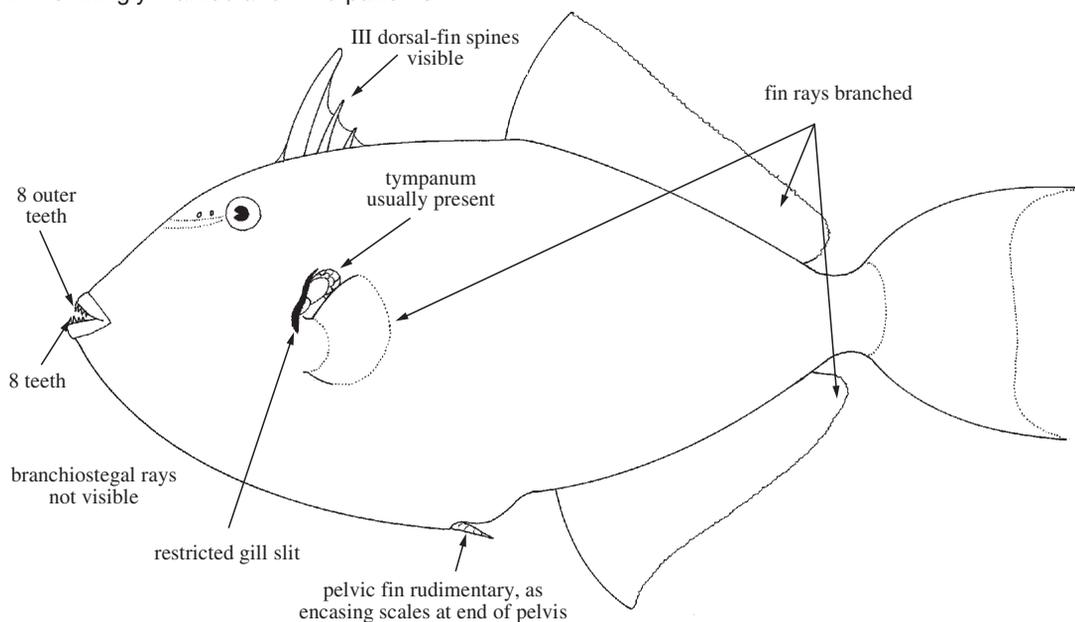


BALISTIDAE

Triggerfishes

by K. Matsuura

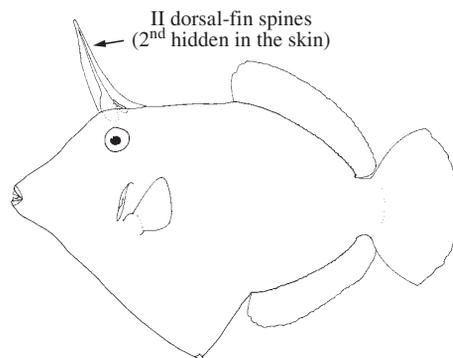
Diagnostic characters: Small or medium-sized (to 80 cm) fishes, with deep, moderately compressed body encased in very thick, tough skin with **large scales easily discernible as individual units**; **scales above pectoral-fin base in many species enlarged, forming a flexible tympanum**. Mouth small and terminal, or almost terminal; **teeth strong, 8 in outer series of upper jaw and lower jaw**. Gill opening a moderately short, vertical to oblique slit in front of pectoral-fin base. Two dorsal fins; **first dorsal fin with III visible spines**, the second spine more than 1/2 length of first spine; **first spine capable being locked in an upright position of erection by second spine**; second dorsal fin and anal fin similar in shape, consisting of soft rays; anal fin without spines; **most dorsal-, anal-, and pectoral-fin rays branched**; **pelvic fins rudimentary, represented by a series of 4 pairs of enlarged scales encasing end of pelvis**. Lateral line inconspicuous. **Colour:** variable, sometimes black or drab brown, grey, or greenish, but often with strikingly marked and vivid patterns.



Habitat, biology, and fisheries: Most species benthic, occurring in coral and rocky reefs from the coastline to a depth of 100 m; some species (e.g. *Canthidermis*) primarily pelagic in open water. Feed on bottom invertebrates, frequently hard-shelled organisms including molluscs and crabs, but also zooplankton; *Melichthys niger* feeds heavily on algae. Highly valued as food in many handline fisheries, and also taken as bycatch in commercial bottom trawls. From 1990 to 1995, the FAO Yearbook of Fishery Statistics reports a range of yearly catch of around 780 to 1 260 t of Balistidae from the Western Central Pacific (Fiji, Malaysia).

Similar families occurring in the area

Monacanthidae: II dorsal-fin spines, only the first of which is long and prominent; body more laterally compressed; fewer and less massive teeth in jaws; scales shagreen-like, with the individual basal plates small and not readily distinguishable from one another to the unaided eye.



Monacanthidae

Key to the genera of Balistidae occurring in the area

- 1a. Caudal peduncle distinctly depressed, wider than deep *Abalistes*
- 1b. Caudal peduncle compressed → 2

- 2a. Scales above pectoral-fin base and just behind gill opening much enlarged, forming a flexible tympanum (Fig. 1) → 3
- 2b. Scales above pectoral-fin base and just behind gill opening not enlarged, not forming a flexible tympanum → 8

- 3a. A prominent groove on snout before eye (Fig. 2) → 4
- 3b. No groove on snout before eye → 9

- 4a. Teeth red, 2 upper teeth projecting and canine-like (Fig. 3) *Odonus*
- 4b. Teeth white, not greatly projecting → 5

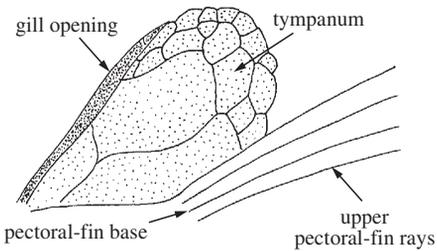


Fig. 1 area above pectoral-fin base

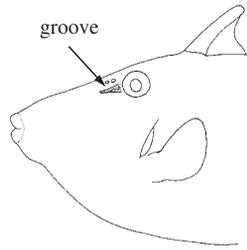


Fig. 2

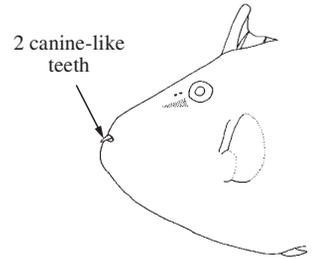
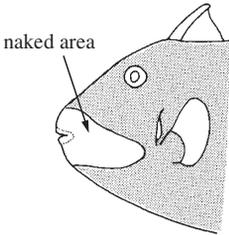
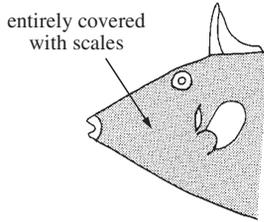


Fig. 3

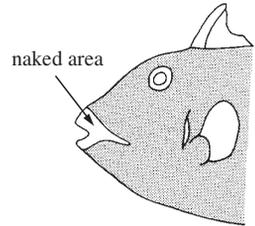
- 5a. Anterior part of cheek largely naked (Fig. 4a), its posterior part covered with scales smaller than those of body *Pseudobalistes*
- 5b. Cheek entirely (Fig. 4b) or except for a fold at the corner of mouth covered with scales (Fig. 4c) → 6



a) *Pseudobalistes flavimarginatus*



b) *Sufflamen bursa*



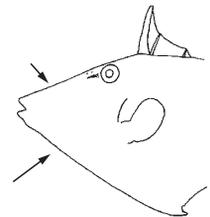
c) *Balistoides viridescens*

Fig. 4

- 6a. Upper and lower profiles of head prominently convex, giving the body a distinctive ovoid shape (Fig. 5a); body uniformly black or deep indigo *Melichthys*
- 6b. Upper and lower profiles of head not prominently convex, either concave, straight, or slightly convex (Figs 5b and 6a); body not uniformly black or deep indigo, but variously coloured with blotches and/or lines → 7



a) *Melichthys*

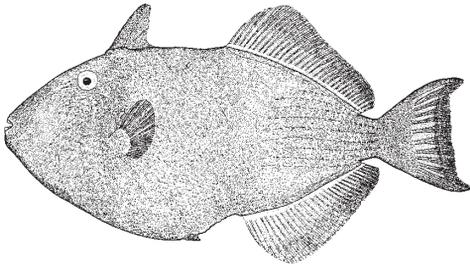


b) *Balistoides, Sufflamen*

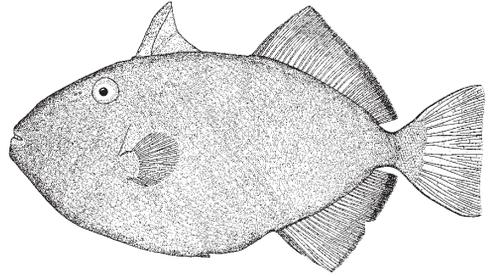
Fig. 5

Key to the species of *Melichthys* occurring in the area

- 1a. Soft dorsal and anal fins black with a longitudinal light blue line at base; caudal fin black (Fig. 10a), deeply emarginate or lunate; pectoral-fin rays 15 or 16 *Melichthys niger*
- 1b. Soft dorsal and anal fins pale with a prominent black margin; caudal fin pale (Fig. 10b), slightly emarginate or slightly rounded; pectoral-fin rays 14 (rarely 15) *Melichthys vidua*



a) *Melichthys niger*

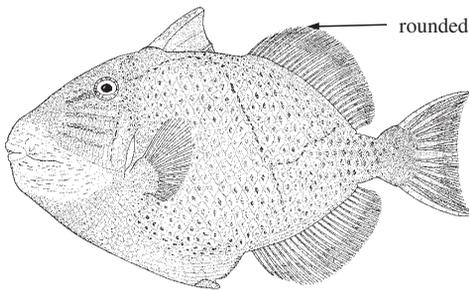


b) *Melichthys vidua*

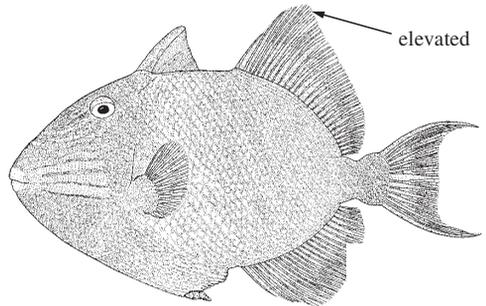
Fig. 10

Key to the species of *Pseudobalistes* occurring in the area

- 1a. Five or six longitudinal scale ridges on caudal peduncle; soft dorsal and anal fins rounded, not elevated anteriorly (Fig. 11a) *Pseudobalistes flavimarginatus*
- 1b. No scale ridges on caudal peduncle; soft dorsal and anal fins elevated anteriorly (Fig. 11b) *Pseudobalistes fuscus*



a) *Pseudobalistes flavimarginatus*



b) *Pseudobalistes fuscus*

Fig. 11

Key to the species of *Rhinecanthus* occurring in the area

- 1a. Four or five longitudinal rows of small anteriorly projecting spines on caudal peduncle (Fig. 12a) → 2
- 1b. Three longitudinal rows of small anteriorly projecting spines on caudal peduncle (Fig. 12b) → 4

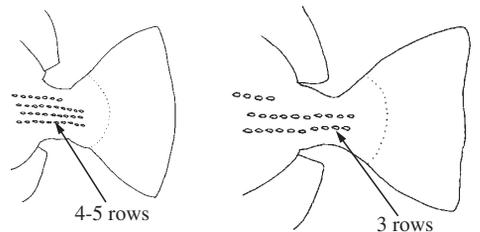


Fig. 12

- 2a. Pectoral-fin rays 14 (excluding uppermost rudimentary element); caudal fin with a black crescent (Fig. 13a) *Rhinecanthus lunula*
- 2b. Pectoral-fin rays 13 (rarely 14); caudal fin without a black crescent → 3

- 3a. A broad, oblique black band running on side of body from eye through gill opening to anterior part of anal-fin base; caudal peduncle with a black triangular blotch produced into a point below middle of soft dorsal fin (Fig. 13b) *Rhinecanthus rectangulus*
- 3b. No oblique black band on body; caudal peduncle nearly encircled with a broad black band (Fig. 13c) *Rhinecanthus abyssus*

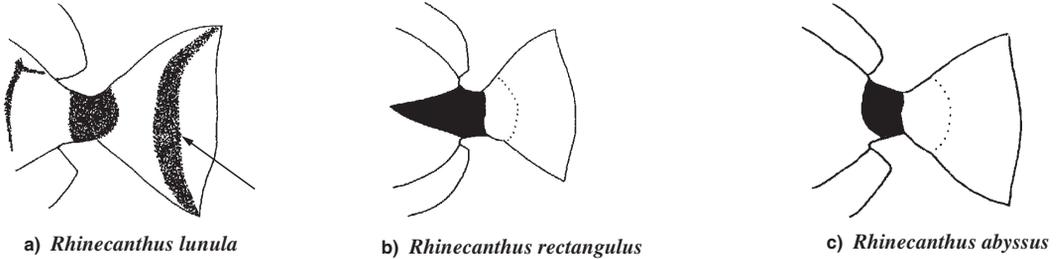


Fig. 13

- 4a. Lowermost row of small anteriorly projecting spines much shorter than upper 2 rows; a large elliptical black blotch on ventral side of body (Fig. 14a) *Rhinecanthus verrucosus*
- 4b. Uppermost row of small anteriorly projecting spines much shorter than lower 2 rows; no large elliptical black blotch on ventral side of body (Fig. 14b) *Rhinecanthus aculeatus*

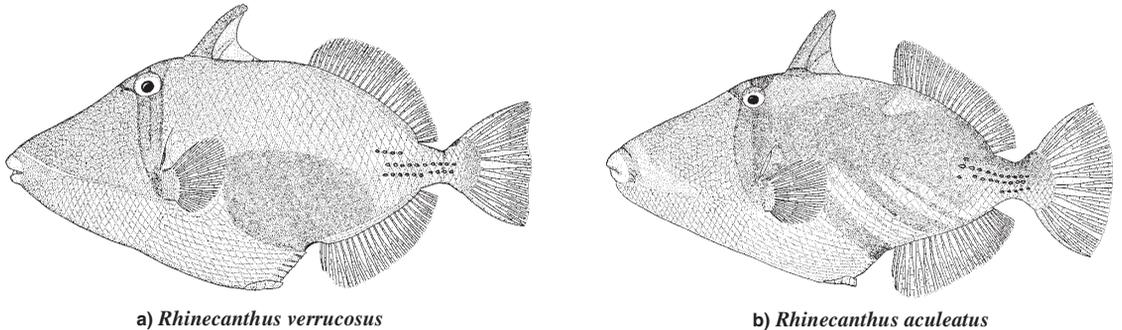


Fig. 14

Key to the species of *Sufflamen* occurring in the area

- 1a. Two vertical curved black bands next to gill opening, the anterior band through eye downward to lower part of pectoral-fin base, the posterior band from upper part of pectoral-fin base towards middle of, but not reaching to, spinous dorsal fin (Fig. 15) *Sufflamen bursa*
- 1b. No vertical curved black bands next to gill opening → 2

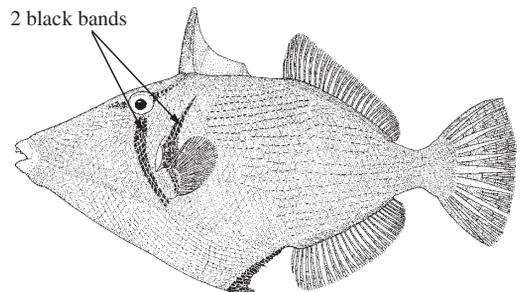


Fig. 15 *Sufflamen bursa*

- 2a. Caudal fin dark with a broad white posterior marginal band, upper and lower caudal-fin rays also white (Fig. 16a) *Sufflamen chrysopterum*
- 2b. Caudal fin uniformly dark (Fig. 16b) *Sufflamen fraenatum*

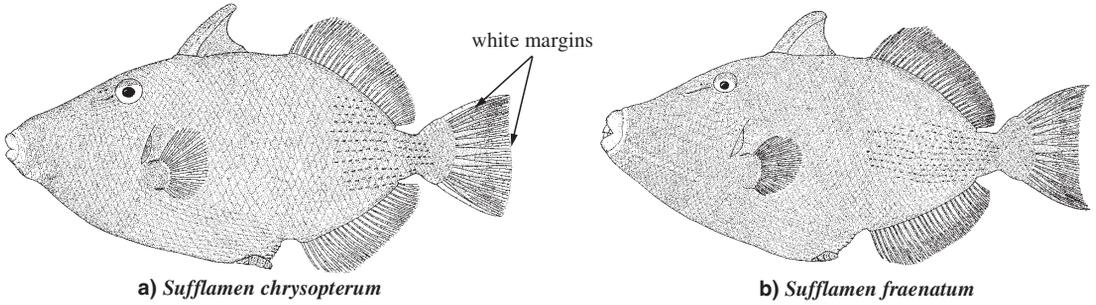


Fig. 16

Key to the species of *Xanthichthys* occurring in the area

- 1a. Cheek with 3 prominent slightly oblique dark brown grooves, extending from just behind and below corner of mouth nearly to gill opening; upper half of body with longitudinal dark brown lines (Fig. 17) *Xanthichthys lineopunctatus*
- 1b. Cheek with 5 or 6 slightly oblique grooves; body without longitudinal dark brown lines → 2
- 2a. Dorsal-fin rays 26 or 27, anal-fin rays 23 to 25; an irregular longitudinal blue line on body from pectoral-fin axil to upper part of caudal peduncle (Fig. 18) *Xanthichthys caeruleolineatus*
- 2b. Dorsal-fin rays 28 to 32, anal-fin rays 25 to 28; no longitudinal blue line on body → 3

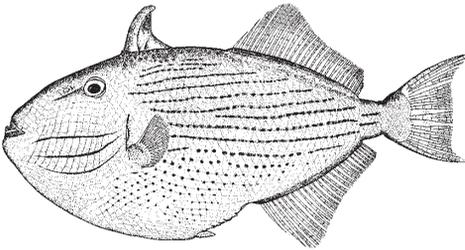


Fig. 17 *Xanthichthys lineopunctatus*

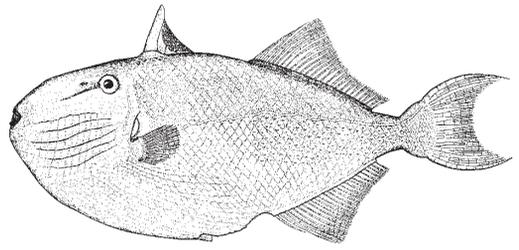
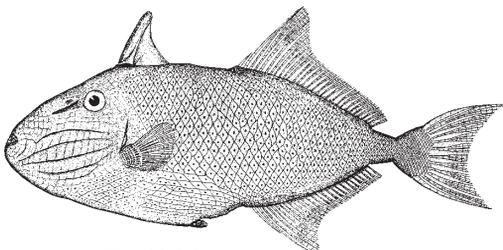
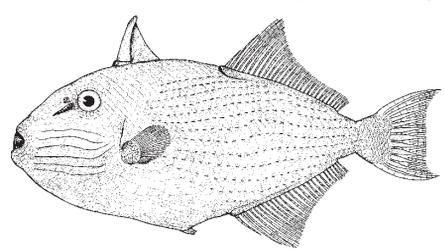


Fig. 18 *Xanthichthys caeruleolineatus*

- 3a. Grooves on cheek well developed and darkly pigmented; body depth 2.8 to 3.4 times in standard length; scales on posterior part of body with a slight median ridge; edges of scales on body dark brown (Fig. 19a) *Xanthichthys mento*
- 3b. Grooves on cheek poorly developed and without pigmentation; body depth 2.5 to 2.7 times in standard length; scales of body with a prominent elevation forming longitudinal ridges; edges of scales on body not dark brown (Fig. 19b). *Xanthichthys auromarginatus*



a) *Xanthichthys mento*



b) *Xanthichthys auromarginatus*

Fig. 19

List of species occurring in the area

The symbol  is given when species accounts are included.

-  *Abalistes stellaris* (Bloch and Schneider, 1801)
-  *Balistapus undulatus* (Park, 1797)
-  *Balistoides conspicillum* (Bloch and Schneider, 1801)
-  *Balistoides viridescens* (Bloch and Schneider, 1801)
-  *Canthidermis maculatus* (Bloch, 1786)
-  *Melichthys niger* (Bloch, 1786)
-  *Melichthys vidua* (Solander, 1844)
-  *Odonus niger* (Rüppell, 1835)
-  *Pseudobalistes flavimarginatus* (Rüppell, 1828)
-  *Pseudobalistes fuscus* (Bloch and Schneider, 1801)
- Rhinecanthus abyssus* Matsuura and Shiobara, 1989
-  *Rhinecanthus aculeatus* (Linnaeus, 1758)
- Rhinecanthus lunula* Randall and Steene, 1983
-  *Rhinecanthus rectangulus* (Bloch and Schneider, 1801)
-  *Rhinecanthus verrucosus* (Linnaeus, 1758)
-  *Sufflamen bursa* (Bloch and Schneider, 1801)
-  *Sufflamen chrysopterum* (Bloch and Schneider, 1801)
-  *Sufflamen fraenatum* (Latreille, 1804)
-  *Xanthichthys auromarginatus* (Bennett, 1831)
-  *Xanthichthys caeruleolineatus* Randall, Matsuura and Zama, 1978
-  *Xanthichthys lineopunctatus* (Hollard, 1854)
-  *Xanthichthys mento* (Jordan and Gilbert, 1882)
- Xenobalistes tumidipectoris* Matsuura, 1981

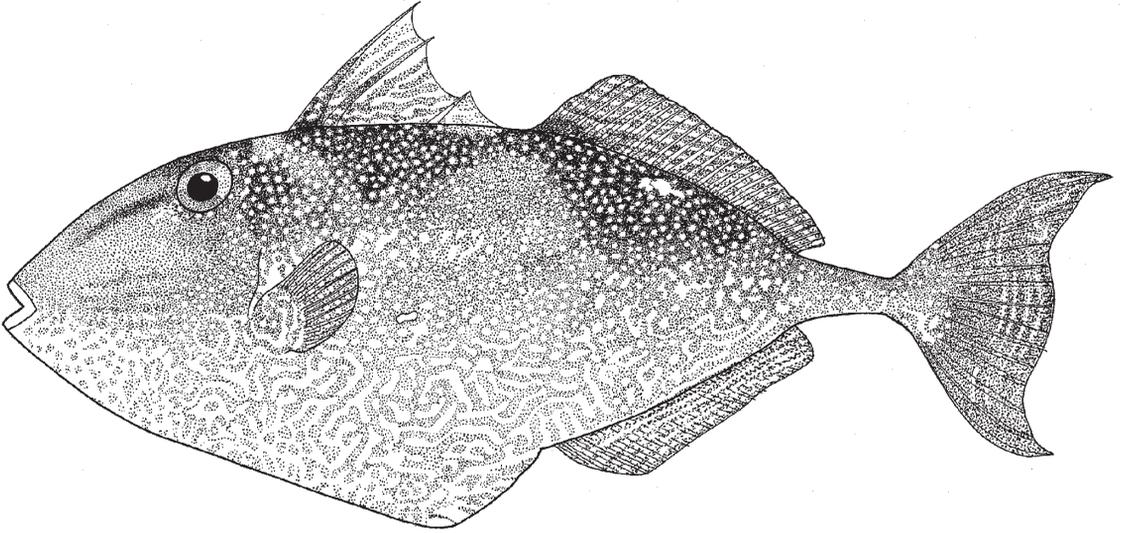
Reference

Matsuura, K. 1980. A revision of Japanese balistoid fishes. I. Family Balistidae. *Bull. Nat. Sci. Mus., Ser. A (Zool.)*, 6(1):27-69.

Abalistes stellaris (Bloch and Schneider, 1801)

Frequent synonyms / misidentifications: *Abalistes stellatus* (Lacepède, 1798) (invalid name, as Lacepède did not describe the species under the scientific name but only under the French vernacular name, 'Le Baliste Étoilé') / None.

FAO names: **En** - Starry triggerfish; **Fr** - Baliste étoilé; **Sp** - Pejeperco estrellado.



Diagnostic characters: Body moderately deep, compressed. Large scale plates forming regular rows; scales of cheek in an even, relatively complete covering. **Scales enlarged above pectoral-fin base and just behind gill opening to form a flexible tympanum; scales of posterior part of body with prominent keels, forming longitudinal ridges. A prominent groove extending anteriorly from front of eye for a distance of about 1 eye diameter. Mouth terminal;** teeth pointed, the central pair in each jaw largest. First dorsal fin with III prominent spines, the first capable of being locked in an erected position by the second; dorsal-fin rays 25 to 27; anal-fin rays 24 or 25; caudal fin double-emarginate; pectoral-fin rays (excluding the uppermost rudimentary element) 15 or 16 (usually 15). **Caudal peduncle depressed, wider than deep.** **Colour:** grey-brown to olivaceous on back, pale below, with small pale blue or yellow spots dorsally and larger yellow spots ventrally (frequently faint); 3 large white blotches on back, disappearing in large specimens; soft dorsal and anal fins with yellow, slightly oblique stripes; pectoral fins yellow.

Size: Maximum total length 60 cm, commonly to 40 cm.

Habitat, biology, and fisheries: Inhabits coastal areas, usually found on sand, sponge, and weed bottoms to depths of 100 m. Feeds on benthic animals. Common in markets in Thailand, Indonesia, the Philippines, and the Ryukyus in Japan. Caught by bottom trawls and longlines. Marketed fresh, sometimes dried-salted.

Distribution: Widespread in the tropical Indo-West Pacific, from East Africa, including the Red Sea, to northern Australia; north to southern Japan, south to southern Great Barrier Reef.

