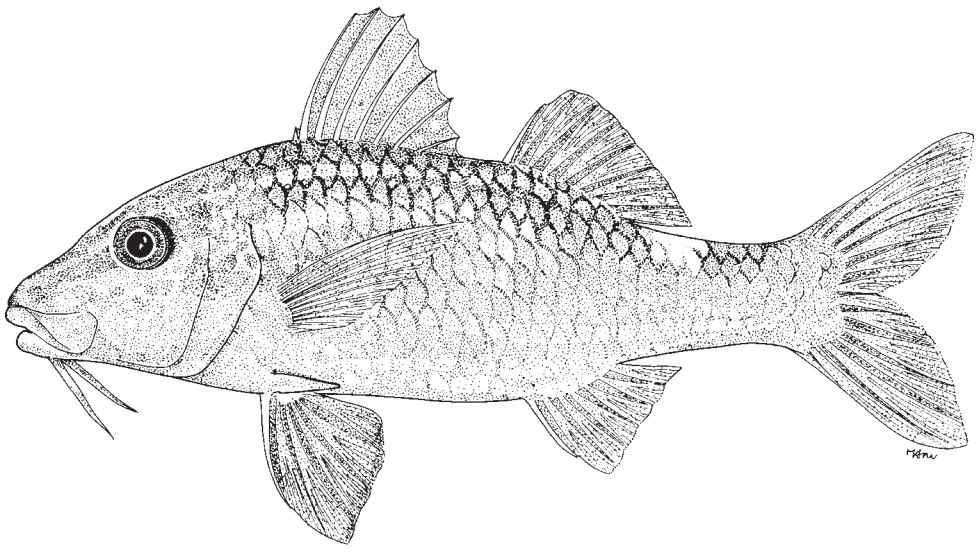
click for previous page

Parupeneus ciliatus (Lacepède, 1802) **(Plate XXV, 193)**

Frequent synonyms / misidentifications: *Parupeneus fraterculus* (Valenciennes, 1831); *P. pleurotaenia* (Playfair and Günther, 1867) / *Parupeneus porphyreus* (non Jenkins, 1903); *P. rubescens* (non Lacepède, 1801).

FAO names: En - Diamondscaled goatfish.

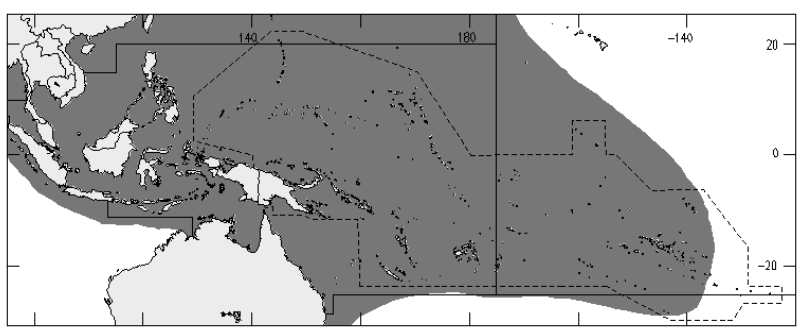


Diagnostic characters: Body slightly elongate, its depth 2.95 to 3.4 times in standard length, and moderately compressed. **Chin with 2 slender barbels which do not reach rear margin of preopercle, their length 1.55 to 1.9 times in head length; snout short, its length 1.85 to 2.1 times in head length**; dorsal profile of snout straight to slightly concave; mouth small, maxilla reaching a vertical through posterior nostril; a single row of well-spaced, stout, conical teeth in jaws; no teeth on roof of mouth. **First gill arch with 6 to 8 gill rakers on upper limb, 24 to 27 (rarely 27) on lower limb (total 31 to 34).** Two well-separated dorsal fins, the first with VIII spines, the second fin with 9 soft rays; first dorsal-fin spine very short; longest dorsal-fin spine 1.6 to 1.9 times in head length; last 2 rays of second dorsal and anal fins subequal; anal fin with I spine and 6 soft rays; **pectoral-fin rays 15 (rarely 14)**. Lateral-line scales 27 or 28; 3 rows of scales between dorsal fins; 8 or 9 rows of scales along upper part of caudal peduncle. **Colour:** light red, the scale edges reddish brown to dark brown except ventrally; a slight intensification of dark pigment to form a blotch dorsally on caudal peduncle, preceded by a narrow pale blotch; 2 parallel whitish to pale red bands from side of snout through eye (1 across upper part, 1 along lower edge) along back to end beneath front of second dorsal fin; fins light red without markings except small pale spots on dorsal and anal fins of some individuals.

Size: Largest specimen examined 38 cm total length, commonly to 28 cm.

Habitat, biology, and fisheries: A coral-reef species of shallow to moderate depths of lagoons and outer reef zones; may also be seen in seagrass beds. Often observed at rest on reef substratum, suggesting that it feeds nocturnally.

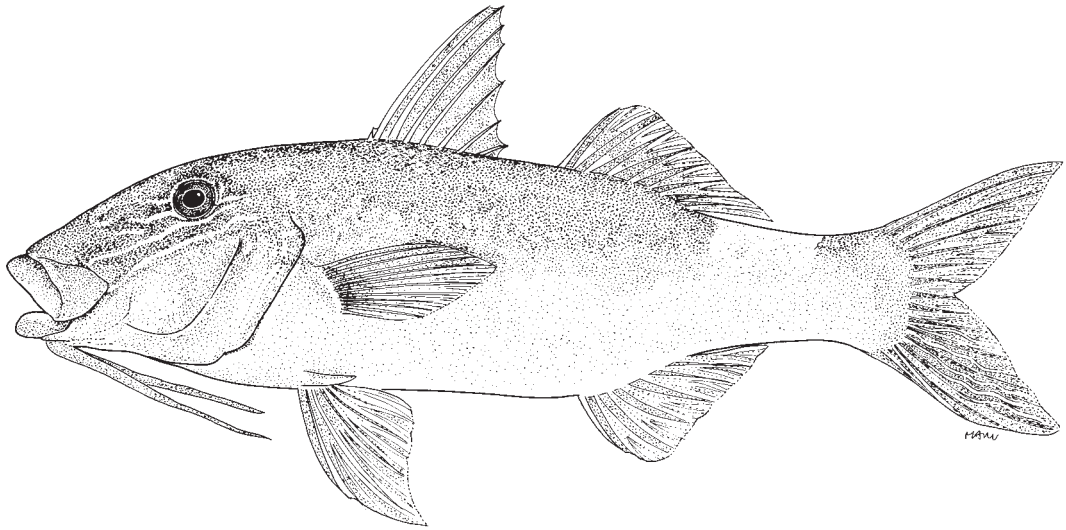
Distribution: Indo-Pacific except the Red Sea to Persian Gulf and Hawaii; in the western Pacific from southern Japan to New South Wales and Lord Howe Island; east in Oceania to the Marshall Islands and French Polynesia (including Rapa).



Parupeneus cyclostomus (Lacepède, 1801) **(Plate XXVI, 194 and 195)**

Frequent synonyms / misidentifications: *Parupeneus chryserydros* (Lacepède, 1801); *P. luteus* (Valenciennes, 1831) / None.

FAO names: En - Goldsaddle goatfish; **Fr** - Rouget-barbet doré; **Sp** - Salmonete dorado.

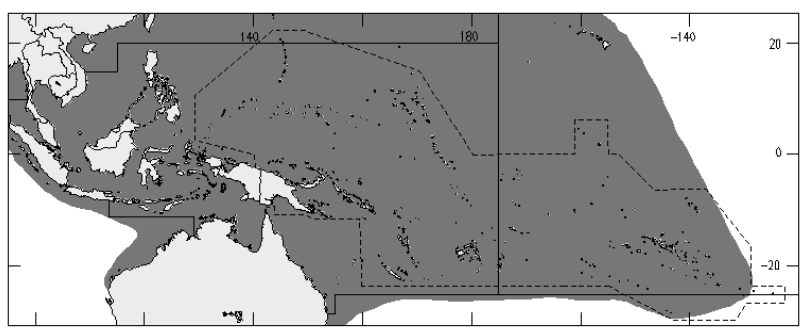


Diagnostic characters: Body moderately elongate, its depth 3.3 to 3.8 times in standard length, and moderately compressed. **Chin with 2 very long slender barbels, reaching to or slightly posterior to end of opercle, their length 0.95 to 1.2 times in head length. Snout long, its length 1.6 to 1.9 times in head length**; dorsal profile of snout straight to slightly concave; mouth small, maxilla reaching little more than 1/2 distance to anterior edge of eye; a single row of well-spaced, stout, conical teeth in jaws; no teeth on roof of mouth. **First gill arch with 6 or 7 gill rakers on upper limb, 22 to 26 on lower limb (total 29 to 33).** Two well-separated dorsal fins, the first with VIII spines, the second fin with 9 soft rays; first dorsal-fin spine very short; longest dorsal-fin spine 1.45 to 1.75 times in head length; last ray of second dorsal and anal fins slightly longer than penultimate ray; anal fin with I spine and 6 soft rays; **pectoral-fin rays 15 to 17 (usually 16)**. Lateral-line scales 27 or 28; 3 rows of scales between dorsal fins; 8 or 9 rows of scales along upper part of caudal peduncle. **Colour:** 2 colour phases, the first yellowish grey with blue markings on the scales and a broad saddle-like yellow spot dorsally on caudal peduncle; irregular blue lines radiating from eye and below eye; second dorsal and anal fins with oblique blue lines; caudal fin with blue lines paralleling rays; other phase entirely yellow with a brighter yellow saddle-like spot dorsally on caudal peduncle.

Size: Largest specimen examined 38 cm total length, commonly to 28 cm.

Habitat, biology, and fisheries: This large goatfish is more closely associated with coral reefs than other species. It is unusual for a mullid in its heavy feeding on fishes (about 70% of the diet). It has been observed to use its barbels to frighten its prey from holes in the reef. Like other goatfishes while feeding, it is often accompanied by other fishes such as jacks and wrasses which try to capture prey animals fleeing from its intrusions in the reef or sand.

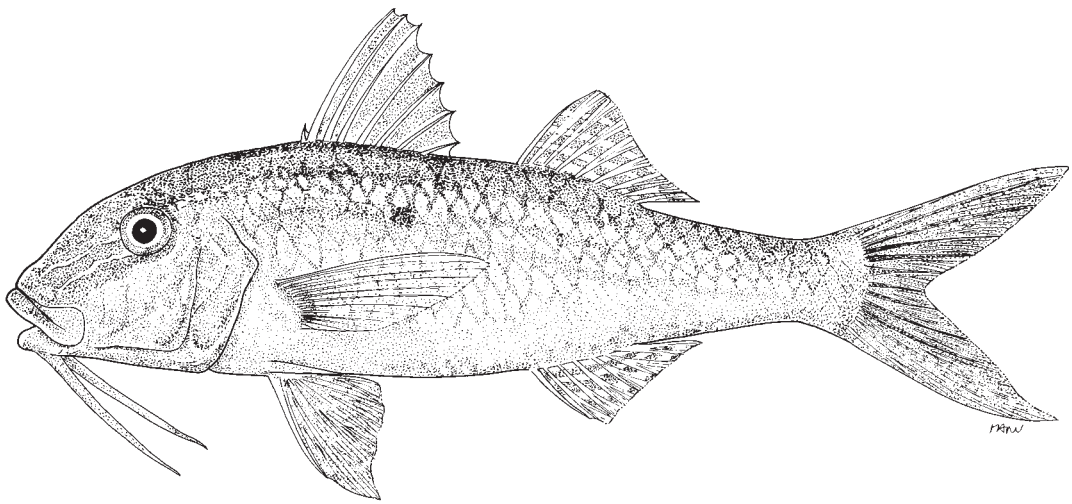
Distribution: Widespread in the Indo-Pacific from the Red Sea to Natal and east to the islands of Oceania, including Hawaii (which lacks the yellow phase), and the Pitcairn Group. Ranges in the western Pacific from the Ryukyu Islands to central New South Wales.



Parupeneus heptacanthus (Lacepède, 1802) **(Plate XXVI, 196)**

Frequent synonyms / misidentifications: *Parupeneus cinnabarinus* (Cuvier, 1801); *P. pleurospilos* (Bleeker, 1853) / None.

FAO names: En - Cinnabar goatfish; **Fr** - Barbet à point rouge.

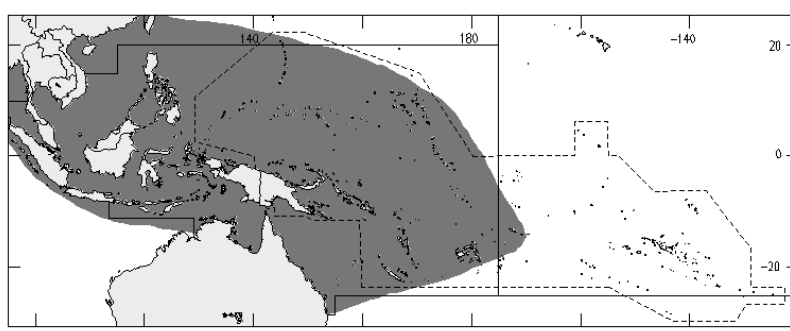


Diagnostic characters: Body slightly elongate, its depth 3 to 3.55 times in standard length, and moderately compressed. **Chin with 2 moderately long slender barbels, reaching beyond rear edge of preopercle, their length 1.15 to 1.35 times in head length; snout moderate, its length 1.75 to 2.1 times in head length**; dorsal profile of head convex; mouth small, maxilla nearly or just reaching a vertical at posterior nostril; **posterior end of maxilla evenly convex** (other species of the genus except *Parupeneus jansenii* with a dorsoposterior lobe on maxilla); a single row of well-spaced, stout, conical teeth in jaws; no teeth on roof of mouth. **First gill arch with 6 or 7 gill rakers on upper limb, 20 to 23 on lower limb (total 26 to 30).** Two well-separated dorsal fins, the first with VIII spines, the second fin with 9 soft rays; first dorsal-fin spine very short; longest dorsal-fin spine 1.45 to 1.75 times in head length; last ray of second dorsal and anal fins slightly longer than penultimate ray; anal fin with I spine and 6 soft rays; **pectoral-fin rays 15 to 17 (usually 16)**. Lateral-line scales 27 or 28; 3 rows of scales between dorsal fins; 8 or 9 rows of scales along upper part of caudal peduncle. **Colour:** brownish yellow to light red (deeper-dwelling fish more red), the edges of the scales darker, shading to silvery white below; centres of scales of back with a pale blue to pearly spot (more evident on some individuals than others); **a small reddish brown spot on upper side of body of adults just below seventh and eighth lateral-line scales**; faint iridescent blue lines extending dorsoposteriorly and ventroanteriorly from eye, and often a parallel one on cheek and snout below eye; second dorsal and anal fins with faint pale blue to pink lines, alternating with yellowish.

Size: Largest of 184 specimens examined, 37 cm total length; commonly to 25 cm.

Habitat, biology, and fisheries: Associated more with somewhat turbid water and silty sand or weedy bottoms than other species of the genus; not often seen on coral reefs; usually found at depths greater than 15 m. Occurs singly or in small groups.

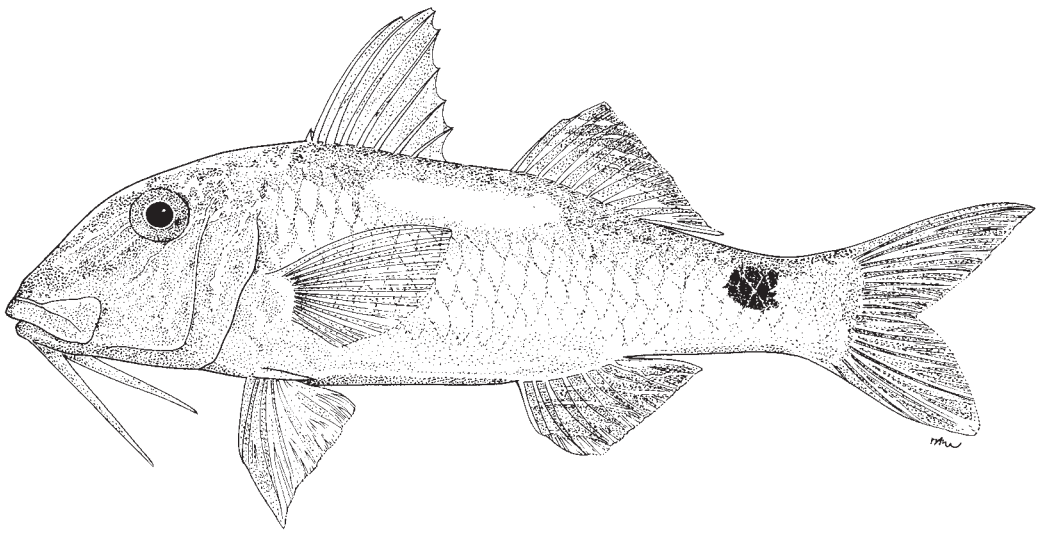
Distribution: Red Sea and coast of East Africa to 34°S, east to Samoa and the Marshall Islands; in the western Pacific from southern Japan to southern Queensland and Lord Howe Island.



Parupeneus indicus (Shaw, 1803) **(Plate XXVI, 197)**

Frequent synonyms / misidentifications: None / None.

FAO names: En - Indian goatfish; **Fr** - Rouget-barbet indien; **Sp** - Salmonete índico.

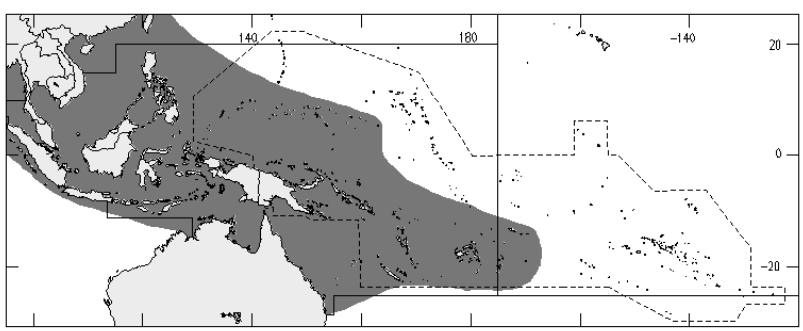


Diagnostic characters: Body moderately elongate, its depth 3.3 to 3.75 times in standard length, and moderately compressed. **Chin with 2 slender barbels which reach to or slightly beyond rear edge of preopercle, their length 1.3 to 1.5 times in head length; snout moderate, its length 1.65 to 1.95 times in head length**; dorsal profile of snout straight, becoming convex anterior to eye; mouth small, maxilla reaching about 1/2 distance to front edge of eye; a single row of well-spaced, stout, conical teeth in jaws; no teeth on roof of mouth. **First gill arch with 5 to 7 gill rakers on upper limb, 18 to 21 on lower limb (total 24 to 27).** Two well-separated dorsal fins, the first with VIII spines, the second fin with 9 soft rays; first dorsal-fin spine very short; longest dorsal-fin spine 1.5 to 1.8 times in head length; **last ray of second dorsal and anal fin longer than penultimate ray**; anal fin with I spine and 6 soft rays; **pectoral-fin rays 15 to 17 (usually 16)**. Lateral-line scales 27 or 28; 3 rows of scales between dorsal fins; 8 or 9 rows of scales along upper part of caudal peduncle. **Colour:** greenish brown to reddish brown dorsally, the scale edges narrowly dark, shading to whitish or pale pink ventrally, with **a roundish black spot larger then eye posteriorly on side of caudal peduncle,** 2/3 of which lies above lateral line; **a large, horizontally-elongate, yellow spot (sometimes partly white) centred on lateral line below posterior part of first dorsal fin and interdorsal space**; irregular pale blue lines radiating from eye; irregular oblique pale blue lines on second dorsal and anal fins; caudal fin with pale blue lines parallel with rays.

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

Habitat, biology, and fisheries: A coastal species generally found on sand, silty sand or seagrass substrata, generally in the vicinity of rocky bottom or reefs; feeds mainly on crabs, shrimps, amphipods, small octopuses, polychaetes, and small fishes. Caught in trawls, fish traps, and by hook-and-line. Highly esteemed as a food fish.

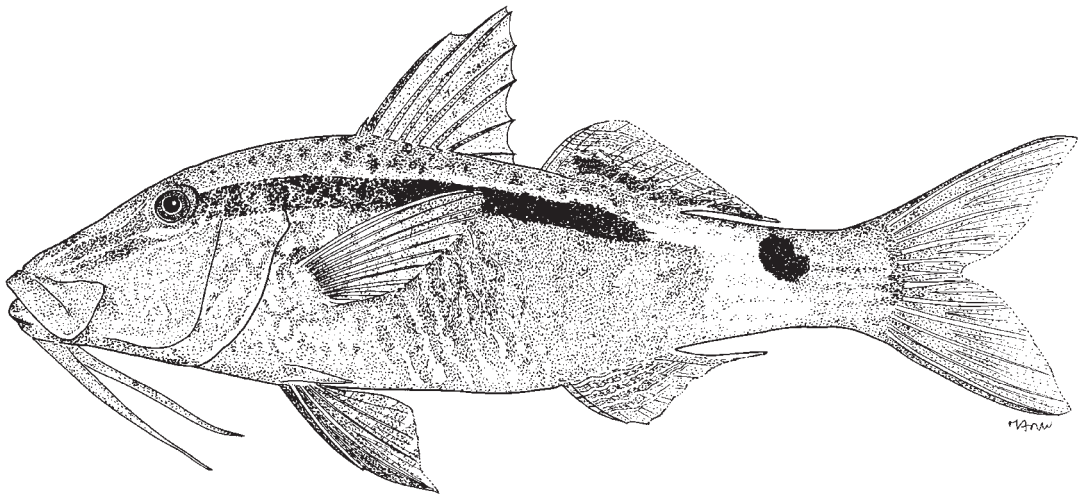
Distribution: Southern Arabian Peninsula south to Port Alfred, South Africa, east to Samoa and the Caroline Islands; in the western Pacific from southern Japan to the southern Great Barrier Reef.



Parupeneus macronemus (Lacepède, 1801) **(Plate XXVI, 198)**

Frequent synonyms / misidentifications: None / None.

FAO names: En - Longbarbel goatfish; **Fr** - Rouget-barbé badeau; **Sp** - Salmonete bandón.

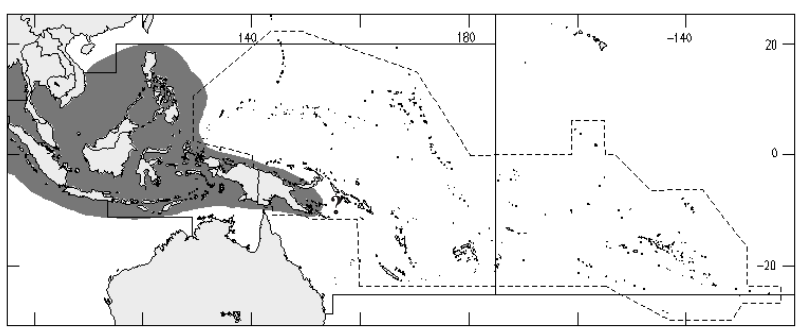


Diagnostic characters: Body moderately elongate, its depth 3.3 to 3.7 times in standard length, and moderately compressed. **Chin with 2 very long slender barbels which reach or nearly reach rear edge of opercle, their length 1.1 to 1.25 times in head length; snout moderate, its length 1.7 to 1.9 times in head length**; dorsal profile of snout straight; mouth small, maxilla not reaching a vertical at posterior nostril; a single row of well-spaced, stout, conical teeth in jaws; no teeth on roof of mouth. **First gill arch with 7 to 9 gill rakers on upper limb, 27 to 30 on lower limb (total 34 to 39).** Two well-separated dorsal fins, the first with VIII spines, the second fin with 9 soft rays; first dorsal-fin spine very short; longest dorsal-fin spine 1.45 to 1.75 times in head length; **last ray of second dorsal and anal fins much longer than penultimate ray;** anal fin with I spine and 6 soft rays; **pectoral-fin rays 15 to 17 (usually 16)**. Lateral-line scales 27 or 28; 3 rows of scales between dorsal fins; 8 or 9 rows of scales along upper part of caudal peduncle. **Colour:** reddish brown, paler posteriorly and ventrally (sometimes pale magenta or lavender), with **a dark brown band from front of snout, through eye, continuing as a black stripe across upper end of gill opening, and ending beneath rear base of second dorsal fin; a roundish black spot (usually larger than eye) on posterior third of caudal peduncle**, the lateral line passing through its lower third; a vertical pale blue line or spot on scales of body below dark stripe, and light blue lines on margin of dark band on head; **basal third of second dorsal fin blackish, with a narrow extension to posterior tip of fin**; lateral edge of pelvic fins broadly blackish.

Size: Maximum total length about 32 cm, commonly to 20 cm.

Habitat, biology, and fisheries: An inshore species generally found on sand and weedy substrata; rarely taken in depths of more than 40 m. Occurs as individuals or in small aggregations. Feeds like other goatfishes by using its long barbels to probe into the sediment to find prey which consists mainly of crustaceans and worms.

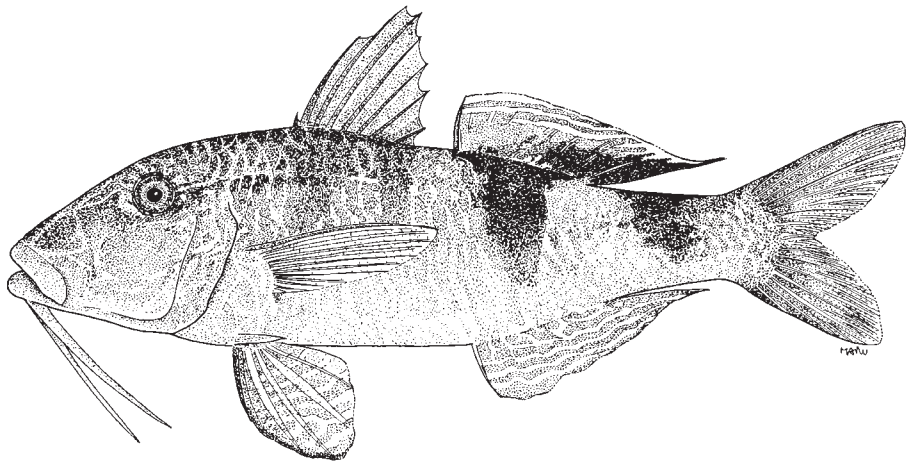
Distribution: Ranges from the Red Sea and Persian Gulf south to Natal and east to Indonesia and the Philippines.



Parupeneus multifasciatus (Quoy and Gaimard, 1824) **(Plate XXVI, 199 and 200)**

Frequent synonyms / misidentifications: None / *Parupeneus trifasciatus* (non Lacepède, 1801).

FAO names: En - Manybar goatfish; **Fr** - Rouget à trois bandes.

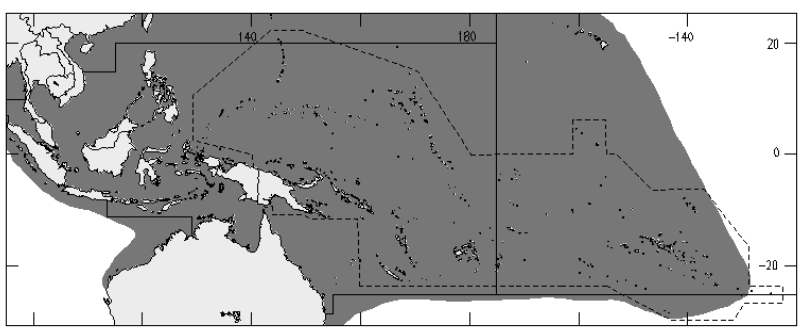


Diagnostic characters: Body moderately elongate, its depth 3.15 to 3.65 times in standard length, and moderately compressed. **Chin with 2 moderately long slender barbels which reach posterior to rear edge of preopercle and exceptionally to posterior edge of opercle, their length 1.1 to 1.35 times in head length; snout moderately long, its length 1.7 to 1.85 times in head length**; dorsal profile of snout straight to slightly concave; mouth small, maxilla reaching little more than 1/2 distance to anterior edge of eye; a single row of well-spaced, stout, conical teeth in jaws; no teeth on roof of mouth. **First gill arch with 7 to 9 gill rakers on upper limb, 29 to 32 on lower limb (total 36 to 41).** Two well-separated dorsal fins, the first with VIII spines, the second fin with 9 soft rays; first dorsal-fin spine very short; longest dorsal-fin spine 1.45 to 1.85 times in head length; **last ray of second dorsal and anal fins much longer than penultimate ray**; anal fin with I spine and 6 soft rays**; pectoral-fin rays 15 to 17 (usually 16)**. Lateral-line scales 27 or 28; 3 rows of scales between dorsal fins; 8 or 9 rows of scales along upper part of caudal peduncle. **Colour:** light grey to light brownish red with **a broad blackish bar below second dorsal fin, an oblique elliptical black bar nearly crossing caudal peduncle, a narrow dusky bar below interdorsal space, a diffuse broad faint bar usually present below first dorsal fin, and another sometimes evident on nape**; area on side between bars paler than rest of body; a dusky band from front of snout through eye, more darkly pigmented on postorbital head; basal half of second dorsal fin blackish, broadening posteriorly to distal part of fin; anal fin and outer half of second dorsal fin yellow with dark-edged blue (sometimes pink) lines; caudal fin with blue lines paralleling rays.

Size: Largest specimen examined 30 cm total length, commonly to 20 cm.

Habitat, biology, and fisheries: The most common goatfish found on coral reefs and adjacent sand and rubble in the central and western Pacific. Although usually encountered inshore, it is reported to depths as great as 140 m. Solitary and diurnal, feeding on crabs (about 40% of diet), shrimps (30%), other crustaceans, small fishes, octopuses, pelecypods, gastropods, and foraminifera. Will also feed on the larger animals of the zooplankton, such as crab megalops, when abundant. Females may be sexually mature as small as 18 cm. Because of its relatively small size, of less commercial value than the larger goatfishes.

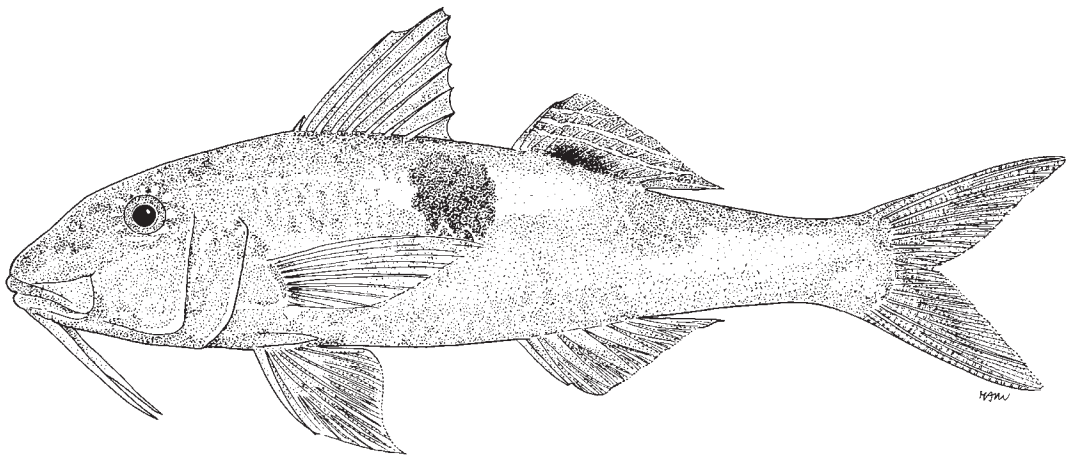
Distribution: Occurs throughout the islands of Oceania and the western Pacific, including Hawaii and the Pitcairn Group. Not known from the Indian Ocean except Christmas Island and Cocos-Keeling Islands. Ranges in the western Pacific from southern Japan to central New South Wales.



Parupeneus pleurostigma (Bennett, 1831) **(PLate XXVII, 201)**

Frequent synonyms / misidentifications: None / None.

FAO names: En - Sidespot goatfish; **Fr** - Rouget-barbet pastille; **Sp** - Salmonete pastilla.

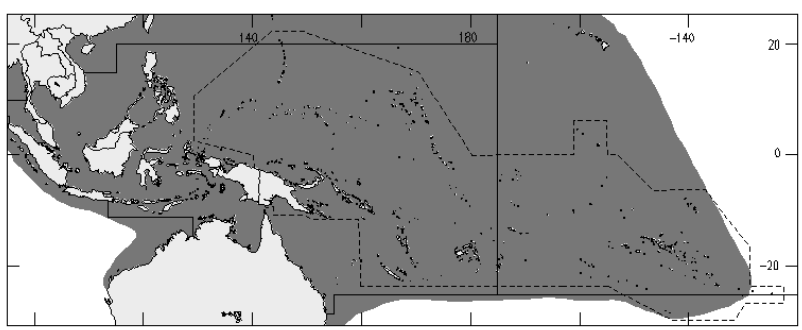


Diagnostic characters: Body elongate, its depth 3.45 to 3.95 times in standard length, and moderately compressed. **Chin with 2 slender barbels which usually reach to or posterior to rear edge of preopercle, their length 1.25 to 1.55 times in head length; snout moderate, its length 1.7 to 2.1 times in head length**; dorsal profile of snout straight to before eye; mouth small, maxilla reaching about 1/2 distance to anterior edge of eye; a single row of well-spaced, stout, conical teeth in jaws; no teeth on roof of mouth. **First gill arch with 6 to 8 (rarely 8) gill rakers on upper limb, 21 to 25 on lower limb (total 28 to 32).** Two well-separated dorsal fins, the first with VIII spines, the second fin with 9 soft rays; first dorsal-fin spine very short; longest dorsal-fin spine 1.4 to 1.8 times in head length; **last ray of second dorsal and anal fins distinctly longer than penultimate ray**; anal fin with I spine and 6 soft rays; **pectoral-fin rays 15 to 17 (usually 16, one of 56 specimens examined with 15 on one side)**. Lateral-line scales 27 or 28; 3 rows of scales between dorsal fins; 8 or 9 rows of scales along upper part of caudal peduncle. **Colour:** yellowish grey to light red, often with a pale blue to whitish spot on scales of body and irregular blue lines around eye; **a black spot usually much larger than eye centred on lateral line below rear base of first dorsal fin, with a large oval white spot posterior and adjacent to it**; base of second dorsal fin blackish, the outer part yellow with dark-edged blue lines.

Size: Largest specimen examined 32 cm total length, commonly to 20 cm.

Habitat, biology, and fisheries: Generally found foraging by day over sand adjacent to inshore coral reefs; feeds on a wide variety of sand-dwelling invertebrates such as crabs (with crab larvae 36% of stomach contents of 15 specimens), polychaetes (20%), shrimps, heart urchins, sipunculids, foraminifera, ophiuroids, other crustaceans, and small gastropods; occasionally takes small fishes.

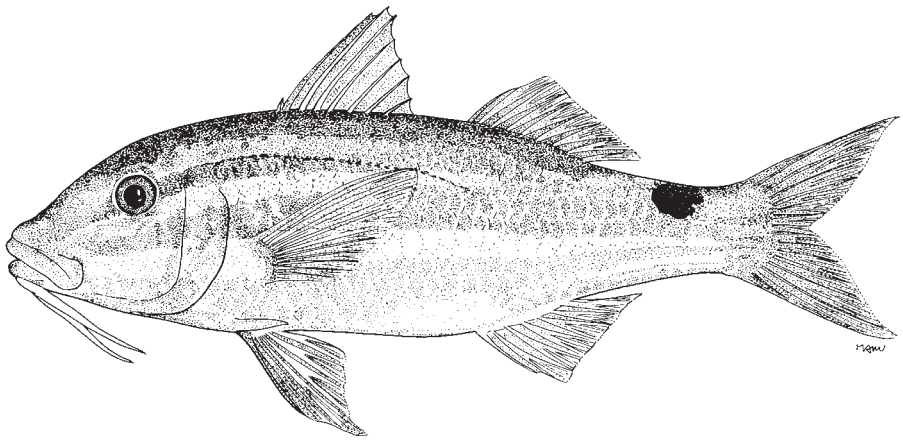
Distribution: Widespread in the Indo-Pacific region; in the western Indian Ocean from southern Oman to southern Mozambique; in the western Pacific from the Ryukyu Islands to Montague Island, New South Wales. East in Oceania to Hawaii and the Pitcairn Group.



Parupeneus spilurus (Bleeker, 1854) **(Plate XXVII, 202)**

Frequent synonyms / misidentifications: *Parupeneus signatus* (Günther, 1867) / *Parupeneus fraterculus* (non Valenciennes, 1831).

FAO names: En - Blackspot goatfish; **Fr** - Rouget-barbet à tache noire.

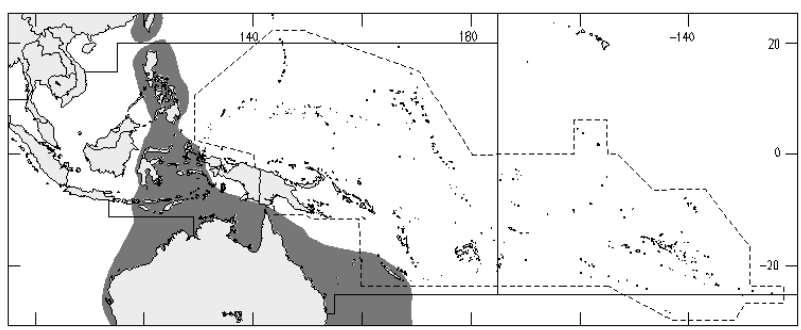


Diagnostic characters: Body slightly elongate, its depth 3.1 to 3.5 times in standard length, and moderately compressed. **Chin with 2 slender barbels which usually reach to below rear edge of preopercle, their length 1.35 to 1.65 times in head length; snout short, its length 1.8 to 2.15 times in head length**; dorsal profile of snout before eye slightly concave to straight; mouth small, maxilla reaching about 2/3 distance to front edge of eye; a single row of well-spaced, stout, conical teeth in jaws; no teeth on roof of mouth. **First gill arch with 6 or 7 gill rakers on upper limb, 21 to 24 on lower limb (total 27 to 32).** Two well-separated dorsal fins, the first with VIII spines, the second fin with 9 soft rays; first dorsal-fin spine very short; longest dorsal-fin spine 1.4 to 1.8 times in head length; last ray of second dorsal and anal fins slightly longer than penultimate ray; anal fin with I spine and 6 soft rays; **pectoral-fin rays 15 or 16 (usually 16)**. Lateral-line scales 27 or 28; 3 rows of scales between dorsal fins; 8 or 9 rows of scales along upper part of caudal peduncle. **Colour:** orange-red to reddish brown, the scale edges narrowly darker, shading to pale red or white ventrally; **a black spot as large or larger than eye dorsally at posterior end of caudal peduncle**, its lower edge resting on lateral line, its upper edge near top of peduncle, usually not meeting spot of other side (or if it does, the intervening pigment is generally less intense); an elongate pale yellowish blotch adjacent and anterior to black spot, extending to below rear base of second dorsal fin; 3 brown stripes, separated by 2 pale red to whitish stripes, passing from snout along anterior part of body parallel with dorsal contour, the middle brown stripe passing through eye, the lower just above pectoral-fin base (brown stripes merge and white stripes disappear below anterior part of second dorsal fin); a faint reddish to yellow stripe along lower side of body; fins orange-red; barbels white.

Size: Maximum reported total length 50 cm; largest of 74 specimens examined 35.5 cm total length.

Habitat, biology, and fisheries: An inshore species generally found on rocky substrata or coral reefs. Often seen by day at rest on the bottom during daylight hours, suggesting possible nocturnal feeding. Adults solitary or in small aggregations; juveniles tend to form small schools.

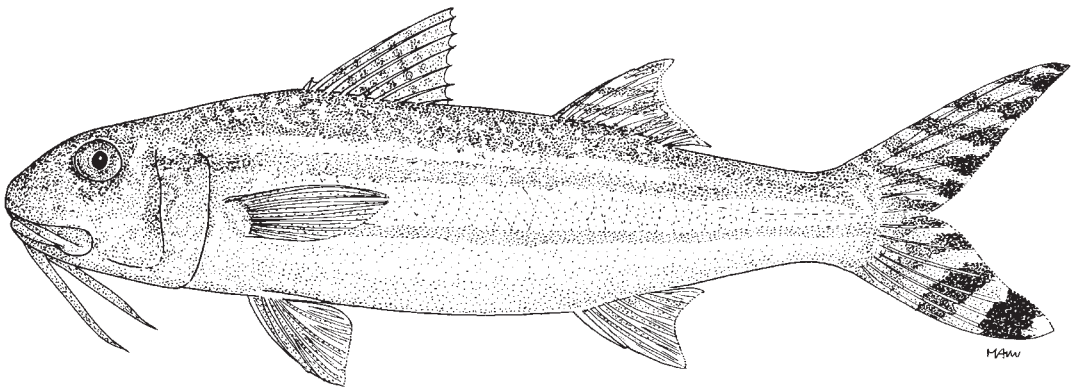
Distribution: Known only from the western Pacific from Japan (collected by the present author at Shirahama in southern Honshu) to New South Wales, Lord Howe Island, Norfolk Island, northern New Zealand, and New Caledonia; also in Western Australia south to Rottnest Island. Individuals collected in the Philippines and Indonesia appear to be the same. Unusual in its broad range of latitude and hence its tolerance of a wide range of temperature.



Upeneus arge Jordan and Evermann, 1902

Frequent synonyms / misidentifications: None / *Upeneus taeniopterus* (non Cuvier, 1829).

FAO names: En - Bandtail goatfish.

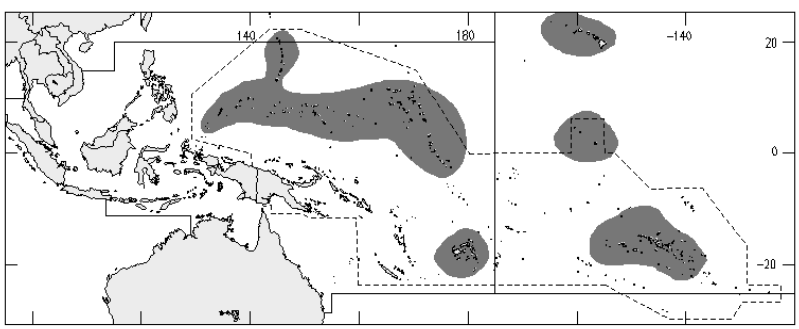


Diagnostic characters: Body elongate, its depth 3.65 to 4.75 times in standard length; snout length 2.25 to 2.45 times in head length. **Chin with 2 slender barbels which nearly or just reach or extend slightly posterior to rear margin of preopercle, their length 1.3 to 1.6 times in head length**. Mouth small; villiform teeth in a narrow band in jaws, on palatines, and in 2 small patches on vomer. **First gill arch with 5 or 6 gill rakers on upper limb, 15 to 17 on lower limb (total 20 to 23).** Two well-separated dorsal fins, the first with VIII spines (first spine minute), and the second with 9 soft rays; **second and third dorsal-fin spines longest, 1.25 to 1.6 times in head length; anal fin with I spine and 7 soft rays; pectoral-fin rays 13 to 15 (usually 14)**. **Lateral-line scales 35 to 37; no scales on side of snout; small scales basally on second dorsal and anal fins; 5½ scales between dorsal fins; 12 or 13 scales along dorsal edge of caudal peduncle. Colour:** silvery, the scales dorsally on body edged with orange-pink; **2 narrow orange-yellow stripes on side of body** (the upper more orange, the lower more yellow); **upper lobe of caudal fin of adults with 6 to 8, and the lower lobe with 4 to 6 dusky orange to black cross bands; first dorsal fin with oblique rows of reddish spots**; second dorsal fin with oblique dull orange-red bands which become blackish distally and separated at outer margin by white; remaining fins whitish; barbels white to pale yellow; peritoneum whitish.

Size: Largest specimen examined 36.5 cm total length, commonly to 25 cm.

Habitat, biology, and fisheries: Generally found on sand bottoms near rocky substrata or coral reefs, often in very shallow water. Ten specimens were collected in Aldabra on sand in less than 1.3 m. Usually encountered in small groups.

Distribution: This species has been found mainly at relatively small islands. It is known in the Pacific from Hawaii (type locality) and Tuamotu Archipelago west to the islands of Micronesia, Fiji, and the Ryukyu Islands. In the Indian Ocean from the Maldives, Chagos Archipelago, Seychelles, and a single collection from Mozambique. It remains unknown from the coast of Asia and Australia, Indonesia, Philippines, and Taiwan Province of China.

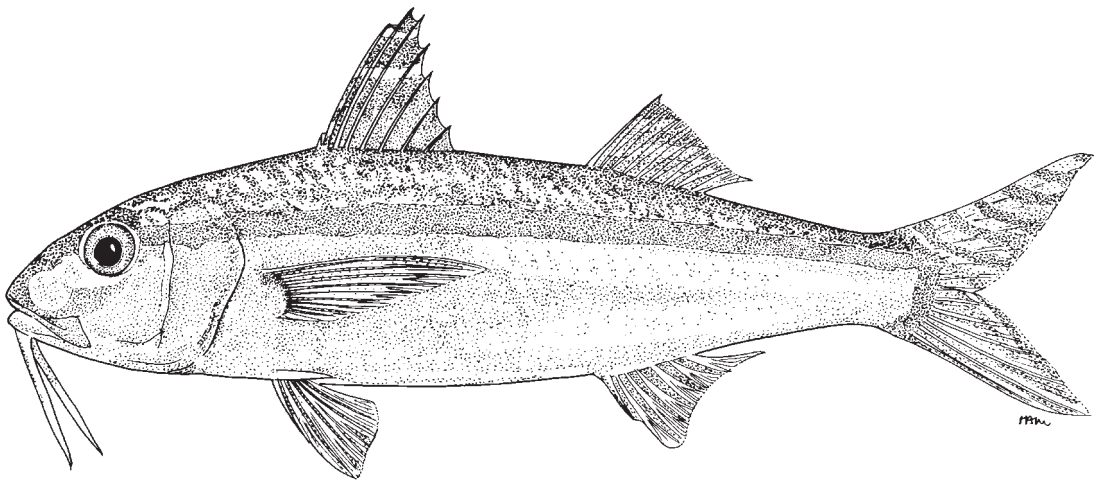


Remarks: *Upeneus arge* has been regarded in recent publications as a synonym of *U. taeniophorus* Cuvier, following the advice of Paul Guézé. However, the latter species is distinct in having a deeper body, slightly lower lateral-line scale counts, and conspicuously dark-striped dorsal fins, the first dorsal fin tipped with black. It was described from Sri Lanka and may be confined to southern Asian waters.

Upeneus moluccensis (Bleeker, 1855) **(Plate XXVII, 203)**

Frequent synonyms / misidentifications: None / None.

FAO names: En - Goldband goatfish; **Fr** - Rouget-souris bande or; **Sp** - Salmonete de bande dorada.

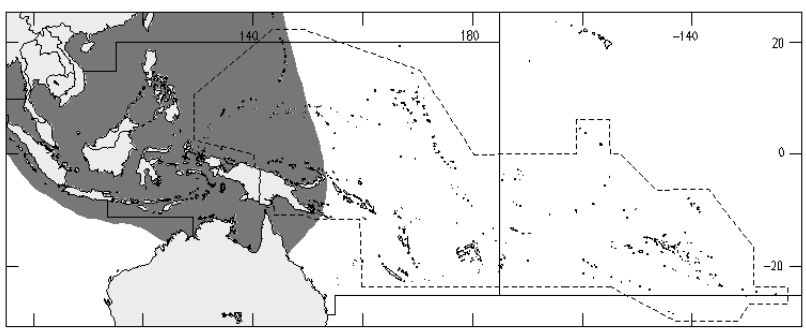


Diagnostic characters: Body moderately elongate, its depth 3.5 to 4.05 in standard length (body tends to become relatively deeper with growth); snout length 2.45 to 2.75 times in head length. **Chin with 2 slender short barbels which do not reach posterior margin of preopercle, their length 1.55 to 2.1 times in head length.** Mouth small; villiform teeth in a narrow band in jaws, on palatines, and in 2 small patches on vomer. **First gill arch with 7 to 9 gill rakers on upper limb, 19 to 22 on lower limb (total 26 to 30).** Two well-separated dorsal fins, the first with VIII spines (first spine minute), and the second with 9 soft rays; second and third dorsal-fin spines longest, 1.45 to 1.65 times in head length; anal fin with I spine and 7 soft rays; **pectoral-fin rays 15 to 17 (nearly always 16). Lateral-line scales 33 to 35**; no scales on side of snout; small scales basally on second dorsal and anal fins; 5½ scales between dorsal fins; 12 or 13 scales along dorsal edge of caudal peduncle. **Colour: a golden yellow stripe about as broad as pupil from behind upper part of eye to upper base of caudal fin**; back above stripe silvery pink, below silvery; snout silvery pink; **upper lobe of caudal fin with 6 or 7 oblique red cross bars, the lower lobe red or longitudinally streaked with red**; dorsal fins with red stripes; barbels white to pink; peritoneum brown to dark brown.

Size: Maximum total length about 20 cm, commonly to 14 cm.

Habitat, biology, and fisheries: A species of continental or large insular shelves, generally on mud substrata; known from a depth range of 10 to 80 m. Usually occurs in schools. Caught mainly by trawling. Of limited commercial importance due to small size, but occasionally taken in large numbers.

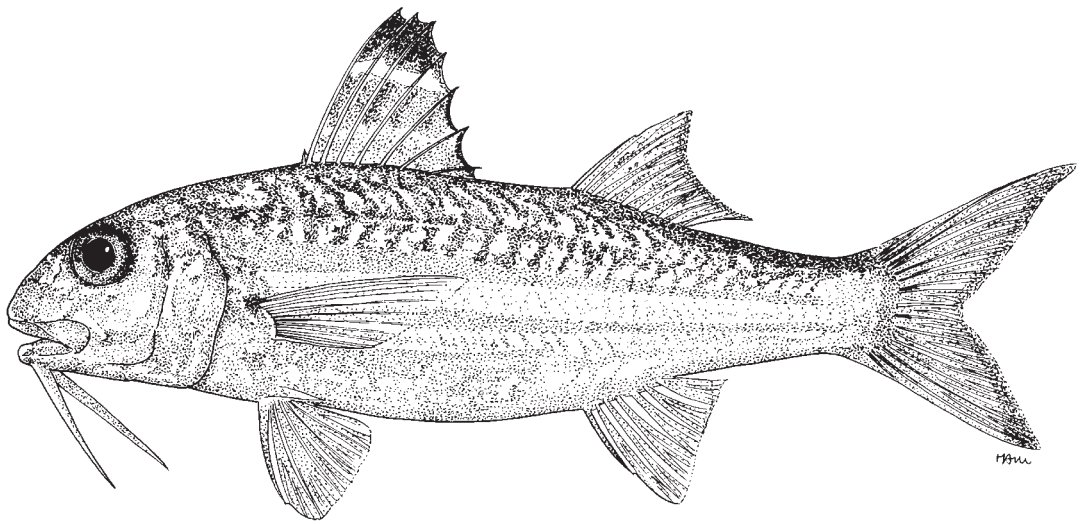
Distribution: Red Sea (and Mediterranean Sea as an immigrant via the Suez Canal) south to Mozambique and Madagascar (also an unexpected record from Réunion), east along the southern shore of Asia (but not the Persian Gulf) to the western Pacific where it ranges from Kyushu to northern Australia.



Upeneus sulphureus Cuvier, 1829 **(Plate XXVII, 204)**

Frequent synonyms / misidentifications: None / None.

FAO names: En - Sulphur goatfish; **Fr** - Rouget-souris aurore; **Fr** - Salmonete aurora.

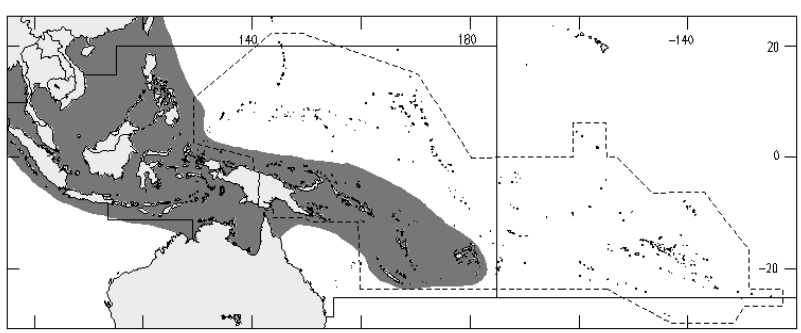


Diagnostic characters: Body slightly elongate, its depth 3.25 to 3.85 times in standard length; snout length 2.4 to 2.7 times in head length. **Chin with 2 slender barbels which usually reach or extend posterior to rear margin of preopercle, their length 1.25 to 1.7 times in head length** (barbels relatively longer in adults than young). Mouth small; villiform teeth in a narrow band in jaws, on palatines, and in 2 small patches on vomer. **First gill arch with 7 to 9 gill rakers on upper limb, 18 to 22 on lower limb (total 26 to 30).** Two well-separated dorsal fins, the first with VIII spines (first spine minute), and the second with 9 soft rays; second and third dorsal-fin spines longest, 1.45 to 1.65 times in head length; anal fin with I spine and 7 soft rays; **pectoral-fin rays 14 to 17 (rarely 14 or 17)**. **Lateral-line scales 33 to 36 (rarely 33 or 36)**; no scales on side of snout; small scales basally on second dorsal and anal fins; 5½ scales between dorsal fins; 12 or 13 scales along dorsal edge of caudal peduncle. **Colour:** silvery greenish or pink dorsally, shading to silvery on sides and ventrally, with **2 narrow brassy yellow stripes on side of body; caudal fin without dark cross bands; first dorsal fin broadly tipped with black**; rest of fin with 2 broad dusky yellow stripes, the narrow interspaces white; remaining fins dusky yellowish; barbels white; peritoneum brown to dark brown.

Size: Maximum total length about 20 cm, commonly to 14 cm.

Habitat, biology, and fisheries: Known from coastal waters of continents and large islands; generally found on mud substrata in the depth range of 20 to 60 m; often enters estuaries. Caught mainly by trawling, sometimes in large numbers.

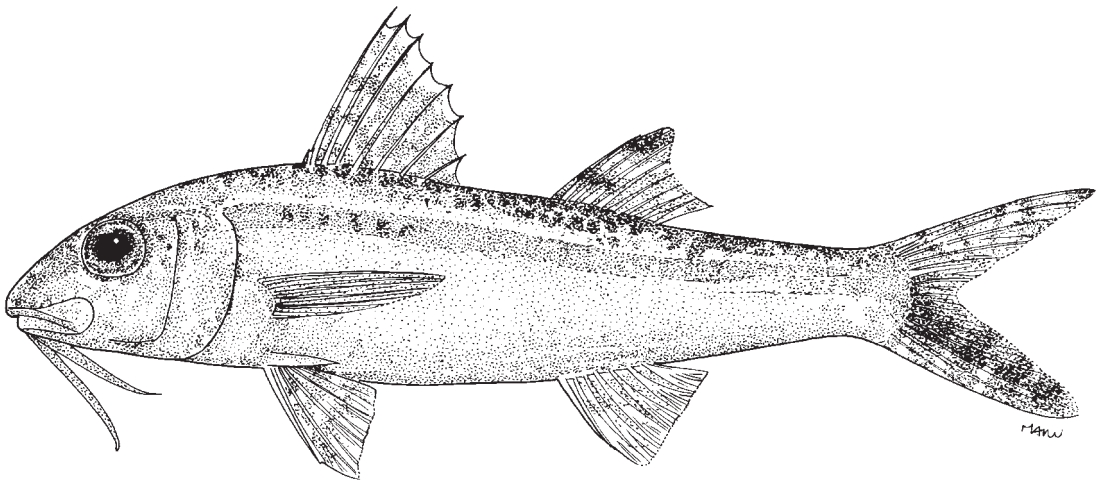
Distribution: Southern Red Sea to southern Mozambique and Madagascar (also recorded from Seychelles), east along continental shores to Indonesia and northern Australia, north to southern Japan. East in Oceania only to Fiji. Absent from the Persian Gulf; previous records of the species from the Gulf are misidentifications of *Upeneus doriae*.



Upeneus sundaicus (Bleeker, 1855) **(Plate XXVII, 205)**

Frequent synonyms / misidentifications: *Upeneus luzonius* Jordan and Seale, 1907 / None.

FAO names: En - Ochreband goatfish; **Fr** - Rouget-souris ocre; **Sp** - Salmonete de banda ocre.



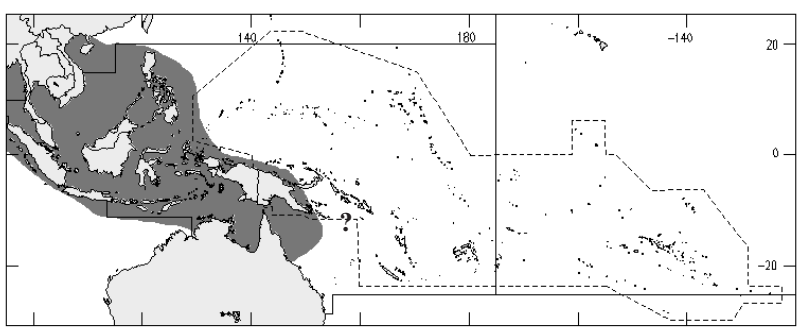
(based on a photo of a very small specimen, 11 mm total length)

Diagnostic characters: Body moderately elongate, its depth 3.55 to 4 times in standard length; snout length 2.05 to 2.5 times in head length. **Chin with 2 slender barbels which usually reach or extend slightly posterior to rear margin of preopercle, their length 1.3 to 1.7 times in head length**. Mouth small; villiform teeth in a narrow band in jaws, on palatines, and in 2 small patches on vomer. **First gill arch with 4 to 6 gill rakers on upper limb, 14 to 16 on lower limb (total 19 to 22). Two well-separated dorsal fins, the first with VIII spines (first spine minute)**, and the second with 9 soft rays; **second dorsal-fin spine longest (but third nearly as long), 1.1 to 1.3 times in head length;** anal fin with I spine and 7 soft rays; **pectoral-fin rays 13 to 15 (usually 14)**. **Lateral-line scales 31 to 32**; no scales on side of snout; small scales basally on second dorsal and anal fins; 4½ scales between dorsal fins; 10 or 11 scales along dorsal edge of caudal peduncle. **Colour:** bronze to silvery green dorsally, shading to silvery white on sides and ventrally, with **a narrow brownish yellow stripe on body at level of upper part of eye** containing 3 darker zones, 1 under each dorsal fin and 1 below anterior caudal peduncle; **upper lobe of caudal fin with 3 or 4 dark cross bands (may be faint); lower lobe of caudal fin with a broad dusky posterior border, with or without faint dark cross bands**; fins yellowish; barbels yellow; peritoneum pale**.**

Size: Largest specimen examined 17.2 cm, commonly to 13 cm.

Habitat, biology, and fisheries: Little is reported on the habitat or biology of this species. It is presumed to live on mud or silty sand substrata, since it is usually taken by trawls or seines. Depth records of museum specimens vary from 3 to 20 m.

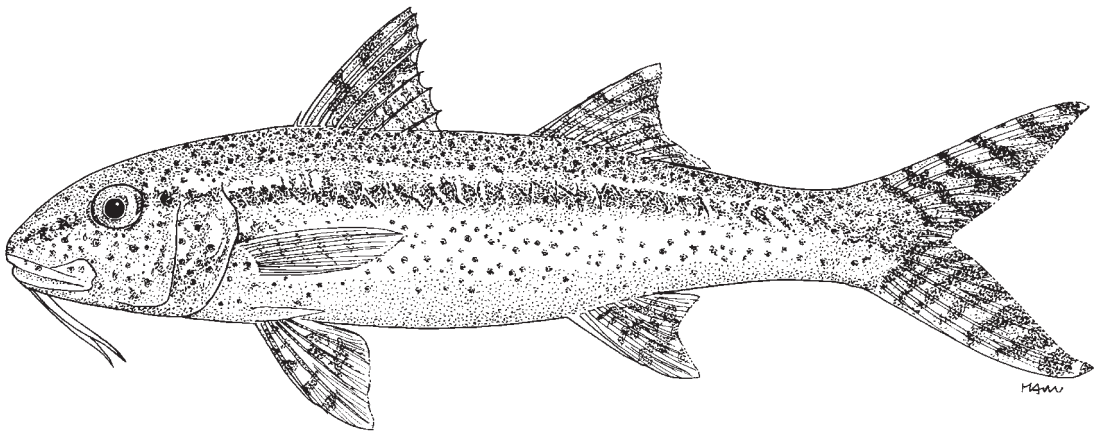
Distribution: Philippines, Papua New Guinea, Indonesia, Queensland, northwestern Australia, Viet Nam, and Thailand to Persian Gulf.



Upeneus tragula (Richardson, 1846) **(Plate XXVII, 206)**

Frequent synonyms / misidentifications: *Upeneus oligospilus* Lachner, 1954 / None.

FAO names: En - Freckled goatfish; **Fr** - Rouget-souris à bande sombre; **Sp** - Salmonete barborín.

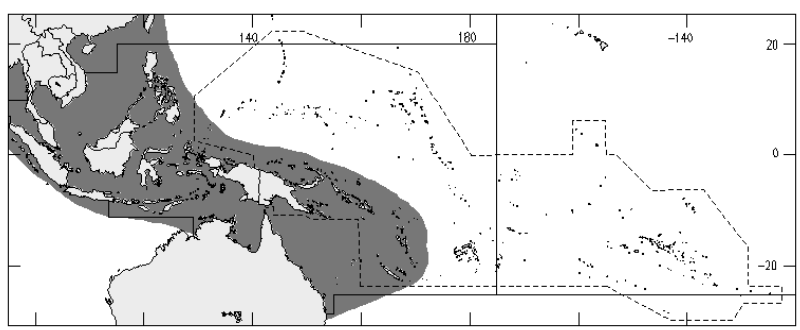


Diagnostic characters: Body elongate, its depth 3.9 to 4.25 times in standard length; snout length 2.25 to 2.65 times in head length. **Chin with 2 slender barbels, usually not reaching rear margin of preopercle, their length 1.4 to 1.85 times in head length**. Mouth small; villiform teeth in a narrow band in jaws, on palatines, and in 2 small patches on vomer. **First gill arch with 5 to 7 gill rakers on upper limb, 15 to 18 (rarely 18) on lower limb (total 21 to 25)**. Two well-separated dorsal fins, the first with VIII spines (first spine minute), and the second with 9 soft rays; second and third dorsal-fin spines longest, 1.35 to 1.65 times in head length; anal fin with I spine and 7 soft rays; **pectoral-fin rays 13 or 14 (more often 13). Lateral-line scales 28 to 30; scales present on side of snout**; small scales basally on second dorsal and anal fins; 4½ scales between dorsal fins; 10 or 11 scales along dorsal edge of caudal peduncle. **Colour: a dark reddish brown to blackish stripe from front of snout through eye, along upper side, to base of caudal fin; head and body above stripe brownish to greenish grey, flecked with small dark reddish brown or blackish spots**; body below stripe white with rows of small dark spots; **upper lobe of caudal fin with 4 to 6 blackish cross bands, and lower lobe with 5 to 7; first dorsal fin whitish with a large dark red to black blotch containing 2 to several small yellow spots on outer third to half of fin**; a second irregular dark blotch in lower part of fin; second dorsal with 3 dark reddish or blackish bands; barbels usually yellow.

Size: Reported to 33 cm total length, commonly to 25 cm**.**

Habitat, biology, and fisheries: A shallow-water species of protected waters of bays and lagoons; often found on sand or silty sand substrata near coral reefs; also common in estuaries. Caught by seines, trawls, gill nets, and traps.

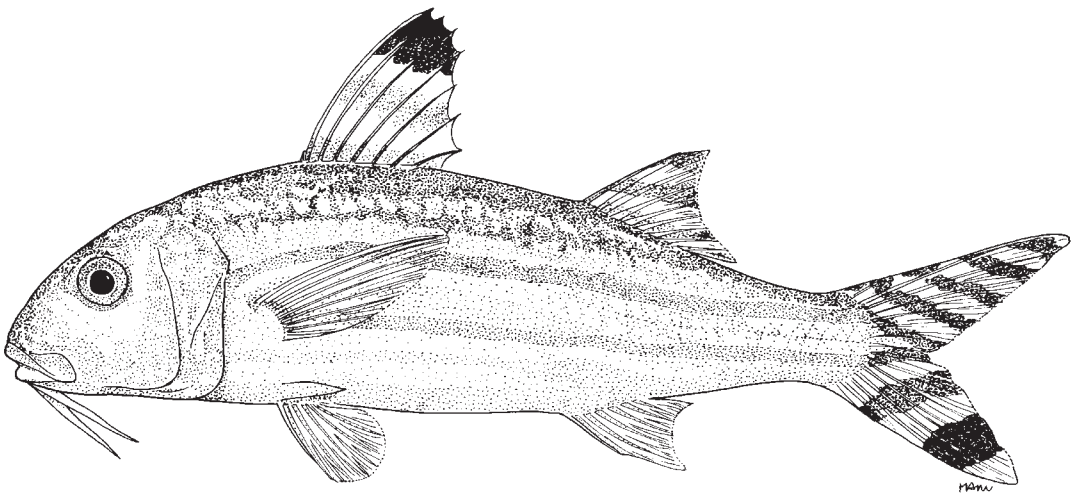
Distribution: Persian Gulf and southern Red Sea to Mozambique, east to the western Pacific where it ranges from southern Japan to central New South Wales, east to New Caledonia, Vanuatu, and Palau.



Upeneus vittatus (Forsskål, 1775) **(Plate XXVII, 207)**

Frequent synonyms / misidentifications: None / None.

FAO names: En - Striped goatfish; **Fr** - Rouget-souris orangé; **Sp** - Salmonete naranjero.

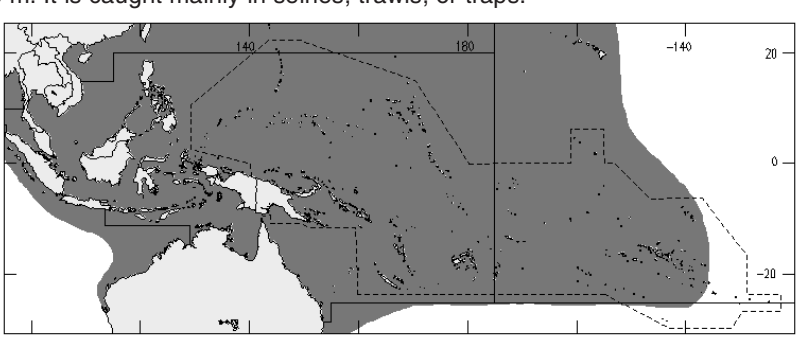


Diagnostic characters: Body moderately elongate, its depth 3.5 to 4 times in standard length; snout length 2.3 to 2.7 times in head length. **Chin with 2 slender barbels, usually not reaching rear margin of preopercle, their length 1.4 to 1.85 times in head length**. Mouth small; villiform teeth in a narrow band in jaws, on palatines, and in 2 small patches on vomer. **First gill arch with 7 to 9 gill rakers on upper limb, 19 to 21 (rarely 18) on lower limb (total 21 to 25).** Two well-separated dorsal fins, the first with VIII spines (first spine minute), and the second with 9 soft rays; second and third dorsal-fin spines longest, 1.3 to 1.55 times in head length; anal fin with I spine and 7 soft rays; **pectoral-fin rays 15 to 17 (usually 16)**. **Lateral-line scales 34 to 36; scales present on side of snout**; small scales basally on second dorsal and anal fins; 5½ scales between dorsal fins; 11 or 12 scales along dorsal edge of caudal peduncle. **Colour:** silvery greenish on back, **silvery on sides, with 4 distinct narrow brassy yellow stripes on upper two-thirds of body**; ventral part of body often yellow; upper lobe of caudal fin with 4 or 5 dark cross bands; **lower lobe of caudal fin with 3 dark cross bands, the distal band nearly twice as broad and more intensely black than middle band**; first dorsal fin broadly tipped with black, with 2 broad dusky yellow stripes below; second dorsal fin with 3 dusky yellow stripes; remaining fins whitish; barbels usually white; peritoneum dark brown to blackish.

Size: Reported to 28 cm total length, commonly to 22 cm**.**

Habitat, biology, and fisheries: This species is usually found on mud bottoms from shallow estuarine areas to depths of at least 100 m. It is caught mainly in seines, trawls, or traps.

Distribution: The most wide-ranging species of the genus, occurring from the Red Sea south to East London, South Africa, east to the Society Islands and Marquesas; in the western Pacific from Shikoku to Queensland. Inadvertently introduced to Hawaii with a shipment of Marquesan sardines.



click for next page