom-living invertebrates.

Size: Maximum total length about 30 cm; common to 20 cm.

Interest to Fisheries: Frequently found in markets. Caught mainly with spears, traps, gillnets, and handlines. Average quality flesh that is marketed mostly fresh.

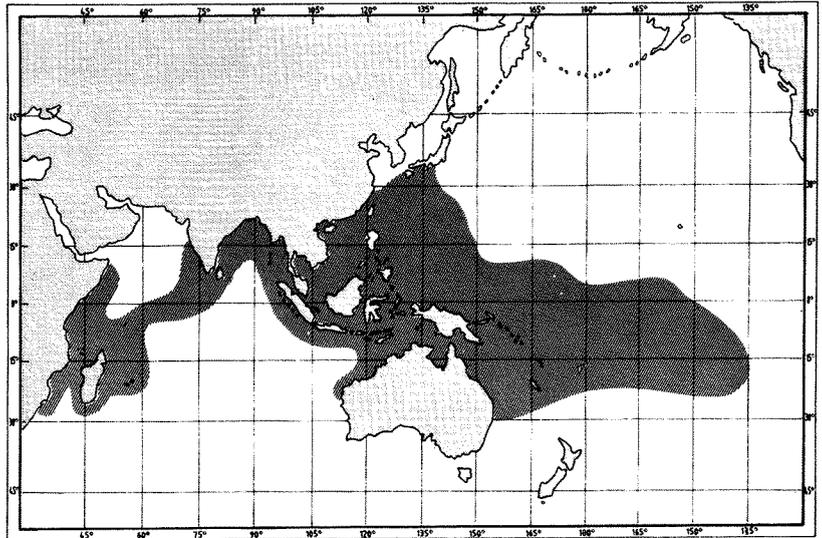


Fig. 32

Local Names: AUSTRALIA: Gold-lined sea bream; JAPAN: Nokogiridai; LACCADIVE ISLANDS: Bondu (Minicoy), Cheekkani (other islands); NEW CALEDONIA: Perche a lignes d'or; PAPUA NEW GUINEA: Manahala (Port Moresby); PHILIPPINES: Gapas-gapas (Visayan); SEYCHELLES: Carandine; SOUTH AFRICA: Glowfish; TAHITI: Maene.

Literature: Fischer & Bianchi (eds) (1984); Masuda et al. (1984); Sato (1986); Smith & Heemstra (eds) (1986).

Gymnocranius Klunzinger, 1870

LETH Gymno

Genus: *Gymnocranius* Klunzinger, 1870: 764. Type species *Dentex rivulatus* Rüppell, 1838 (= *Cantharus grandoculis* Valenciennes, 1830 - see remarks below), by monotypy.

Synonyms: Genus *Paradentex* Bleeker, 1876.

Diagnostic Features: Medium to large-sized emperors with an ovate, laterally compressed body. Profile of head in front of eye convex, the snout slope relatively steep; adult specimens often developing a bony ridge on nape and bony shelf above anterior part of eye. Mouth small, usually not reaching to level of eye; each jaw with 2 or 3 small, slender canines at front with remaining teeth villiform, except conical (molariform in one species) on other part of lateral section. Eye relatively large, a pair of close-set, round nasal openings on each side of snout in front of eyes, usually a thin flap of skin on rear edge of anterior opening. Dorsal fin continuous, not noticeably incised in middle portion, with 10 spines and 10 soft rays; anal fin with 3 spines and 10 (occasionally 9) soft rays; pectoral fin rays 14, including slender, splint-like uppermost element; caudal fin strongly to moderately forked, usually with pointed tips. Lateral-fine scales 46 to 49 with 2 to 4 additional tubed scales extending on to base of caudal fin; rear part of cheek with 3 to 5 transverse scale rows, remainder of cheek, preorbital, snout, and interorbital scaleless; inner surface of pectoral fin base scaleless. **Colour:** generally overall silvery; cheek region below eye marked with either a dark bar (sometimes faint), wavy blue, longitudinal lines, or numerous blue spots; fins clear to yellow or reddish. Freshly caught specimens, especially juveniles, often assume a pattern of 5 to 8 narrow dark bars.

Biology, Habitat and Distribution: Inhabits shallow to moderately deep water (between about 10 and 80 m), usually over sand or rubble bottoms of continental coasts, but a few species are sometimes found around islands or offshore reefs. They generally occur solitarily, but *G. griseus* sometimes forms schools. The diet consists of small, bottom-living invertebrates, especially gastropod molluscs.

Geographical Distribution: Tropical Indian Ocean to western and central Pacific Ocean.

Interest to Fisheries: Most are caught in relatively low numbers, except *G. griseus* which is an important commercial fish in some countries of southeast Asia such as Malaysia and Thailand. In 1987, Hong Kong reported the catch of 954 t and Fiji of 223 t of unidentified *Gymnocranius* species.

Remarks: The original denomination of the type species, *Dentex rivulatus* Rüppell (1838) is an invalid name for the Indo-Pacific species. It is preoccupied by *Dentex rivulatus* Bennett (1835), a sparid fish from the Black Sea. *Gymnocranius grandoculis* (Valenciennes, 1830) is the valid name for the species described by Rüppell.

The identity of the species in this genus has caused considerable confusion. The main reason for this problem is the great similarity in shape and coloration among the species. In addition, traditional characters such as fin-ray and scale counts, dentition, etc. are of little value. It has been especially difficult to resolve nomenclatorial problems, because of the small size and poor condition of many of the type specimens. Surprisingly, the group is not very well represented in museum collections. Further study of large juvenile to adult series of fresh material is required to confirm the status of most of the species recognized in this catalogue. Therefore the classification presented here should be regarded as provisional.

Key to the species of *Gymnocranius*

- 1a. Caudal fin strongly forked (Fig. 33a), the median rays shorter than eye diameter; lower edge of eye intersected by line from tip of snout to middle of caudal fin fork (Fig. 34) *G. elongatus* (Fig. 35, Plate I, 3)
- 1b. Caudal fin moderately forked (Fig. 33b), the median rays about equal to, or longer than eye diameter; lower edge of eye above line from tip of snout to middle of caudal fin fork (Fig. 36)

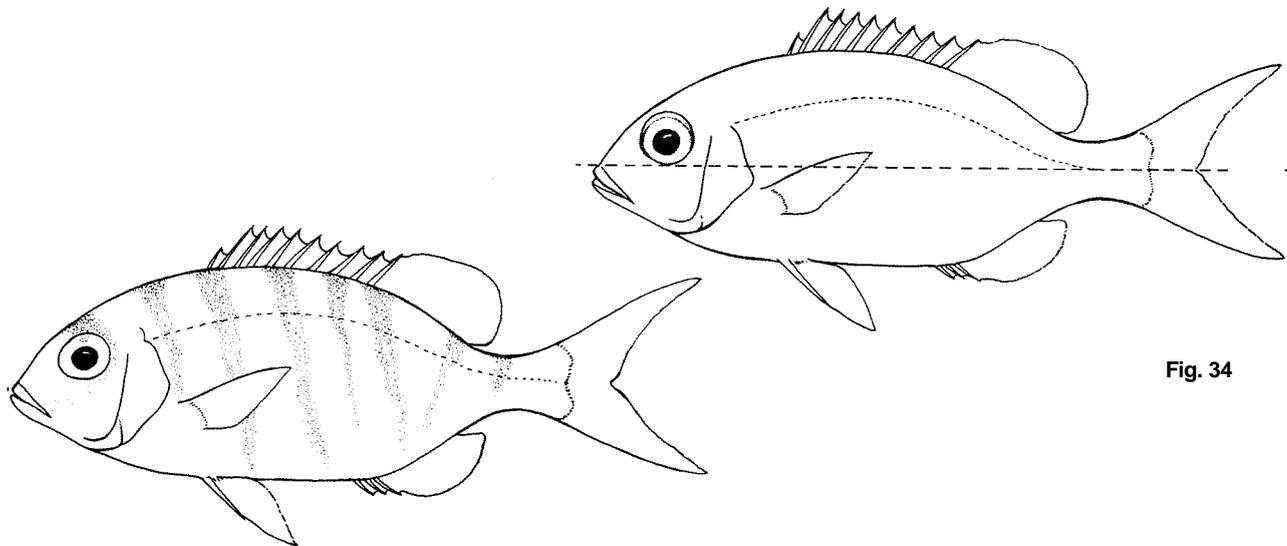
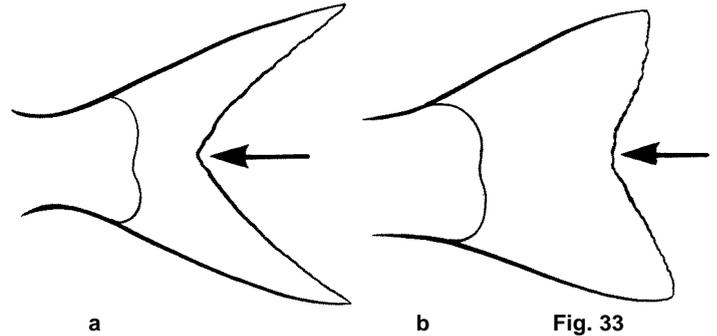


Fig. 34

G. elongatus

Fig. 35

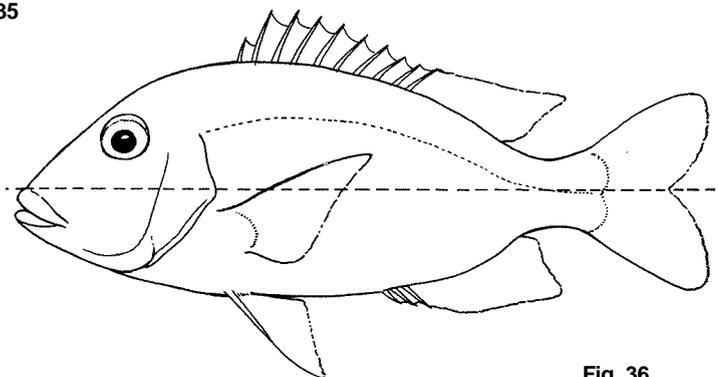
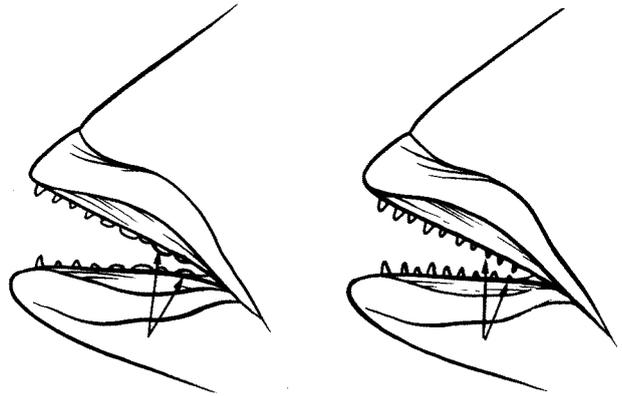


Fig. 36

2a. Longitudinal scale rows between lateral line and base of middle dorsal spines $4\frac{1}{2}$; molars present on sides of jaws (Fig. 37a) ***G. euanus***
(Fig. 38, Plate I, 4)

2b. Longitudinal scale rows between lateral line and base of middle dorsal spines $5\frac{1}{2}$ (Fig. 39); molars absent, usually villiform to conical teeth present on sides of jaws (Fig. 37b)



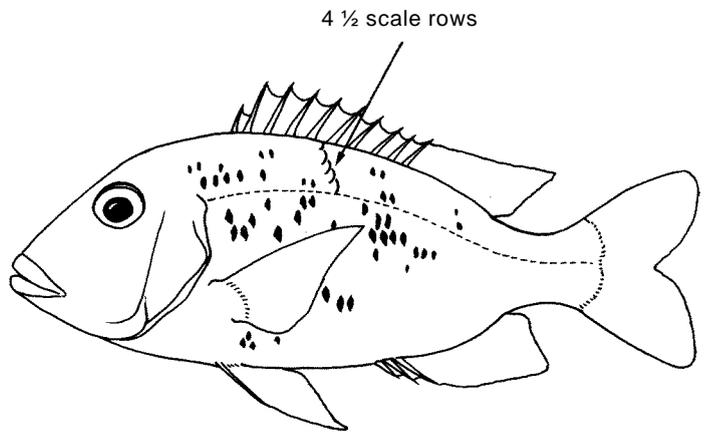
a b Fig. 37

3a. Head with a prominent diamond-shaped, blackish patch of scales surrounded by a white border above and behind each eye ***G. audleyi***
(Fig. 39, Plate I, 2)

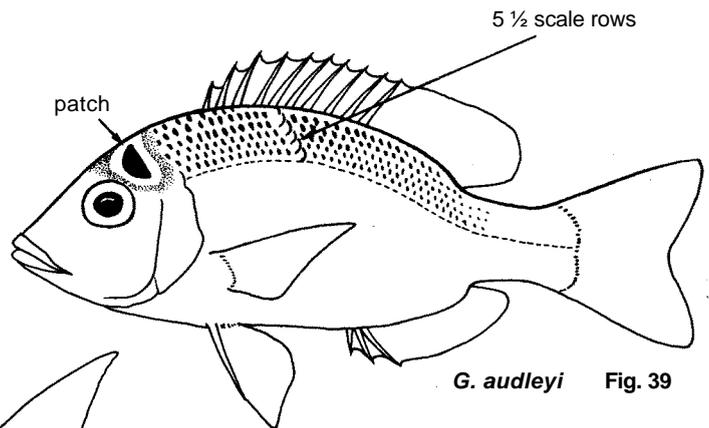
3b. Head without the marking described in 3a

4a. Snout with prominent blue-edged yellow band from front of eye to above upper lip (encompassing nostrils); 3 or 4 oblique, blue (brown in preservative) lines across cheek; body moderately deep, the maximum depth about 2.3 to 2.4 times in standard length ***G. frenatus***
(Fig. 40, Plate 1, 5)

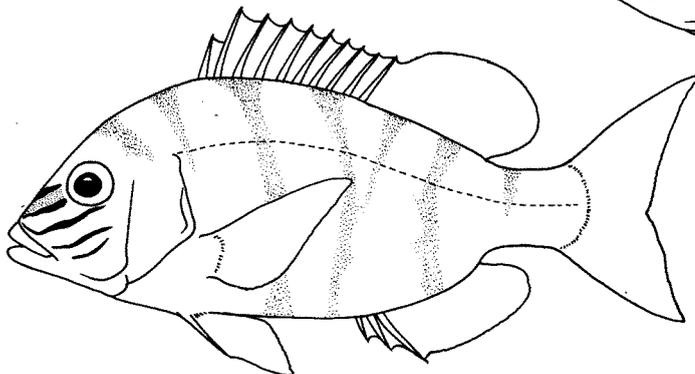
4b. Snout without the marking described in 4 a; cheek may have wavy, blue lines, but they are more or less horizontal rather than oblique; body depth variable, 1.9 to 3.0 times in standard length



G. euanus Fig. 38



G. audleyi Fig. 39



G. frenatus Fig. 40

5a. inner edge of caudal fin fork slightly convex with fin tips blunt (Fig. 41a); live fish with longitudinal rows of dark spots on upper side **Gymnocranius sp.** (Fig. 42, Plate II, 10)

5b. Inner edge of caudal fin fork straight and fin tips pointed (Fig. 41b); no longitudinal rows of dark spots on upper side

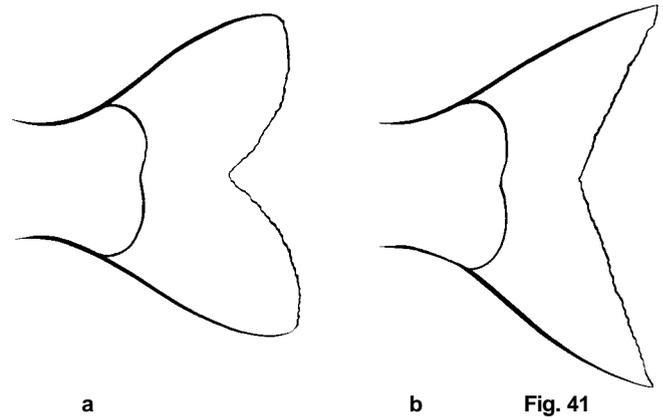
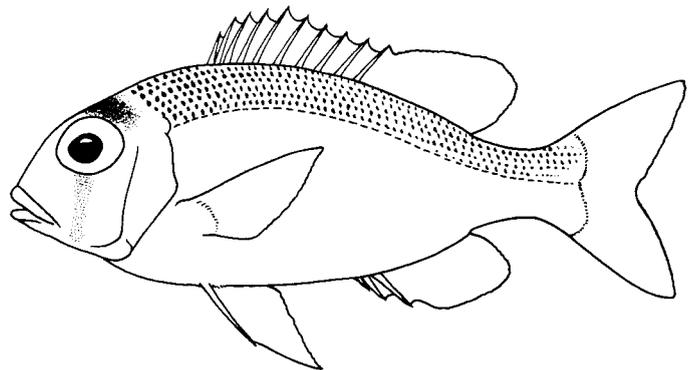


Fig. 41

6a. Body relatively deep, the maximum depth about 1.9 to 2.2 (occasionally 2.3) times in standard length; no blue spots or wavy blue lines on cheek; usually with several irregular dark bars on sides and dark subocular bar **G. griseus** (Fig. 43, Plate II, 7,8)

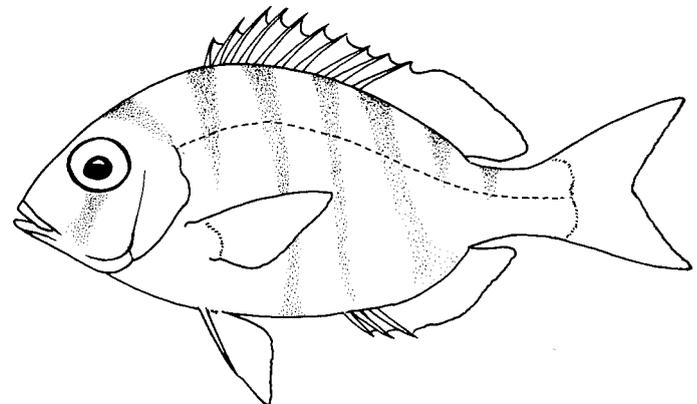


G. sp.

Fig. 42

6b. Body relatively slender, the maximum depth about 2.3 to 3.0 times in the standard length; side of snout and cheek often with wavy longitudinal blue lines (Fig. 45) or vertically elongate spots (Fig. 44) in fresh specimens longer than 20 to 25 cm standard length; smaller specimens may have irregular dark bars on side and dark subocular bar as in 6a

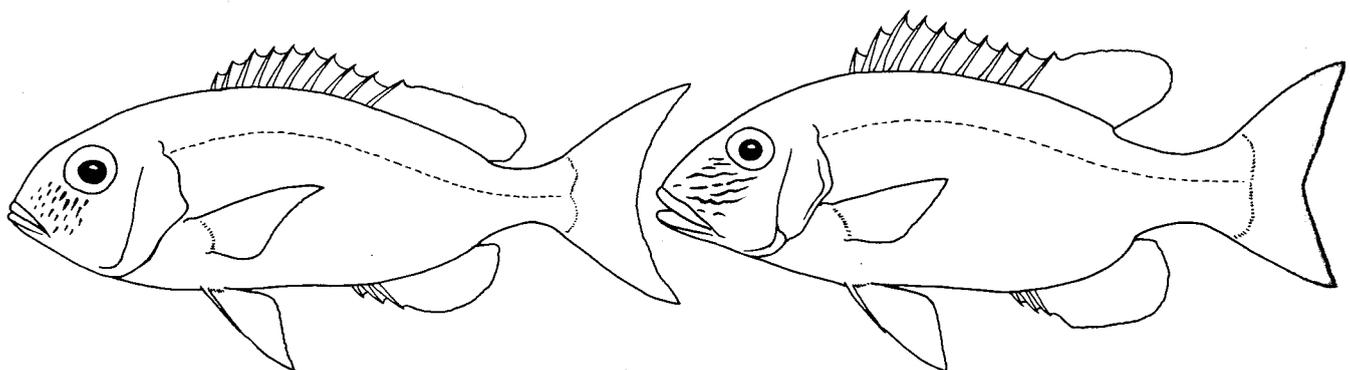
7a. Maximum depth of body about 2.6 to 3.0 times in standard length; cheek often with vertically elongate blue spots in fresh specimens ... **G. microdon** (Fig. 44, Plate II, 9)



G. griseus

Fig. 43

7b. Maximum depth of body about 2.3 to 2.5 (occasionally 2.6) times in standard length; juveniles below about 200 mm standard length frequently with dark bar under eye and 5 or 6 irregular dark bars across side of body adults with wavy, blue lines on snout and cheek, increasing in number with growth **G. grandoculis** (Fig. 45, Plate II, 6)



G. microdon Fig. 44

G. grandoculis

Fig. 45