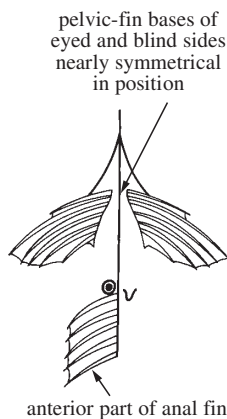
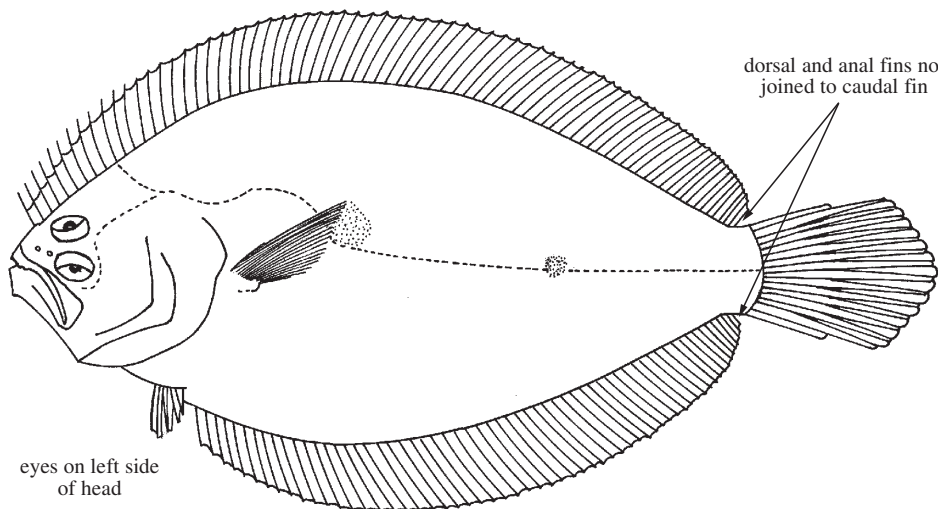


PARALICHTHYIDAE

Sand flounders

by K. Amaoka and D.A. Hensley

Diagnostic characters: Body ovate (size to 40 cm). Head large, 3 to 4.4 times in standard length. Two nostrils on each side of head, the anterior nostril with a flap posteriorly. Eyes separated by a bony ridge. Mouth rather large, teeth uniserial in both jaws. Gill rakers palmate, of moderate length or short, with posterior serrations. Caudal fin double truncate; pectoral fins not elongate, middle 6 to 9 rays branched on eyed side, but all rays unbranched on blind side; **pelvic fins short-based, subequal and subsymmetrical in position, posterior 3 or 4 rays branched.** Scales cycloid or ctenoid on both sides; lateral line equally developed on both sides, with a distinct curve above pectoral fins and a **supratemporal branch, running upward to anterior part of dorsal fin.** **Four plates of caudal skeleton with deep clefts along distal margins.** **Colour:** body brownish or pale greenish with dark spots or rings, sometimes with double ocelli.

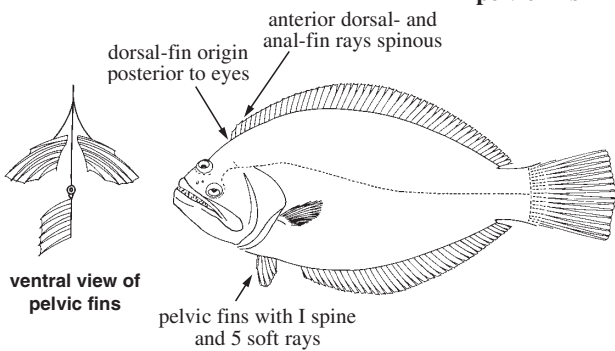


Habitat, biology, and fisheries: Most species inhabit shallow muddy and sandy bottoms of the continental shelf. Some species occur in brackish waters near river mouths. Caught with bottom trawls and marketed mostly fresh and sometimes salt-dried.

Remarks: Diagnostic characters given here for the family Paralichthyidae apply only to species from the Western Central Pacific, all of which belong to the genus *Pseudorhombus*.

Similar families occurring in the area

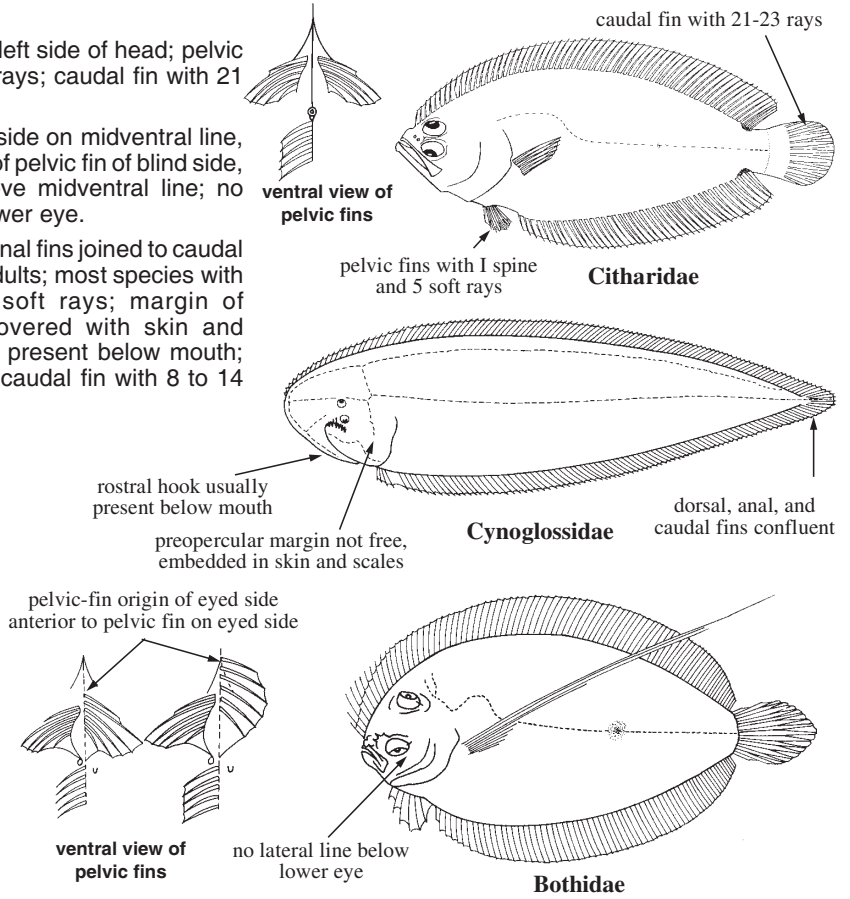
Psettodidae: eyes on right or left side of head; upper eye on dorsal surface of head; dorsal-fin origin well posterior to upper eye; spines in dorsal, anal, and pelvic fins; no high arch in lateral line over pectoral fins; branch of lateral line below lower eye.



Citharidae: eyes on right or left side of head; pelvic fins with I spine and 5 soft rays; caudal fin with 21 to 23 rays.

Bothidae: pelvic fin of eyed side on midventral line, the fin origin anterior to that of pelvic fin of blind side, pelvic fin of blind side above midventral line; no lateral line present below lower eye.

Cynoglossidae: dorsal and anal fins joined to caudal fin; pectoral fins absent in adults; most species with only 1 pelvic fin with 4 soft rays; margin of preopercle not distinct, covered with skin and scales; rostral hook usually present below mouth; no high arch in lateral line; caudal fin with 8 to 14 rays, none branched.



Key to the species of Paralichthyidae occurring in the area

- 1a. Gill rakers palmate, as broad as long (Fig. 1a); 1 or 2 distinct ocelli or double ocelli on body above and below lateral line → 2
- 1b. Gill rakers usually pointed and long, not palmate if short (Fig. 1b); no double ocelli on body → 4

- 2a. Upper profile of head round, without notch in front of upper eye; a line connecting base of first dorsal-fin ray and posterior nostril on eyed side passes behind posterior end of maxilla (Fig. 2a); origin of dorsal fin in front of upper eye and in front of anterior nostril on blind side *Pseudorhombus spinosus*
- 2b. Upper profile of head with a distinct notch in front of upper eye; a line connecting base of first dorsal-fin ray and posterior nostril on eyed side crosses maxilla (Fig. 2b) → 3

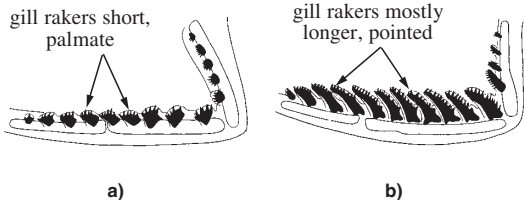


Fig. 1 gill arch

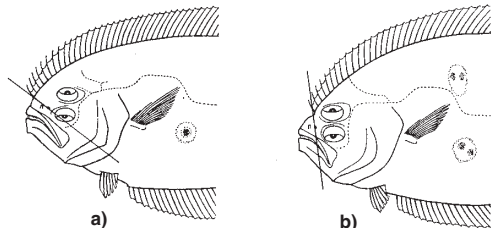


Fig. 2

- 3a.** Lateral-line scales 83 to 98; strong canine teeth in anterior part of both jaws; maxilla extending to below or beyond posterior margin of lower eye *Pseudorhombus diplospilus*
- 3b.** Lateral-line scales 73 to 84; body depth 2.2 to 2.4 times in standard length; no strong canine teeth in both jaws; maxilla extending to below or beyond middle of lower eye *Pseudorhombus duplicioccellatus*
- 4a.** Cycloid scales on both sides of body, but sometimes scales with some ctenii on anterior part of body on eyed side *Pseudorhombus tenuirastrum*
- 4b.** Ctenoid scales at least on anterior part and dorsal and ventral edges of body on eyed side → 5
- 5a.** Ctenoid scales on blind side → 6
- 5b.** Mostly cycloid scales on blind side. → 8
- 6a.** Pelvic fin on eyed side with distinct black spot; eye diameter 3.4 to 3.9 times in head length; dorsal-fin rays 67 to 70; anal-fin rays 50 to 53 *Pseudorhombus megalops*
- 6b.** Pelvic fin on eyed side without distinct black spot; eye diameter 3.8 to 6.4 times in head length; dorsal-fin rays 72 or more; anal-fin rays 58 or more. → 7
- 7a.** Body depth 1.8 to 2 times in standard length, head length 3.1 to 3.3 times in standard length; pectoral fin on blind side 1.9 to 2.2 times in head length; dorsal-fin rays 72 to 74; anal-fin rays 58 or 59 *Pseudorhombus malayanus*
- 7b.** Body depth 2.1 to 2.3 times in standard length, head length 3.5 to 3.8 times in standard length; pectoral fin on blind side 2 to 2.4 times in head length; dorsal-fin rays 78 to 82; anal-fin rays 61 to 65 *Pseudorhombus oligodon*
- 8a.** Anterior dorsal-fin rays longer than succeeding rays and free from fin membrane; 3 conspicuous ocelli on body *Pseudorhombus triocellatus*
- 8b.** Anterior dorsal-fin rays not prolonged, never entirely free from fin membrane → 9
- 9a.** A line connecting base of first dorsal-fin ray and posterior nostril on eyed side passes behind posterior end of maxilla, or crosses its posteriormost part (Fig. 3a); origin of dorsal fin just above or slightly in advance of anterior nostril on blind side → 10
- 9b.** A line connecting base of first dorsal-fin ray and posterior nostril on eyed side crosses maxilla (Fig. 3b) → 12
- 10a.** Dorsal-fin rays 77 to 89; anal-fin rays 58 to 69 *Pseudorhombus cinnamoneus*
- 10b.** Dorsal-fin rays 67 to 76; anal-fin rays 51 to 58 → 11
- 11a.** Upper profile of head with distinct notch; body depth 1.7 to 2 times in standard length; ctenoid scales on eyed side *Pseudorhombus elevatus*
- 11b.** Upper profile of head round, without distinct notch; body depth 2.1 to 2.4 times in standard length; ctenoid scales only on anterior part, and on dorsal and ventral edges of eyed side of body, scales in other areas cycloid *Pseudorhombus javanicus*
- 12a.** Origin of dorsal fin in front of upper eye and nostrils on blind side (Fig. 4a). → 13
- 12b.** Origin of dorsal fin above or slightly in front of anterior edge of upper eye, and just above or slightly behind posterior nostril on blind side (Fig. 4b) → 15

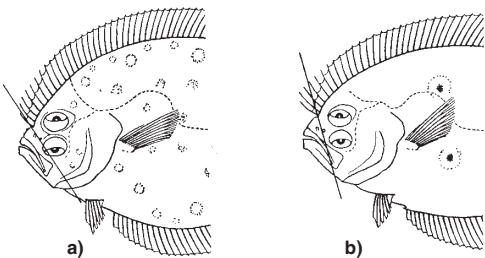


Fig. 3

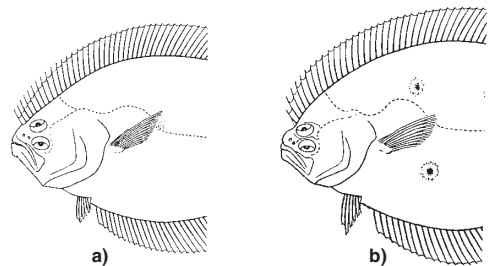



















Fig. 4

- 13a.** Strong canines on anterior part of both jaws; dorsal-fin rays 68 to 72, anal-fin rays 52 to 55; head length 3 to 3.3 times in standard length; 2 pairs of distinct ocelli above and below lateral line and 1 ocellus on posterior part of lateral line . . . *Pseudorhombus quinquocellatus*
- 13b.** No strong canines in either jaw → **14**
- 14a.** Gill rakers on lower limb of first gill arch 8 to 15; a dark blotch on lateral line at junction of curved and straight portions and another one on posterior part of lateral line
. *Pseudorhombus arsius*
- 14b.** Gill rakers on lower limb of first gill arch 16 to 21; 2 pairs of ocelli above and below lateral line, and 1 ocellus on posterior part of body *Pseudorhombus pentophthalmus*
- 15a.** Gill rakers slender, 10 to 16 on lower limb of first gill arch; maxilla extending only to below middle of lower eye. *Pseudorhombus argus*
- 15b.** Gill rakers short and broad, 7 to 10 on lower limb of first gill arch; maxilla extending to below middle of lower eye or behind it → **16**
- 16a.** Distinct notch in front of upper eye; dark blotch on lateral line at junction of curved and straight portions, 2 ocelli above and below lateral line, and 1 or 2 ocelli on posterior part of lateral line *Pseudorhombus jenynsii*
- 16b.** Upper profile of head almost straight or a little concave in front of upper eye; a dark blotch on lateral line at junction of curved and straight portions and another one on middle of straight portion of lateral line. *Pseudorhombus neglectus*

List of species occurring in the area

The symbol  is given when species accounts are included.

-  *Pseudorhombus argus* Weber, 1913
-  *Pseudorhombus arsius* (Hamilton, 1822)
-  *Pseudorhombus cinnamoneus* (Temminck and Schlegel, 1846)
-  *Pseudorhombus diplospilus* Norman, 1926
-  *Pseudorhombus dupliciocellatus* Regan, 1905
-  *Pseudorhombus elevatus* Ogilby, 1912
-  *Pseudorhombus javanicus* (Bleeker, 1853)
-  *Pseudorhombus jenynsii* (Bleeker, 1855)
-  *Pseudorhombus malayanus* Bleeker, 1866
-  *Pseudorhombus megalops* Fowler, 1934
-  *Pseudorhombus neglectus* Bleeker, 1866
-  *Pseudorhombus oligodon* (Bleeker, 1854)
-  *Pseudorhombus pentophthalmus* Günther, 1862
-  *Pseudorhombus quinquocellatus* Weber and Beaufort, 1929
-  *Pseudorhombus spinosus* McCulloch, 1914
-  *Pseudorhombus tenuirastrum* (Waite, 1899)
-  *Pseudorhombus triocellatus* (Schneider, 1801)

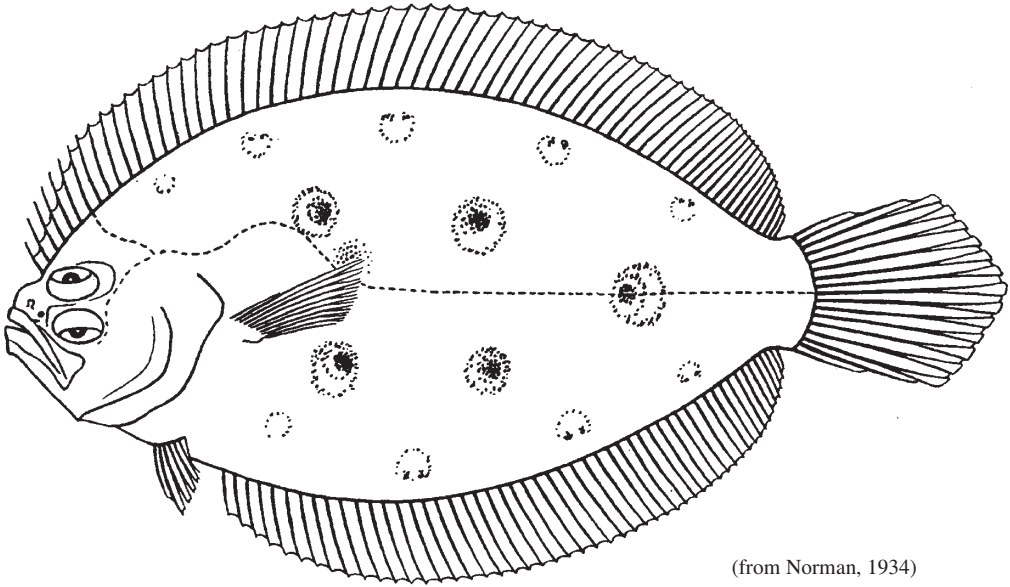
References

- Amaoka, K. 1969. Studies on the sinistral flounders found in the waters around Japan. Taxonomy, anatomy and phylogeny. *J. Shimonoseki Univ. Fish.*, 18(2):65-340.
- Fowler, H.W. 1934. Description of new fishes obtained 1907 to 1910, chiefly in the Philippine Islands and adjacent seas. *Proc. Acad. Nat. Sci., Philad.*, 85:233-367.
- Hensley, D.A. and K. Amaoka. 1989. A redescription of *Pseudorhombus megalops*, *Cephalopsetta ventrocellata* (Osteichthyes: Pleuronectiformes: Paralichthyidae). *Proc. Biol. Soc. Wash.*, 102(3):577-585.
- Norman, J.R. 1934. *A systematic monograph of the flatfishes (Heterosomata). 1. Psettoidea, Bothidae, Pleuronectidae.* London, British Museum, 459 p.

Pseudorhombus argus Weber, 1913

Frequent synonyms / misidentifications: None / *Pseudorhombus jenynsii* (Bleeker, 1855).

FAO names: En - Peacock flounder.



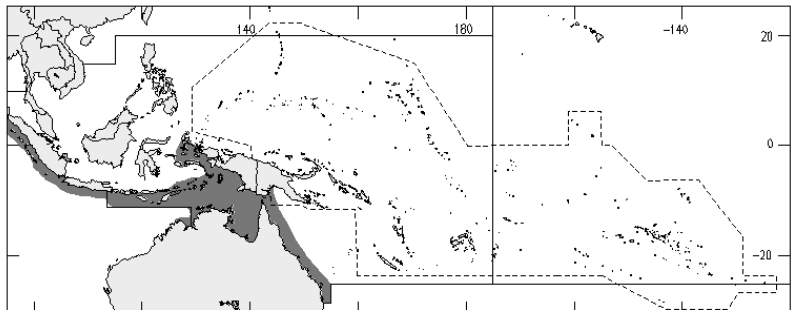
(from Norman, 1934)

Diagnostic characters: Body ovoid, its depth 1.9 to 2.2 times in standard length. Head length 3.4 to 3.9 times in standard length; **upper profile of head with a distinct notch in front of upper eye.** Snout nearly as long as eye diameter. Upper-eye diameter 4 to 4.6 times in head length; eyes separated by narrow and bony ridge. Maxilla extending to below middle of lower eye, upper-jaw length 2.3 to 3 times in head length; teeth in both jaws small, close-set, and slightly enlarged anteriorly. Gill rakers slender and pointed, 2 to 6 on upper limb of first gill arch, 10 to 16 on lower limb. **Origin of dorsal fin slightly in front of anterior edge of upper eye and just above or a little behind nostrils on blind side;** dorsal fin with 67 to 72 soft rays; anal fin with 51 to 55 soft rays; pectoral fin on eyed side with 12 or 13 rays. Scales ctenoid on eyed side, cycloid on blind side; lateral-line scales 70 to 78; lateral line curved above pectoral fins, supratemporal branch of lateral line extending to between eighth to twelfth dorsal-fin rays. Vertebrae 10 + 23-26. **Colour:** body brownish, **2 double or triple ocelli above and below lateral line and 1 on posterior third of straight section of lateral line;** many dark spots and rings scattered on body and median fins.

Size: Maximum standard length 25 cm, commonly between 15 and 20 cm.

Habitat, biology, and fisheries: Lives at depths of 15 to 25 m on muddy and sandy bottoms. Feeds on bottom-living small animals. Caught mainly with bottom prawn trawls.

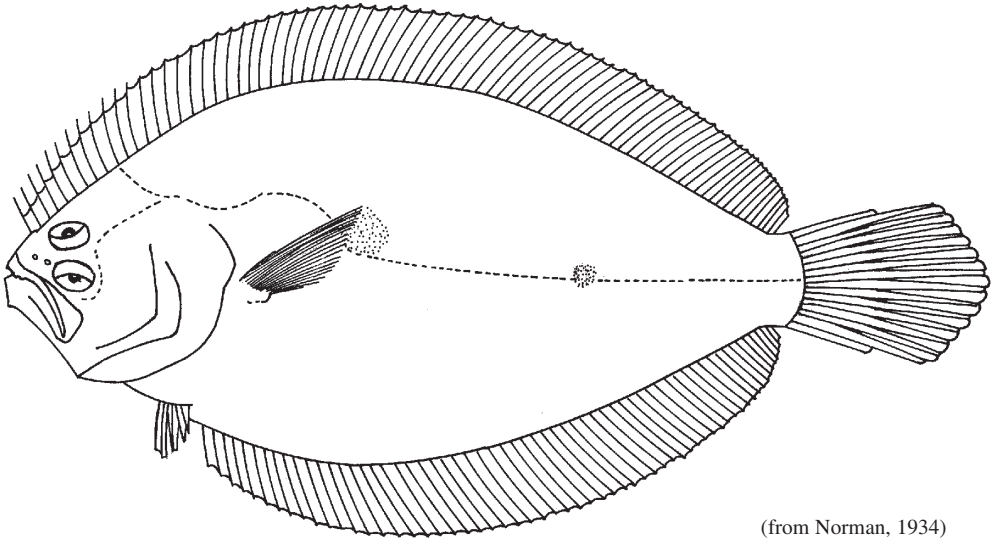
Distribution: Known from the Indo-Australian Archipelago to southern Queensland and Aru Island.



Pseudorhombus arsius (Hamilton, 1822)

Frequent synonyms / misidentifications: None / *Pseudorhombus oligodon* (Bleeker, 1854).

FAO names: En - Largetooth flounder; Fr - Rite dentu; Sp - Lenguado dentado.



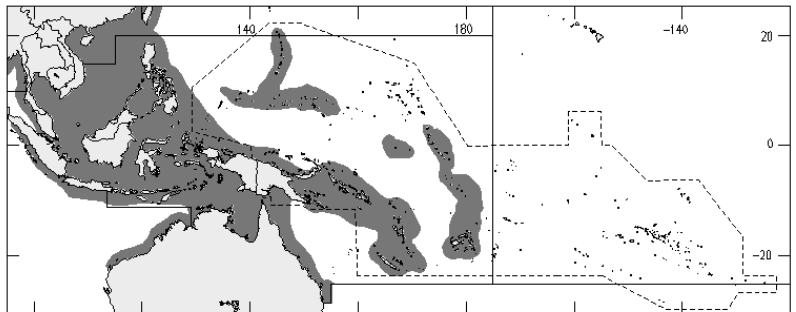
(from Norman, 1934)

Diagnostic characters: Body ovoid, its depth 1.8 to 2.3 times in standard length. Head length 3.3 to 3.6 times in standard length; upper profile of head with a slight notch in front of upper eye. Snout as long as or longer than eye diameter. Upper-eye diameter 4.3 to 6.1 times in head length. Maxilla extending to below posterior margin of lower eye, upper-jaw length 2.2 to 2.6 times in head length; **some pairs of moderately large canines in anterior part of both jaws, 6 to 13 lateral teeth in lower jaw, stronger and more widely spaced than those of upper jaw. Gill rakers pointed, longer than broad, 1 to 7 on upper limb of first gill arch, 8 to 15 on lower limb.** Origin of dorsal fin in front of upper eye and nostrils on blind side; dorsal fin with 71 to 84 soft rays; anal fin with 53 to 62 soft rays; pectoral fin on eyed side with 12 or 13 rays. Scales ctenoid on eyed side, cycloid on blind side; lateral-line scales 69 to 81; lateral line curved above pectoral fins; supratemporal branch of lateral line extending to between eighth to twelfth dorsal-fin rays. Vertebrae 10 + 24-28. **Colour:** body greenish or pale brownish, a dark blotch at junction of straight and curved parts of lateral line, and a smaller blotch half-way to caudal-fin base.

Size: Maximum standard length 45 cm, commonly to 30 cm.

Habitat, biology, and fisheries: Inhabits shallow muddy-sandy or sandy bottoms from coastal areas to river mouths; juveniles commonly found in brackish waters. Feeds on bottom-living animals. Marketed mostly fresh.

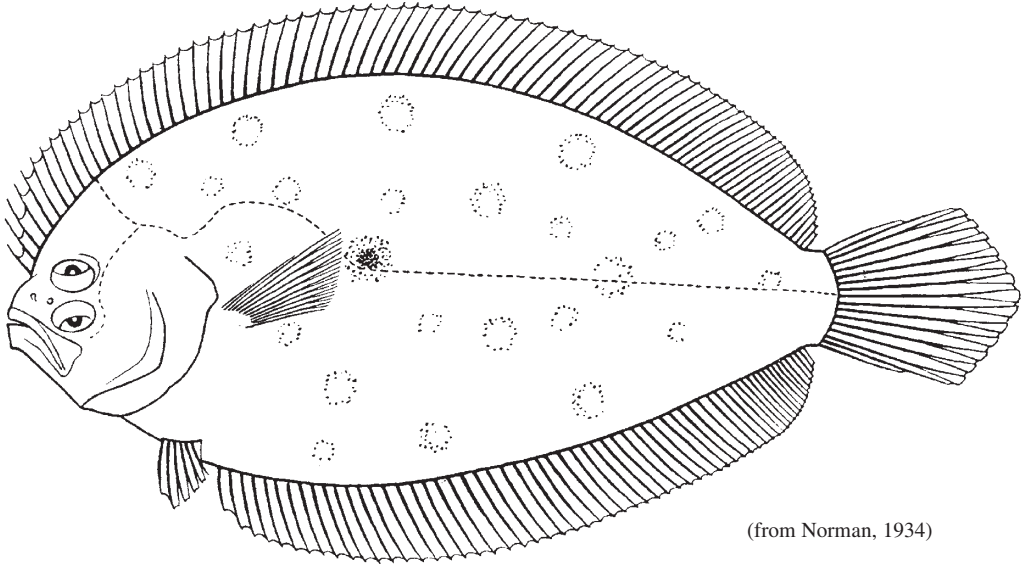
Distribution: Widespread from the east coast of Africa to Australia, and tropical and subtropical areas of the western Central Pacific.



Pseudorhombus cinnamoneus (Temminck and Schlegel, 1846)

Frequent synonyms / misidentifications: None / *Pseudorhombus levisquamis* (Oshima, 1927).

FAO names: En - Cinnamon flounder.



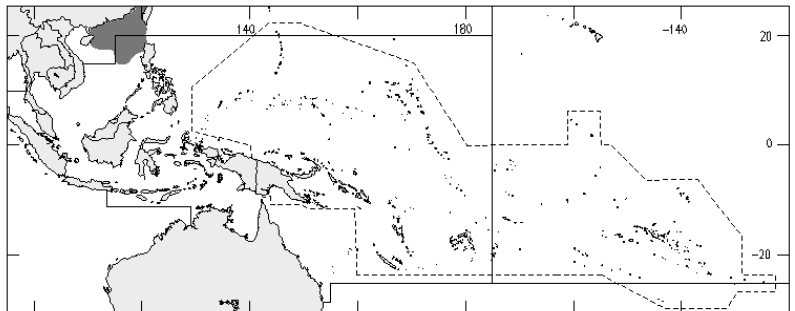
(from Norman, 1934)

Diagnostic characters: Body deeply ovoid, its depth 2 to 2.1 times in standard length. Head length 3.6 to 3.8 times in standard length; upper profile shallowly notched in front of upper eye; **a line connecting base of first dorsal-fin ray and posterior nostril on eyed side passes behind posterior end of maxilla, or crosses its posteriormost part.** Snout protruded, 1.3 to 1.5 times of eye diameter. Upper-eye diameter 5 to 5.6 times in head length. Maxilla extending to below or a little beyond middle of lower eye; upper-jaw length 2.5 to 2.6 times in head length; teeth in upper jaw small, slightly enlarged anteriorly, those on lower jaw stronger and wider separated from each other. **Gill rakers moderately long and slender, 4 to 8 on upper limb of first gill arch, 10 to 12 on lower limb.** Origin of dorsal fin in front of upper eye and just above anterior nostril on blind side; dorsal fin with 77 to 89 soft rays; anal fin with 58 to 69 soft rays; pectoral fin on eyed side with 12 or 13 rays. Scales ctenoid on eyed side, cycloid on blind side; lateral-line scales 75 to 84; lateral line curved above pectoral fins, supratemporal branch extending to between seventh to tenth dorsal-fin rays. Vertebrae 10 + 28-29. **Colour:** body brownish, a distinct ocellus at junction of straight and curved parts of lateral line; **many dark rings scattered on body, many dark spots on median fins.**

Size: Maximum standard length 35 cm, commonly between 20 and 25 cm.

Habitat, biology, and fisheries: Inhabits mud and sand bottoms along shallow coasts or bays. Feeds on small bottom-living crustaceans and fishes. Caught with small bottom trawls. Marketed mostly fresh.

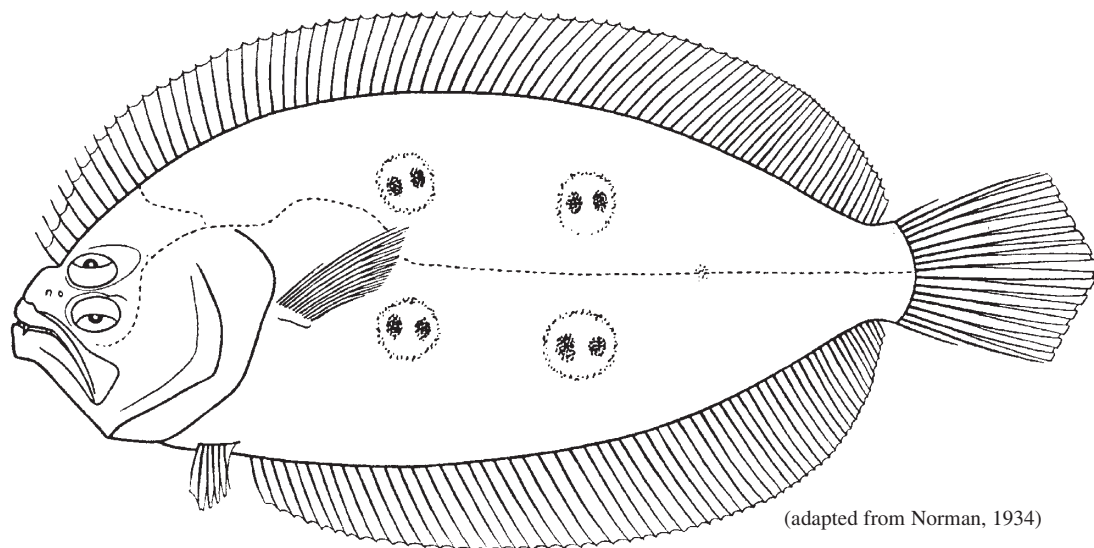
Distribution: Known from the South China Sea north to China and Japan.



***Pseudorhombus diplospilus* Norman, 1926**

Frequent synonyms / misidentifications: None / *Pseudorhombus dupliciocellatus* Regan, 1905.

FAO names: En - Four twin-spot flounder.



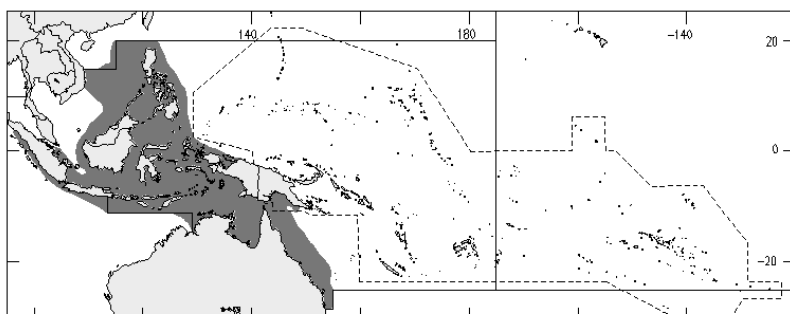
(adapted from Norman, 1934)

Diagnostic characters: Body elliptical, its depth 2.3 to 2.7 times in standard length. Head length 3.2 to 3.5 times in standard length; upper profile of head with a distinct notch in front of upper eye; a line connecting base of first dorsal-fin ray and posterior nostril on eyed side crosses maxilla. Maxilla extending to below posterior margin of lower eye or beyond it; upper-jaw length 2.3 to 2.6 times in head length; **strong canines in both jaws anteriorly**. **Gill rakers palmate, as broad as long**, 3 to 5 on upper limb of first gill arch, 8 to 10 on lower limb. Dorsal fin with 75 to 81 soft rays; anal fin with 61 to 64 soft rays; pectoral fin on eyed side with 11 or 12 rays. Scales ctenoid on eyed side, cycloid on blind side; **lateral-line scales 83 to 98**; lateral line curved above pectoral fins, supratemporal branch of lateral line extending to between ninth and tenth dorsal-fin rays. Vertebrae 10 + 27-28. **Colour:** body brownish, **2 conspicuous double ocelli above and below lateral line**, a large blotch at junction of curved and straight part of lateral line and a distinct spot on posterior third of straight section of lateral line; indistinct dark rings on body, small brown spots on median fins.

Size: Maximum standard length 40 cm, commonly between 20 and 30 cm.

Habitat, biology, and fisheries: Inhabits shallow water (10 to 150 m) on mud and sand bottoms of coastal zones. Feeds on benthic small animals. Caught mainly with prawn trawls. Marketed mostly fresh.

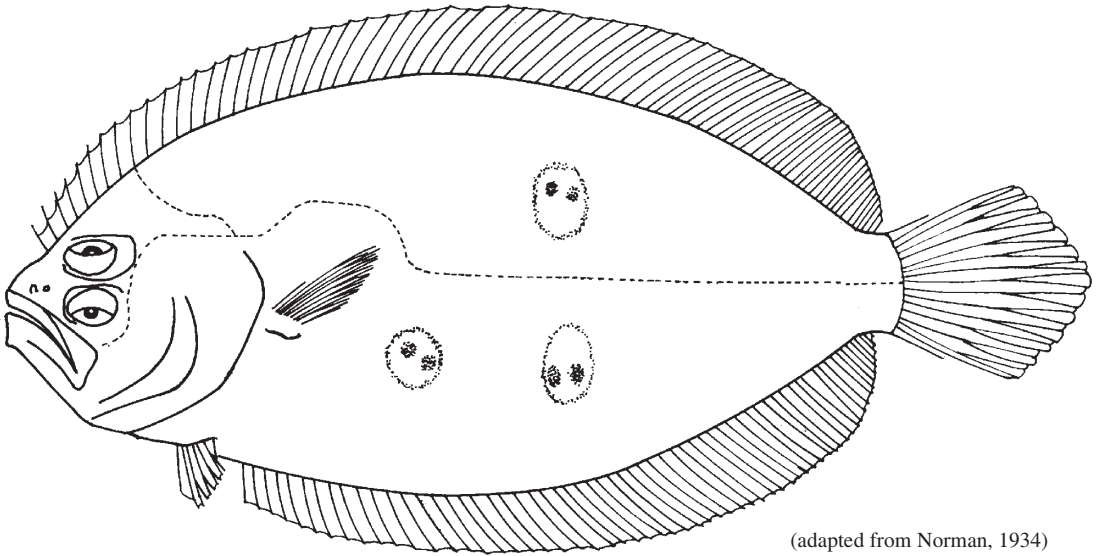
Distribution: Known from the Indo-Australian Archipelago to the east coast of Queensland, and the South China Sea.



Pseudorhombus dupliocellatus Regan, 1905

Frequent synonyms / misidentifications: None / *Pseudorhombus diplospilus* Norman, 1926.

FAO names: En - Ocellated flounder.



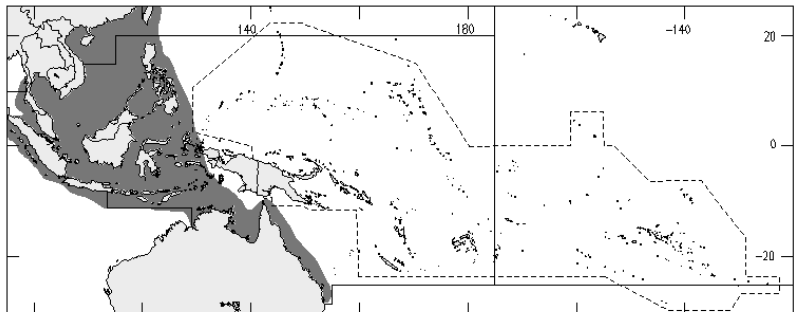
(adapted from Norman, 1934)

Diagnostic characters: Body ovoid, its depth 2.2 to 2.4 times in standard length. Head length 3.4 to 3.7 times in standard length; upper profile of head strongly notched in front of upper eye; a line connecting base of first dorsal-fin ray and posterior nostril on eyed side crosses maxilla. Snout protruded, its length 1 to 1.3 times of eye diameter; eye diameter 4.3 to 5 times in head length. Maxilla extending to below or beyond middle of lower eye; **teeth in both jaws small, without strong canines. Gill rakers palmate, as broad as long**, 5 on upper limb of first gill arch, 8 or 9 on lower limb. Origin of dorsal fin in front of upper eye and posterior nostril on blind side; dorsal fin with 72 to 78 soft rays; anal fin with 56 to 63 soft rays; pectoral fin on eyed side with 11 or 12 rays. Scales ctenoid on eyed side, cycloid on blind side; **lateral-line scales 73 to 84**; lateral line curved above pectoral fins; supratemporal branch of lateral line extending to between eighth and ninth dorsal-fin rays. Vertebrae 10 + 26-27. **Colour: 1 or 2 pairs of distinct double ocelli above and below lateral line**; many darker rings and spots scattered on body and median fins.

Size: Maximum standard length 40 cm, commonly between 20 and 30 cm.

Habitat, biology, and fisheries: Inhabits shallow water (50 to 150 m) on mud and sand bottoms of the continental shelf. Feeds on bottom-living small animals. Caught mainly with bottom trawls. Marketed mostly fresh.

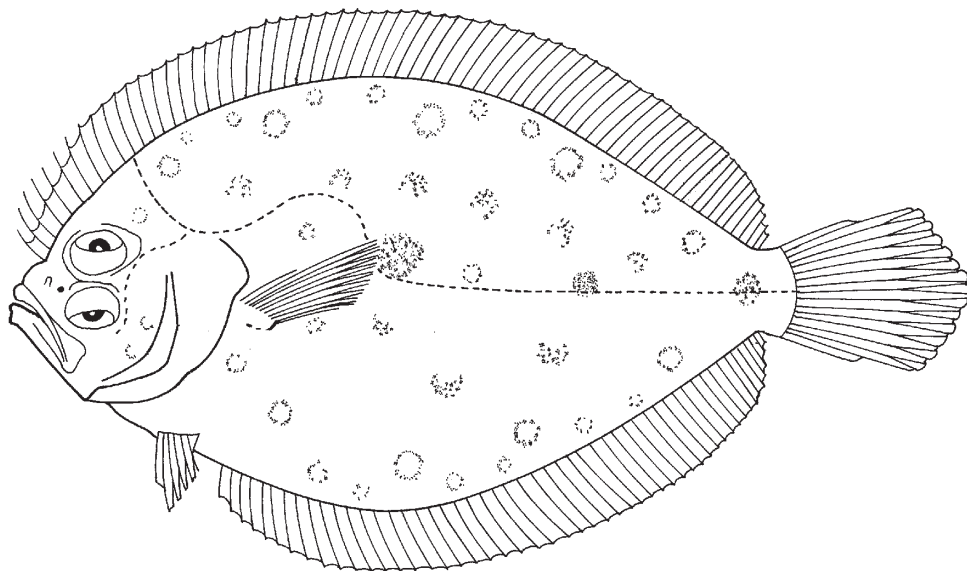
Distribution: Widespread in the Indo-West Pacific, from the Nicobar Islands throughout most of the Indo-Australian Archipelago, northward to Japan and southward to northeastern Australia.



***Pseudorhombus elevatus* Ogilby, 1912**

Frequent synonyms / misidentifications: *Pseudorhombus affinis* Weber, 1913 / *Pseudorhombus arsius* (Hamilton, 1822).

FAO names: **En** - Deep flounder; **Fr** - Rite targeur; **Sp** - Lenguado choncho.



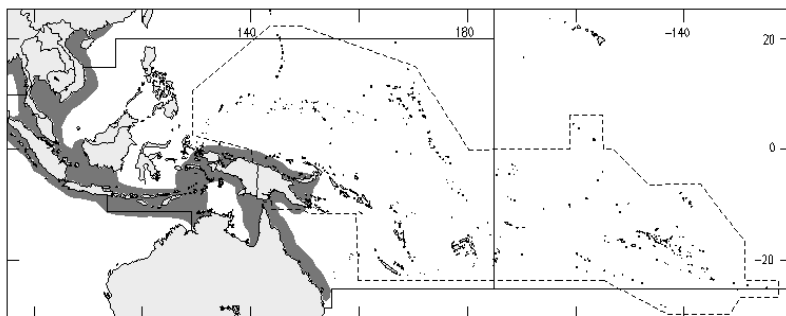
(after Norman, 1934)

Diagnostic characters: **Body deeply ovoid, its depth 1.7 to 2 times in standard length.** Head length 3.1 to 3.5 times in standard length; upper profile with a distinct notch in front of upper eye; a line connecting base of first dorsal-fin ray and posterior nostril on eyed side passes behind posterior end of maxilla, or crosses its posteriormost part. Snout slightly protruded, 0.9 to 1.2 times of eye diameter. Maxilla extending to below or a little behind middle of lower eye; upper jaw 2.2 to 2.8 times in standard length; **teeth in both jaws all small, without enlarged teeth anteriorly.** Gill rakers long and slender, 4 to 6 on upper limb of first gill arch, 11 to 17 on lower limb. Dorsal fin with 67 to 74 soft rays; anal fin with 52 to 58 soft rays; pectoral fin on eyed side with 11 or 12 rays. Scales ctenoid on eyed side, cycloid on blind side; lateral line curved above pectoral fins; supratemporal branch extending to between ninth to eleventh dorsal-fin rays. Vertebrae 10 + 24-25. **Colour:** body pale brownish, a distinct large blotch at junction of straight and curved parts of lateral line, and many dark rings and spots scattered on body and median fins.

Size: Maximum standard length 20 cm, commonly to 15 cm.

Habitat, biology, and fisheries: Inhabits shallow waters (40 to 200 m) on mud and sand bottoms of the continental shelf. Feeds on small bottom-living animals. Caught with bottom trawl. Marketed mostly fresh.

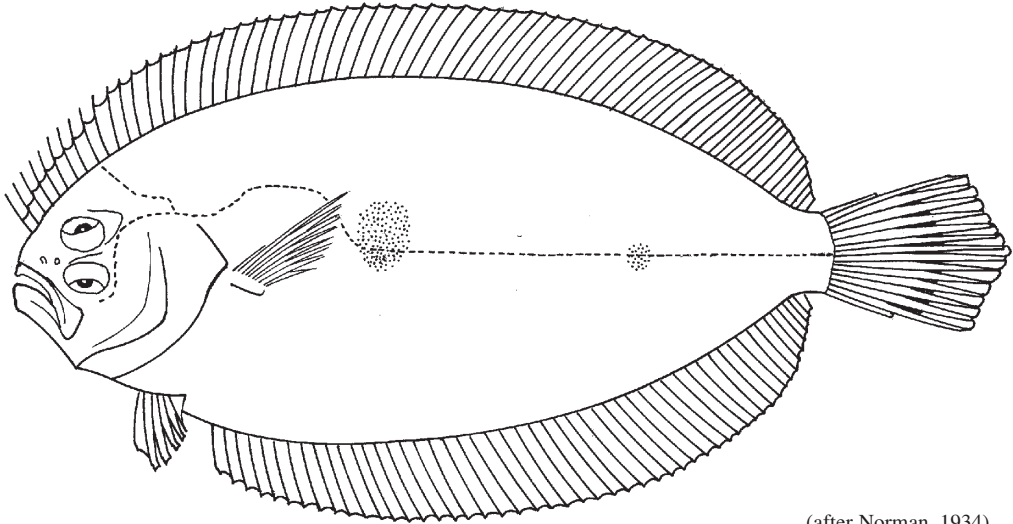
Distribution: Known from the Red Sea throughout the Indo-Australian Archipelago, northward to China and southward to northeastern Australia.



Pseudorhombus javanicus (Bleeker, 1853)

Frequent synonyms / misidentifications: None / None.

FAO names: En - Javan flounder; Fr - Rite javanais; Sp - Lenguado javano.



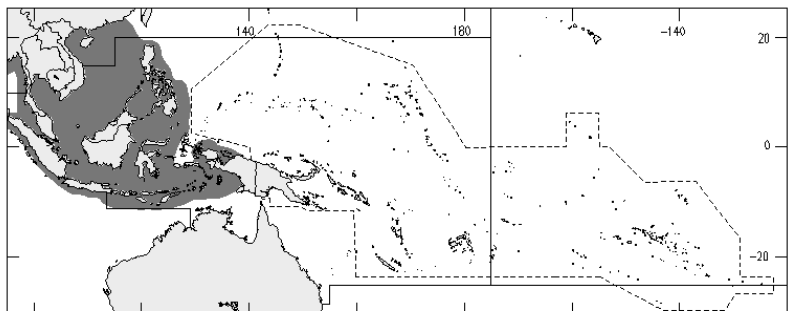
(after Norman, 1934)

Diagnostic characters: Body ovoid, its depth 2.1 to 2.4 times in standard length. Head length 3.2 to 3.6 times in standard length; **upper profile of head without notch in front of eye**; a line connecting base of first dorsal-fin ray and posterior nostril on eyed side passes behind posterior end of maxilla, or crosses its posteriormost part. Snout slightly protruded, 1.1 to 1.4 times of eye diameter. Upper-eye diameter 4.3 to 5.5 times in head length. Maxilla extending to below middle of lower eye; upper-jaw length 2.2 to 2.7 times in head length; teeth in both jaws small, with slightly enlarged teeth anteriorly. Gill rakers pointed, moderately short, 5 to 7 on upper limb of first gill arch, 12 to 16 on lower limb. Dorsal fin with 67 to 76 soft rays; anal fin with 51 to 56 soft rays; pectoral fin on eyed side with 11 or 12 rays. **Scales on eyed side ctenoid on anterior part and dorsal and ventral margins of body on eyed side, cycloid on remaining areas**; scales cycloid on blind side; lateral-line scales 66 to 74; lateral line curved above pectoral fins, supratemporal branch extending to between ninth and twelfth dorsal-fin rays. Vertebrae 10 + 24-25. **Colour:** body brownish, a distinct, large dark blotch at junction of straight and curved parts of lateral line and a smaller blotch on middle of straight section of lateral line, many dark rings scattered on body.

Size: Maximum standard length 35 cm, commonly to 20 cm.

Habitat, biology, and fisheries: Inhabits the shallow waters on mud and sand bottoms on the continental shelf. Feeds on bottom-living small animals. Caught mainly with bottom trawl. Marketed mostly fresh.

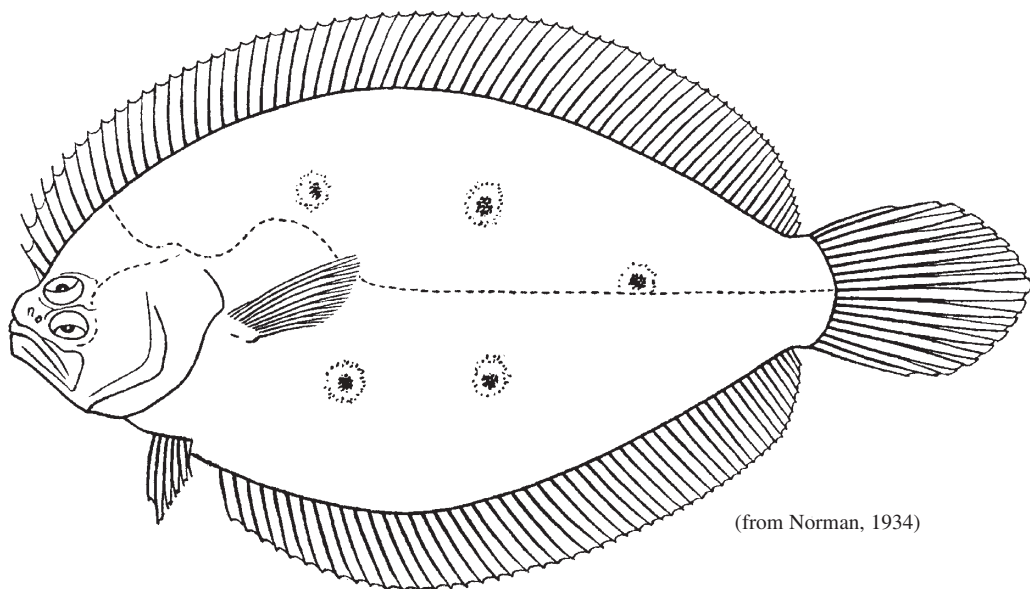
Distribution: Known from the east coast of India eastward to western New Guinea and to southern China.



Pseudorhombus jenynsii (Bleeker, 1855)

Frequent synonyms / misidentifications: None / *Pseudorhombus argus* Weber, 1913.

FAO names: En - Smalltoothed flounder.



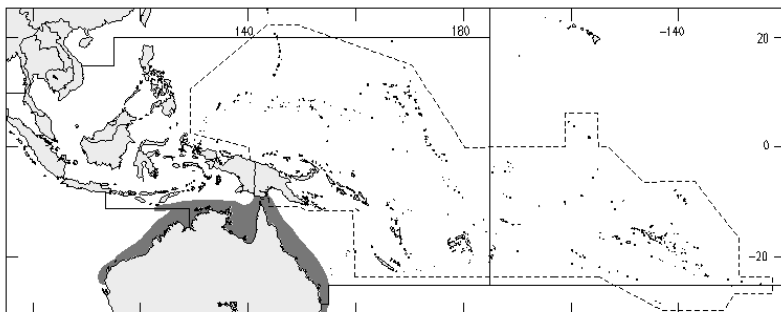
(from Norman, 1934)

Diagnostic characters: Body ovoid, its depth 1.8 to 2.2 times in standard length. Head length 3.1 to 3.8 times in standard length; **upper profile of head distinctly notched in front of upper eye; a line connecting base of first dorsal-fin ray and posterior nostril on eyed side crosses maxilla.** Snout protruded, 0.7 to 1.2 times of upper-eye diameter. Upper-eye diameter 4.3 to 5.1 times in head length. Maxilla extending to below or beyond middle of lower eye; upper-jaw length 2.3 to 2.6 times in head length; teeth in both jaws small and close-set laterally and posteriorly, no canines anteriorly. Gill rakers short, broad, and pointed, 2 to 5 on upper limb of first gill arch, 7 to 10 on lower limb. **Origin of dorsal fin slightly before anterior margin of upper eye and just above or behind posterior nostril on blind side;** dorsal fin with 65 to 74 soft rays; anal fin with 51 to 60 soft rays; pectoral fin on eyed side with 11 or 12 rays. Scales ctenoid on eyed side, cycloid on blind side; lateral-line scales 65 to 78; lateral line curved above pectoral fins, supratemporal branch extending to between seventh to eighth dorsal-fin rays. **Colour:** body brownish, 2 conspicuous ocelli above and below lateral line and 1 or 2 ocelli on posterior part of straight section of lateral line, a dark blotch at junction of straight and curved portions of lateral line.

Size: Maximum standard length 30 cm, commonly between 20 and 25 cm.

Habitat, biology, and fisheries: Inhabits sand and mud bottoms of river mouths to depths of 150 m. Feeds on various small benthic animals. Caught mainly with small trawls. Marketed fresh.

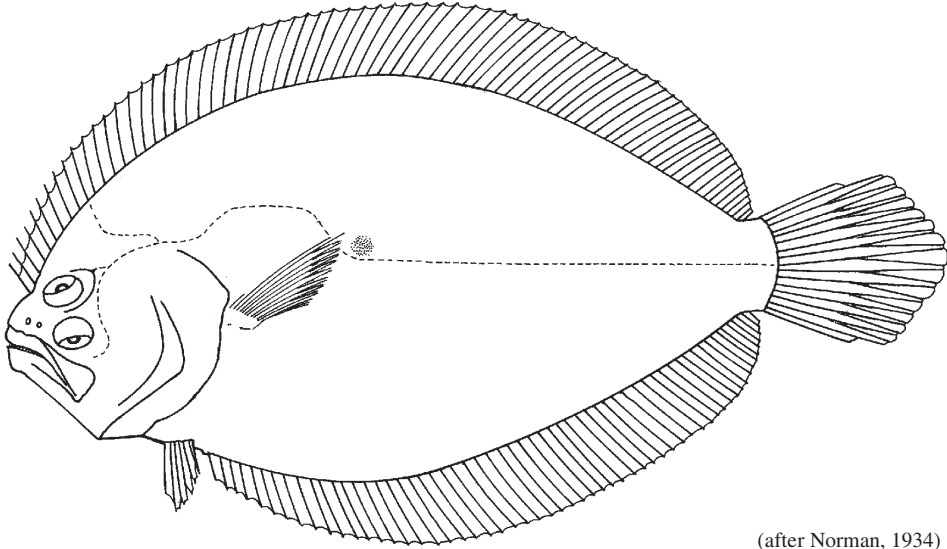
Distribution: Known from most coasts of Australia.



Pseudorhombus malayanus Bleeker, 1866

Frequent synonyms / misidentifications: None / *Pseudorhombus oligodon* (Bleeker, 1854).

FAO names: En - Malayan flounder; Fr - Rite malais; Sp - Lenguado malayano.



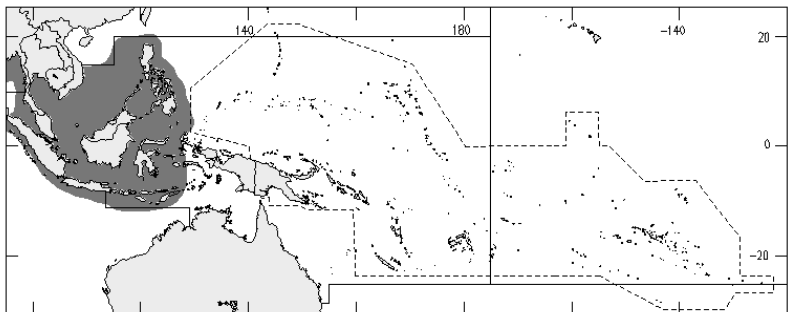
(after Norman, 1934)

Diagnostic characters: Body deep ovoid, its depth 1.8 to 2 times in standard length. Head length 3.1 to 3.3 times in standard length; upper profile of head with a slight notch before upper eye. Snout protruded, 1.2 to 1.6 times of eye diameter. Upper-eye diameter 5.3 to 5.9 times in head length. **Maxilla extending to below posterior margin of lower eye;** upper-jaw length 2.3 to 2.4 times in head length; teeth in upper jaw small and close-set laterally, and enlarged anteriorly; teeth in lower jaw stronger and more widely spaced than those of upper jaw. Gill rakers moderately long, 5 to 7 on upper limb of first gill arch, 8 to 10 on lower limb. Dorsal fin with 72 to 74 soft rays; anal fin with 58 or 59 soft rays; pectoral fin on eyed side with 12 or 13 rays. **Scales ctenoid on both sides of body;** lateral-line scales 70 to 78; lateral line curved above pectoral fins, supratemporal branch extending to between ninth to eleventh dorsal-fin rays. Vertebrae 10 + 26. **Colour:** body brownish, a small dark blotch at junction of straight and curved parts of lateral line.

Size: Maximum standard length 35 cm, commonly to 20 cm.

Habitat, biology, and fisheries: Inhabits shallow waters on mud and sand bottoms. Feeds on small bottom-living animals. Caught with trawls. Marketed mostly fresh.

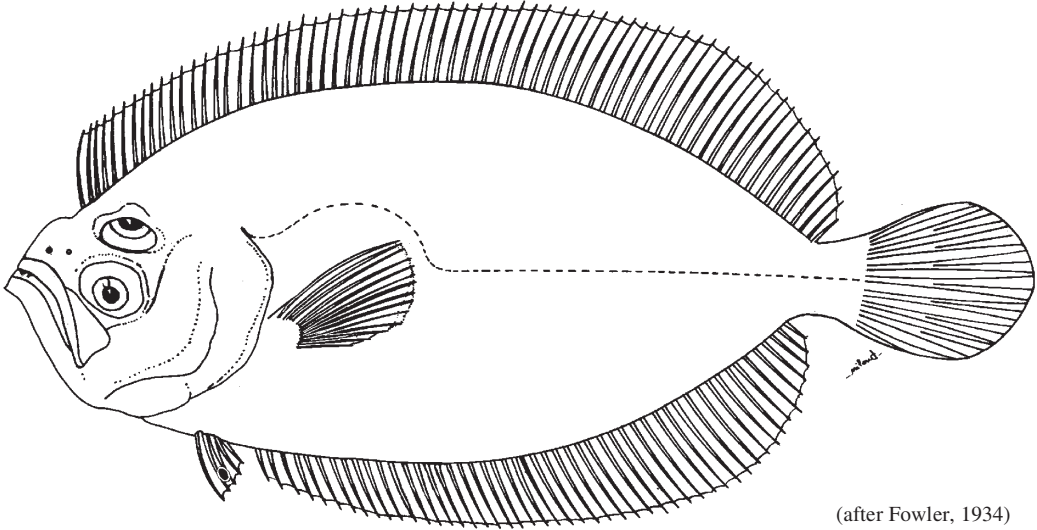
Distribution: Known from the Persian Gulf east to India throughout the Malay Peninsula and Malay Archipelago to the Philippines.



Pseudorhombus megalops Fowler, 1934

Frequent synonyms / misidentifications: None / *Pseudorhombus malayanus* Bleeker, 1866; *Cephalopsetta ventrocellatus* Dutt and Rao, 1965.

FAO names: En - Bigeye flounder.



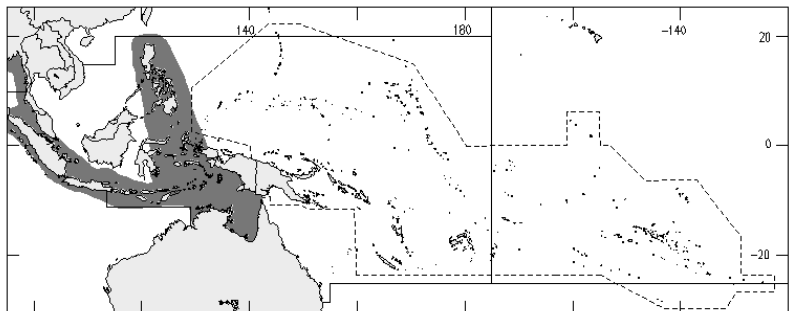
(after Fowler, 1934)

Diagnostic characters: Body ovoid, its depth 1.9 to 2.4 times in standard length. Head length 3 to 3.3 times in standard length; upper profile of head with a distinct notch in front of upper eye; **eye very large, upper-eye diameter 3.4 to 3.9 times in head length**; a line connecting base of first dorsal-fin ray and posterior nostril on eyed side crosses maxilla. Snout moderately protruded, 1 to 1.2 times of eye diameter. Maxilla extending to below or beyond middle of lower eye; upper-jaw length 2 to 2.2 times in head length; lateral teeth in upper jaw moderate in size, becoming more close-set posteriorly, some teeth enlarged anteriorly, teeth in lower jaw stronger and more widely spaced than those of upper jaw and with a pair of anterior canines. Gill rakers pointed and elongate, 5 to 9 on upper limb of first gill arch, 15 to 18 on lower limb. Dorsal fin with 67 to 70 soft rays; anal fin with 50 to 53 soft rays; pectoral fin on eyed side with 11 to 13 rays. **Scales ctenoid on both sides, but sometimes cycloid scales scattered on blind side of body**; lateral-line scales 69 to 77; lateral line curved above pectoral fins, supratemporal branch extending to near base of tenth dorsal-fin ray. Vertebrae 10 + 24. **Colour:** body pale brownish, with many indistinct dark rings; **pelvic fin on eyed side with very distinct black spot or ocellus.**

Size: Maximum standard length about 20 cm.

Habitat, biology, and fisheries: Inhabits moderately deep waters (about 200 to 270 m) on mud and sand bottoms. Feeds on small crustaceans and other bottom-living animals. Caught with bottom trawls.

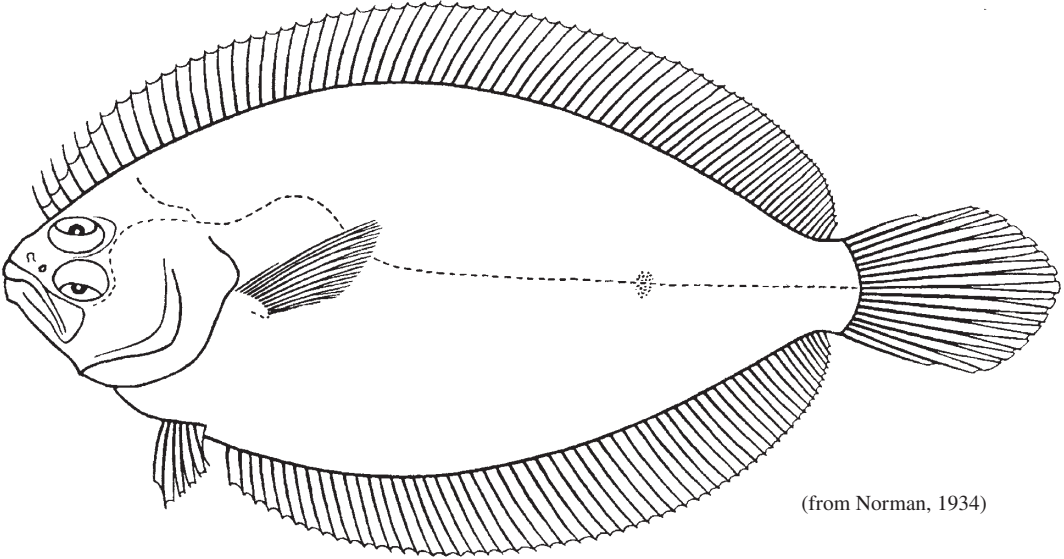
Distribution: Known from eastern Indian Ocean southward to the Arafura Sea and northward to the Philippines.



Pseudorhombus neglectus Bleeker, 1866

Frequent synonyms / misidentifications: None / *Pseudorhombus jenynsii* (Bleeker, 1855).

FAO names: En - Neglected flounder.



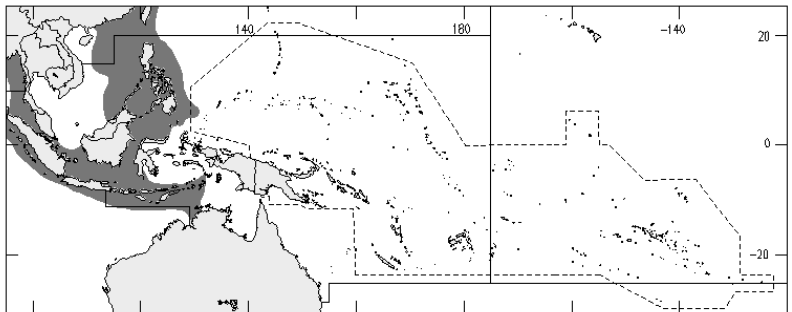
(from Norman, 1934)

Diagnostic characters: Body elliptical, its depth 1.9 to 2.1 times in standard length. Head length 3.5 to 3.6 times in standard length; **upper profile of head without a distinct notch or with slight notch in front of upper eye.** Snout slightly protruded, 1 to 1.3 times of eye diameter. Upper-eye diameter 3.8 to 4.3 times in head length. Maxilla extending to below or beyond middle of lower eye; upper jaw 2.4 to 2.5 times in head length; teeth in upper jaw small, slightly enlarged anteriorly, teeth in lower jaw larger and more widely spaced than those in upper jaw. Gill rakers pointed and moderately short, 4 to 7 on upper limb of first gill arch, 9 or 10 on lower limb. **Origin of dorsal fin slightly in front of anterior margin of upper eye and just above posterior nostril on blind side;** dorsal fin with 72 to 75 soft rays; anal fin with 56 to 59 soft rays; pectoral fin on eyed side with 12 or 13 rays. Scales ctenoid on eyed side, cycloid on blind side; lateral-line scales 77 to 79; lateral line curved above pectoral fins, supratemporal branch extending to between seventh and eighth dorsal-fin rays. Vertebrae 10 + 25-26. **Colour:** body pale brownish, with small ocelli at junction between curved and straight portions of lateral line and another one near middle of straight section.

Size: Maximum standard length 25 cm.

Habitat, biology, and fisheries: Inhabits shallow waters (30 to 40 m) on mud and sand bottoms of continental shelf. Feeds on small benthic animals. Caught with bottom trawls. Marketed mainly fresh.

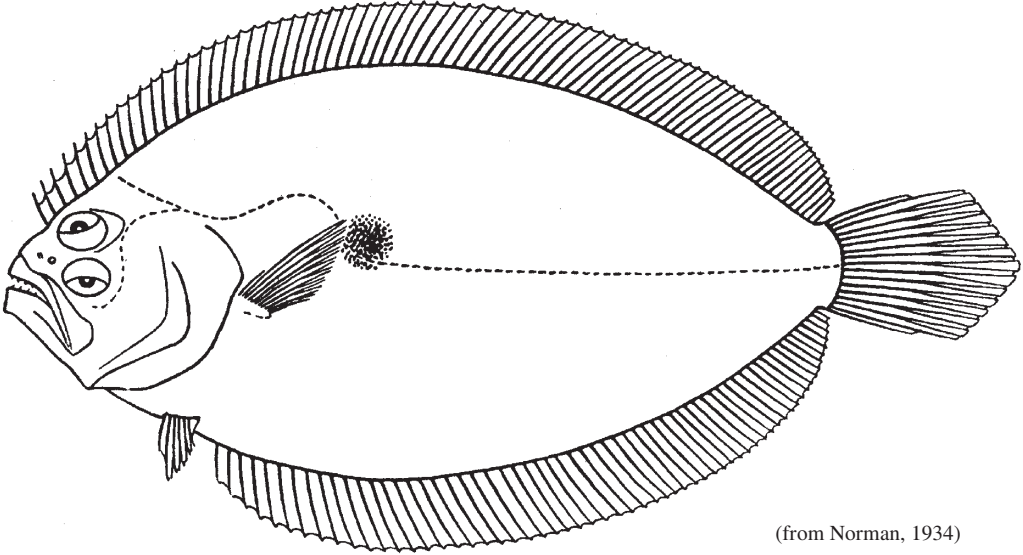
Distribution: Known from the eastern Indian Ocean through-out Indo-Australian Archipelago and Philippines to the South China Sea.



Pseudorhombus oligodon (Bleeker, 1854)

Frequent synonyms / misidentifications: None / *Pseudorhombus cinnamoneus* (Temminck and Schlegel, 1846); *P. arsius* (Hamilton, 1822).

FAO names: En - Roughscale flounder.



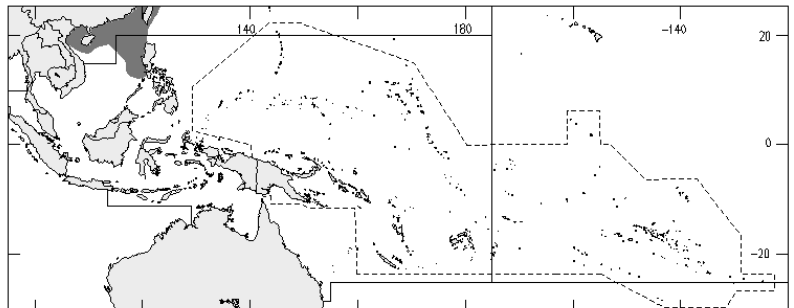
(from Norman, 1934)

Diagnostic characters: Body deeply ovoid, its depth 2.1 to 2.3 times in standard length. Head length 3.5 to 3.8 times in standard length; upper profile of head distinctly notched in front of upper eye; a line connecting base of first dorsal-fin ray and posterior nostril on eyed side crosses maxilla. Snout protruded, 1 to 1.3 times upper-eye diameter. Upper-eye diameter 4.7 to 6.1 times in head length. Maxilla extending to below posterior margin of lower eye; upper-jaw length 2.2 to 2.5 times in head length; teeth in upper jaw with some canines anteriorly, teeth in lower jaw stronger and more widely spaced than those in upper jaw, with some large canines anteriorly. Gill rakers pointed and moderately short, 2 to 5 on upper limb of first gill arch, 8 or 9 on lower limb. Dorsal fin with 78 to 82 soft rays; anal fin with 61 to 65 soft rays; pectoral fin on eyed side with 12 or 13 rays. Scales ctenoid on both sides; lateral-line scales 80 to 90; lateral line curved above pectoral fins, supratemporal branch extending to between seventh to ninth dorsal-fin rays. Vertebrae 10 + 27-28. **Colour:** body greenish brown, with a dark blotch at junction between straight and curved portions of lateral line; 2 dark spots at boundary of opercle and trunk below base of pectoral fins.

Size: Maximum standard length 30 cm, commonly between 10 and 20 cm.

Habitat, biology, and fisheries: Inhabits shallow waters (30 to 40 m) on mud and sand bottoms of continental shelf. Feeds mainly on small bottom fishes. Caught with bottom trawls. Marketed fresh.

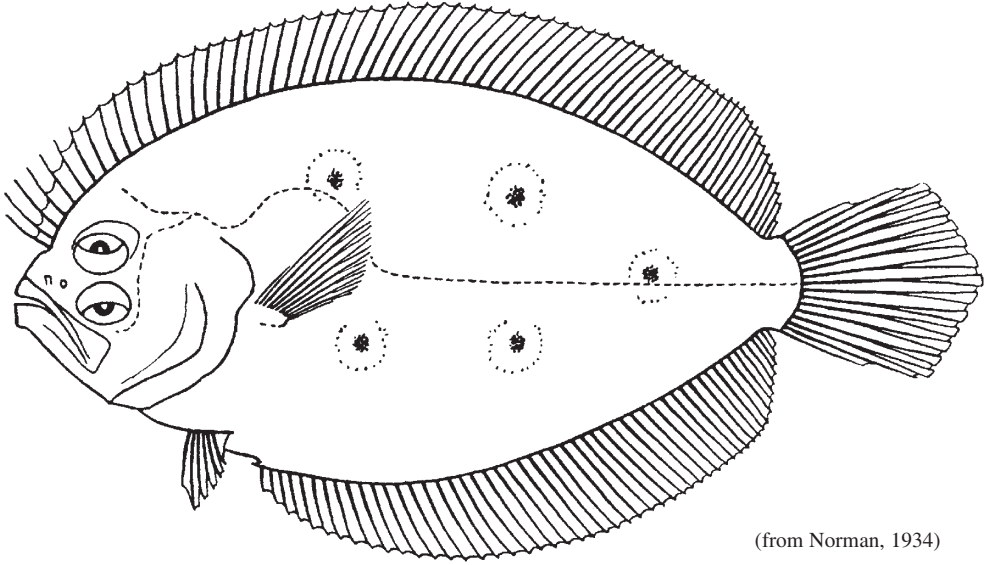
Distribution: Known from South China Sea to Japan.



Pseudorhombus pentophthalmus Günther, 1862

Frequent synonyms / misidentifications: *Pseudorhombus ocellifer* Regan, 1905 / None.

FAO names: En - Fivespot flounder.



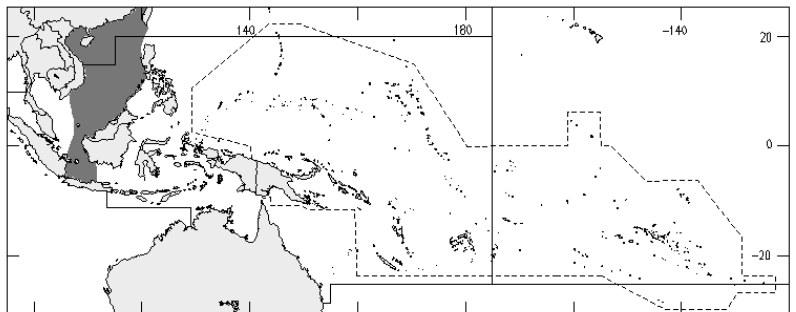
(from Norman, 1934)

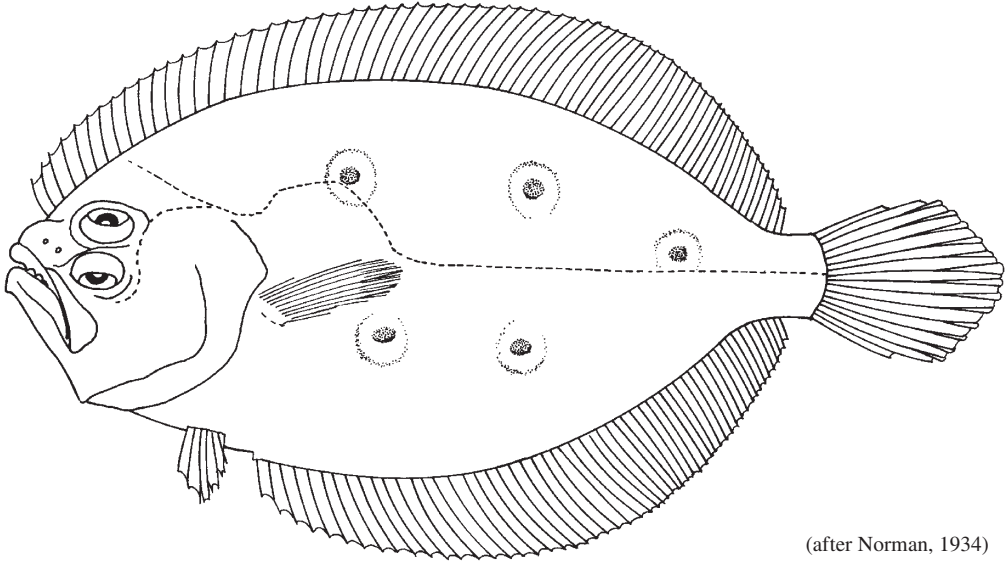
Diagnostic characters: Body ovoid, its depth 1.9 to 2.3 times in standard length. Head length 3.2 to 3.4 times in standard length; upper profile of head with conspicuous notch in front of upper eye; a line connecting base of first dorsal-fin ray and posterior nostril on eyed side crosses maxilla. Snout slightly protruded, 0.9 to 1.3 times upper-eye diameter. Upper-eye diameter 3.8 to 5.2 times in head length. Maxilla extending to below or a little beyond middle of lower eye; upper-jaw length 2 to 2.3 times in head length; **teeth in upper jaw small and close-set**, teeth in lower jaw moderately larger and more widely spaced than those in upper jaw; no canines in either jaw. **Gill rakers long and slender, 5 to 7 on upper limb of first gill arch, 16 to 21 on lower limb.** Origin of dorsal fin before upper eye and posterior nostril on blind side; dorsal fin with 68 to 76 soft rays; anal fin with 53 to 57 soft rays; pectoral fin on eyed side with 11 or 12 rays. Scales ctenoid on eyed side, cycloid on blind side; lateral-line scales 62 to 75; lateral line curved above pectoral fins, supratemporal branch not extending to base of dorsal fin. Vertebrae 10 + 25-26. **Colour: body pale brownish, with 2 ocelli above and below lateral line and 1 ocellus on posterior third of straight section of lateral line.**

Size: Maximum standard length 18 cm, commonly to 12 cm.

Habitat, biology, and fisheries: Inhabits fairly deep water (50 to 150 m) on mud and sand bottoms of continental shelf. Feeds on bottom-living small crustaceans and fishes. Caught mainly with bottom trawls. Marketed fresh and salt-dried.

Distribution: Known from Java Sea through Indo-China, north to northern Japan.



Pseudorhombus quinquocellatus* Weber and Beaufort, 1929*Frequent synonyms / misidentifications:** None / None.**FAO names:** En - Five-eyed flounder.

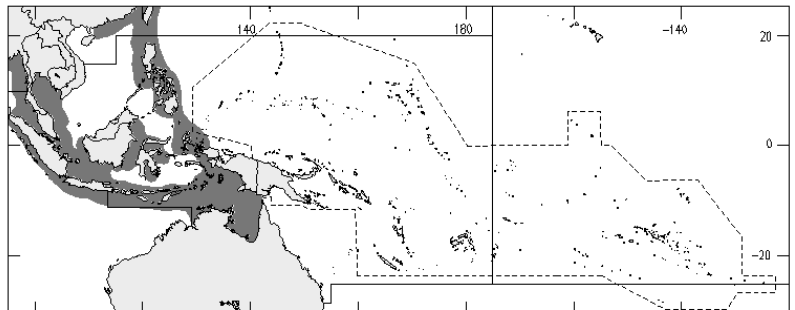
(after Norman, 1934)

Diagnostic characters: Body ovoid, rather well compressed, its depth 2 to 2.1 times in standard length. Head length 3 to 3.3 times in standard length; upper profile of head with deep notch in front of upper eye; a line connecting base of first dorsal-fin ray and posterior nostril on eyed side crosses maxilla. Snout slightly protruded, 1.1 to 1.6 times eye diameter. Upper-eye diameter 4.3 to 5.6 times in head length. Maxilla extending to below or beyond middle of lower eye; upper-jaw length 2.2 to 2.4 times in head length; **teeth in upper jaw small and close-set with 3 or 4 pairs of canines anteriorly**, teeth in lower jaw stronger and more widely spaced than those in upper jaw. **Gill rakers pointed and rather short, 3 to 6 on upper limb of first gill arch, 9 to 13 on lower limb**. Origin of dorsal fin before upper eye and just before anterior nostril on blind side; dorsal fin with 68 to 72 soft rays; anal fin with 52 to 55 soft rays; pectoral fin on eyed side with 12 or 13 rays. Scales ctenoid on eyed side, mostly cycloid on blind side, but sometimes with some ctenoid scales; lateral-line scales 74 to 79; lateral line curved above pectoral fins, supratemporal branch extending to near base of eighth dorsal-fin ray. Vertebrae 10 + 23-25. **Colour:** body uniformly brownish, **2 ocelli above and below lateral line and 1 ocellus on posterior third of straight section of lateral line**; many indistinct rings scattered on body and median fins.

Size: Maximum standard length 20 cm, commonly between 10 and 15 cm.

Habitat, biology, and fisheries: Inhabits rather deep waters (80 to 100 m) on mud and sand bottoms of continental shelf. Feeds on small bottom-living animals. Caught mainly with bottom trawls. Marketed fresh and salt-dried.

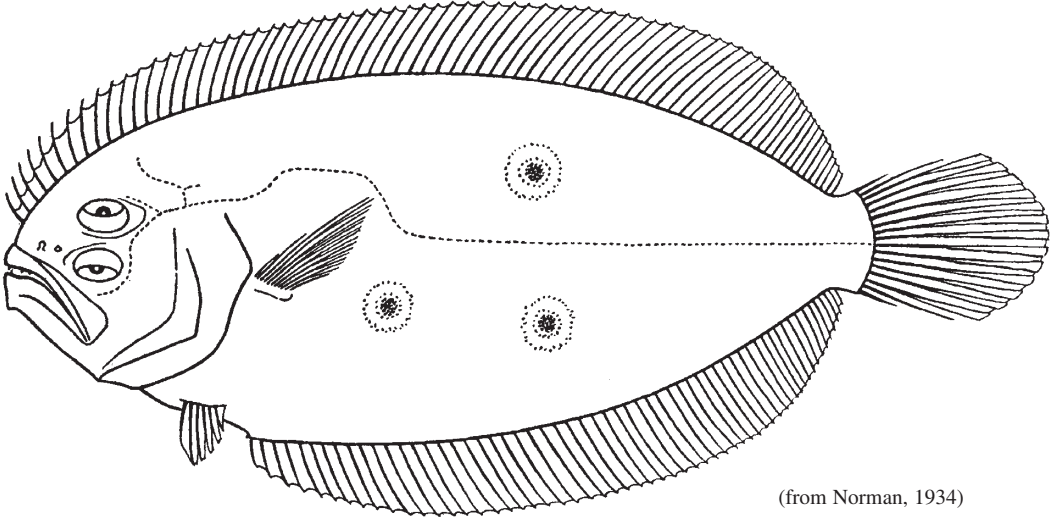
Distribution: Known from the eastern Indian Ocean, throughout the Indo-Australian Archipelago, to northern South China Sea.



Pseudorhombus spinosus McCulloch, 1914

Frequent synonyms / misidentifications: None / None.

FAO names: En - Spiny flounder.



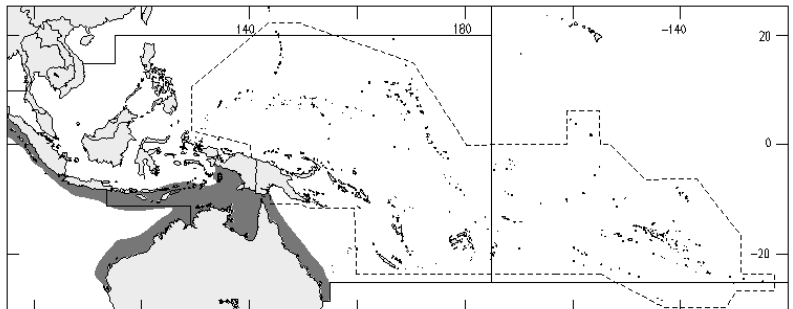
(from Norman, 1934)

Diagnostic characters: Body elliptical, its depth 2.3 to 2.7 times in standard length. Head length 3.3 to 3.6 times in standard length; **upper profile of head round, without notch; a line connecting base of first dorsal-fin ray and posterior nostril on eyed side passes behind posterior end of maxilla.** Snout rather protruded, 1 to 1.3 times of upper-eye diameter. Upper-eye diameter 4.2 to 4.6 times in head length. Maxilla extending almost below posterior margin of lower eye; upper-jaw length 2.1 to 2.3 times in head length; teeth in upper jaw rather small, enlarged anteriorly, teeth in lower jaw larger than those of upper jaw, enlarged anteriorly. **Gill rakers palmate, as broad as long, 4 to 6 on upper limb of first gill arch, 9 or 10 on lower limb.** Origin of dorsal fin before upper eye and before anterior nostril on blind side; dorsal fin with 72 to 76 soft rays; anal fin with 55 to 57 soft rays; pectoral fin on eyed side 10 to 12 rays. Scales feebly ctenoid or cycloid on eyed side, cycloid on blind side; lateral-line scales 74 to 83; lateral line curved above pectoral fins, supratemporal branch not extending to base of dorsal fin. Vertebrae 10 + 24-25. **Colour:** body pale brownish, **1 ocellus above and 2 ocelli below lateral line;** many darker spots and rings on body and median fins.

Size: Maximum standard length 30 cm.

Habitat, biology, and fisheries: Inhabits shallow (about 20 m) mud and sand bottoms of the continental shelf. Feeds on small bottom-living animals. Caught with bottom trawls. Marketed mostly fresh.

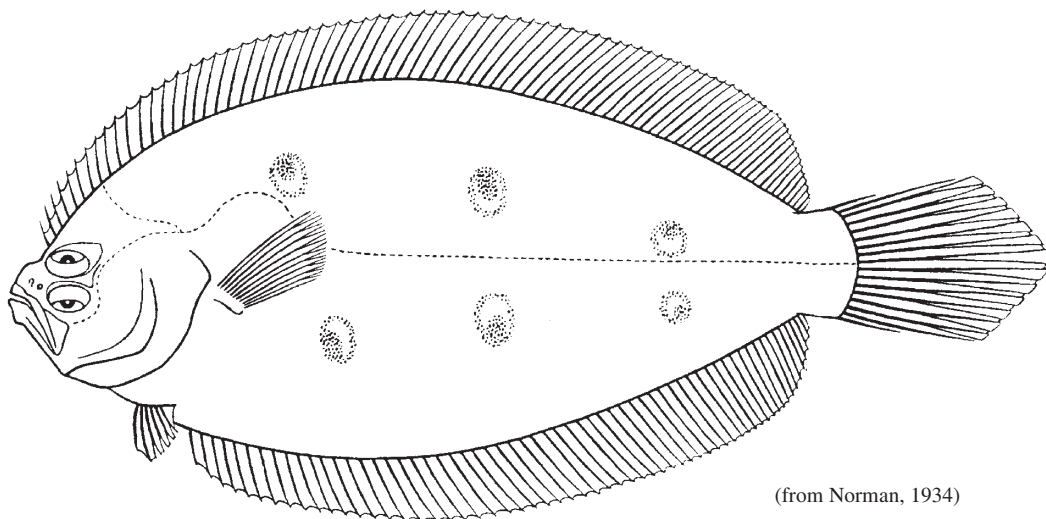
Distribution: Known from Western Australia to southern Queensland.



Pseudorhombus tenuirastrum (Waite, 1899)

Frequent synonyms / misidentifications: None / None.

FAO names: En - Deepwater flounder.



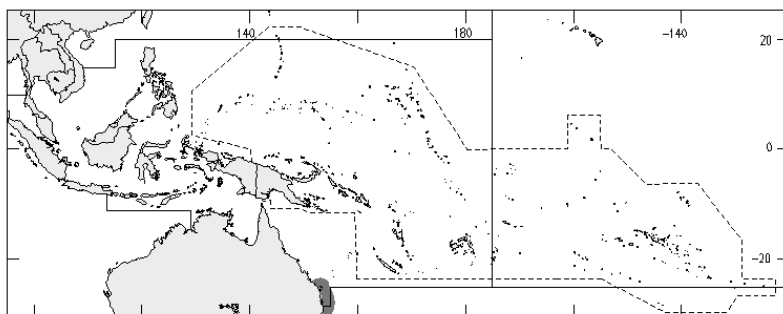
(from Norman, 1934)

Diagnostic characters: Body elliptical, its depth 2.1 to 2.3 times in standard length. Head length 4.1 to 4.4 times in standard length; upper profile of head with shallow notch in front of upper eye. Snout slightly protruded, shorter than eye diameter, upper-eye diameter 3.8 to 5.2 times in head length. Maxilla extending almost below middle of lower eye; **upper-jaw length 3.9 to 4.6 times in head length; teeth in both jaws small, close-set, no enlarged canines. Gill rakers slender and rather long, 5 or 6 on upper limb of first gill arch, 11 to 14 on lower limb.** Origin of dorsal fin before upper eye and before posterior nostril on blind side; dorsal fin with 74 to 80 soft rays; anal fin with 58 to 61 soft rays; pectoral fin on eyed side with 11 or 12 rays. **Scales usually cycloid on both sides, but sometimes weakly ctenoid on anterior part of body on eyed side;** lateral-line scales 71 to 80; lateral line curved above pectoral fins, supratemporal branch reaching base of eighth or ninth dorsal-fin rays. **Colour:** body brownish with **3 ocelli above and below lateral line, and small dark rings and blotches scattered on body and median fins.**

Size: Maximum standard length 25 cm.

Habitat, biology, and fisheries: Inhabits shallow water (10 to 20 m) on sand and mud bottoms. Feeds on small bottom-living animals. Caught mainly with prawn and bottom trawls. Marketed mostly fresh.

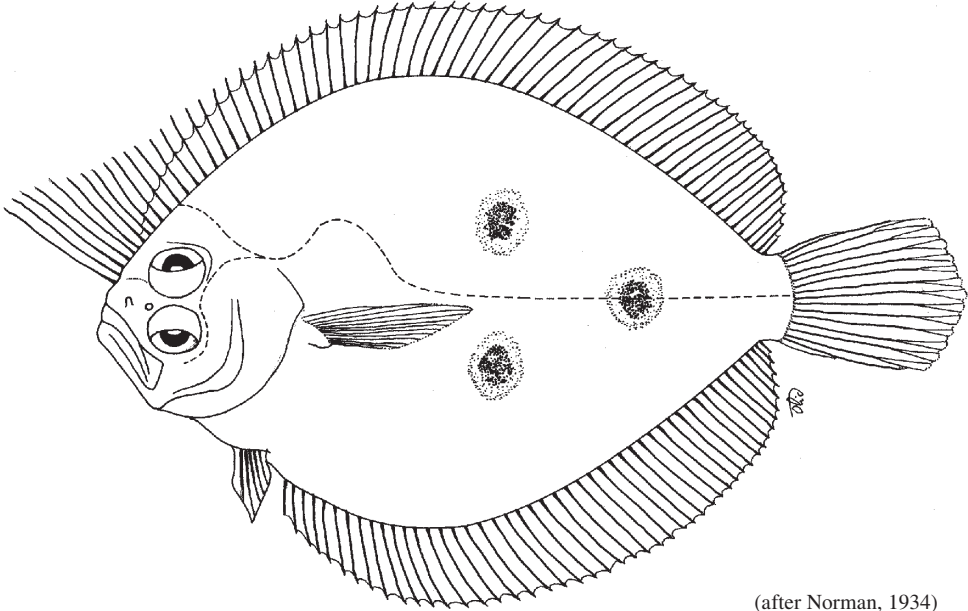
Distribution: Known from southeastern Australia northward to southern Queensland.



Pseudorhombus triocellatus (Schneider, 1801)

Frequent synonyms / misidentifications: None / None.

FAO names: En - Threespotted flounder; Fr - Rite à trois taches; Sp - Lenguado de tres manchas.



(after Norman, 1934)

Diagnostic characters: Body deeply ovoid, its depth 1.5 to 1.8 times in standard length. Head length 3.3 to 3.5 times in standard length; upper profile of head without distinct notch in front of upper eye. Snout short, as long as eye diameter. Upper-eye diameter 3.3 to 4 times in head length. Maxilla extending to below near middle of lower eye; upper-jaw length 2.3 times in head length; teeth in both jaws small, not enlarged anteriorly. Gill rakers pointed and slender, 20 to 25 on lower limb of first gill arch. Origin of dorsal fin before upper eye and a little before anterior nostril on blind side; **anterior ray of dorsal fin prolonged and free from fin membrane**; dorsal fin with 65 to 70 soft rays; anal fin with 49 to 52 soft rays; pectoral fin on eyed side with 11 or 12 rays. Scales ctenoid on eyed side, cycloid on blind side; lateral-line scales 63 to 69; lateral line curved above pectoral fins, supratemporal branch reaching to base of tenth to thirteenth dorsal-fin rays. Vertebrae 10 + 24-25. **Colour:** body brownish, **with 1 ocellus above and below lateral line and 1 ocellus on posterior third of straight section of lateral line**; many indistinct spots and blotches on body.

Size: Maximum standard length 15 cm, commonly to 10 cm.

Habitat, biology, and fisheries: Inhabits shallow waters on mud and sand bottoms of the continental shelf. Feeds on small bottom-living animals. Caught with bottom trawls. Marketed fresh and salted-dried.

Distribution: Known from Bombay throughout the Indo-Australian Archipelago to northwestern Australia.

