FAO SPECIES IDENTIFICATION SHEETS
FOR FISHERY PURPOSES

EASTERN INDIAN OCEAN Fishing Area 57
and WESTERN CENTRAL PACIFIC Fishing Area 71

VOLUME III

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 1974

FAO SPECIES IDENTIFICATION SHEETS
FOR FISHERY PURPOSES

EASTERN INDIAN OCEAN (Fishing Area 57)

and

WESTERN CENTRAL PACIFIC (Fishing Area 71)

Compiled by the Fishery Resources and Environment Division, FAO

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VOLUME III

- Bony Fishes: Families from M to S (in part)

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 1974

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(fishing area 57) and Western Central
Pacific (fishing area 71). Volume 3

ISW, ISEW. Teleostei. Identification
sheets - taxonomy, geographic distribution,
fisheries, vernacular names.

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VOLUME III

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M

MEGAL

1974

FAO SPECIES IDENTIFICATION SHEETS

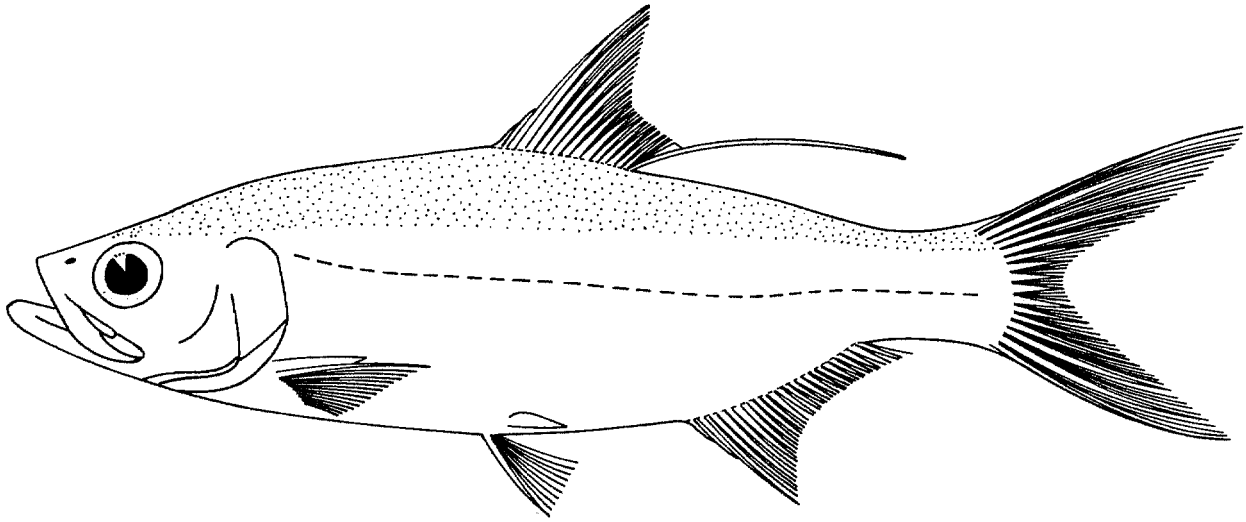
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

MEGALOPIDAE

Tarpons

Moderately deep-bodied, fusiform fishes, *resembling Clupeidae* (herrings) *but possessing a lateral line and lacking scutes along belly.* A single dorsal fin, with unbranched rays soft and *last dorsal ray filamentous;* anal fin origin set a little behind last dorsal ray. *Bony gular plate between arms of lower, jaw.* Pseudobranch absent (gill-like structure on inner face of gill cover). *Scales large;* lateral line present, with up to 40 scales.

Colour: back blue/green, flanks silvery.



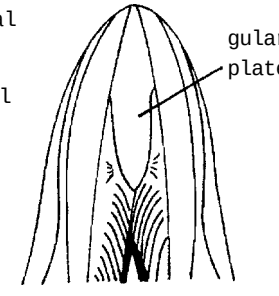
SIMILAR FAMILIES OCCURRING IN THE AREA:

Clupeidae: usually have sharp keel of scutes along belly; also, no lateral Line and no gular plate.

Elopidae: have smaller scales (about 100 in lateral line) and last dorsal in ray not filamentous.

Chanidae: last dorsal fin ray not filamentous.

Albulidae: last dorsal fin ray not filamentous; also, snout projecting, mouth inferior.



Megalopidae, Elopidae
underside of head

Key to Genera

Megalops only (*Tarpon* an Atlantic genus)

List of Species occurring in the Area

(Code numbers are given for those species
for which Identification Sheets are included)

Megalops cyprinoides MEGAL Megal 1

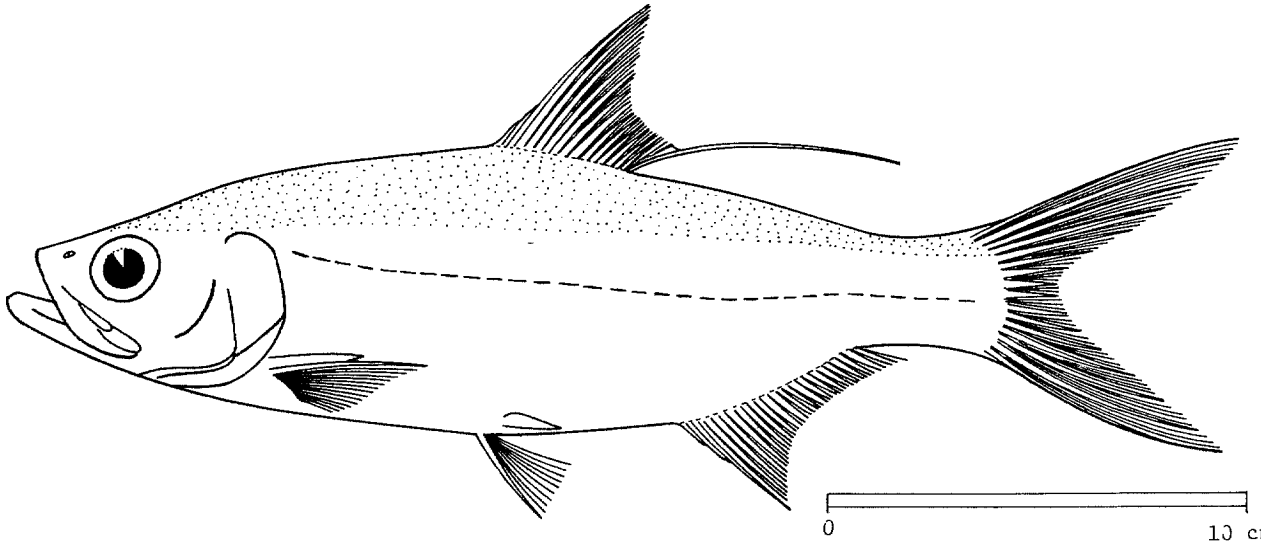
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MEGALOPIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Megalops cyprinoides (Broussonet, 1782)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Indo-Pacific tarpon
Fr
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

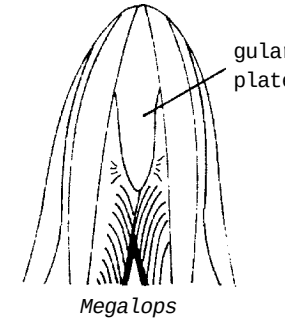
Body fusiform, somewhat compressed, *with smooth, unkeeled belly. Single dorsal fin, the last ray a long filament;* anal fin origin behind base of last dorsal ray. Upper jaw reaching almost to hind border of eye; lower jaw projecting slightly. *Gular plate present between arms of lower jaw. Branchiostegal rays* 26 to 27. Pseudobranch absent (gill-like structure on inner face of gill cover). Scales present, large; lateral line with 30 to 40 scales.

Colour: back blue/green, flanks silvery; lateral line golden.

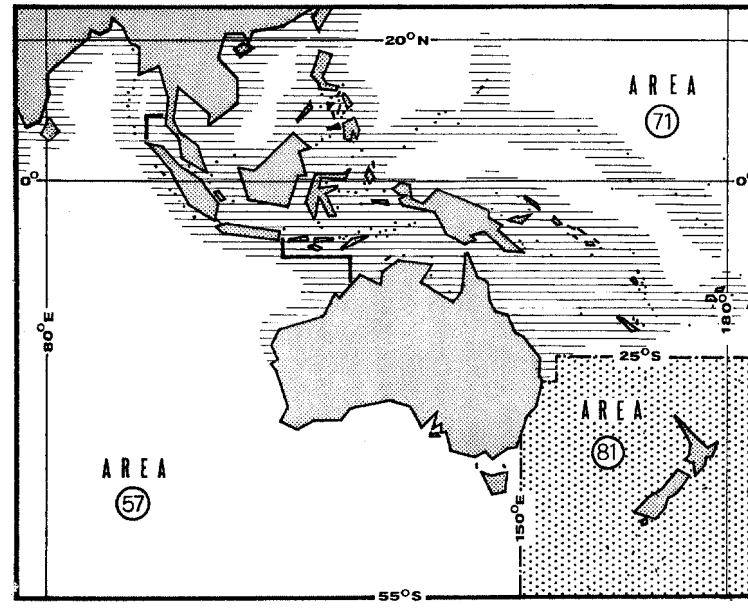
DIFFERENTIAL CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Species of Clupeidae: lateral line and gular plate absent, but scutes along belly in most species.

Elops machnata: no filamentous last dorsal ray and much smaller scales (about 100 in lateral series; no more than 40 in *Megalops cyprinoides).*



Megalops



SIZE:

Maximum: 55 cm; common: 25 to 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout whole of northern part of area, southward to tropical waters of Australia; also, westward to East Africa and eastward to Hawaii.

A coastal pelagic species.

PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with gill nets and trawls.

Marketed usually fresh or dried-salted.

MUGIL

1974

FAD SPECIES IDENTIFICATION SHEETS

FAMILY: MUGILIDAE

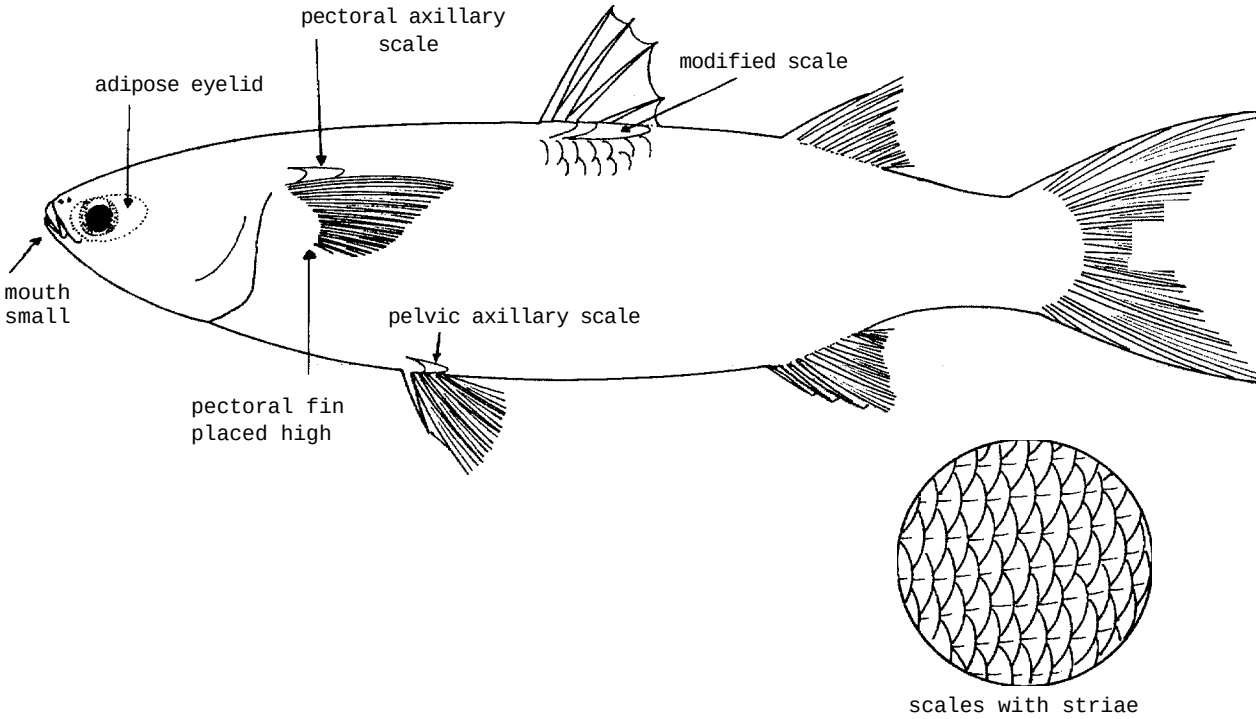
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

MUGILIDAE

Grey mullets

Elongate fishes, usually with *broad, flattened head,* blunt snout and cylindrical or little compressed body. *Mouth rather small, terminal or inferior;* premaxillae protractile; teeth small, feeble, hidden or absent. Eyes often partly covered by fatty tissue (adipose eyelid). No *lateral line. 2 short dorsal fins, the first with 4 slender spines; pectoral fins set rather high on body;* pelvic fin base about equidistant between pectoral fin base and origin of first dorsal fin; 3 spines in anal fin; caudal fin moderately forked, emarginate or truncate. Scales large or moderate, often with one or more striae to give appearance of longitudinal streaks down sides; modified scales may be present below first dorsal fin and above pectoral and pelvic fins (axillary scales).

Colour: in life, blue/green, green or olive on back, silvery on sides and belly, often with 3 to 9 longitudinal streaks on back, sides and belly; fins hyaline or dusky.



SIMILAR FAMILIES OCCURRING IN THE AREA:

Atherinidae: have silvery stripe along sides, larger eyes and soft anal fin rays usually more than 10 (usually less than 10 in Mugilidae).

Key to Genera

1 a. Fleshy lobes between arms of lower jaw (Fig. 1) ..... *Cestraeus*

1 b. No such fleshy lobes (Fig. 2)

2 a. Spine on gill cover above pectoral fin base ..... *Sicamugil*

2 b. No spine on gill cover

3 a. Head concave between eyes, the latter projecting above this level; anterior nostril at level of eye centre or lower ..... *Rhinomugil*

3 b. Head concave between eyes, the latter not projecting above this level; anterior nostril above level of eye centre

4 a. Lower third of upper lip bearing enlarged papillae or crenellations

5 a. Preorbital deeply notched (Fig. 3); lips with a single row of horny projections ..... *Oedalechilus*

5 b. Preorbital not or but little notched (Fig. 4); lips with a multiserial row of papillae

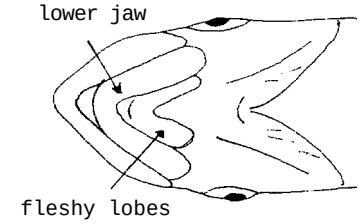
6 a. Scales cycloid but hind margin with denticulations; large pectoral axillary scale ..... *Crenimugil*

6 b. Scales either ctenoid or cycloid but without denticulations on hind margin; pectoral axillary scale rudimentary or absent ..... *Chelon*

4 b. Lower third of upper lip without enlarged papillae or crenellations

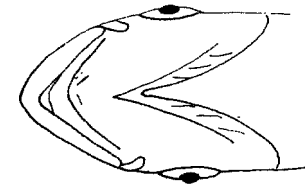
7 a. Lower lip thick; small symphysial knob at front of lower jaw ..... *Aldrichetta*

7 b. Lower lip thin; large symphysial knob at front of lower jaw



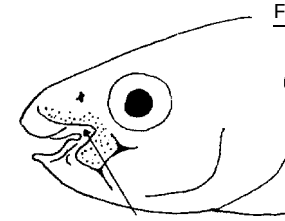
Cestraeus
underside of head

Fig. 1



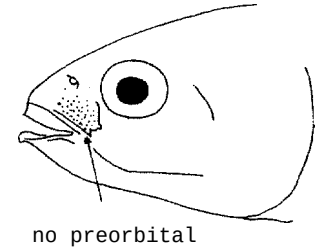
Liza
underside of head

Fig. 2



deep notch in preorbital
Oedalechilus

Fig. 3

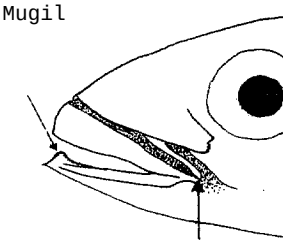


no preorbital notch

Fig. 4

8 a. Hind tip of maxilla not curved down below tip of pre maxilla (Fig. 5); adipose eyelid to pupil in adults ..... Mugil

8 b. Hind tip of maxilla curved down below tip of premaxilla (Fig. 6); adipose eyelid absent or to iris only

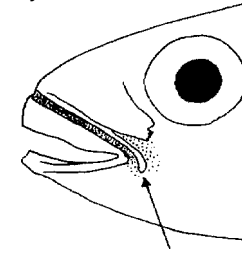


maxilla tip
Mugil

Fig. 5

9 a. Teeth present on vomer and palatines (roof of mouth); maxilla tip not greatly curved downward ..... Myxus

9 b. Teeth absent on vomer and palatines (roof of mouth); maxilla tip strongly curved down at corner of mouth (Fig. 6)



maxilla tip
Liza

Fig. 6

10 a. Scales ctenoid or cycloid but with no digitations on hind margin; tip of maxilla apparent when mouth closed ..... Liza

10 b. Scales cycloid, hind margin with digitations; maxilla tip hidden beneath tendon .. Valamugil

List of Species occurring in the Area
(Code numbers are given for those species for which Identification Sheets are included)

Aldrichetta forsteri	MUGIL Aldr 1	*Myxus elongatus*	MUGIL Myx 1
		Myxus petardi	
Cestraeus oxyrhynchus			
Cestraeus plicatilis		*Oedalechilus labiosus*	
Crenimugil crenitabis		*Rhinomugit nasutus*	
Crenimugil heterocheilos		*Rhinomugil squamipinnis*	
Liza argentea	MUGIL Liza 1	*Sicamugil cascasia*	
Liza carinata		*Sicamugil hamiltoni*	
Liza macrolepis			
Liza melinoptera		*Valamugil buchanani*	
Liza parmata		*Valamugil cunnesius*	MUGIL Vala 1
Liza parsia		*Valamugil engeli*	
Liza subviridis	MUGIL Liza 2	*Valamugil georgii*	
Liza tade	MUGIL Liza 3	*Valamugil seheli*	MUGIL Vala 2
Liza vaigiensis	MUGIL Liza 4	*Valamugil speigleri*	MUGIL Vala 3
Mugil cephalus	MUGIL Mugil 1		

MUGIL Aldr 1

1974

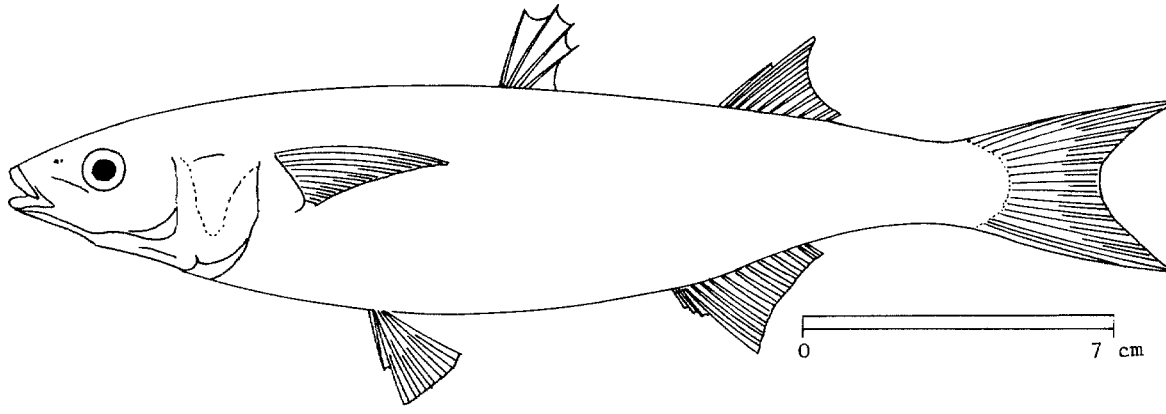
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: MUGILIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Aldrichetta forsteri (Valenciennes, 1836)

SYNONYMS STILL IN USE: *Agonostomus forsteri:* Waite, 1921



VERNACULAR NAMES:

FAO: En - Yellow eye grey mullet
Fr -
Sp -

NATIONAL:

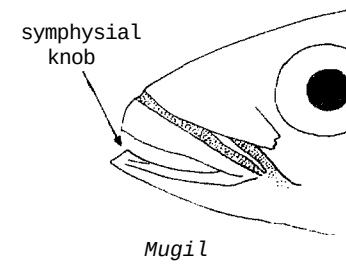
DISTINCTIVE CHARACTERS:

Body slender, elongate, head somewhat convex on top, its length 23 to 267 of standard length; *no fatty (adipose) tissue on head; lips thick,* posterior tip of upper jaw not visible when mouth closed; several rows of teeth in both lips, sessile in jaws. Origin of first dorsal fin nearer to caudal fin base than to snout tip. Second dorsal fin origin behind vertical from origin of anal fin; pectoral fins of moderate length, 78 to 807 of head length, with no axillary scale; caudal fin forked. *Scales in lateral series 58 to 64.*

Colour: olive/brown on back, silvery to yellowish white on sides and belly; fins with brown margins; iris yellow.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

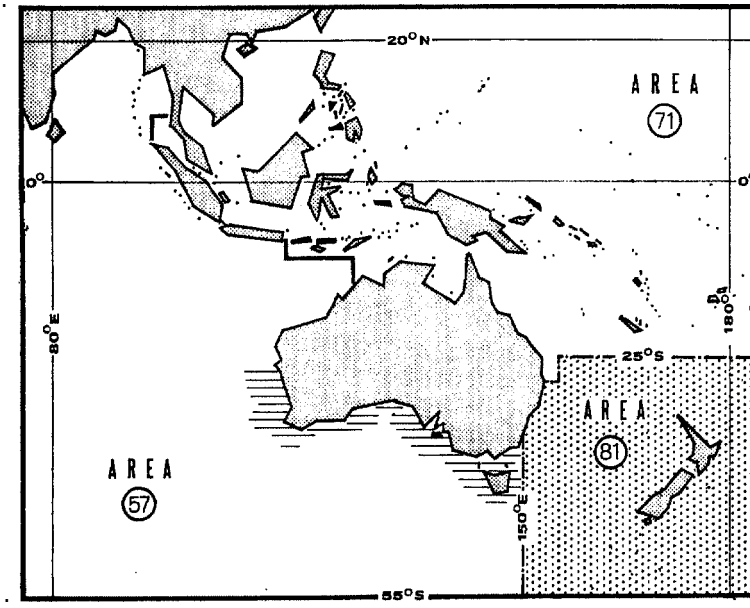
All other mugilid species in area: lower lip thin, with large symphysial knob at front of lower jaw; also, fewer scales (less than 58 in lateral series).



Mugil

SIZE:

Maximum: 40 cm; common: 15 to 20 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Southern coasts of Australia, from Shark Bay on the west coast to southern New South Wales on the east; also, extending southward to New Zealand.

Shoals occur in shallow estuaries and close inshore, spawning takes place in the sea.

Feeds on small crustaceans and molluscs, as well as filamentous algae and diatoms.

PRESENT FISHING GROUNDS:

Estuaries, lagoons and some sea beaches.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

The total catch in 1972 was 250 tons (Australia only).

Caught with gill nets and beach lines.

Marketed fresh.

MUGIL Liza 1

1974

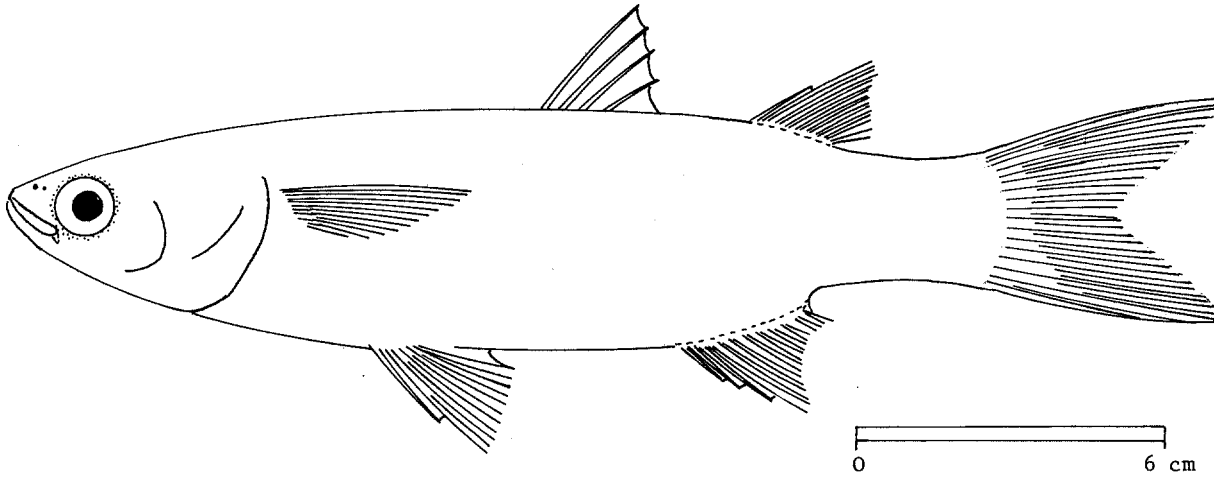
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MUGILIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Liza argentea (*Quoy* & Gaimard, 1824)

SYNONYMS STILL IN USE: *Gracilimugil ramsayi* Whitley, 1941



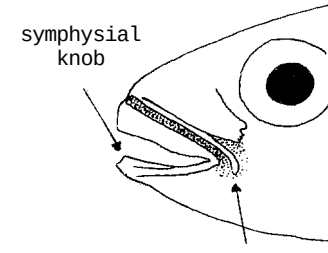
VERNACULAR NAMES:

FAO: En - Ramsay's grey mullet
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

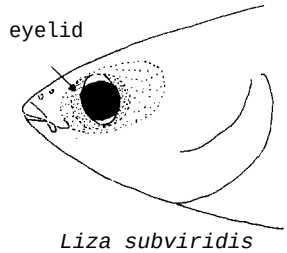
Body slender, head flattened on top but relatively narrow, its length 26 to 28% of standard length; *fatty (adipose) tissue only a rim around eye;* lips thin; a large symphysial knob at front of lower jaw; *posterior tip of upper jaw strongly curved dorm and still visible when mouth closed;* a single row of fine teeth in both jaws. Origin of first dorsal fin nearer to caudal fin base than to snout tip; origin of second dorsal at vertical from mid-way along anal fin base; *pectoral fins short, about 3/4 of head length, with no axillary scale;* anal fin with 10 soft rays; caudal fin deeply forked; scales in lateral series 35 to 38.



Liza

Colour: light brown on back, silvery on sides and belly; iris purple with gold flecks; a patch of bright gold at upper posterior corner of operculum.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

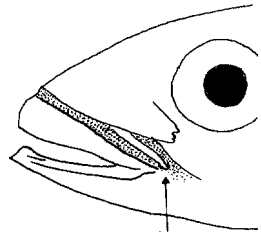


Liza subviridis

Liza vagiensis: caudal fin truncate, not forked.

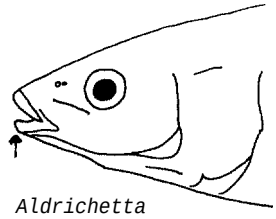
Liza subviridis, L. tade: adipose tissue covering eye except for pupil (only a rim in *L. argentea);* also, usually 9 soft anal fin rays.

Mugil species: adipose tissue covering eye except for pupil; also, maxilla not curving down behind mouth corner.


maxilla tip
Mugil

Valamugil species: longer pectoral fins (reaching to level of first dorsal fin).

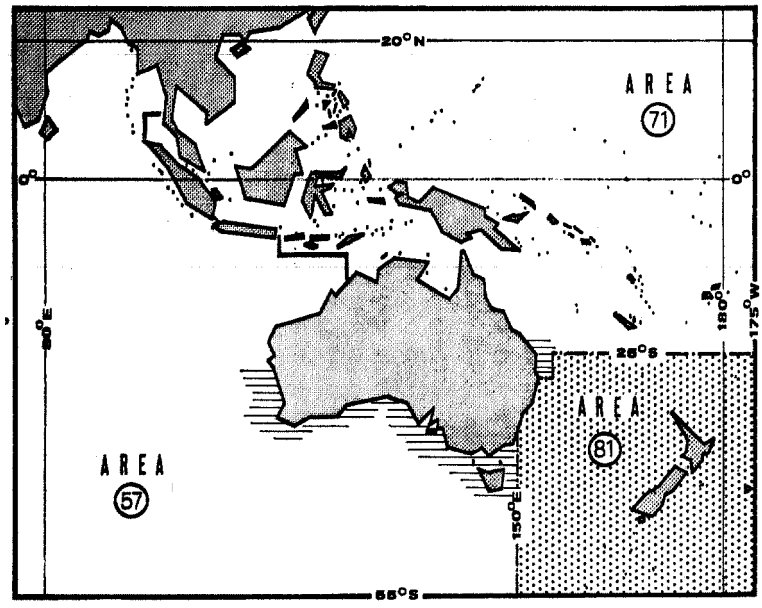
Aldrichetta species: lower lip thick, and only a small symphysial knob at front of lower jaw.


Aldrichetta

Myxus species: no adipose tissue around eye.

SIZE:

Maximum: 30 cm; common: 15 to 22 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Southern Australia, from mid-Queensland to Geraldton on west coast.

Schools occur in shallows, bogs and lower estuaries, and more saline lagoons. Spawning takes place in the sea.

Feeds on minute bottom-living organisms, including small crustaceans and filamentous algae.

PRESENT FISHING GROUNDS:

Shallow coastal waters, estuaries.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with gill nets and beach seines.

Marketed fresh and filleted.

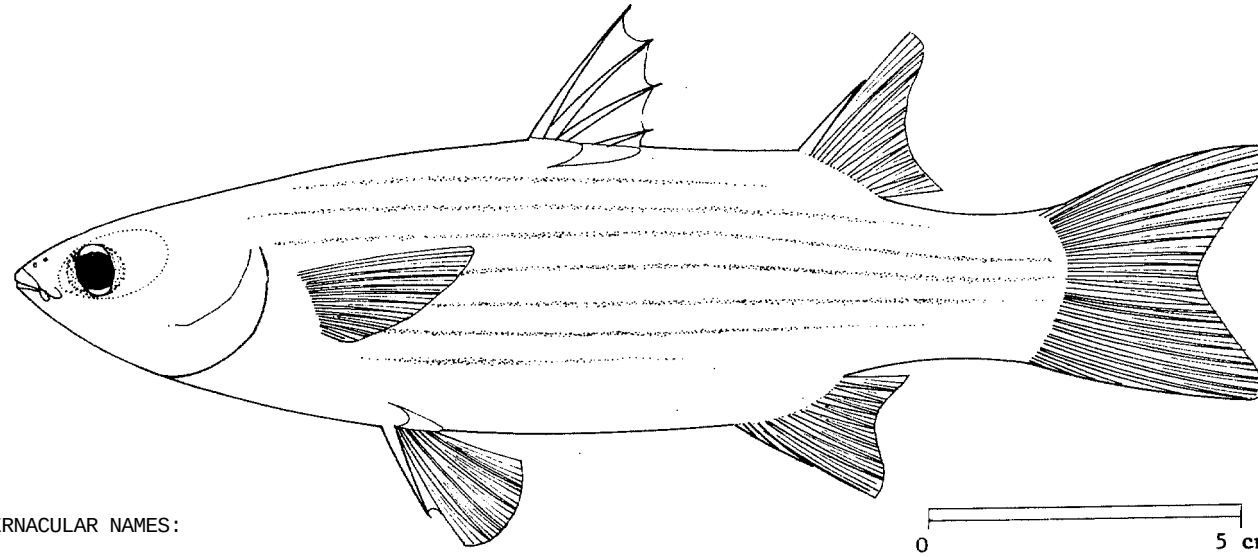
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MUGILIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Liza subviridis (Valenciennes, 1836)

SYNONYMS STILL IN USE: *Mugil dussumieri* Valenciennes, 1836
Mugil javanicus Bleeker, 1852
Mugil sundanensis Bleeker, 1853



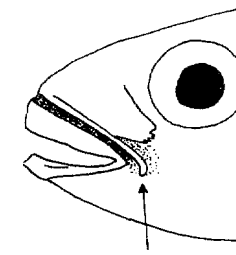
VERNACULAR NAMES:

FAO: En - Greenback grey mullet
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body rather stout, head broad and flattened on top, its length 23 to 25% of standard length; *fatty (adipose) tissue covering eye except for pupil.* Upper and lower lips thin; a large symphysial knob at front of lower jaw; *posterior tip of upper jaw strongly curved down and still visible when mouth closed;* several rows of teeth in upper lip, a single row in lower lip, the latter absent in adults. Origin of first dorsal fin nearer to snout tip than to caudal fin base; origin of second dorsal fin behind vertical from origin of anal fin; *pectoral fins very short, about 3/4 of head length, with no axillary scale;* caudal fin slightly forked. Scales in lateral series 30 to 32.



maxilla tip

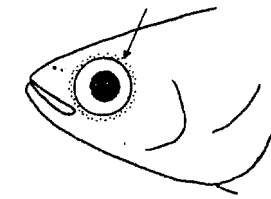
Liza

Colour: back green/grey, flanks and belly silvery; often 3 to 7 blackish longitudinal stripes along flanks; pectoral fins not blackish.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Liza vaigiensis: pectoral fins as long as head and blackish; scales in lateral series 24 to 27 (30 to 32 in *L. subviridis);* also, caudal fin almost truncate (slightly forked in *L. subviridis).*

Liza tade: head very short (19 to 23% of standard length; 23 to 25% in *L. subviridis)* and with distinctive bulge at sides; also, caudal fin forked.



Liza argentea

Liza argentea, L. vaigiensis and *Valamugil seheli:* adipose tissue only a rim around eye.

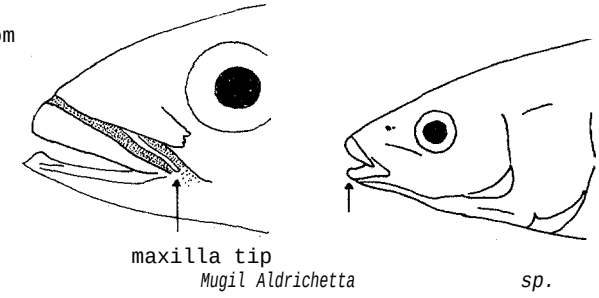
Liza parsia: corner of mouth reaches to vertical from posterior nostril (to vertical from anterior nostril in *L. subviridis).*

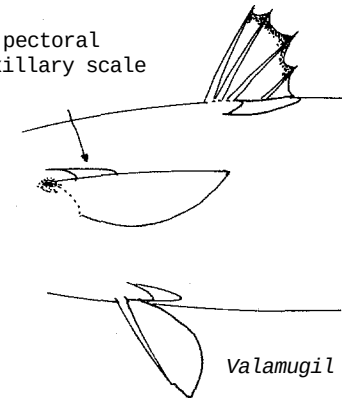
Mugil species: maxilla not curved down and hidden when mouth closed.

Aldrichetta species: lower lip thick, and only a small symphysial knob at front of lower jaw.

Myxus species: no adipose tissue around eye.

Other mugilid species: large axillary scale usually present above pectoral fin.





Valamugil speigleri

SIZE:

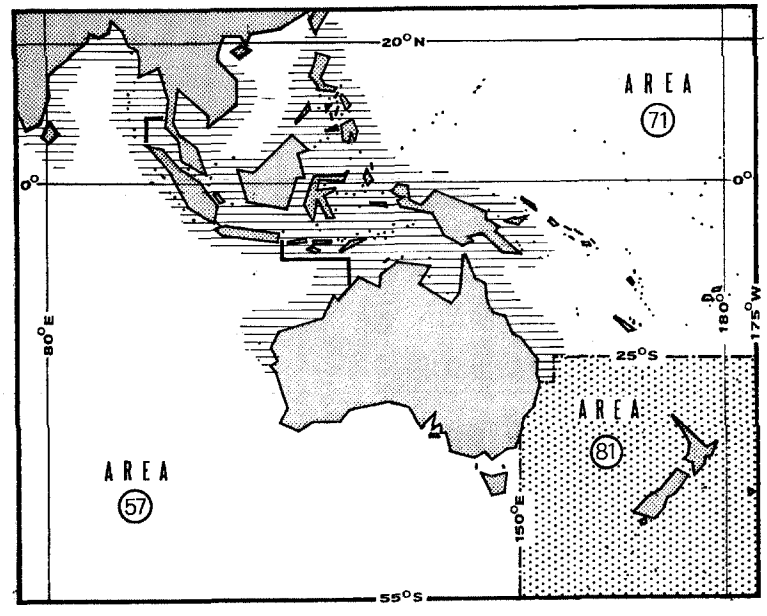
Maximum: 40 cm; common: 25 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area and southward to northern coasts of Australia (recorded as *Liza planiceps);* also, westward to Karachi.

Schools occur in shallow coastal waters and enter lagoons and estuaries to feed, juveniles often occurring in rice fields and mangrove swamps. Spawning takes place in the sea.

Feeds on minute bottom-living organisms and on organic matter contained in mud and sand; perhaps also on floating algae.



PRESENT FISHING GROUNDS:

Shallow coastal waters, estuaries, and mangrove swamps.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified grey mullets in 1972 was:

area 57 (Eastern Indian Ocean): 1 700 tons (Australia: 1 200 tons)
area 71 (Western Central Pacific): 2 300 tons (Australia: 1 500 tons)

Caught with gill nets, beach seines and cast nets.

Marketed fresh and salted; also boiled (Thailand) and canned or frozen (Australia). The roe is often marketed as a salted product.

MUGIL Liza 3

1974

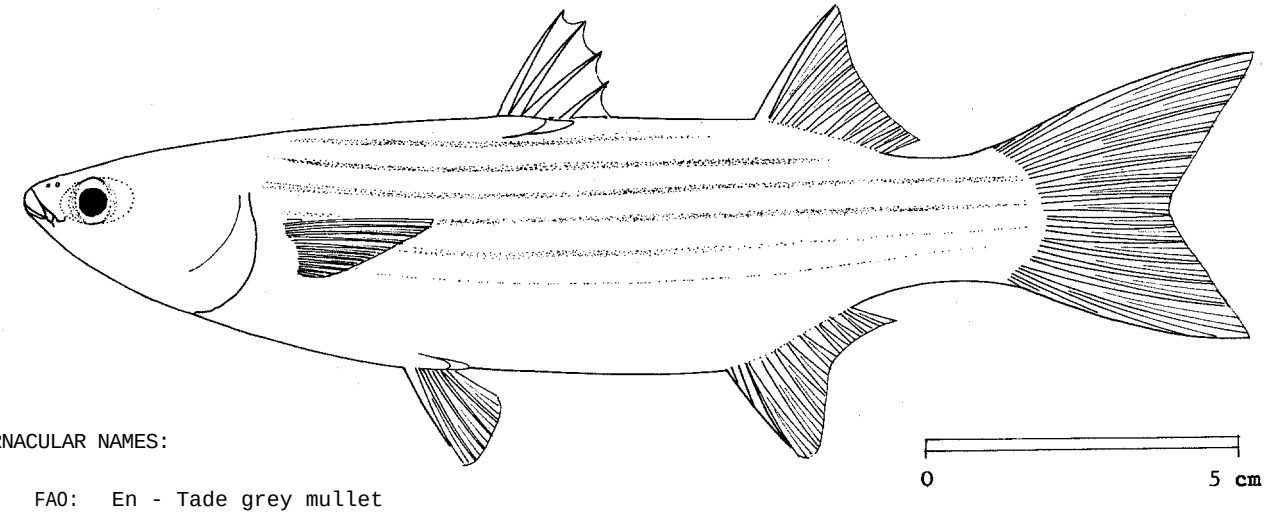
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MUGILIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Liza tade (Forsskål, 1775)

SYNONYMS STILL IN USE: *Mugil planiceps* Valenciennes, 1836



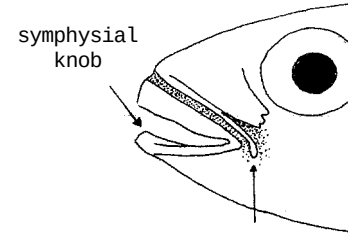
VERNACULAR NAMES:

FAO: En - Tade grey mullet
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body rather stout, head short, broad and flattened on top, its length 19 to 23% of standard length, *with distinctive bulge at sides; fatty (adipose) tissue covering eye except for pupil.* Upper and lower lips thin; a large symphysial knob at front of lower jaw; *posterior tip of upper jaw strongly curved down and still visible when mouth closed;* a row of fine straight teeth (and 4 to 8 rows of smaller teeth) on upper lip, a row of sparse cilia on lower lip. Origin of first dorsal fin nearer to tip of snout than to base of caudal fin. Origin of second dorsal fin behind vertical from origin of anal fin; *pectoral fins very short, 18 to 20% of standard length, about 3/4 of head length, with axillary scale very small or absent;* caudal fin forked. Scales in lateral series 31 to 33.



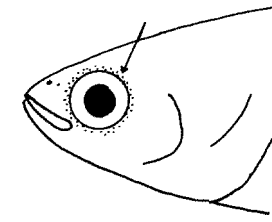
Liza

Colour: back olive, flanks and belly silvery; often 5 to 9 dark longitudinal stripes along flanks.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Liza subviridis: head longer (23 to 25% of standard length; 19 to 23% in *L. tade)* and without distinctive bulge at sides; also, caudal fin almost truncate.

Liza argentea, L. vaigiensis and *Valamugil seheli*: adipose tissue only a rim around eye; also, pectoral fins about equal to head length and blackish in *L. vaigiensis* (3/4 of head length in *L. tade).*



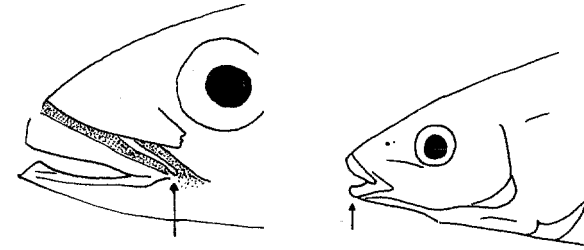
Liza argentea

Mugil species: maxilla not curved down and hidden when mouth closed.

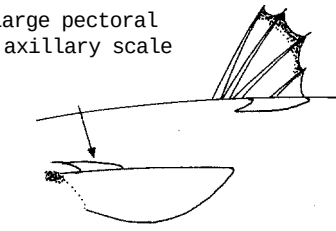
Aldrichetta species: lower lip thick, and only a small symphysial knob at front of lower jaw.

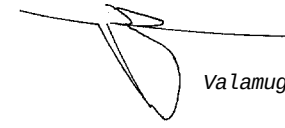
Myxus species: no adipose tissue around eye.

Other mugilid species: large axillary scale usually present above pectoral fin.



maxilla tip
Mugil Aldrichetta





Valamugil speigleri

SIZE:

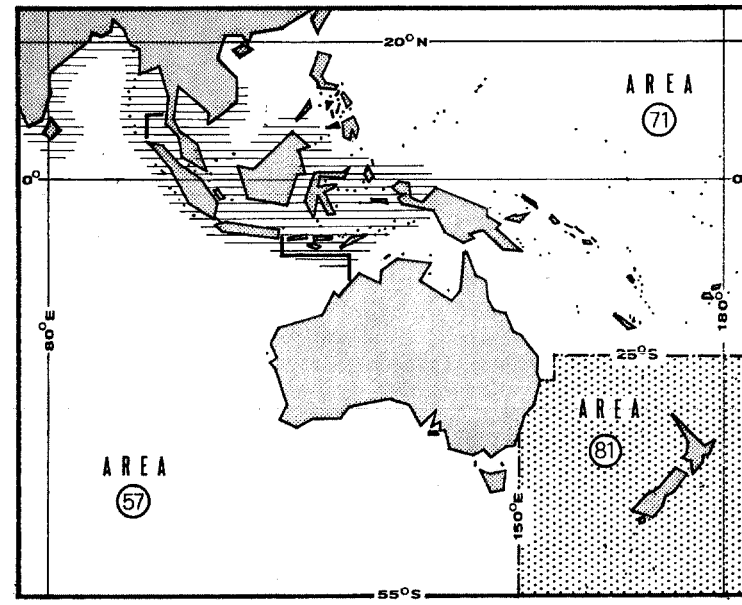
Maximum: 47 cm; common: 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area, but probably not from Australian coasts (previous records, as *Mugil planiceps,* refer to *Liza subviridis);* also, westward to Bombay.

Schools occur in shallow coastal waters and enter lagoons, estuaries and rivers to feed, the juveniles often occurring in rice fields and mangrove swamps. Spawning takes place in the sea.

Feeds on minute bottom-living organisms and on organic matter contained in mud and sand; perhaps also on floating algae.



PRESENT FISHING GROUNDS:

Shallow coastal waters, estuaries, and mouths of rivers.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified grey mullets in 1972 was:

area 57 (Eastern Indian Ocean): 1 700 tons (Australia: 1 200 tons)
area 71 (Western Central Pacific): 2 300 tons (Australia: 1 500 tons)

Caught with gill nets, beach seines and cast nets.

Marketed fresh and salted; also boiled (Thailand) and canned or frozen (Australia). The roe is often marketed as a salted product.

MUGIL Liza 4

1974

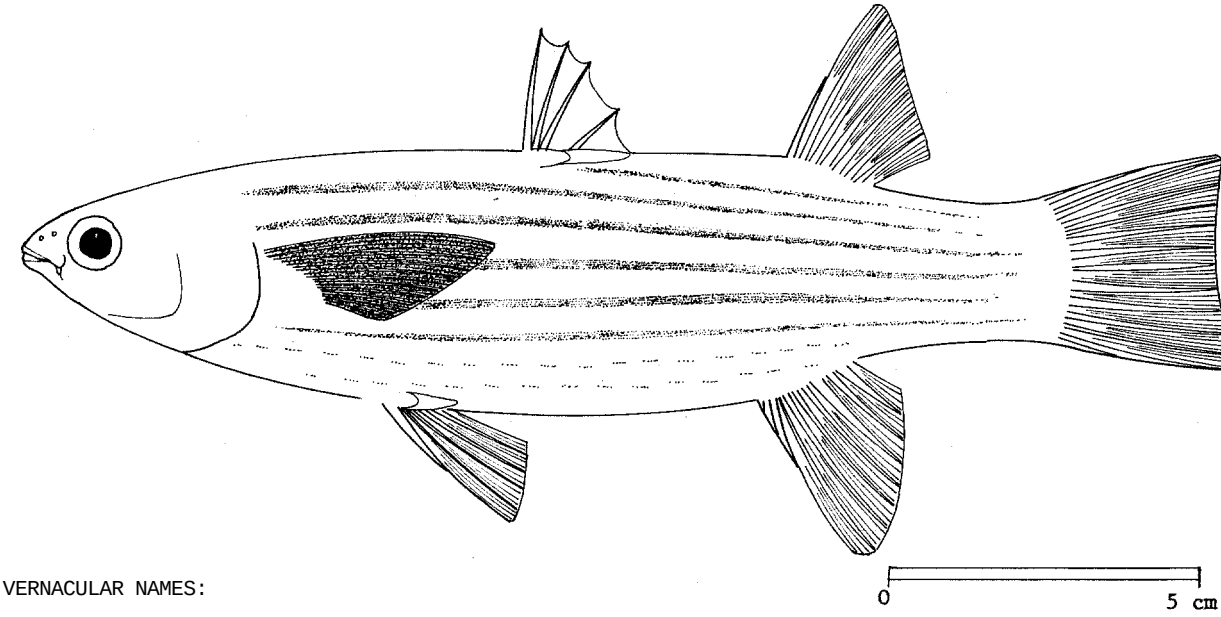
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: MUGILIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Liza vaigiensis (Quoy & Gaimard, 1824)

SYNONYMS STILL IN USE: *Mugil vaigiensis* Quoy & Gaimard, 1824



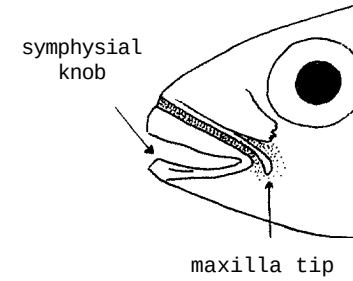
VERNACULAR NAMES:

FAO: En - Diamond-scaled grey mullet
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body rather stout, head broad and flattened on top, its length 24 to 27% of standard length; *fatty (adipose) tissue only around rim of eye.* Upper and lower lips thin; a large symphysial knob at front of lower jaw; *posterior tip of upper jaw strongly curved down and still visible when mouth closed;* adults without teeth, juveniles with sparse row of teeth in each lip. Origin of first dorsal fin nearer to base of caudal fin than to snout tip; origin of second dorsal fin behind vertical from origin of anal fin; *pectoral fins about equal to head length, with no axillary scale; caudal fin almost truncate.* Scales in lateral series 24 to 27.



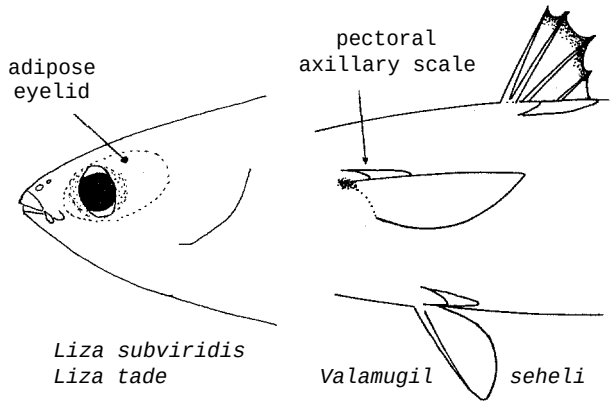
Liza

Colour: back dark green, flanks lighter, belly silvery; usually 6 longitudinal spotted bands along flanks, the second nd fifth the most conspicuous. *Pectoral fins blackish,* other ins with dusky margins.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Liza subviridis, L. Lade: adipose tissue covering eye except for pupil; pectoral fin 3/4 of head length and not blackish; scales in lateral series 30 to 33 (24 to 27 in *L. vaigiensis).*

Other mugilid species: caudal fin more or less forked and axillary scale usually present above pectoral fin.



SIZE:

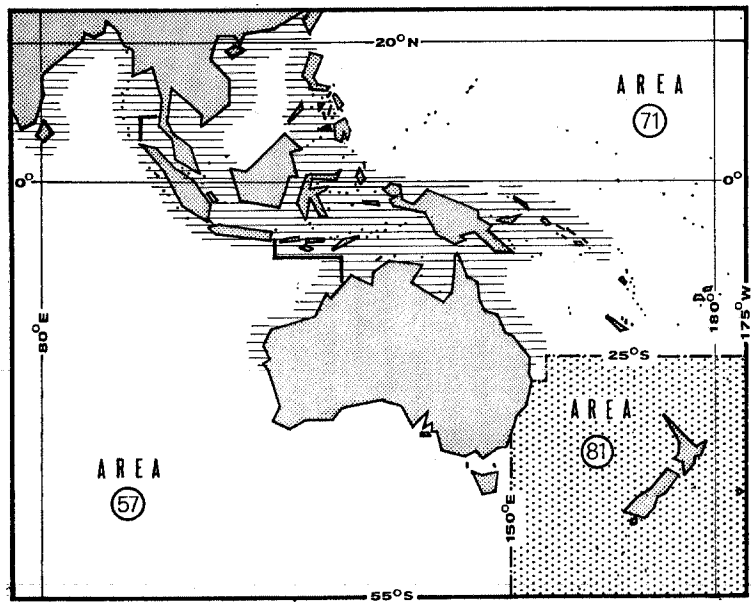
Maximum: 45 cm; common: 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area and southward to northern coasts of Australia; also, westward to South Africa and northward to Japan.

Schools occur in shallow coastal waters and enter lagoons, estuaries and rivers, the juveniles often occurring in rice fields and mangrove swamps. Spawning takes place in the sea.

Feeds on minute bottom-living organisms and on organic matter in mud and sand; perhaps also on floating algae.



PRESENT FISHING GROUNDS:

Shallow coastal waters, estuaries, and mouths of rivers.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified grey mullets in 1972 was:

area 57 (Eastern Indian Ocean): 1 700 tons (Australia: 1 200 tons)
area 71 (Western Central Pacific): 2 300 tons (Australia: 1 500 tons)

Caught with gill nets, beach seines and cast nets.

Marketed fresh and salted; also boiled (Thailand) and canned or frozen (Australia). The roe is often marketed as a salted product.

MUGIL Mugil 1

1974

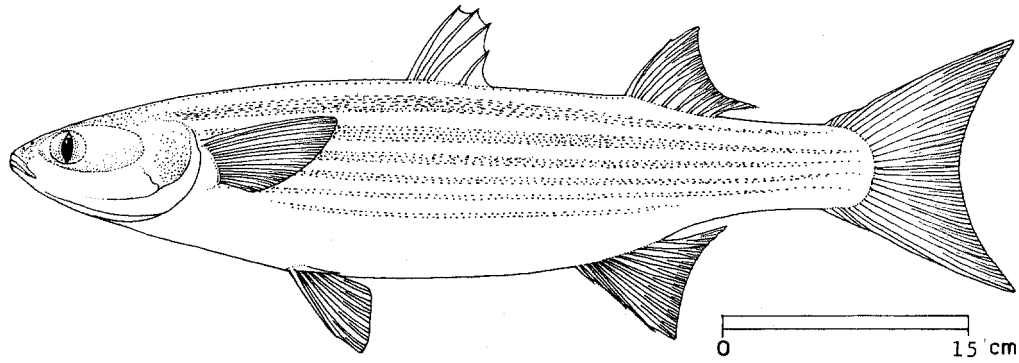
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MUGILIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Mugil cephalus Linnaeus, 1758

SYNONYMS STILL IN USE: *Mugil japonicus* Schlegel, 1845
Mugil galapagensis Ebeling, 1961



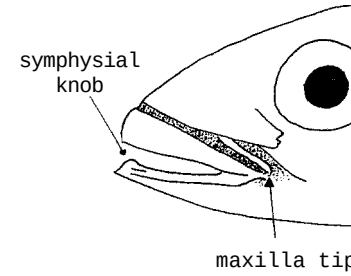
VERNACULAR NAMES:

FAO: En - Flathead grey mullet
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body rather stout, head broad and flattened on top, its length 27 to 29% of standard length; *fatty (adipose) tissue covering most of eye;* lips thin; a large symphysial knob at front of lower jaw; posterior tip of upper jaw not curved down and hidden when mouth closed; several rows of teeth in upper lip; one row or sometimes more in lower lip. Origin of first dorsal fin nearer to snout tip than to caudal fin base; origin of second dorsal fin behind vertical from origin of anal fin; *pectoral fins short, not reaching first dorsal fin origin, with an axillary scale; anal fin with 8 soft rays;* caudal fin forked. Scales in lateral series 38 to 42.



Mugil

Colour: olive green on back, silvery on sides shading into white below; 6 to 7 indistinct longitudinal brown bars on flanks.

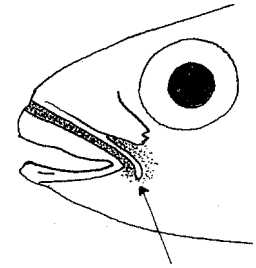
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Liza and Myxus species: adipose tissue only covering rim of eye or at most to iris border, no axillary pectoral scale, and maxilla curving down behind mouth corner; also, usually 9 to 11 soft anal rays (8 in *Mugil cephalus*, but 8 in *L. vaigiensis* as also in *Aldrichetta).*

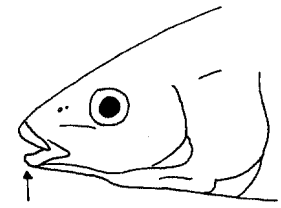
Valamugil species: longer pectoral fins (reaching to level of first dorsal fin).

Aldrichetta species: lower lip thick, and only a small *symphysial* knob at front of lower jaw.

Myxus species: no adipose tissue around eye.



Liza


Aldrichetta

SIZE:

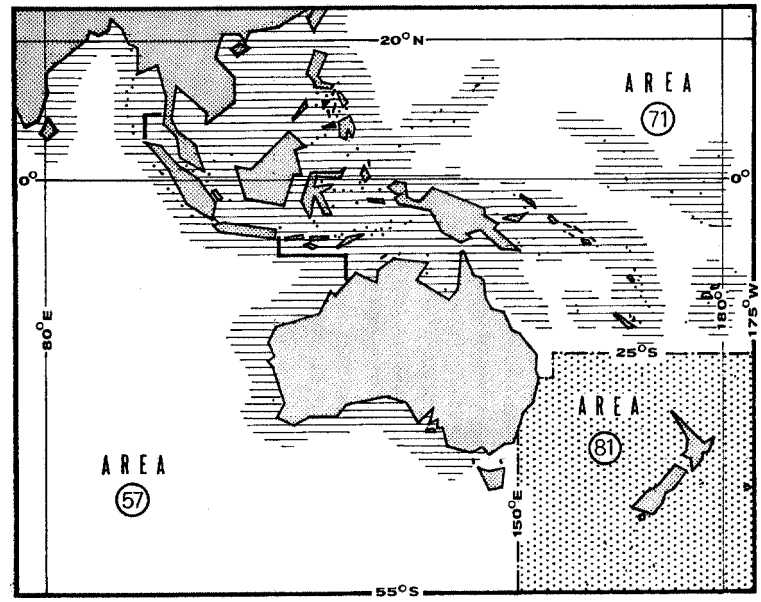
Maximum: 60 cm; common: 14 to 32 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout area but not common in tropical areas (especially Indo-Australian archipelago).

Schools enter fresh water and estuaries but spawning in the sea; commonly leaps from the water.

Feeds on microscopic organisms and organic detritus in bottom muds.



PRESENT FISHING GROUNDS:

Shallow estuaries and coastal lakes, as well as sea beaches on the migration to the spawning grounds.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics for this species are reported only by Australia. The Australian catch in 1972 was:

area 57 (Eastern Indian Ocean): 452 tons
area 71 (Western Central Pacific): 1 300 tons

Caught with gill nets, beach seines and shore-line traps.

Marketed fresh or sometimes frozen. Roe also sold fresh or smoked.

MUGIL Myx 1

1974

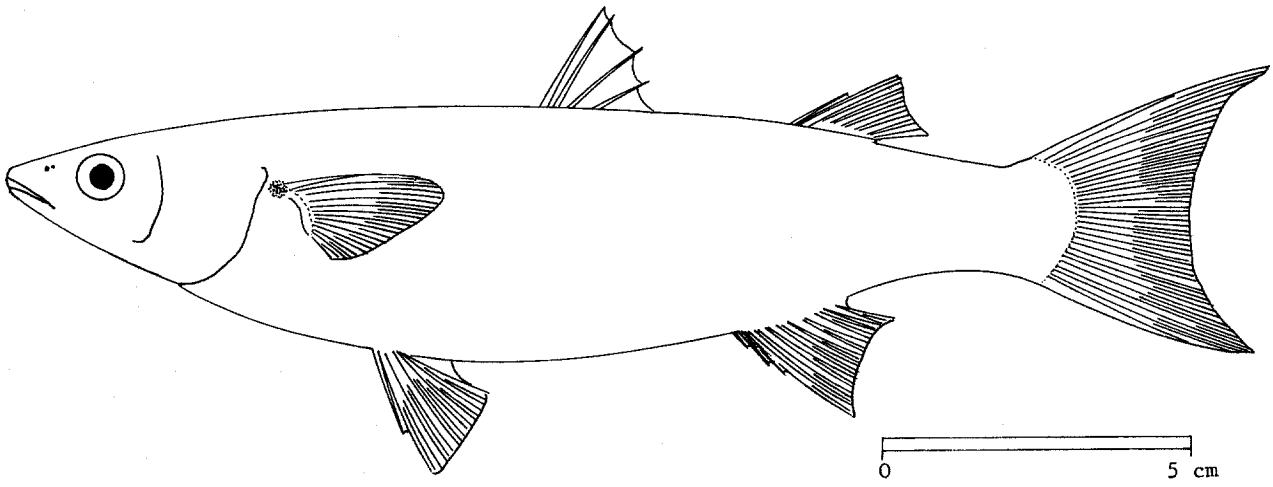
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MUGILIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Myxus elongatus (Günther, 1861)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Sand grey mullet
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body slender, head slightly convex and rather broad, its length 25 to 267 of standard length; *no fatty (adipose) tissue around eye;* lips thin; a large symphysial knob at front of lower jaw; hind tip of upper jaw hidden when mouth closed; *a single row of spatulate teeth in upper lip,* a marginal row in lower lip and also lateral patches near mouth corners. Origin of first dorsal fin nearer to caudal fin base than to snout tip; origin of second dorsal fin behind vertical from origin of anal fin; *pectoral fins very short,* less than 3/4 of head length, *with no axillary scale;* caudal fin deeply forked. Scales in lateral series 43 to 46.

Colour: olive green on back, silver on sides, white below; fins with dusky edges except anal fin which has white edge; iris yellow; a dark axillary spot at base of pectoral fins.

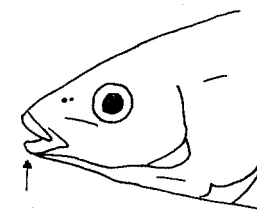
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Myxus petardi: ciliate teeth in upper lip (spatulate in *M. elongatus)* and more scales in lateral series (47 to 50; 43 to 46 in *M. elongatus*).

Liza and *Mugil* species: adipose tissue around at least rim of eye.

Valamugil species: longer pectoral fins (reaching to level of first dorsal fin).

Aldrichetta species: lower lip thick, and. only a small symphysial knob at front of lower jaw; also, 58 to 64 scales.



Aldrichetta

SIZE:

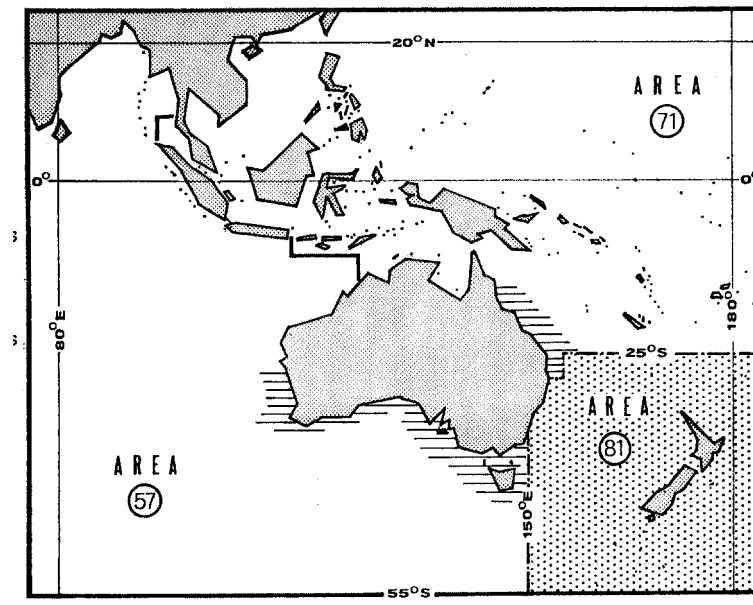
Maximum: 27 cm; common: 15 to 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Southern coasts of Australia, from southern Queensland to south western Australia.

Schools occur in shallow coastal waters and lower estuaries. Spawning takes place in the sea.

Feeds on small crustaceans and molluscs as well as microscopic algae.



PRESENT FISHING GROUNDS:

Shallow coastal waters and estuaries.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with gill nets and beach seines.

Marketed fresh or filleted.

MUGIL Vala 1

1974

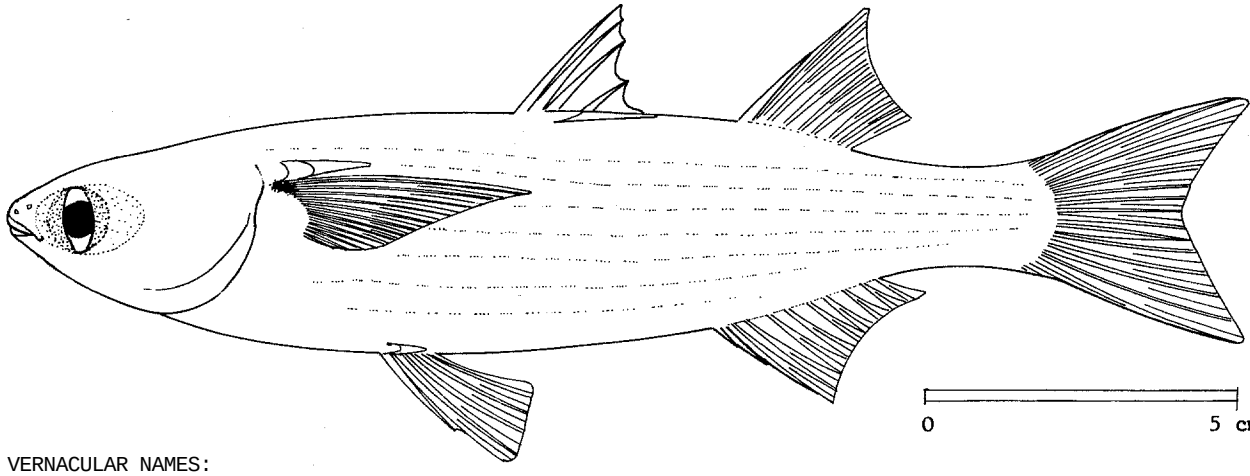
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MUGILIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Valamugil cunnesius (Valenciennes, 1836)

SYNONYMS STILL IN USE: *Mugil strongylocephalus* Richardson, 1846
Mugil longimanus Günther, 1861



VERNACULAR NAMES:

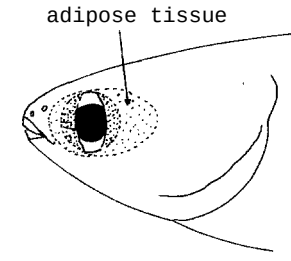
FAO: En - Longfin grey mullet
Fr
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body elongate, rather slender, head moderate; *fatty (adipose) tissue covering eye except for* pupil. Upper lip fleshy, lower lip thin; *posterior tip of upper jaw hidden when mouth closed;* fine teeth on both lips, but more sparse on upper. Origin of first dorsal fin a little nearer to tip of snout than to base of caudal fin; origin of second dorsal fin a little behind vertical from origin of anal fin; *pectoral fins equal to or longer than head, reaching to below 3rd or 4th rays of first dorsal fin, with axillary scale nearly half the length of fin;* caudal fin forked. Scales in lateral series 30 to 35.

Colour: back blue, flanks and belly silvery; pectoral fins with dark mark at axil.



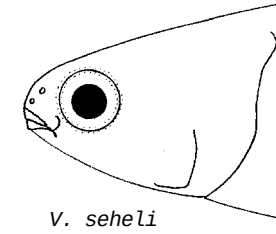
V. cunnesius

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Valamugil speigleri outer margin of first dorsal fin black; also, scales in lateral series 37 to 40 (30 to 35 in V. *cunnesius).*

Valamugil seheli, V. buchanani: fatty (adipose) tissue only around rim of eye.

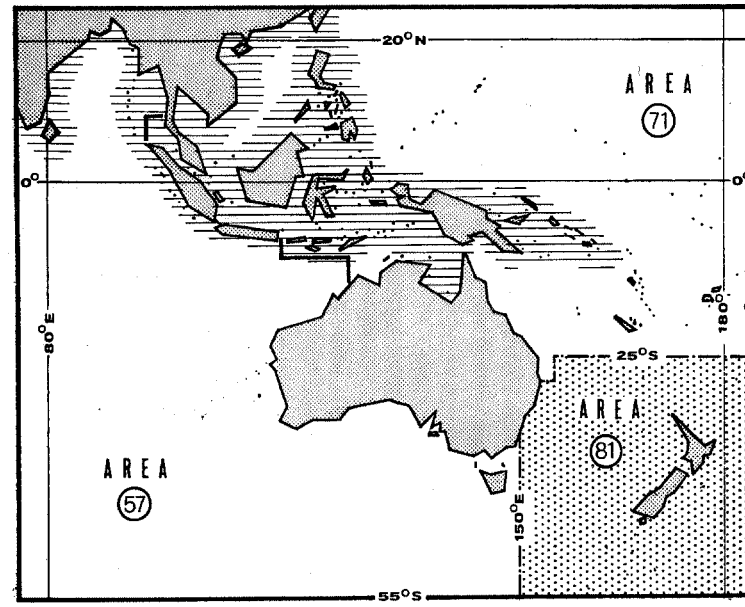
Other mugilid species: shorter pectoral fins, not reaching beyond first dorsal fin origin.



V. seheli

SIZE:

Maximum: 35 cm; common: 15 to 20 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area and southward to northern Australia; also, westward to Bombay.

Schools occur in shallow coastal, waters and enter lagoons, estuaries and rivers to feed, the juveniles often occurring in rice fields and mangrove swamps.

Spawning takes place in the sea.

Feeds on minute bottom-living organisms and on organic material contained in mud and sand; perhaps also on floating algae.

PRESENT FISHING GROUNDS:

Shallow coastal waters, estuaries, and mouths of rivers.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified grey mullets in 1972 was:

area 57 (Eastern Indian Ocean): 1 700 tons (Australia: 1 200 tons)
area 71 (Western Central. Pacific): 2 300 tons (Australia: 1 500 tons)

Caught with gill nets, beach seines and cast nets.

Marketed fresh and salted; also boiled (Thailand) and canned or frozen (Australia). The roe is often marketed as a salted product.

MUGIL Vala 2

1974

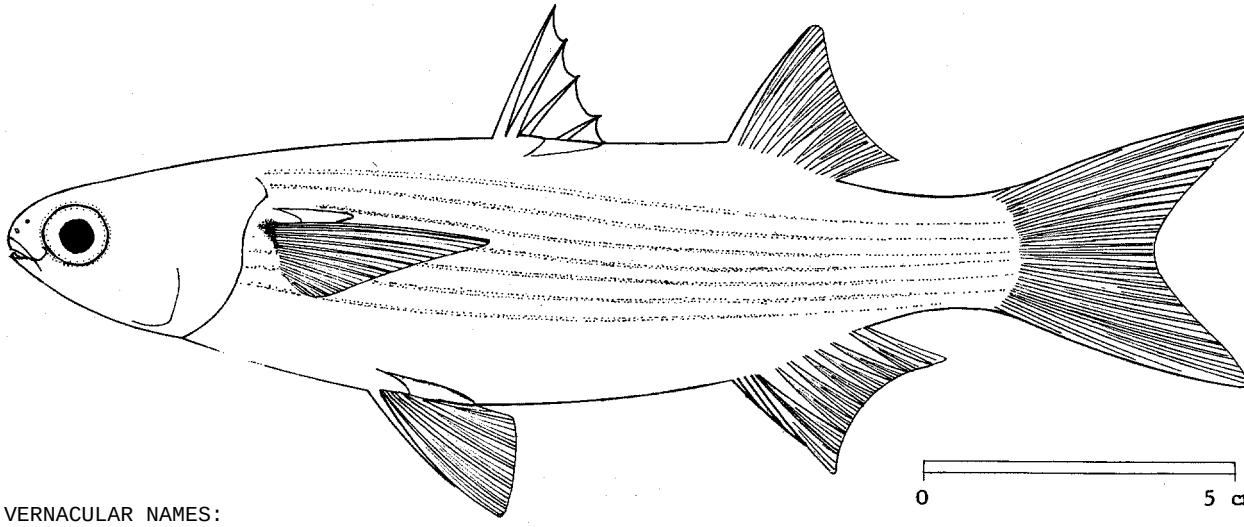
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MUGILIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Valamugil seheli (Forsskål, 1775)

SYNONYMS STILL IN USE: *Mugil axillaris* Valenciennes, 1836
Mugil caeruleomaculatus Lacepède,1803



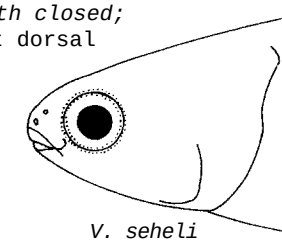
VERNACULAR NAMES:

FAO: En - Bluespot grey mullet
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body elongate, rather slender, head moderate; *fatty (adipose) tissue only around rim of eye.* Upper lip fleshy, lower lip thin; *posterior tip of upper jaw. hidden when mouth closed;* fine teeth on both lips, but shorter and more sparse in upper. Origin of first dorsal fin about equidistant between tip of snout and base of caudal fin; origin of second dorsal fin on vertical from anal fin origin; *pectoral fins equal to head Length or a little shorter, just reaching to vertical from first dorsal fin origin, with axillary scale 1/3 the length of fin;* caudal fin forked. Scales in lateral series 38 to 42.

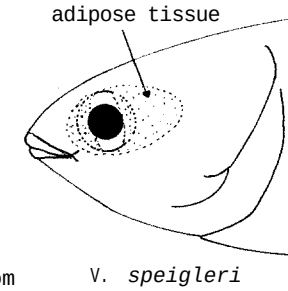


V. seheli

Colour: back blue, flanks and belly silvery; pectoral fins yellow, with dark blue spot at axil.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Valamugil speigleri, V. cunnesius, V. engeli: fatty (adipose) tissue covering most of eye.



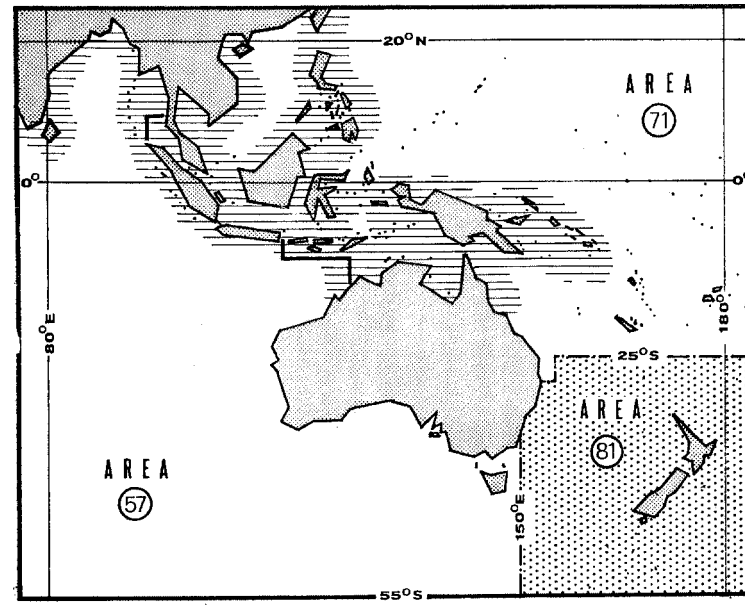
V. *speigleri*

Valamugil buchanani: fewer scales in lateral series (32 to 35; 38 to 42 in V. *seheli).*

Other mugilid species: shorter pectoral fins not reaching to vertical from first dorsal fin origin.

SIZE:

Maximum: 45 cm; common: 20 to 30 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area and probably southward to tropical waters of Australia; also westward to South Africa.

Schools occur in shallow coastal waters and enter lagoons, estuaries and rivers to feed, juveniles often occurring in rice fields and mangrove swamps.

Spawning takes place in the sea.

Feeds on minute bottom-living organisms and on organic matter contained in mud and sand; perhaps also on floating algae.

PRESENT FISHING GROUNDS:

Shallow coastal waters, estuaries, and mouths of rivers.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified grey mullets in 1972 was:

area 57 (Eastern Indian Ocean): 1 700 tons (Australia: 1 200 tons)
area 71 (Western Central Pacific): 2 300 tons (Australia: 1 500 tons)

Caught with gill nets, beach seines and cast nets

Marketed fresh and salted; also boiled (Thailand) and canned or frozen (Australia). The roe is often marketed as a salted product.

MUGIL Vala 3

1974

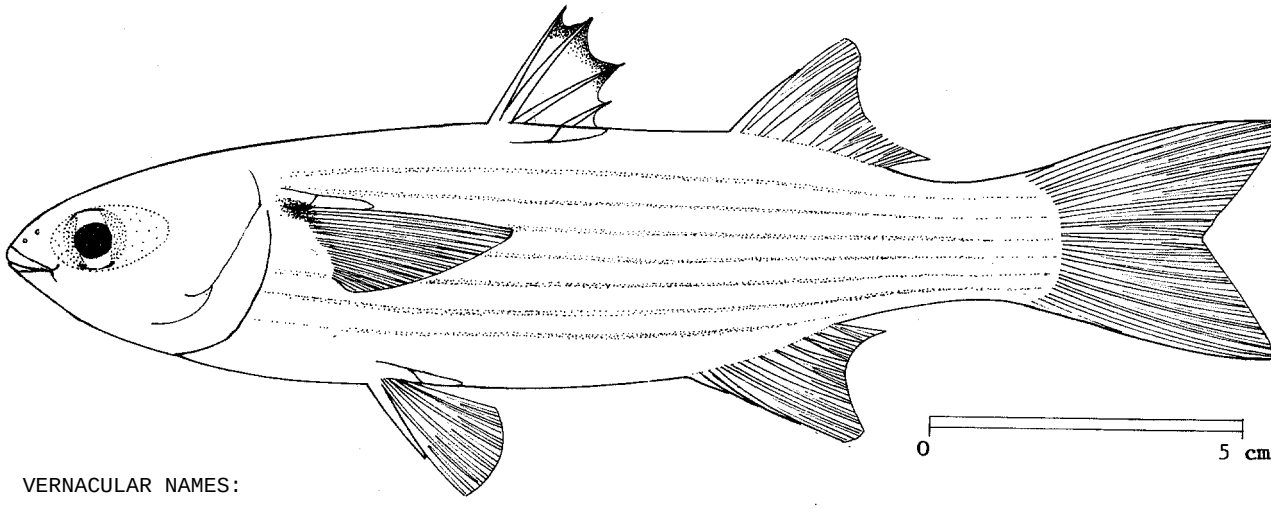
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MUGILIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Valamugil speigleri (Bleeker, 1858)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

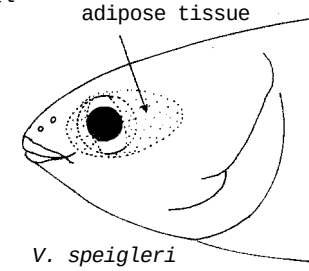
FAO: En - Speigler's grey mullet
Fr -
Sp -

NATIONAL:

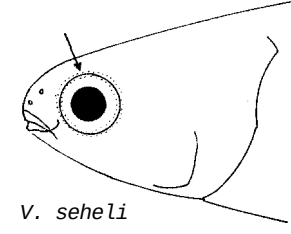
DISTINCTIVE CHARACTERS:

Body elongate, rather slender, head moderate; *fatty (adipose) tissue covering eye except for pupil.* Upper lip fleshy, lower lip thin; *posterior tip of upper jaw hidden when mouth closed;* fine teeth on both lips, but more sparse on upper. Origin of first dorsal fin nearer to tip of snout than to base of caudal fin; origin of second dorsal fin behind origin of anal fin; *pectoral fin a little shorter than head length, reaching somewhat beyond vertical from first dorsal fin origin, with axillary scale almost half the length of fin;* caudal fin forked. Scales in lateral series 37 to 40.

Colour: back green, flanks and belly silvery; pectoral fin with black spot at axil; *margin of first dorsal fin black*; other fins dusky.



V. speigleri



V. seheli

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

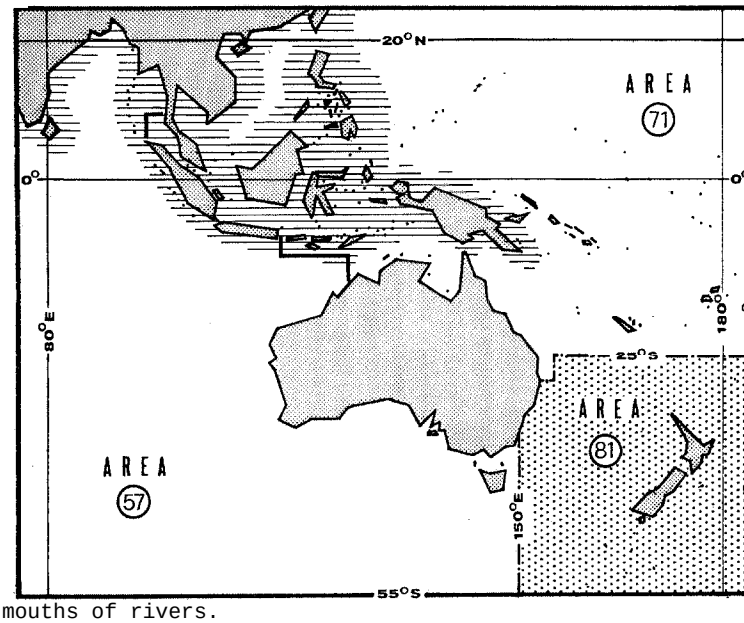
Valamugil seheli, V. buchanani: fatty (adipose) tissue only around rim of eye; also, margin of first dorsal fin not black.

Valamugil cunnesius: outer margin of first dorsal fin not black; also, fewer scales in lateral series (30 to 35; 37 to 40 in V. *speigleri).*

Other mugilid species: shorter pectoral fins, not reaching beyond first dorsal fin origin.

SIZE:

Maximum: 35 cm; common: 15 to 20 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area, but perhaps not southward to Australian coasts.

Schools occur in shallow coastal waters and enter lagoons, estuaries and rivers to feed, juveniles often occurring in rice fields and mangrove swamps.

Spawning takes place in the sea.

Feeds on minute bottom-living organisms and on organic material contained in mud and sand; perhaps also on floating algae.

PRESENT FISHING GROUNDS:

Shallow coastal waters, estuaries, and mouths of rivers.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified grey mullets in 1972 was:

area 57 (Eastern Indian Ocean): 1 700 tons (Australia: 1 200 tons)
area 71 (Western Central Pacific): 2 300 tons (Australia: 1 500 tons)

Caught with gill nets, beach seines and cast nets

Marketed fresh and salted; also boiled (Thailand) and canned or frozen (Australia). The roe is often marketed as a salted product.

MULL

1974

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

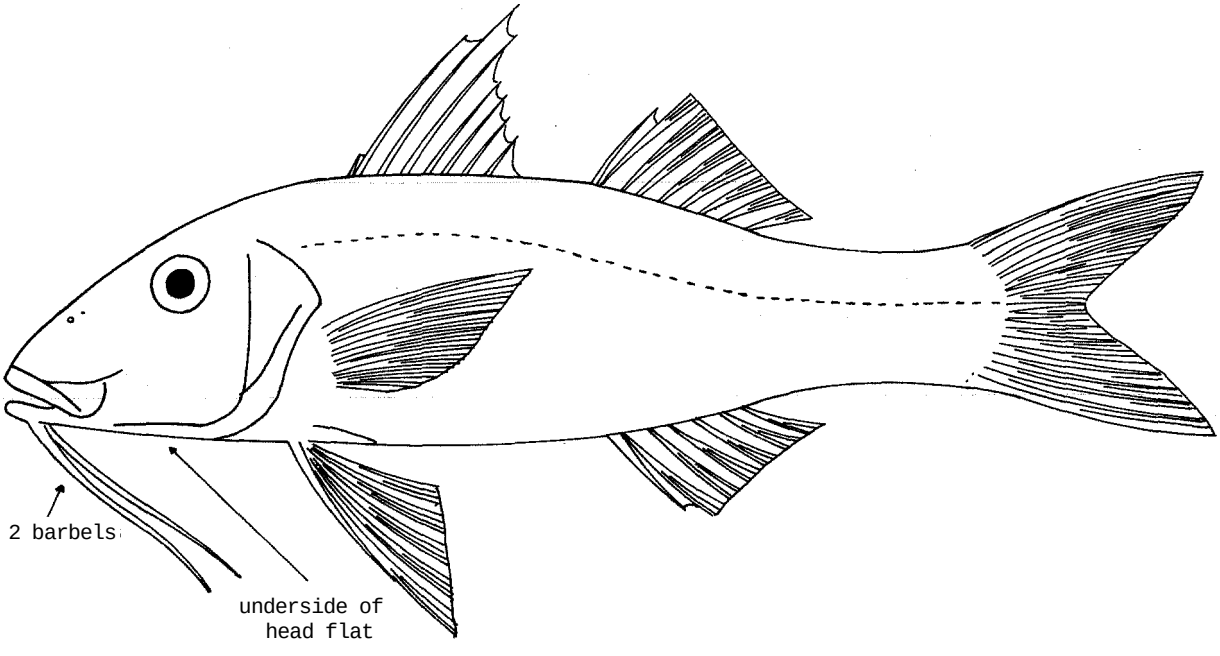
MULLIDAE

Goatfishes

Small to moderate-sized fishes, body elongate, *underside* of *head, and usually also belly, flat; 2 barbels on chin. Proportions of eye and snout variable with age. 2 dorsal fins, the 1st with 7 to 8 spines, the 2nd with 1 spine and 8 soft rays;* pelvic fins comparatively large, set just before pectoral fin base; caudal fin forked.

Colour: mostly red, orange, golden or brownish, but young specimens often pale sandy or blue. Body usually bears coloured markings such as longitudinal bands or stripes in yellow, orange, red, brown or black; also coloured dots, spots or blotches. Fins may have bands, stripes or bars. The colouration is characteristic for each species and is the best means of distinguishing one from another.

Goatfishes live in coastal waters, always near the bottom. The barbels carry sensory organs and are used in finding food, which consists mainly of small bottom-living animals.



SIMILAR FAMILIES OCCURRING IN THE AREA:

No other marine fishes of similar shape have two long barbels on chin.

Key to Genera

1 a. Teeth on vomer and palatines (Fig. 1: can be seen only after removing lower jaw); stripes on both dorsal fins, but never on anal fin; no opercular spine ..... *Upeneus*

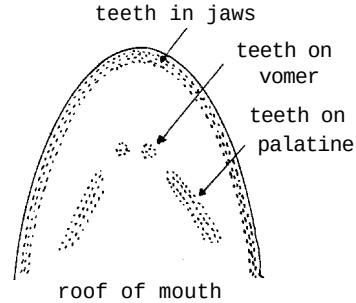
2 a. 5 to 7 vertical rows of scales along the space between dorsal fins; 12 vertical rows of scales along upper part of caudal peduncle; both dorsal fins with grey or black (or sometimes red) horizontal stripes (Fig. 2); stripes on caudal fin, if present, always more numerous on upper than on lower lobe ..... subgenus *Upeneus*

2 b. 4 vertical rows of scales along the space between dorsal fins; 10 vertical rows of scales along upper part of caudal peduncle; both dorsal fins with red or brown horizontal stripes (Fig. 3); stripes on caudal fin, if present, always more numerous on lower than on upper lobe ..... subgenus *Pennon*

1 b. No teeth on palatines; either no stripes on any fin, or when there are stripes, these always present on 2nd dorsal and anal fins, but not on its dorsal fin; opercular spine present

3 a. No teeth on vomer

4 a. A band of very fine teeth in each jaw (Fig. 4); 5 vertical rows of scales along the space between dorsal fins; 12 vertical rows of scales along upper part of caudal peduncle; no marks on any of the fins (Fig. 5) ..... *Mulloidichthys*



Upeneus

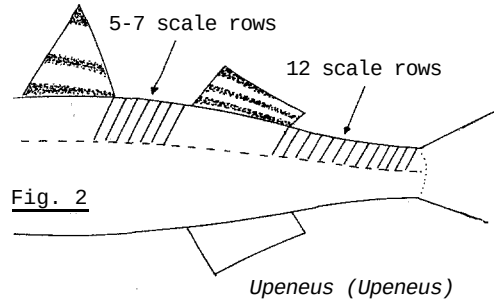


Fig. 2

Upeneus (Upeneus)

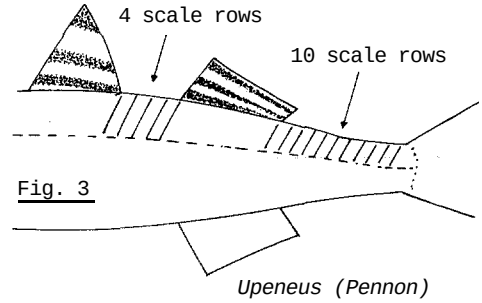


Fig. 3

Upeneus (Pennon)

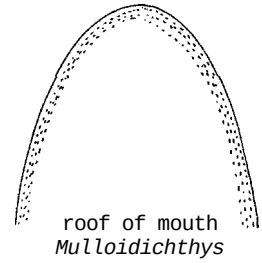


Fig. 4

Mulloidichthys

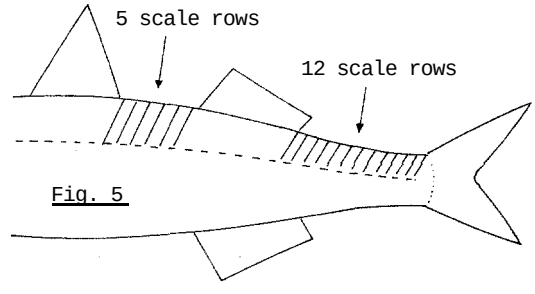
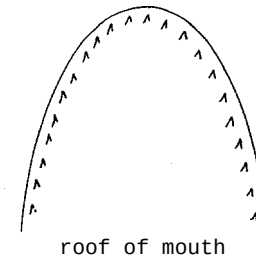


Fig. 5

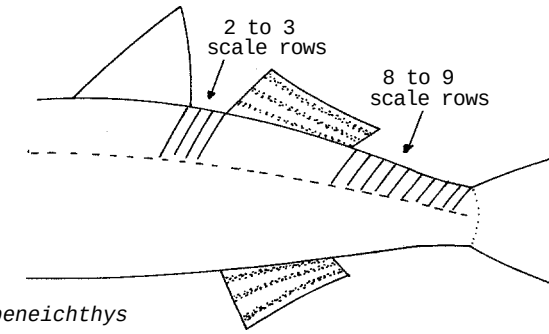
Mulloidichthys

4 b. One row of large, blunt teeth in each jaw (Fig. 6); 2 to 3 vertical rows of scales along the space between dorsal fins; 8 to 9 vertical rows of scales along upper part of caudal peduncle; stripes always present on 2nd dorsal and anal fins, but never on 1st dorsal fin (Fig. 7) ..... . *Parupeneus*

Fig. 6

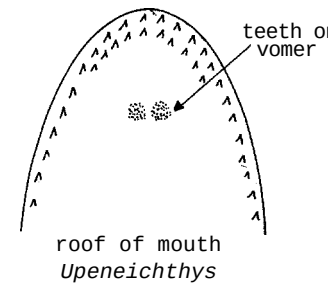


3 b. Teeth on vomer (can be seen only after removing lower jaw); teeth in jaws short, conical, 2 rows in front, a single row at sides (Fig. 8); as in *Parupeneus,* 2 to 3 vertical rows of scales along the space between dorsal fins; 8 to 9 vertical rows of scales along upper part of caudal peduncle; stripes always present on 2nd dorsal and anal fins, but never on 1st dorsal fin (Fig. 7) ... *Upeneichthys* *(Upeneichthys is* endemic to Australia; both the species known to belong to this genus have a characteristic colour pattern: body with regular alternating series of blue spots on a reddish background and with irregular greenish vertical bands.)



Parupeneus and *Upeneichthys*

Fig. 8



List of Species occurring in the Area
(Code numbers are given for those species for which Identification Sheets are included)

Upeneus (Upeneus) moluccensis Bleeker, 1855 MULL Upen 1

Upeneus (Upeneus) sulphureus Cuvier, 1829 MULL Upen 2

Upeneus (Upeneus) taeniopterus Cuvier, 1829
= *Upeneus arge* Jordan & Evermann, 1902

Upeneus (Upeneus) vittatus Lacepède, 1801 MULL Upen 3
(U. vittatus Forsskål seems to be a species from the Red Sea belonging to the subgenus *Pennon)*

* Due to the widespread confusion with the taxonomy of this family, it was decided to include in the list, besides the valid scientific species names, the authors and synonyms still in use, as well as some explanatory notes, as kindly provided by Mr. P. Guézé

Upeneus (Pennon) asymetricus Lachner, 1954

Upeneus (Pennon) bensasi Temninck & Schlegel, 1842 MULL Upen 4

Upeneus.(Pennon) filifer Ogilby, 1910
(endemic to Australia)

Upeneus (Pennon) luzonius Jordan & Seal, 1907
(endemic to Southeast Asia)

Upeneus (Pennon) sundaicus Bleeker, 1855 MULL Upen 5
= form *U. armatoides* Whitley, 1955 (Australia)
= form *U. caudalis* Poppta, 1921 (Indonesia)

Upeneus (Pennon) tragula Richardson, 1845 MULL Upen 6

Mulloidichthys flavolineatus Lacepède, 1801 MULL Mulld 1
= *Mulloidichthys auriflamma* Klunzinger nec Forsskål,
= *Mulloidichthys samoensis* Günther, 1873

Mulloidichthys pflügeri Steindachner, 1901
= *Mulloidichthys vanicolensis* nec Valenciennes

Mu lloidichthys vanicolensis Valenciennes, 1831
= *Mulloidichthys auriflamma* nec Klunzinger nec Forsskål

Parupeneus barberinus Lacepède, 1801 MULL Paru 2

Parupeneus barberinoides Bleeker, 1852

Parupeneus bifasciatus Lacepède, 1801 MULL Paru 1
= *Parupeneus trifasciatus* Lacepède, 1801
= form P. *crassilabris* Valenciennes, 1831

Parupeneus chryserydros Lacepède, 1801 MULL Paru 7
(specimens of grey colour)
= *Parupeneus cyclostomus* Cuvier, 1829 nec Lapecède
(specimens of pink colour)
= *Parupeneus luteus* Valenciennes, 1831
(specimens of orange colour)

Parupeneus fraterculus Valenciennes, 1831 MULL Paru 6
= *Parupeneus signatus* Günther, 1867
(name still used in Australia)
= *Parupeneus spilurus* Bleeker, 1854
(name still used in South Asia)

Parupeneus heptacanthus Lacepède, 1801 MULL Paru 5
= *Parupeneus cinnabarinus* Cuvier, 1829 (juvenile)
= *Parupeneus luteus* Bleeker nec Valenciennes
= *Parupeneus pleurospilus* Bleeker, 1853 (juvenile)

Parupeneus indices Shaw, 1803 MULL Paru 4

Parupeneus janseni Bleeker, 1856

Parupeneus macronema Lacepède, 1801 MULL Paru 3

Parupeneus multifasciatus Quoy & Gaimard, 1824
Parupeneus trifasciatus nec Lacepède
= form P. *velifer* Smith & Swain, 1882

Parupeneus pleurostigma Bennett, 1831

Parupeneus porphyreus Jenkins, 1902
Parupeneus chryserydros Cuvier, 1829 nec Lacepède
(name still used in Indian Ocean)
= *Parupeneus sufflavus* Whitley, 1941
(name still used in Australia)

Upeneichthys porosus Cuvier, 1829
(endemic to Australia and New Zealand)

Upeneichthys vlamingi Cuvier, 1829
(endemic to Australia and New Zealand)

MULL Mulld 1

1974

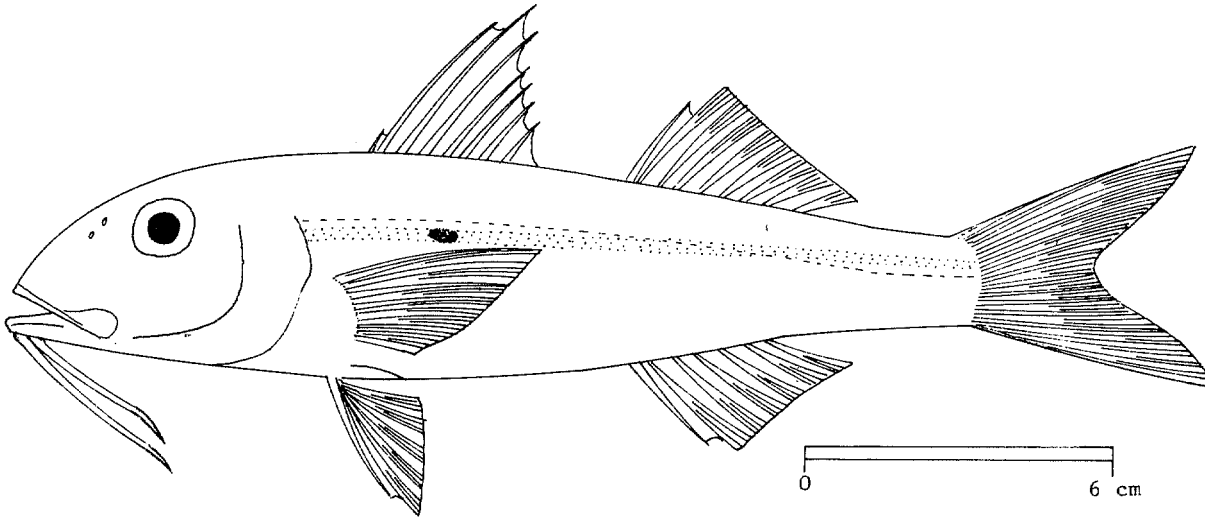
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MULLIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Mulloidichthys flavolineatus Lacepède, 1801

SYNONYMS STILL IN USE: *Mulloidichthys samoensis* Günther, 1873
Mulloidichthys auriflamma Klunzinger, nec. Forsskål

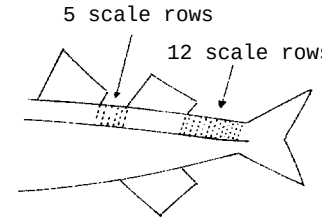


VERNACULAR NAMES

FAO: En - Slender goldband goatfish
Fr -
Sp"-

NATIONAL:

DISTINCTIVE CHARACTERS:



Body very elongate, but robust. Chin with 2 short and thin barbels; a spine on upper half of opercular margin. A band of very fine teeth in each jaw, none on vomer and palatines (roof of mouth). *5 vertical rows of scales along the space between dorsal fins; 12 vertical rows o f scales along upper part of caudal peduncle.*

Colour: head and back greenish bronze, belly whitish. A *narrow golden band runs from opercular spine to base of upper caudal fin lobe, anteriorly well below lateral line, then crossing the line at level of 2nd dorsal fin;* often 1 or 2 grey or black blotches on the longitudinal band below lst dorsal fin. *No marks on any of the fins;* both dorsal fins greenish yellow, pectoral fins rosy, pelvic and anal fins whitish, caudal fin yellowish. Barbels white.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

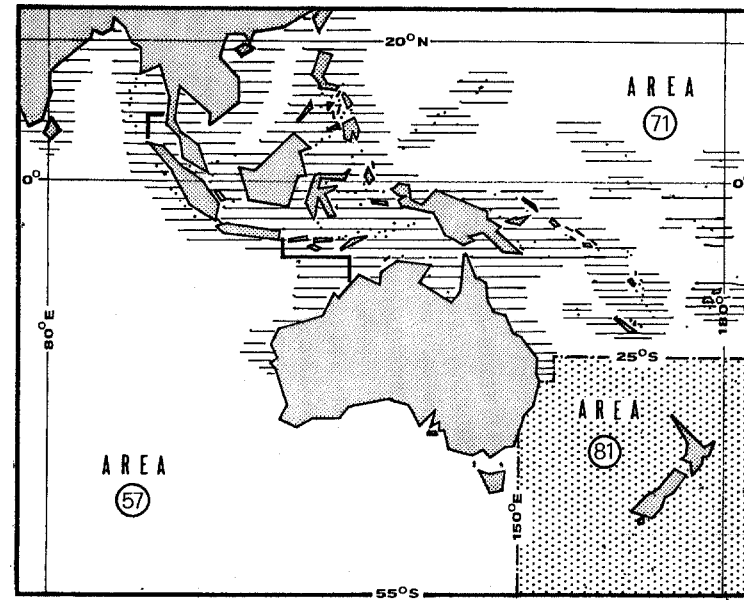
Mulloidichthys vanicolensis: body deeper, eye clearly larger; colour of head and back changing with depth - bronze in shallow waters, brick red in deeper waters; all fins bright yellow, except for pectoral fins which are rosy.

M. pflügeri: head, body and fins uniform bright red; maximum size 45 cm (*M. flavolineatus.* 34 cm); only found in deep waters.

Other mullid species: stripes or other marks on dorsal, anal or caudal fins (apart from other generic differences).

SIZE:

Maximum: 34 cm; common: 20 to 25 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area, northward to Japan, southward to Australia and New Zealand, westward to East Africa and the Red Sea.

Inhabits coastal waters; the young form large schools entering coastal lagoons during the hot season.

Feeds on bottom-living animals.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species. The total reported catch of unclassified goatfishes in 1972 was:

area 57 (Eastern Indian Ocean): 1 500 tons (India only)
area 71 (Western Central Pacific): 15 500 tons (Philippines: 13 100 tons)

Caught mainly with bottom trawls; also with seines, especially in coastal lagoons.

Marketed mostly fresh, its flesh is highly appreciated.

MTLL Paru l

1974

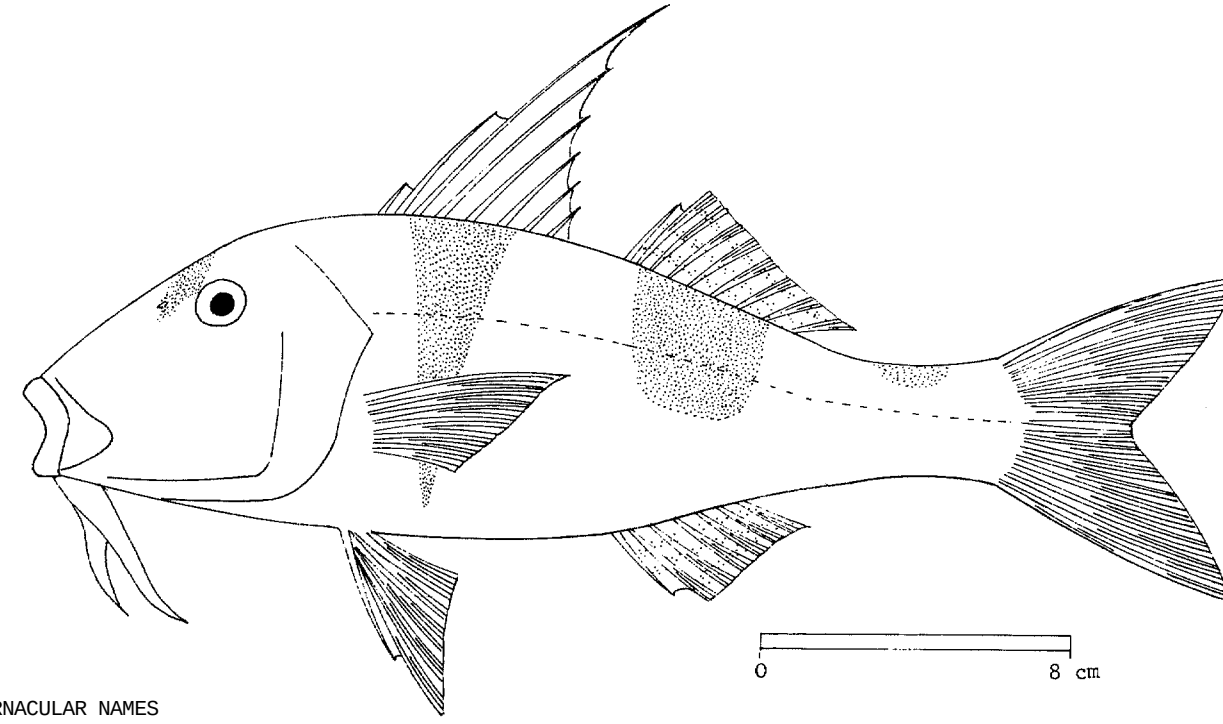
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MULLIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Parupeneus bifasciatus Lacepède, 1801

SYNONYMS STILL IN USE: *Parupeneus trifasciatus* Lacepède, 1801
Parupeneus crassilabris Valenciennes, 1831

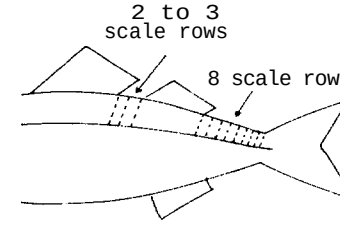


VERNACULAR NAMES

FAO: En - Doublebar goatfish
Fr -
Sp -

NATIONAL:

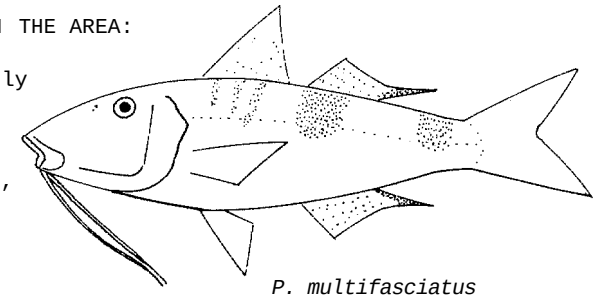
DISTINCTIVE CHARACTERS:



Body very deep, snout profile straight. *Lips thick and fleshy;* a small spine on upper third of opercular margin; chin with *2 short, very thick and fleshy barbels.* Teeth in both jaws in a single row, none on vomer and palatines (roof of mouth). *2 to 3 vertical rows of scales along space between dorsal fins; 8 vertical rows of scales along upper part of caudal peduncle.*

Colour: *ground colour of head, body and fins dark red*; centres of scales white with red marblings; a faint blackish band on head, in front of eye. *1 vertical blackish bar below each dorsal fin, the first long and narrow, triangular in shape; the second broad and short;* often also a black saddle on caudal peduncle. These black markings may, however, fade to an inconspicuous light grey in very large specimens (so-called form *crassilabris*). *2nd dorsal fin with horizontal pink or violet stripes* (but no stripes on 1st dorsal); *anal fin with horizontal yellow stripes.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:



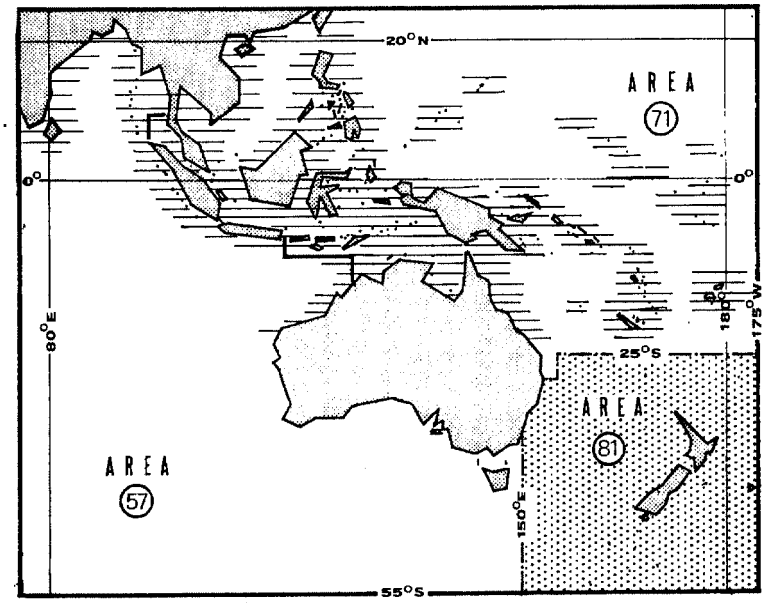
P. multifasciatus

Parupeneus multifasciatus: body moderately to strongly elongate, lips rather thin, barbels thin and very long, reaching to base of pelvic fins; "past ray of 2nd dorsal and anal fins elongate and blackish. Markings on body as follows: 2 to 3 ill-defined bars below 1st dorsal fin, a large conspicuous bar below 2nd dorsal fin, and a very broad saddle on caudal peduncle separated from preceding bar by a light-coloured area. In specimens from shallow waters these markings are black, save the first 2, which may be dark red; in fish from deeper waters (about 60 m), all of them are deep red, only slightly darker than ground colour of body (so-called form *velifer*). The existence of this species in the Indian Ocean is doubtful.

Other mullid species: lack the combination of short, very fleshy barbels, vertical stripes on body and saddle on caudal peduncle (apart from generic differences in *Upeneus, Mulloidichthys* and *Upeneichthys*).

SIZE:

Maximum: 40 cm; common: 25 to 30 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area; northward to Vietnam, southward to Australia, westward to East Africa.

Inhabits coastal waters, down to about 60 m.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING MAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species. The total reported catch of unclassified goatfishes in 1972 was:

area 57 (Eastern Indian Ocean): 1 500 tons (India only)
area 71 (Western Central Pacific): 15 500 tons (Philippines: 13 100 tons)

Caught mainly with lines.

Marketed mostly fresh.

MULL Paru 2

1974

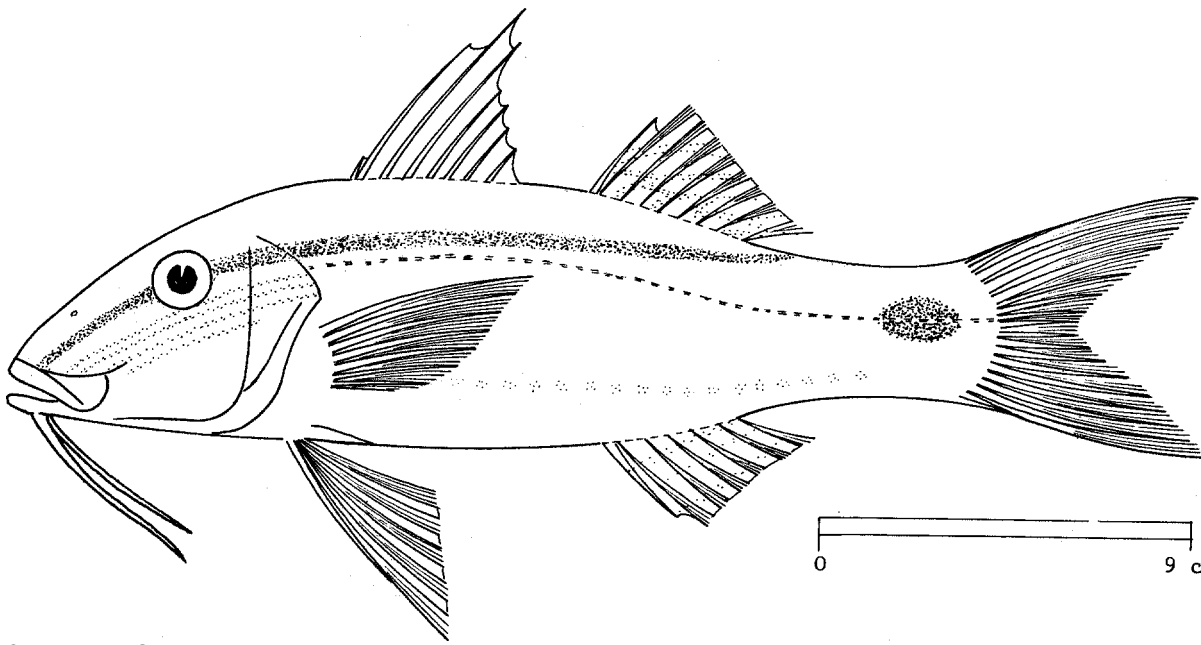
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MULLIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Parupeneus barberinus (Lacepède 1802)

SYNONYMS STILL IN USE: None

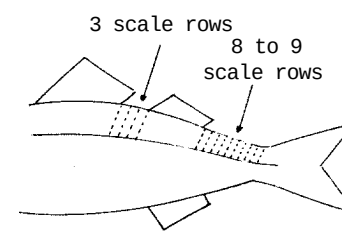


VERNACULAR NAMES:

FAO: En - Dash-and-dot goatfish
Fr -
Sp -

NATIONAL:

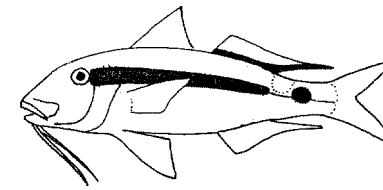
DISTINCTIVE CHARACTERS:



A large-sized fish; body elongate, snout long and pointed. Chin with moderately long barbels; a small spine on upper third of opercular margin. Teeth in both jaws in a single row, none on vomer and palatines (roof of mouth). *3 vertical rows of scales along space between dorsal fins; 8 to 9 vertical rows of scales along upper part of caudal peduncle.* 1st dorsal fin long and pointed, reaching 2nd dorsal when depressed; 3rd dorsal spine sometimes strongly elongate and may reach base of caudal fin when depressed.

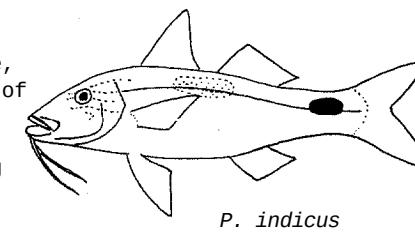
Colour: ground colour variable with depth; in shallow waters, head and back bronze-coloured and fins yellow; in deeper waters (60 to *80 m),* head and back reddish, and fins pink; lower sides and belly always whitish. Head with alternating blue and yellow streaks from snout to operculum. *A narrow, dark band, with golden upper and lower margins, runs from upper jaw through eye, above lateral line, to about end of 2nd dorsal fin; an oblong dark blotch, longer than eye, placed behind mid-point of caudal peduncle (its hind margin only* 3 *scale rows from caudal fin base), the lateral line passing through its centre.* Both the band and the blotch are dark brown in specimens from shallow waters, but bright red in those from deeper waters. A line of yellow spots extends from base of pectoral fin to caudal peduncle. *Second dorsal fin with pink or violet horizontal stripes, but no stripes on 1st dorsal; anal fin with yellow stripes.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:



P. macronema

P. macronema: maximum size only 25 cm (P. *barberinus:* 50 cm); barbels very long, reaching base of pelvic fins; last ray of 2nd dorsal and anal fins elongate, about double the length of preceding rays; ground colour reddish, belly somewhat lighter; dark band on sides broader, not extending forward beyond eye; black blotch on caudal peduncle smaller, placed further (7 scale rows) from caudal fin base, the lateral line passing through its lower third; a black stripe along base of 2nd dorsal fin extending to last fin ray.



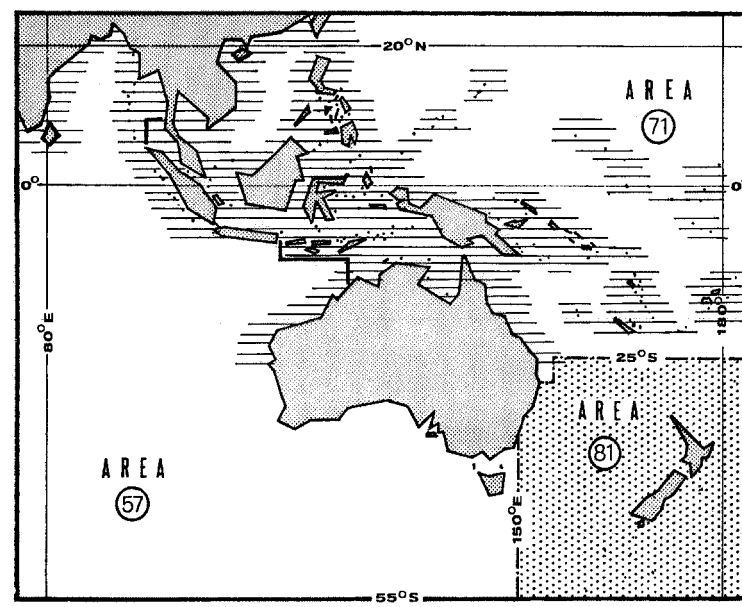
P. indicus

P. indicus: large blotch on caudal peduncle, but no dark band on sides; a large, elongate yellow blotch, mostly above lateral line, extending from below hind part of 1st dorsal fin to below front part of 2nd dorsal fin.

Other mullid species: lack the combination of a dark band along sides and a dark blotch on midline of caudal peduncle (apart from generic differences in *Upeneus, Mulloidichthys* and *Upeneichthys).*

SIZE:

Maximum: 50 cm; common: 20 to 30 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to Queensland (Australia); also, westward to East Africa and northward to southern Japan.

Inhabits coastal waters down to 100 m; found singly or in small schools.

Feeds mainly on bottom-living animals.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species. The total reported catch of unclassified goatfishes in 1972 was:

area 57 (Eastern Indian Ocean): 1 500 tons (India only)
area 71 (Western Central Pacific): 15 500 tons (Philippines: 13 100 tons)

Caught mainly with bottom trawls; also with trap nets.

Marketed mainly fresh.

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1974

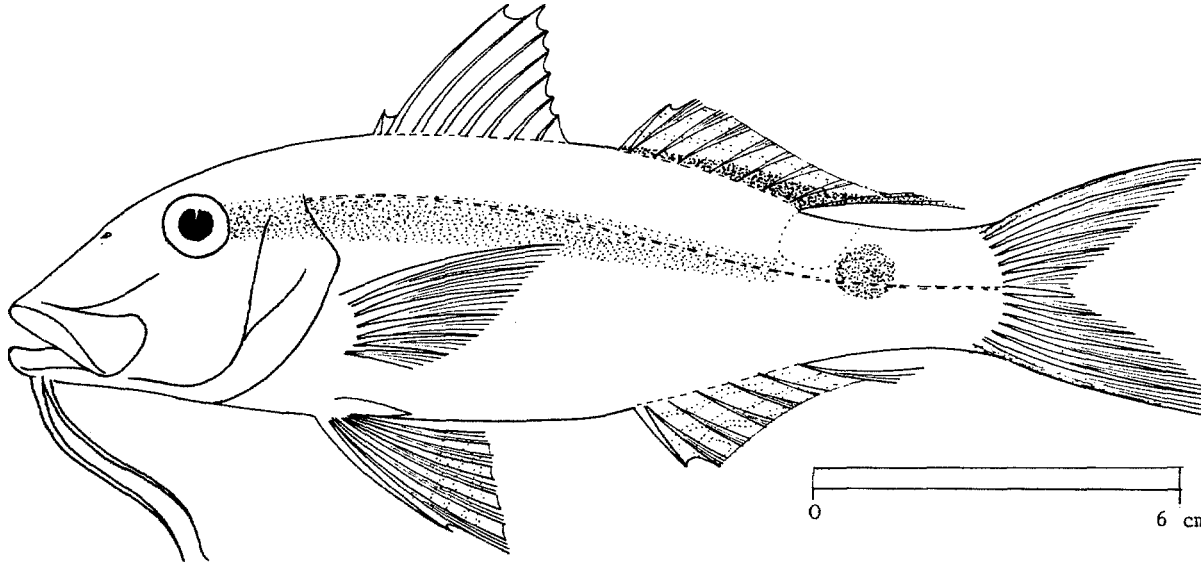
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MULLIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Parupeneus macronema (Lacepède, 1802)

SYNONYMS STILL IN USE: None

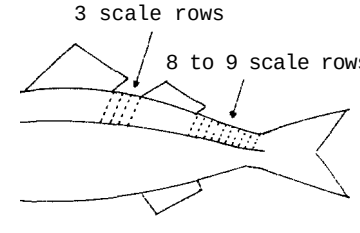


VERNACULAR NAMES:

FAO: En - Longbarbed goatfish
Fr -
Sp -

NATIONAL:

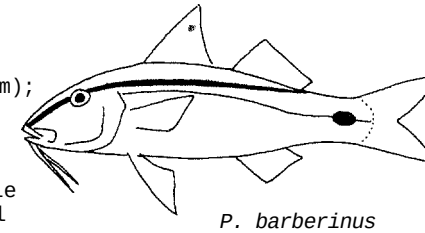
DISTINCTIVE CHARACTERS:



A small fish; body elongate. Chin with 2 long barbels reaching to base of pelvic fins; a small spine on upper third of opercular margin. Teeth in both jaws in a single row, none on vomer and palatines (roof of mouth). 3 *vertical rows of scales along the space between dorsal fins; 8 to 9 vertical rows of scales along upper part of caudal peduncle.* 1st dorsal fin rather high; *last ray of 2nd dorsal and anal fins elongated (about double the length of preceding rays).*

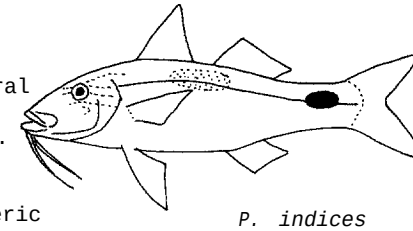
Colour: ground colour of head and body reddish, somewhat paler on lower sides and belly. A *very broad, dark brown band runs from hind margin of eye to below hind margin of 2nd dorsal fin; a pale saddle behind 2nd dorsal fin and a dark blotch, smaller than or equal to eye, at midpoint of caudal peduncle (7 scale rows from caudal fin base), mostly above lateral line.* All fins reddish or purple, *2nd dorsal fin with a black stripe along base extending to tip of last ray, and several horizontal pink or violet stripes above, but no stripes on 1st dorsal; anal fin with faint yellow horizontal stripes;* outer rays of caudal fins purplish or dark.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:



P. barberinus

Parupeneus barberinus: maximum size 50 cm (P. *macronema:* 25 cm); barbels shorter, not reaching base of pelvic fins; last ray of 2nd dorsal and anal fins not elongate; dark band on sides much narrower, and continuing in front of eye to upper jaw; dark blotch on caudal peduncle larger than eye and placed behind midpoint of caudal peduncle (its hind margin only 3 scale rows from caudal fin base), the lateral line passing through its centre; no pale saddle behind 2nd dorsal fin; base of 2nd dorsal fin without a black stripe. Red-coloured specimens of P. *barberinus* are often confused with P. *macronema.*



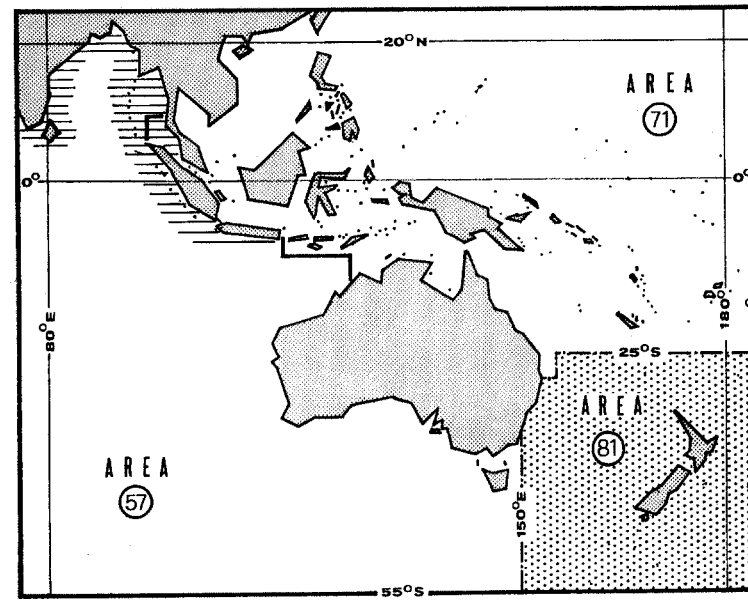
P. indices

P. indicus: a large blotch on caudal peduncle, but no dark band on sides; a large elongate yellow blotch on sides, mostly above lateral line, extending from below hind part of 1st dorsal fin to below front part of 2nd dorsal fin; base of 2nd dorsal fin without a black stripe.

Other mullid species: lack the combination of a dark band along sides and a dark blotch on midline of caudal peduncle (apart from generic differences in *Upeneus, Mulloidichthys* and *Upeneichthys).*

SIZE:

Maximum: 25 cm;
common: about 15 to 20 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of Indian Ocean only, but not southward to Australia; also, westward to East Africa.

Inhabits shallow coastal waters, only exceptionally beyond 40 m depth; lives singly or in small schools.

Feeds mainly on bottom-living animals.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species. The total reported catch of unclassified goatfishes in 1972 was:

area 57 (Eastern Indian Ocean): 1 500 tons (India only)
area 71 (Western Central Pacific): 15 500 tons (Philippines: 13 100 tons)

Caught mainly with bottom trawls; also with trap nets.

Marketed mainly fresh.

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1974

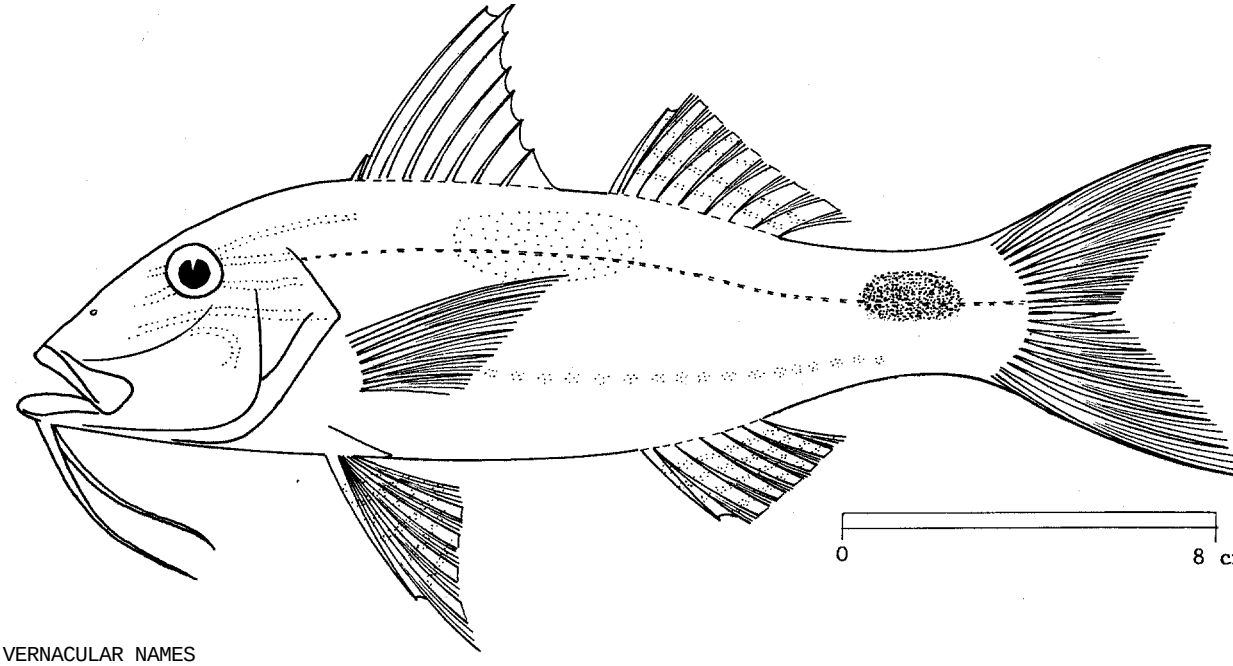
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: MULLIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Parupeneus indicus Shaw, 1803

SYNONYMS STILL IN USE: None

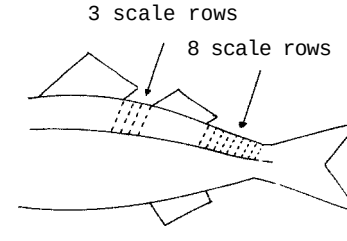


VERNACULAR NAMES

FAO: En - Indian goatfish
Fr
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:



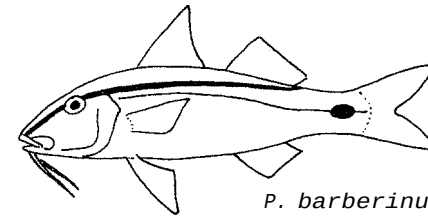
Body deep. Chin with 2 moderately long barbels; a small spine on upper third of opercular margin. Teeth in both jaws in a single row, none on vomer and palatines (roof of mouth). *3 vertical rows of scales along the space between dorsal fins; 8 vertical rows of scales along upper part of caudal peduncle.*

Colour: ground colour of head and body purple. Head with 3 to 5 violet or blue lines from snout to operculum. Scales *on* back each with a greenish yellow edge and scales on caudal peduncle with violet or blue spots. A *large elongate yellow blotch, mostly above lateral line, extending from below hind part of 1st dorsal fin to below front part of 2nd dorsal fin; a large black blotch immediately behind midpoint of caudal peduncle, 2/3 of it above lateral line;* a line of yellow spots from pectoral fin to caudal peduncle. *2nd dorsal fin with horizontal violet or pink stripes, but no stripes on 1st dorsal; anal fin with yellow horizontal stripes.* Barbels white to pink.

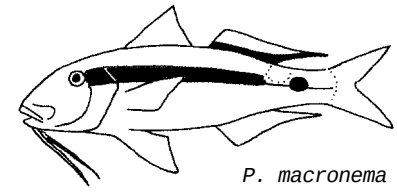
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Parupeneus barberinus and *P. macronema*: no yellow blotch on lateral line; a dark band along sides, running to below hind margin of 2nd dorsal fin (from snout in P, *barberinus*); also, in *P. macronema* last ray of 2nd dorsal and anal fins elongate and a black band along base of 2nd dorsal fin extending to tip of last ray.

Other mullid species: lack the combination of a yellow blotch on sides and a dark blotch on midline of caudal peduncle (apart from generic differences in the case of *Upeneus, Mulloidichthys* and *Upeneichthys).*



P. barberinus



P. macronema

SIZE:

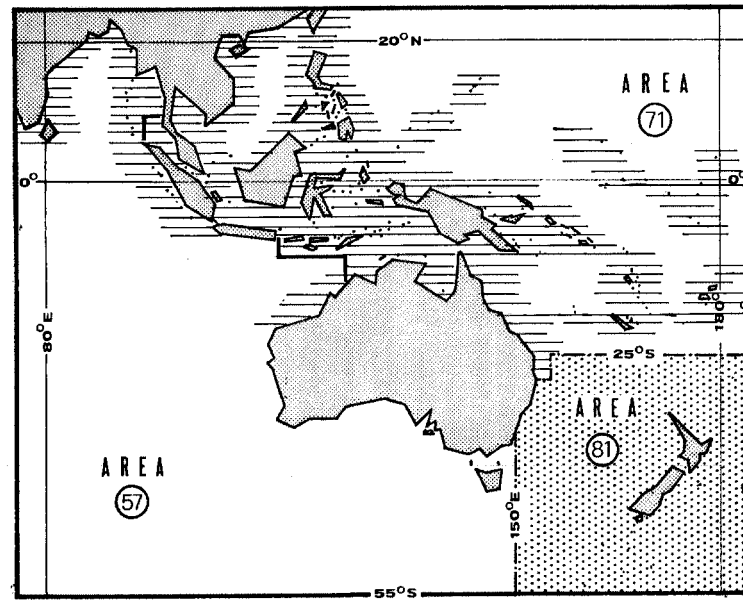
Maximum: 40 cm; common: 20 to 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to Queensland (Australia); also, westward to East Africa and northward to Japan.

Inhabits shallow coastal waters; found singly or in small schools.

Feeds on bottom-living animals.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species. The total reported catch of unclassified goatfishes in 1972 was:

area 57 (Eastern Indian Ocean): 1 500 tons (India only)
area 71 (Western Central Pacific): 15 500 tons (Philippines: 13 100 tons)

Caught mainly with bottom trawls; also with trap nets.

Marketed mainly fresh.

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1974

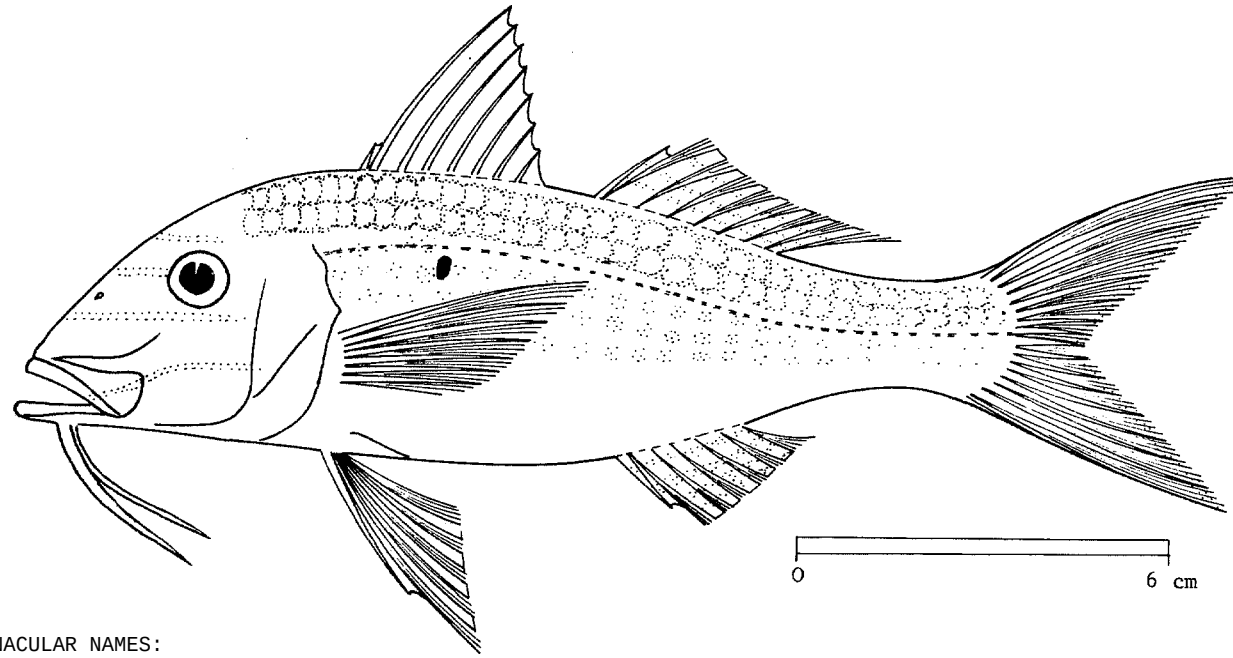
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MULLIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Parupeneus heptacanthus Lacepède, 1801

SYNONYMS STILL IN USE: *Parupeneus luteus* Bleeker nec. Valenciennes
Parupeneus pleurospilus Bleeker, 1853 (juveniles from shallow waters)
Parupeneus cinnabarinus Cuvier, 1829 (juveniles from medium depths)

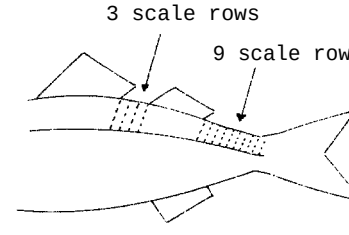


VERNACULAR NAMES:

FAO: En - Spotted golden goatfish
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:



Body rather deep, *upper profile forming a characteristic regular arch;* snout short and steep. Chin with 2 moderately long barbels; a small spine on upper third of opercular margin. Teeth in both jaws in a single row, none on vomer and palatines (roof of mouth). *3 vertical rows of scales along the space between dorsal fins; 9 vertical rows of scales along upper part of caudal peduncte.* 1st dorsal fin higher than 2nd, *pectoral fins longer than pelvic fins.*

Colour: live fish very colourful, with blue reflections on back, golden on sides and pearly white on belly; several blue parallel bands on head; scales on back with dark edges, those on back and sides with light circular central spots, forming about 5 horizontal lines to caudal peduncle; 2nd dorsal fin with horizontal pink or violet stripes, but no stripes on 1st dorsal; anal fin with yellow stripes. After death, the head, back and fins become uniform pink. The only remaining ornament is a *bright red "pleural" spot below the 9th scale of lateral line.* Barbels white to pink. Young specimens with upper caudal fin lobe yellow; those from shallow waters in S.E. Asia have a grey or black pleural spot and are usually classified as *P. pleurospilus,* while those from deeper waters off India, with a little red pleural spot, are often identified as *P. cinnabarinus.*

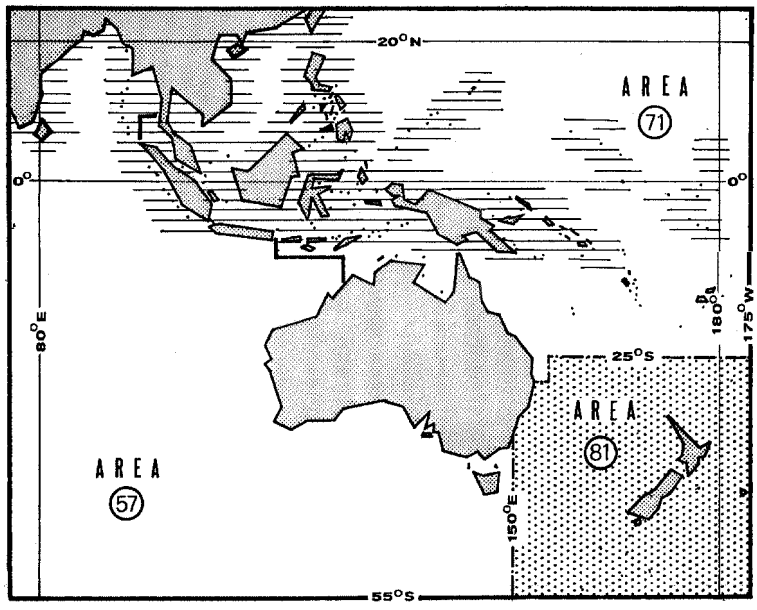
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:.

Parupeneus pleurostigma: body more elongate, upper profile of head straight, or even concave in older specimens; pleural spot grey or red, variable in size, placed below last spines of 1st dorsal fin; a broad, whitish or yellowish area above lateral line in the space between dorsal fins; soft rays of 2nd dorsal fin and of upper lobe of caudal fin edged with violet (black after death).

Other mullid species: lack the combination of upper profile forming a perfect arch, presence of a red or grey "pleural" spot on sides, and pectoral fins longer than pelvic fins (apart from generic differences in *Upeneus, Mulloidichthys* and *Upeneichthys).*

SIZE:

Maximum: 30 cm; common: about 20 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area but not to coasts of Australia; also, westward to East Africa.

Inhabits coastal waters, down to about 60 m. Found singly or in small schools.

Feeds on bottom-living animals.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species. The total reported catch of unclassified goatfishes in 1972 was:

area 57 (Eastern Indian Ocean): 1 500 tons (India only)
area 71 (Western Central Pacific): 15 500 tons (Philippines: 13 100 tons)

Caught mainly with bottom trawls; also with trap nets.

Marketed mainly fresh.

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1974

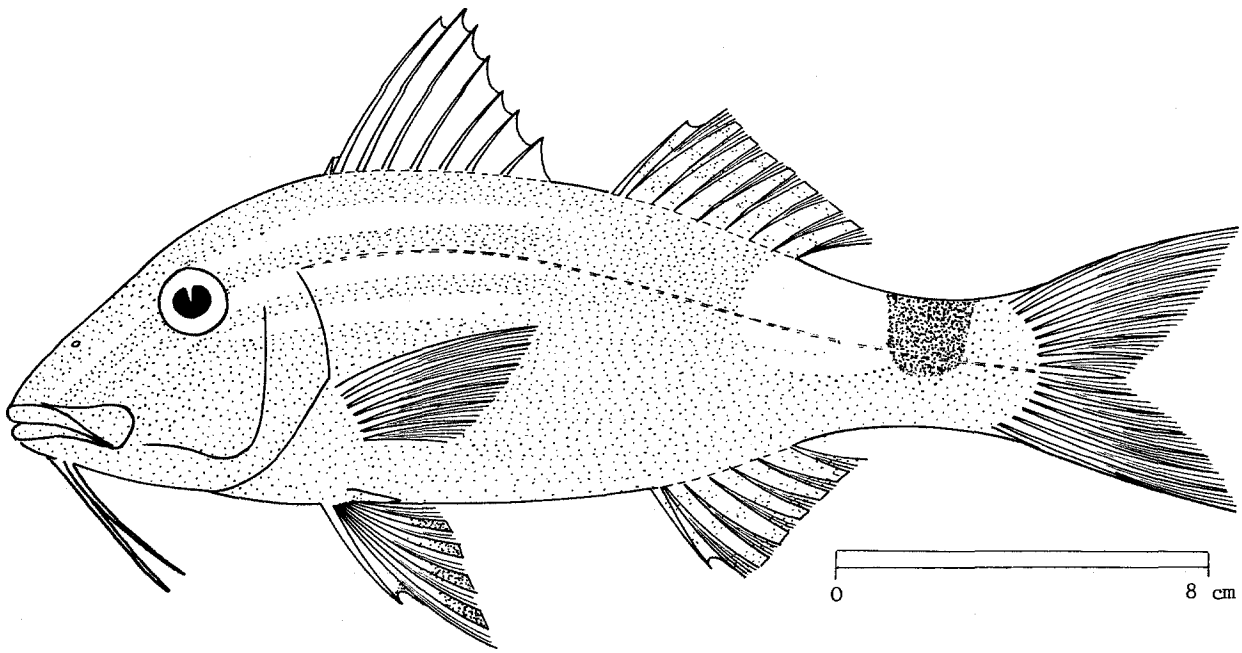
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MULLIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Parupeneus fraterculus Valenciennes, 1831

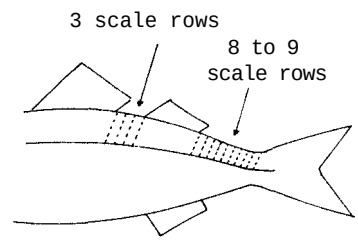
SYNONYMS STILL IN USE: *Parupeneus spilurus* Bleeker, 1854
Parupeneus signatus Günther, 1867



VERNACULAR NAMES

FAO: En - Blacksaddle goatfish
Fr -
Sp -

NATIONAL:



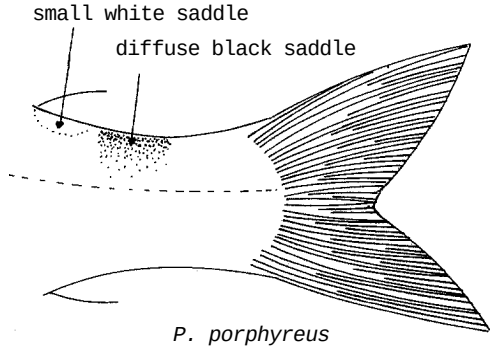
DISTINCTIVE CHARACTERS:

Body deep, snout profile straight. Chin with 2 moderately long barbels; a small spine above midpoint of opercular margin. Teeth in both jaws in a single row, none on vomer and palatines (roof of mouth). *3 vertical rows of scales along the space between dorsal fins; 8 to 9 vertical rows of scales along upper part of caudal peduncle.*

Colour: ground colour of head, body and fins red or vermilion in adults, but greenish bronze in young specimens. *2 to 3 longitudinal bands of lighter shade on head and sides, separating 2 darker bands (of the same colour as body) which are most conspicuous behind the eyes but become indistinguishable at the level of the space between dorsal fins;* these bands tend to disappear with age. *A large whitish saddle on anterior part of caudal peduncle followed by a black saddle which increases in size with age.* 2nd dorsal and anal fins with light yellow to golden marks (parallel lines of spots in young specimens, changing to irregular blotches with age, no marks on 1st dorsal fin; caudal fin rays lined with yellow, also changing to blotches with age.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Parupeneus porphyreus: whitish saddle on anterior part of caudal fin very well defined and small (only 2 scale rows long and 1 scale row broad) followed by a diffuse black saddle which disappears with age; in adults, also vertical stripes on body, tips of 1st dorsal fin and upper lobe of caudal fin white; alternating series of greenish points on caudal fin. Ground colour highly variable with age (olive green in young, bright red in adults, and orange in old specimens). This species is often confused with *P. fraterculus.*



P. porphyreus

Other mullid species: lack the combination of light and dark longitudinal bands on head and sides, and white and black saddles on caudal peduncle (apart from generic differences in *Upeneus, Mulloidichthys* and *Upeneichthys* species).

SIZE:

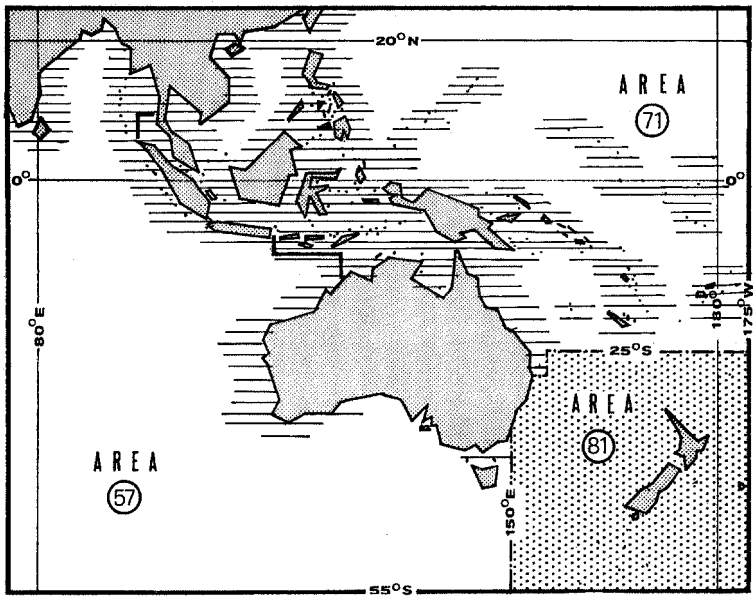
Maximum: 45 cm; common: 20 to 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area; northward to Japan, southward to southern coasts of Australia, and westward to East Africa. Abundant along continental coasts, as well as around oceanic islands.

Inhabits coastal waters, from depths of 20 m to about 80 m. Found singly or in small schools.

Feeds on bottom-living animals.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species. The total reported catch of unclassified goatfishes in 1972 was:

area 57 (Eastern Indian Ocean): 1 500 tons (India only)
area 71 (Western Central Pacific): 15 500 tons (Philippines: 13 100 tons)

Caught mainly with bottom trawls; also with trap nets.

Marketed mainly fresh.

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1974

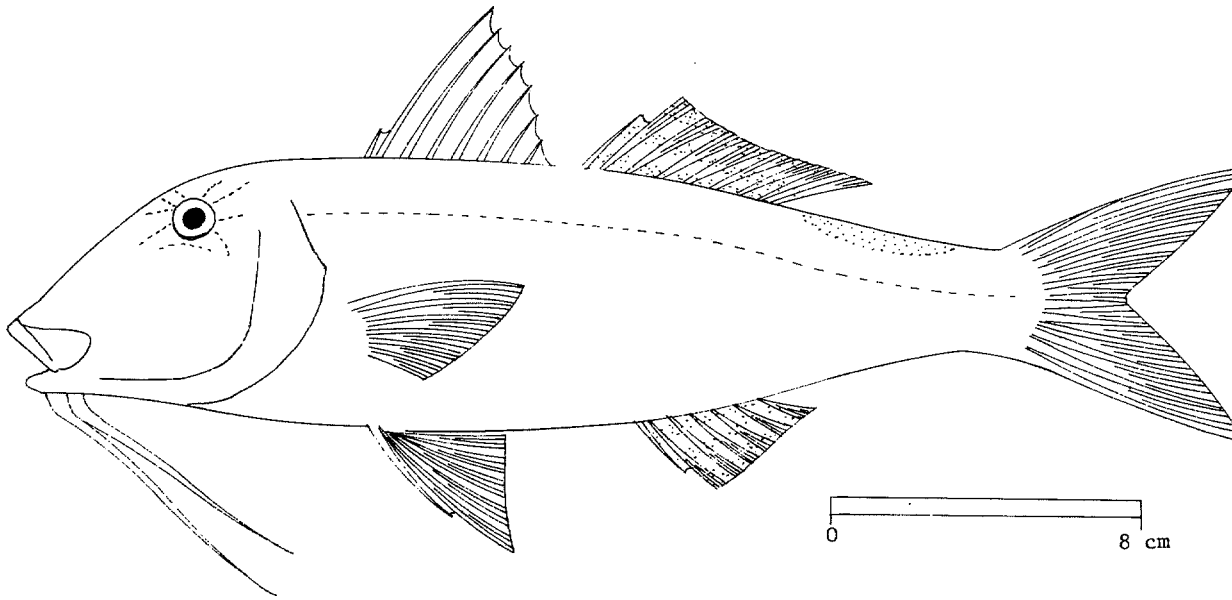
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MULLIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Parupeneus chryserydros Lacepède, 1801

SYNONYMS STILL IN USE: *Parupeneus cyclostomus* Cuvier, 1829 nec. Lacepède
Parupeneus luteus Valenciennes, 1831

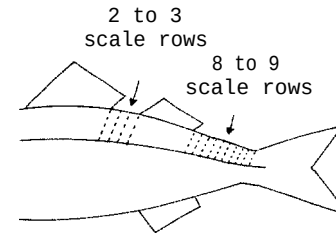


VERNACULAR NAMES

FAO: En - Goldsaddle goatfish
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:



Body elongate, snout profile straight. Chin with 2 very long barbels, reaching to base of pelvic fins; a small spine on upper third of opercular margin. Teeth in both jaws in a single row, none on vomer and palatines (roof of mouth). *2 to 3 vertical rows of scales along the space between dorsal fins; 8 to 9 vertical rows of scales along upper part of caudal peduncle.*

Colour: ground colour of head, body and fins changing greatly with depth; light to dark violet/grey with lines of yellow spots or a yellow network in shallow waters; yellow/orange at about 50 m, and pink at greater depths (about 80 m). Radiating lines around eye, either golden on a violet/grey background, or vice versa, according to the ground colour of the fish. *Always a large, oblong, golden saddle on caudal peduncle which is characteristic for the species.* 2nd dorsal and anal fins with horizontal stripes, but no stripes on 1st dorsal. Due to its variability in colour, this species is often misidentified.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA

Other mullid species: lack the combination of very long barbels, radiating lines around eye, and a golden saddle on caudal peduncle (apart from generic differences in *Upeneus, Mulloidichthys* and *Upeneichthys).*

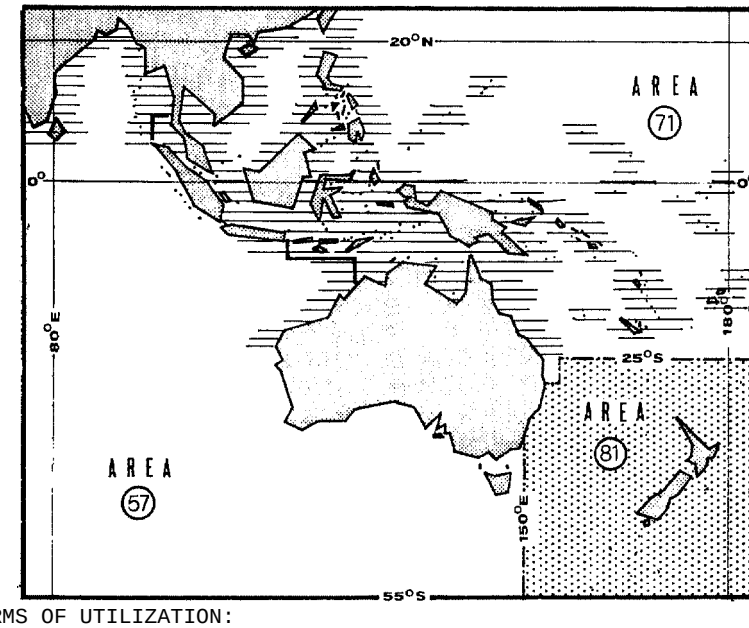
SIZE:

Maximum: 52 cm; common: 30 to 40 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area, northward and southward to 25° latitude, westward to East Africa.

Inhabits coastal waters down to about 80 m.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species. The total reported catch of unclassified goatfishes in 1972 was:

area 57 (Eastern Indian Ocean): 1 500 tons (India only)
area 71 (Western Central Pacific): 15 500 tons (Philippines: 13 100 tons)

Caught mainly with lines.

Marketed mostly fresh.

MULL Upen 1
1974

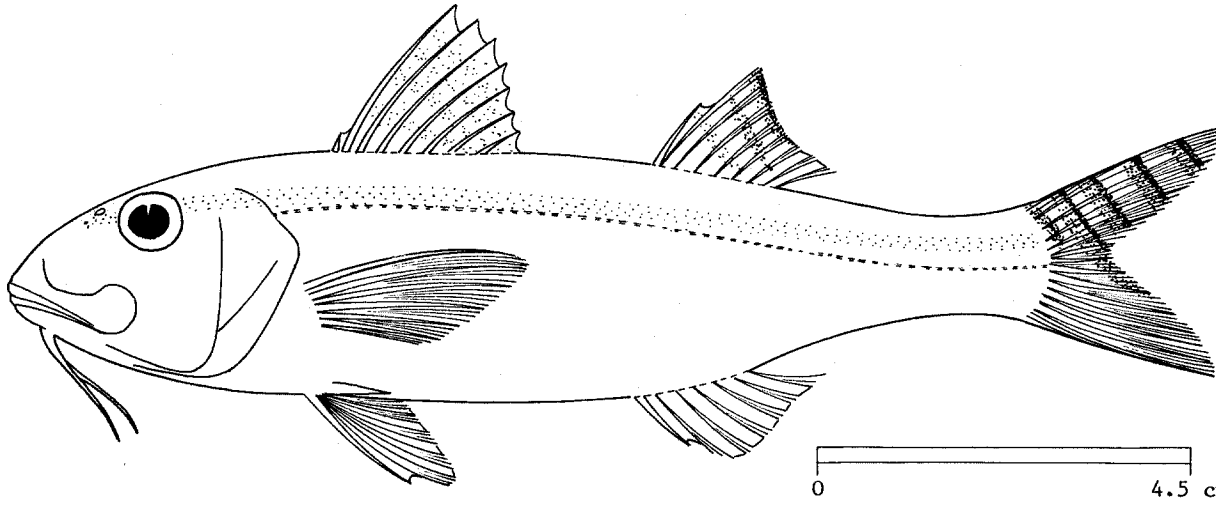
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MULLIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Upeneus (Upeneus) moluccensis Bleeker, 1855

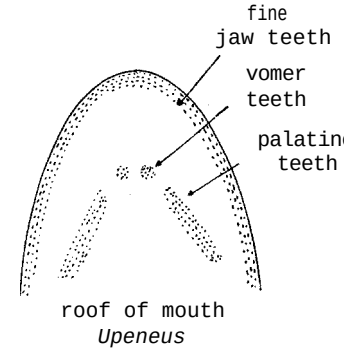
SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Goldband goatfish
Fr -
Sp -

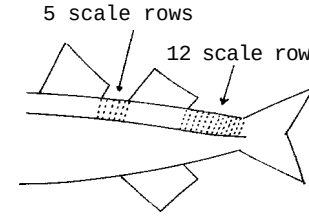
NATIONAL:



roof of mouth
Upeneus

DISTINCTIVE CHARACTERS:

Body elongate. Chin with 2 short, thin barbels; no spine on operculum. Teeth in both jaws and on vomer and palatines (roof of mouth), the latter can only be seen after removal of lower jaw. Caudal peduncle moderately deep (its depth about 1110 of body length, excluding caudal fin). *5 vertical rows of scales along the space between dorsal fins; 12 vertical rows of scales along upper part of caudal peduncle.* Pectoral fins much longer than pelvic fins.



Colour: head and back brown/red or bright red, sides and belly white. A *distinct bright yellow band runs from anterior profile of head through eye above lateral line to caudal fin* (clearly visible also in market specimens that are not very fresh). Both dorsal fins yellow/golden, with 3 red horizontal stripes, those on the first dorsal ill-defined (marblings rather than stripes); pectoral fins colourless; pelvic fins yellowish; *anal fin whitish, without any marks; zipper lobe of caudal fin whitish, with 5 to 6 black cross-bars, the 2nd extending to hind margin of lower lobe.* Barbels pink.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Mulloidichthys vanicolensis: often confused with *U. moluccensis* because it also has a single golden band along sides, but this begins only at operculum and runs well below lateral line only to below 2nd dorsal fin; also, eye much larger, caudal peduncle more slender, no marks on any of the fins (which are bright yellow or orange) and barbels white.

Other mullid species: lack the combination of a single yellow band along sides and the characteristic pattern of cross-bars on caudal fin (apart from generic differences in *Mulloidichthys, Parupeneus* and *Upeneichthys).*

SIZE:

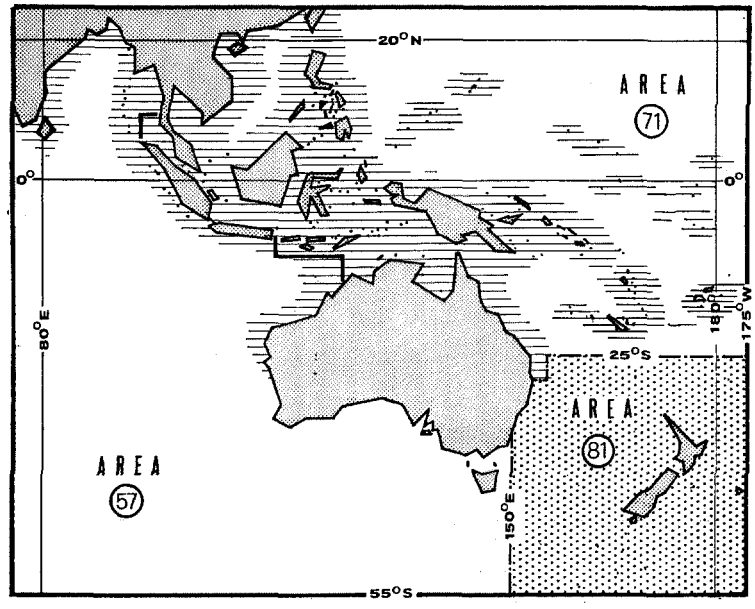
Maximum: 25 cm; common: about 15 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area, perhaps to northern coasts of Australia; also, westward to East Africa and as immigrant into eastern part of Mediterranean. Rare around isolated groups of islands.

Inhabits predominantly coastal waters at depths of 10 to 80 m; usually found in large schools.

Feeds on bottom-living organisms.



PRESENT FISHING GROUNDS:

Inshore waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species. The total reported catch of unclassified goatfishes in 1972 was:

area 57 (Eastern Indian Ocean): 1 500 tons (India only)
area 71 (Western Central Pacific): 15 500 tons (Philippines: 13 100 tons)

Caught mainly with bottom trawls; also with trap nets.

Marketed mainly fresh; also used for fish meal.

MULL Upen 2

1974

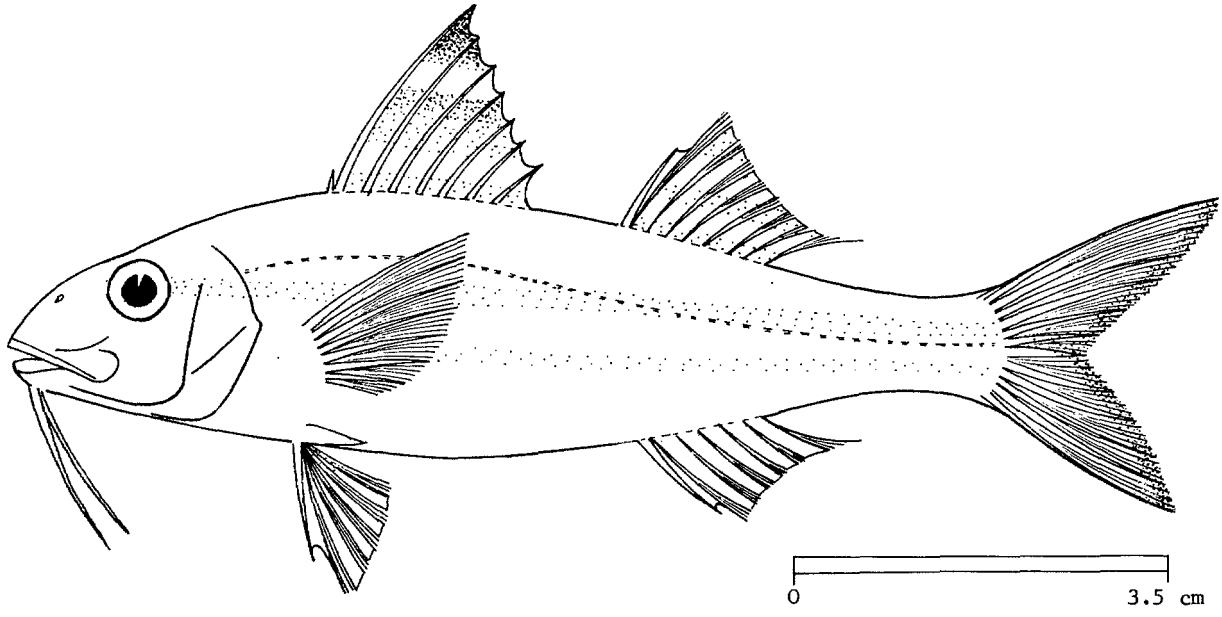
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MULLIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Upeneus (Upeneus) sulphureus Cuvier, 1829

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

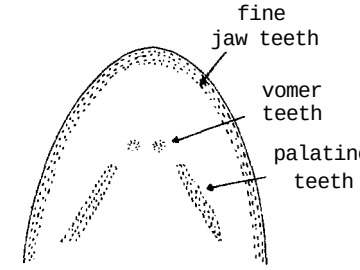
FAO: En - Yellow goatfish
Fr -
Sp -

NATIONAL:

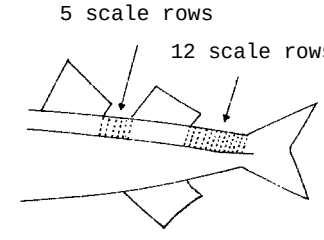
DISTINCTIVE CHARACTERS:

Body elongate, but rather deep. Chin with 2 thin, short barbels; no spine on operculum. Teeth in both jaws and on vomer and palatines (roof of mouth), the latter can only be seen after removal of lower jaw. 5 *vertical rows of scales along the space between dorsal fins; 12 vertical rows of scales along upper part of caudal peduncle. Pelvic fins short,* about 2/3 the length of pectoral fins.

Colour: head reddish, back greenish bronze or olive green, lower sides and belly yellow. Two *yellow/orange bands along sides,* the upper from eye to caudal peduncle and the lower from axil of pectoral fin to caudal peduncle. Both dorsal fins white, with 3 horizontal stripes, the uppermost (at tips of fin) black, the others grey; *no marks on anal or caudal fins, the latter is uniform grey/green with a dusky hind margin.* Barbels white.



roof of mouth
Upeneus

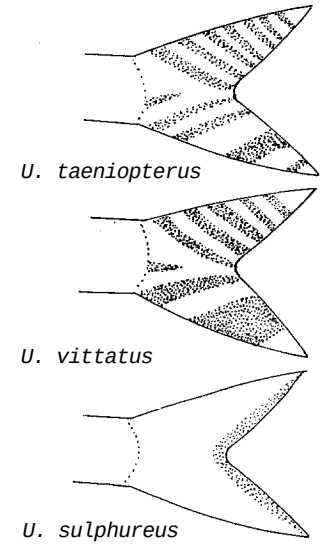


DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Upeneus (Upeneus) taeniopterus: the largest of *Upeneus* species (maximum size: 35 cm); body more elongate, pelvic fins almost as long as pectoral fins; 1st dorsal fin with orange blotches; both caudal fin lobes with black bars.

U. (Upeneus) vittatus: 6 to 7 vertical rows of scales along the space between dorsal fins (5 in *U. sulphureus);* 4 to 5 bronze to golden bands along sides; both caudal fin lobes with black bars.

Other mullid species: lack the combination of two yellow/orange bands along sides, and no bars on caudal fin (apart from generic differences in *Mulloidichthys, Parupeneus* and *Upeneichthys).*



U. taeniopterus

U. vittatus

U. sulphureus

SIZE:

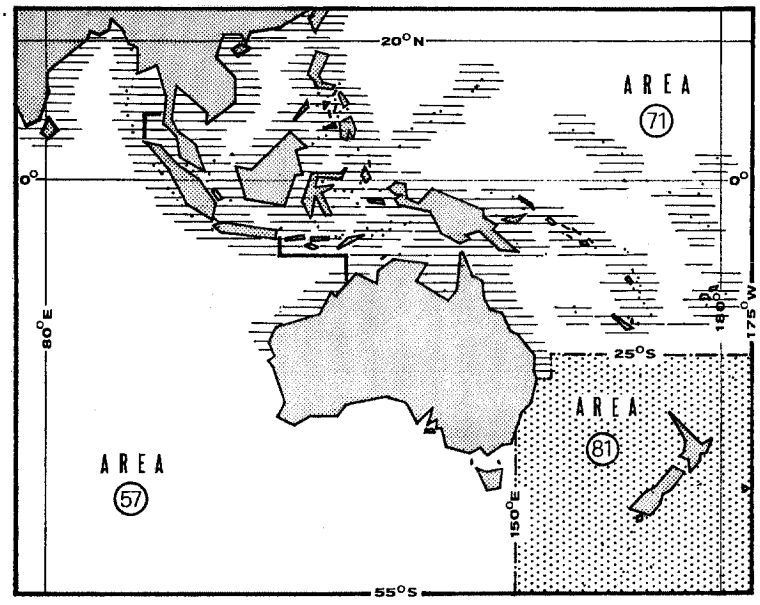
Maximum: 23 cm; common: 12 to 15 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to northern coasts of Australia; also, westward to East Africa and northward to coasts of China.

Inhabits coastal waters, often in river estuaries, at depths of 30 to 70 m; usually found in large schools.

Feeds on bottom-living organisms.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species. The total reported catch of unclassified goatfishes in 1972 was:

area 57 (Eastern Indian Ocean): 1 500 tons (India only)
area 71 (Western Central Pacific): 15 500 tons (Philippines: 13 100 tons)

Caught mainly with bottom trawls, trap nets, seines and lines.

Marketed mainly fresh; also used for fish meal.

MULL Upen *3*

1974

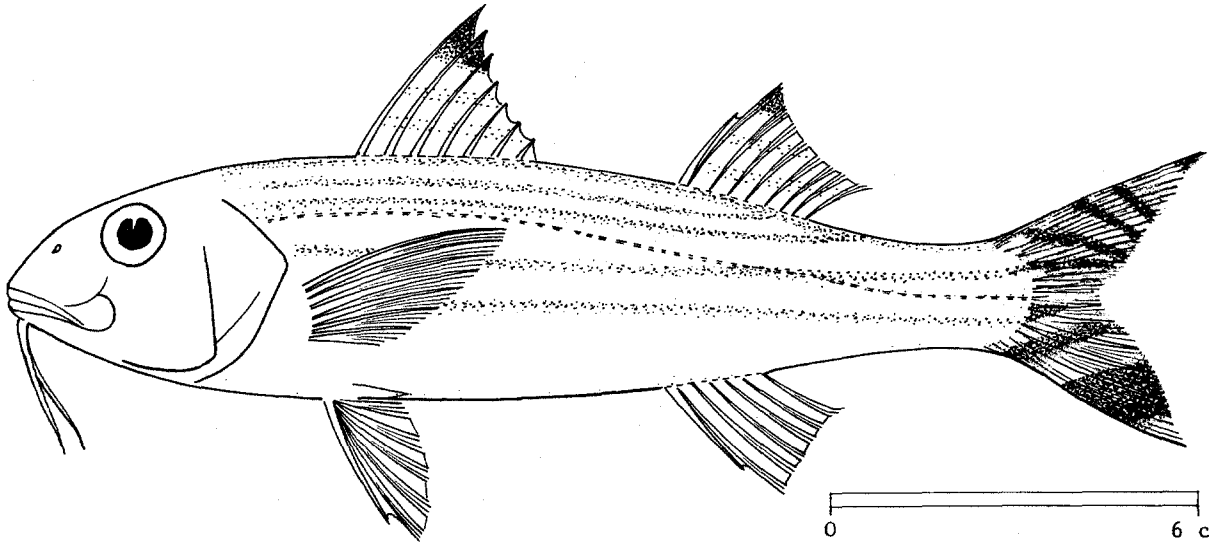
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MULLIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Upeneus (Upeneus) vittatus Lacepède, 1801

SYNONYMS STILL IN USE: *Upeneus vittatus* Forsskål seems to be a species from the Red Sea belonging to the subgenus *Pennon*



VERNACULAR NAMES:

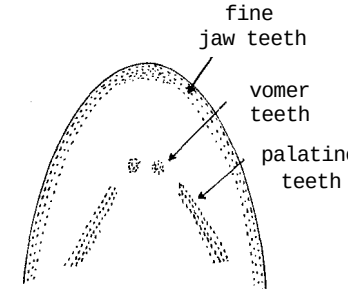
FAO: En - Yellowstriped goatfish
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

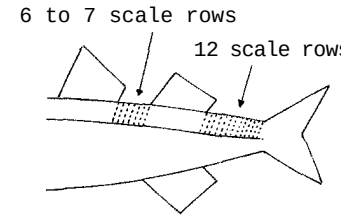
Body elongate and rather robust. Chin with 2 short, thin barbels; no spine on operculum. Teeth in both jaws and on vomer and palatines (roof of mouth), the latter can only be seen after removal of lower jaw. 6 *to 7 vertical rows of scales along the space between dorsal fins; 12 vertical rows of scales along upper part of caudal peduncle. Pelvic fins short,* about 2/3 the length of pectoral fins.

Colour: head and back bronze, belly white. 3 deep-bronze longitudinal bands above lateral line (one of them median, running along dorsal profile) and 2 yellow bands below lateral line (the upper crossing the lateral line at level of 2nd dorsal firs; spaces between these bands slightly wider than the bands themselves and pearly white. Both dorsal fins white, with 3 horizontal stripes, the uppermost (at tips of fins) black, the others grey; *no marks on anal fin;* pectoral fins greyish, pelvic and anal fins greenish; upper lobe of caudal fin with 4 to 5 grey or black cross-bars, alternating with slightly broader white bars; lower lobe with 3 to 4 grey or black cross-bars (also on white background) unequal in width, *the 3rd forming a black square which is characteristic for the species* (visible even in dried specimens).



roof of mouth

Upeneus

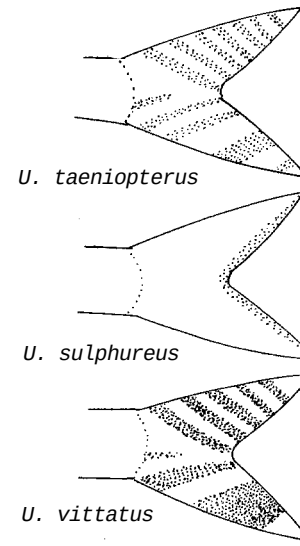


DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Upeneus (Upeneus) taeniopterus: the largest of *Upeneus* species (maximum size: 35 cm); body more elongate; pelvic fins almost as long as pectoral fins; back greenish bronze and only 2 golden bands along sides; 1st dorsal fin with orange blotches; a larger number of dark cross-bars on caudal fin.

U. (Upeneus) sulphureus: body much deeper; only 5 scale rows along the space between dorsal fins; back greenish bronze or olive green; no bars on caudal fin.

Other mullid species: lack the combination of 5 yellow or orange bands along sides and a characteristic black square bar on lower lobe of caudal fin.



SIZE:

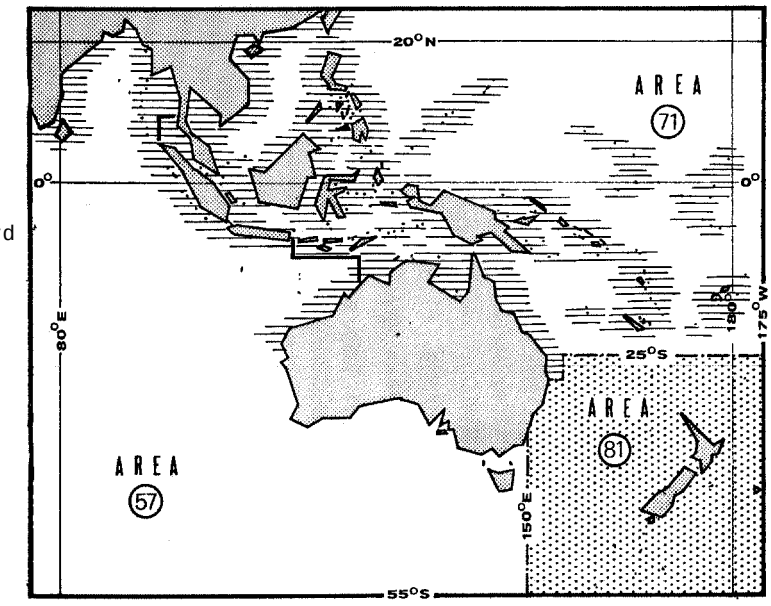
Maximum: 27 cm; common: 15 to 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to northern coasts of Australia; also, westward to East Africa and northward to Japan.

Lives in coastal waters down to 100 m; usually found in schools

Feeds on bottom-living animals.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species. The total reported catch of unclassified goatfishes in 1972 was:

area 57 (Eastern Indian Ocean): 1 500 tons (India only)
area 71 (Western Central Pacific): 15 500 tons (Philippines: 13 100 tons)

Caught mainly with bottom trawls, trap nets, seines and lines.

Marketed mainly fresh; also used for fish meal.

MULL Upen 4

1974

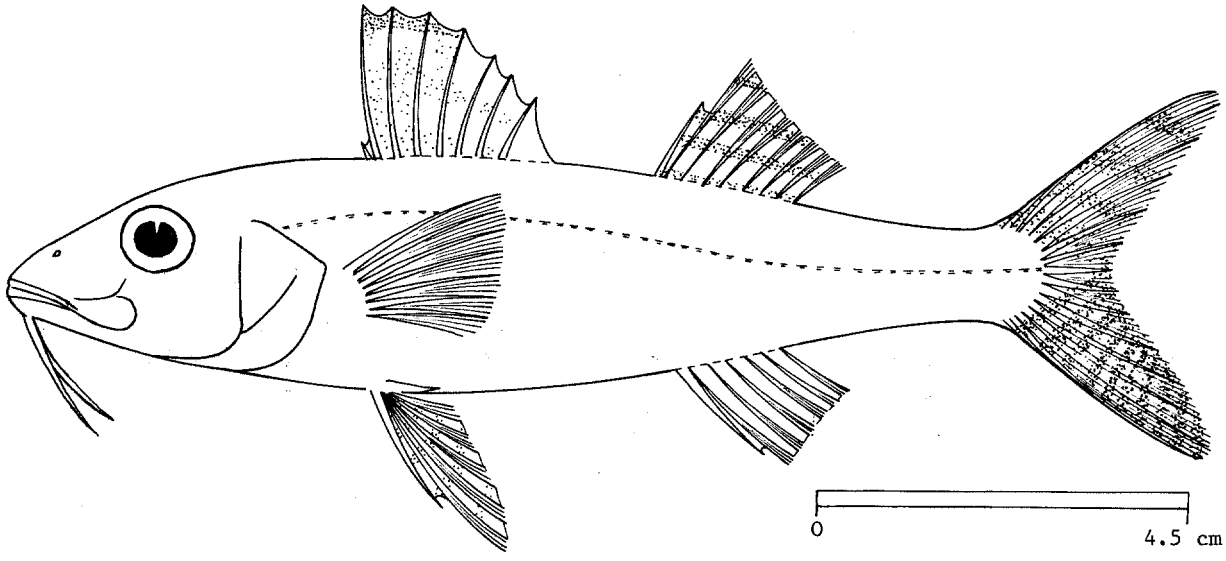
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MULLIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Upeneus (Pennon) bensasi Temminck & Schlegel, 1842

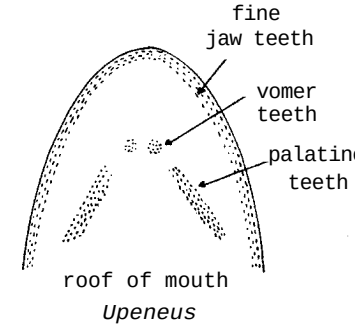
SYNONYMS STILL IN USE: None



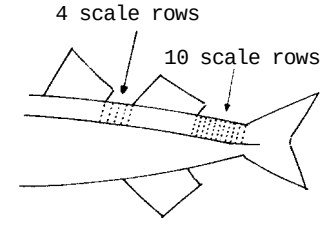
VERNACULAR NAMES:

FAO: En - Yellowfin goatfish
Fr -
Sp -

NATIONAL:



Upeneus



DISTINCTIVE CHARACTERS:

Body elongate and slender. Chin with 2 short, thin barbels; no spine on operculum. Teeth in both jaws and on vomer and palatines (roof of mouth). *4 vertical rows of scales along the space between dorsal fins; 10 vertical rows of scales along upper part of caudal peduncle.* Caudal peduncle moderately deep (its depth about 10 times in body length, excluding caudal fin. *Pelvic fins about equal in length to pectoral fins.*

Colour: head and back brownish violet, belly whitish. *Both dorsal fins golden, with red stripes* (2nd dorsal) *or marblings* (1st dorsal); pelvic fins with red stripes; *anal fin yellow/orange, without any marks; caudal fin golden yellow, with 4 to 6 oblique red bars across upper lobe, and 10 or more across lower lobe. Barbels and gill membrane golden.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

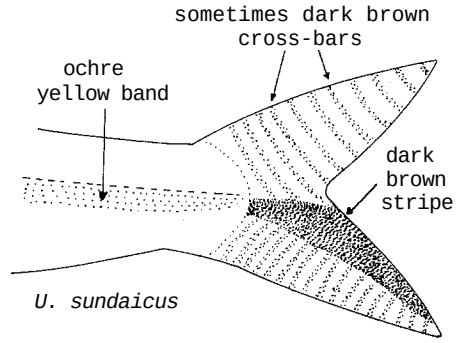
Upeneus (Pennon) asymetricus: caudal peduncle very long and slender (its depth about 11 times in body length, excluding caudal fin); 6 to 8 cross-bars on upper lobe of caudal fin; barbels and gill membrane white. Often confused with *U. bensasi,* as both species are often caught together.

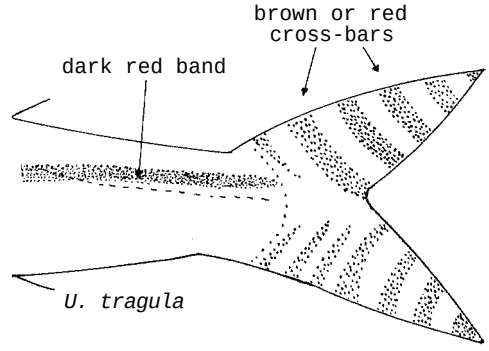
Upeneus (Pennon) sundaicus: caudal peduncle very deep, a large ochre yellow band along sides, and a dark brown triangular stripe prolonging the lateral band along lower lobe of caudal fin.

Upeneus (Pennon) tragula: a broad, very dark longitudinal band along sides.

Upeneus (Pennon) filifer: 1st dorsal fin prolonged into a long filament; colour uniform pink.

Other mullid species: often yellow or dark bands on body, or cross-bars on caudal fin grey to black (subgenus *Upeneus),* or stripes on anal fin *(Parupeneus),* or no marks on any of the fins *(Mulloidichthys),* (apart from other generic differences).





SIZE:

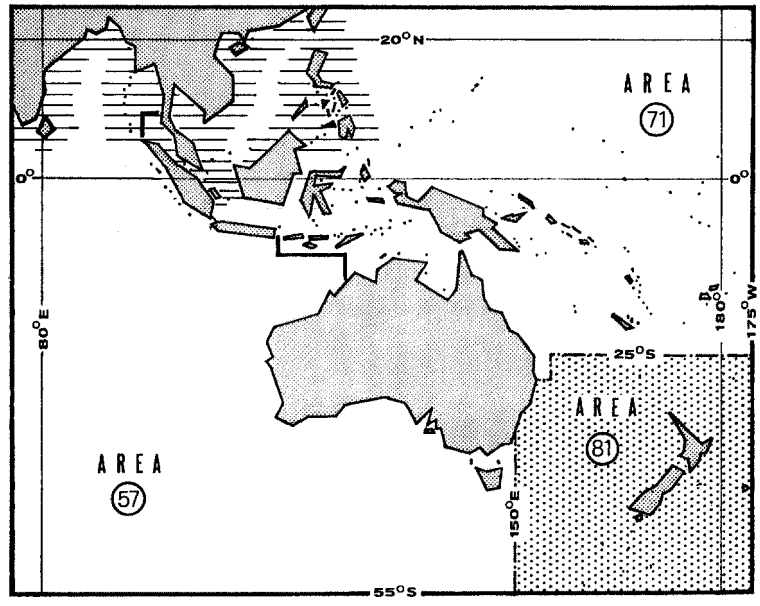
Maximum: 24 cm; common: about 15 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northwestern part of area, but not New Guinea or Australia; also, westward to East Africa and northward to Japan.

Inhabits coastal waters, down to about 40 m; usually found in schools.

Feeds on bottom-living animals.



PRESENT FISHING GROUNDS:

Inshore waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species. The total reported catch of unclassified goatfishes in 1972 was:

area 57 (Eastern Indian Ocean): 1 500 tons (India only)
area 71 (Western Central Pacific): 15 500 tons (Philippines: 13 100 tons)

Caught mainly with bottom trawls; also with trap nets.

Marketed mainly fresh; also used for fish meal.

MULL Upen 5

1974

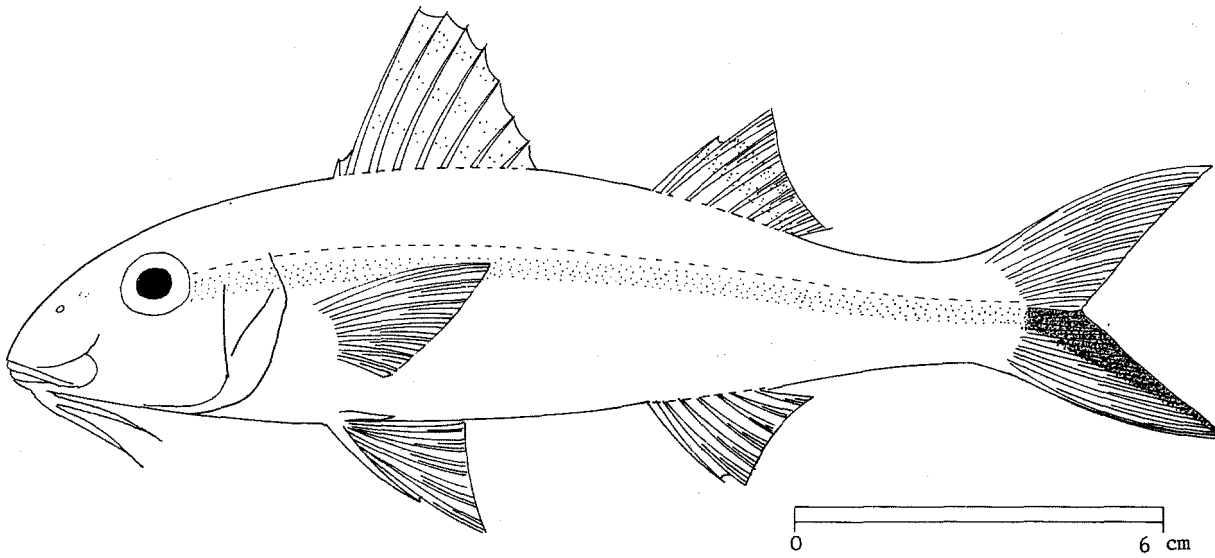
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MULLIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Upeneus (Pennon) sundaicus Bleeker,

SYNONYMS STILL IN USE: *Upeneus armatoides* Whitley, 1955
Upeneus caudalis Poppta, 1921



VERNACULAR NAMES:

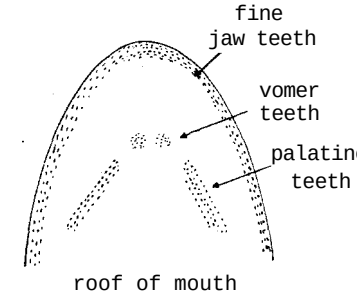
FAO: Fr - Ochreband goatfish
Fr -
Sp -

NATIONAL:

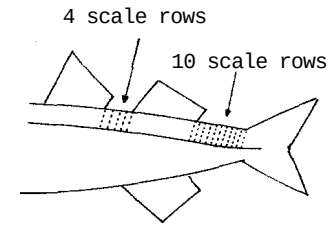
DISTINCTIVE CHARACTERS:

Body elongate. Chin with 2 short, thin barbels; no spine on operculum. Teeth in both jaws and on roof of mouth (vomer and palatines). *4 vertical rows of scales along the space between dorsal fins; 10 vertical rows of scales along upper part of caudal peduncle. Caudal peduncle very deep (its depth 8 times in body length, excluding caudal fin).* Pectoral fins sometimes considerably longer than pelvic fins.

Colour: head and back greenish bronze, belly whitish. *An ochre yellow band runs below lateral line from hind margin of eye to base of caudal fin.* Dorsal fins yellowish, with faint horizontal reddish stripes; *caudal fin*, generally uniform brown, *always with a characteristic dark brown triangular stripe prolonging the longitudinal band along lower fin lobe.* In some cases (so-called form *caudalis)* also series of dark brown cross-bars on caudal fin, more numerous on lower lobe than on upper. Barbels orange.



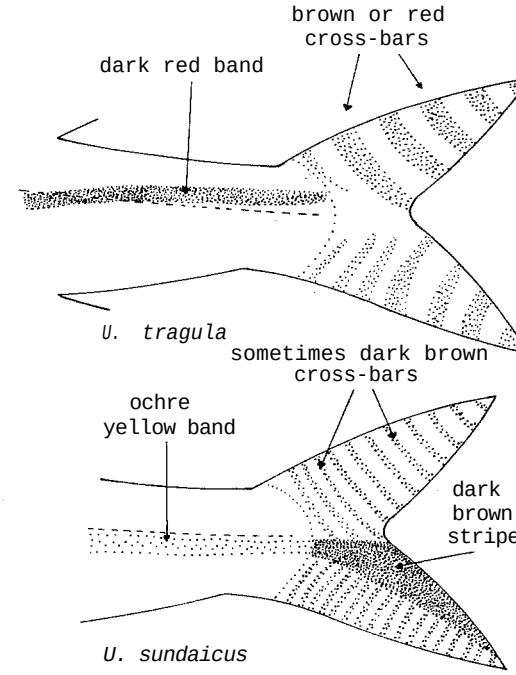
roof of mouth
Upeneus



DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE

Upeneus (Pennon) tragula: caudal peduncle less deep (its depth 9 times in body length, excluding caudal fin); longitudinal band along sides dark red, extending from snout through eye to caudal fin base, below lateral line in its anterior 2/3, above lateral line along caudal peduncle; caudal fin with brown or red cross-bars, 4 to 6 on upper lobe, 5 to 8 on lower; barbels yellow.

Other mullid species: lack the combination of an *ochre* yellow band along sides and a dark triangular stripe on lower lobe of caudal fin (apart from *generic* differences in *Mulloidichthys, Parupeneus* and *Upeneichthys).*



SIZE:

Maximum: 22 cm; common: 12 to 15 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

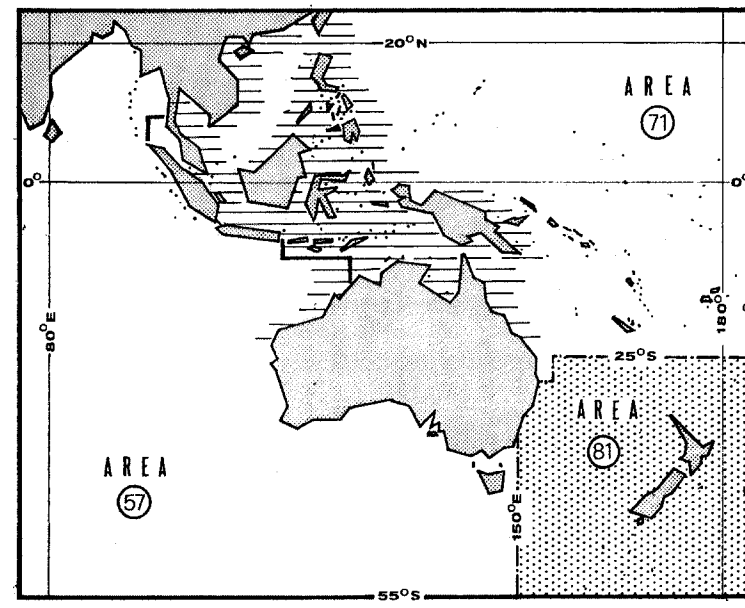
Coasts of Southeast Asia to northern coasts of Australia.

Inhabits coastal waters down to 100 m; usually found in schools.

Feeds on bottom-living animals.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species. The total reported catch of unclassified goatfishes in 1972 was:

area 57 (Eastern Indian Ocean): 1 500 tons (India only)
area 71 (Western Central Pacific): 15 500 tons (Philippines: 13 100 tons)

Caught mainly with bottom trawls; also with trap nets.

Marketed mainly fresh; also used for fish meal.

KULL Upen 6

1974

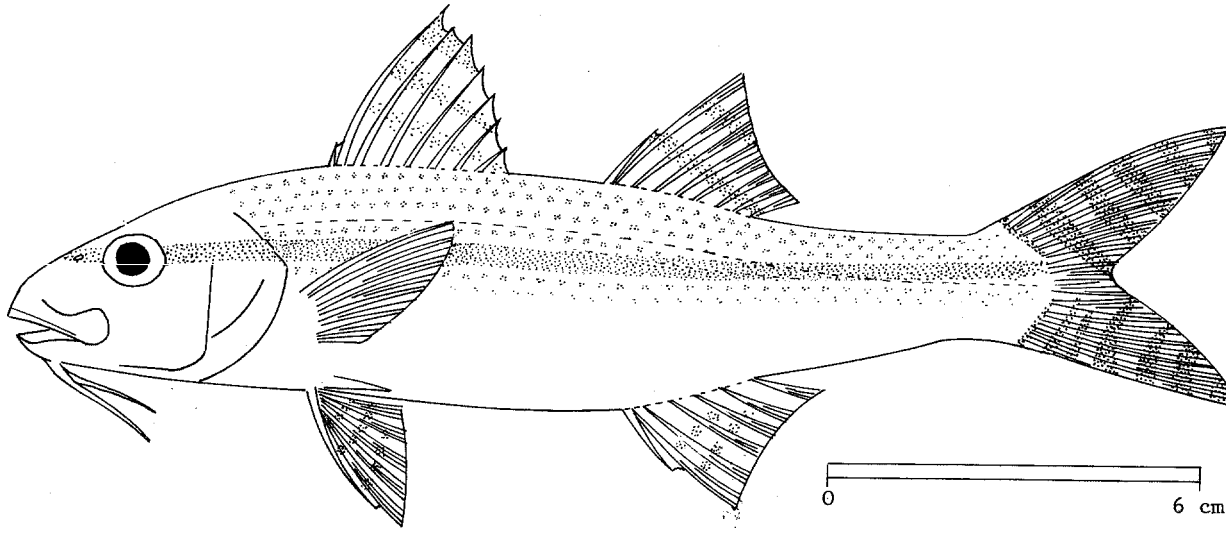
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MULLIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Upeneus (Pennon) tragula Richardson, 1846

SYNONYMS STILL IN USE: None



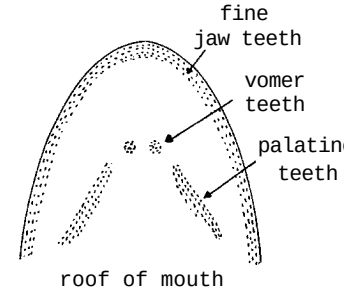
VERNACULAR NAMES:

FAO: En - Darkband goatfish
Fr -
Sp -

NATIONAL:

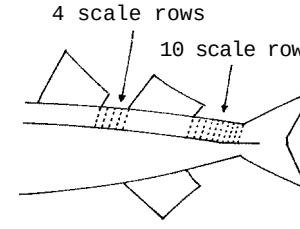
DISTINCTIVE CHARACTERS:

Body elongate and slender. Chin with 2 short, thin barbels; no spine on operculum. Teeth in both jaws and on vomer and palatines (roof of mouth). *4 vertical rows of scales along the space between dorsal fins; 10 vertical rows of scales along upper part of caudal peduncle.* Caudal peduncle deep (its depth about 9 times in body length, excluding caudal fin). Dorsal fins about equal in height; *pelvic fins about equal in length to pectoral fins.*



roof of mouth
Upeneus

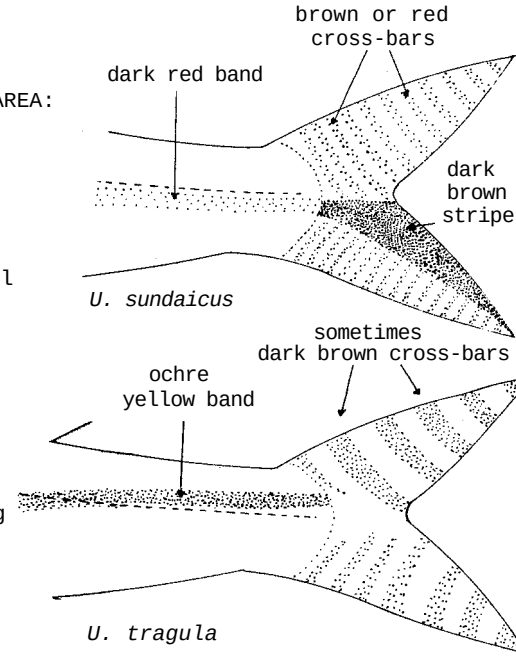
Colour: head and back brownish, belly white. A dark red band *runs from snout through eye to base of caudal fin,* below lateral line for its anterior 2/3, above lateral line along caudal peduncle. *Scales of back and upper sides with brown or reddish spots forming regular longitudinal lines.* Both dorsal fins with horizontal brown or reddish stripes against a light background; pelvic and anal fins with horizontal lines of round spots; *caudal fin with brown or red cross-bars* (4 to 6 on upper lobe and 5 to 8 on lower, their number increasing with age). Barbels yellow.



DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Upeneus (Pennon) sundaicus: caudal peduncle very deep (its depth 8 times in body length, excluding caudal fin; pectoral fins often much longer than pelvic fins (Australian form *armatoides);* head and back greenish bronze; longitudinal band along sides ochre yellow, running below lateral line from eye to caudal fin; dorsal fins yellowish, with faint horizontal reddish stripes; caudal fin generally uniform brown, always with a characteristic dark brown triangular stripe, prolonging the lateral longitudinal band along lower lobe. In some cases (so-called form caudalis), also series of dark brown cross-bars on caudal fin, more numerous on lower lobe than on upper. Barbels orange.

Other mullid species: lack the combination of a dark red band along sides and regular series of brown or red spots along scale rows (apart from generic differences in *Mulloidichthys, Parupeneus* and *Upeneichthys).*



SIZE:

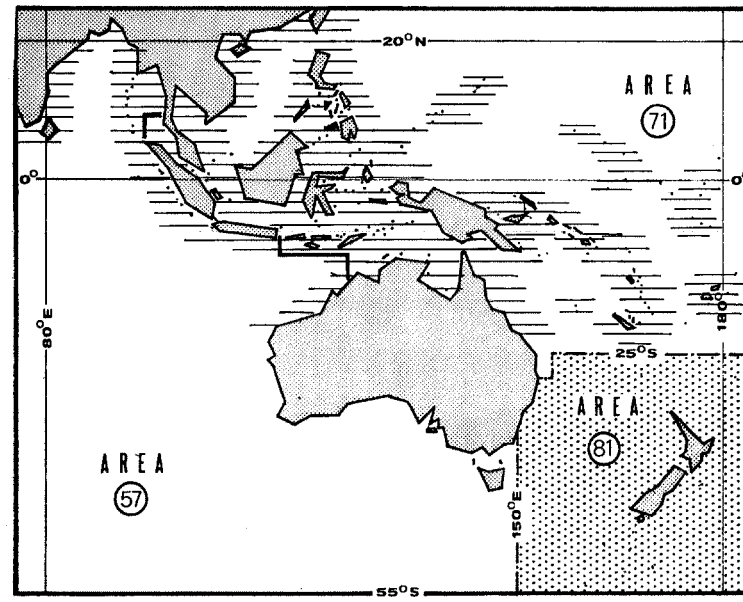
Maximum: 28 cm;
common: about 15 to 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to northern coasts of Australia; eastward to New Caledonia, westward to East Africa.

Inhabits coastal waters, down to 40 m; found singly or in schools.

Feeds on bottom-living organisms.



PRESENT FISHING GROUNDS:

Inshore waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species. The total reported catch of unclassified goatfishes in 1972 was:

area 57 (Eastern Indian Ocean): 1 500 tons (India only)
area 71 (Western Central Pacific): 15 500 tons (Philippines: 13 100 tons)

Caught mainly with bottom trawls; also with trap nets.

Marketed mainly fresh; also used for fish meal.

MURSOC

1974

FAO SPECIES IDENTIFICATION SHEETS

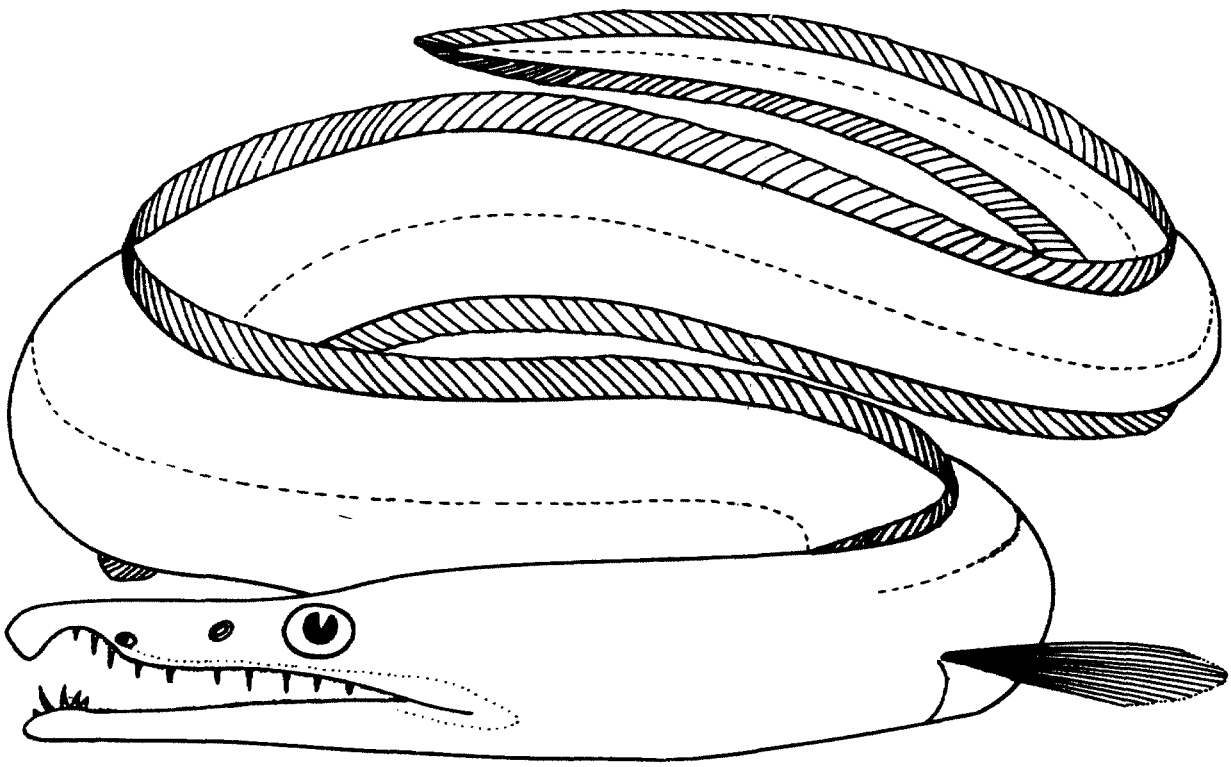
FISHING AREAS 57,71
(E Ind. ocean)
(W Cent. Pacific)

MURAENESOCIDAE

Pike-congers

Eel-like fishes, cylindrical in front, compressed towards tail. Large mouth with upper jaw extending well behind eye. Fangs (large canine teeth) on vomer (a median tooth-bearing bone on roof of mouth) and at front of lower jaw; tongue not free from floor of mouth. *Gill openings large,* separate and placed low on body. *Pectoral fins present;* dorsal and anal fins long, continuous with caudal fin; pelvic fins absent. Anus *well behind pectoral fin* and somewhat before midpoint of body. *No scales.*

Colour: grey, yellow or white, sometimes almost black on back.



SIMILAR FAMILIES OCCURRING IN THE AREA:

Muraenidae: lack pectoral fins.

Dysommidae: anus below the pectoral fin (well behind in Muraenesocidae).

All other eel families: lack large canine teeth on vomer.

Key to Genera

I a. Distinct bulge at bases of canine teeth on middle part of vomer ..... *Muraenesox*

1 b. Canine teeth on vomer conical, or if flattened, then not bulging at bases ..... *Congresox*

List of Species occurring in the Area

(Code numbers are given for those species for which Identification Sheets are included)

Congresox talabon	MURSOC Consox 1	*Muraenesox bagio*	MURSOC Mursox 1
Congresox talabonoides	MURSOC Consox 2	*Muraenesox cinereus*	MURSOC Mursox 2

KURSOC *Consox 1*

1974

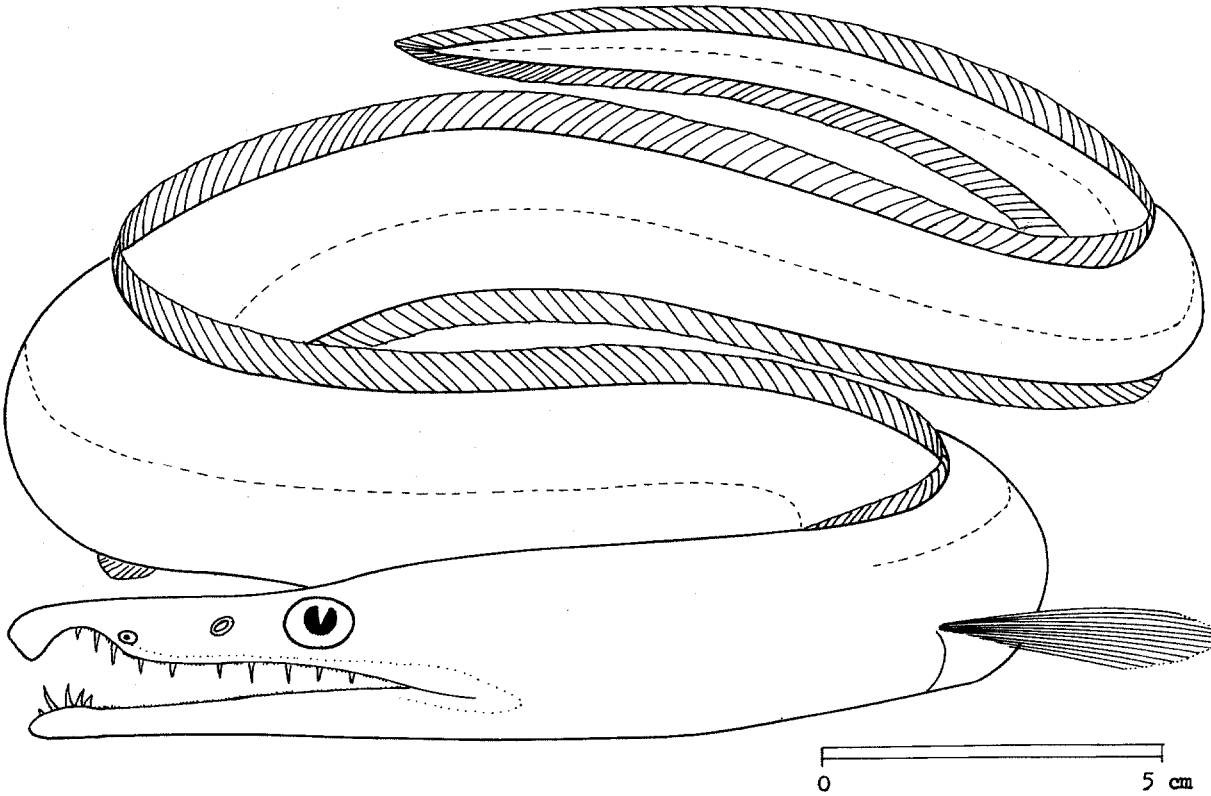
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MURAENESOCIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Congresox talabon (Cuvier, 1829)

SYNONYMS STILL IN USE: *Muraenesox talabon* (Cuvier, 1829)



VERNACULAR NAMES:

FAO: En - Yellow pike-conger
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Eel-shaped fish without scales. Mouth large, upper jaw ending well behind eye. *Outer tooth row in lower jaw leaning outward; middle canines on vomer* (roof of mouth) *conical* (needle-like, not blade-shaped). Dorsal and anal fins joined to caudal fin; *pectoral fins well developed, their length about 3 times in, length of head.*

Colour: head and body yellow.

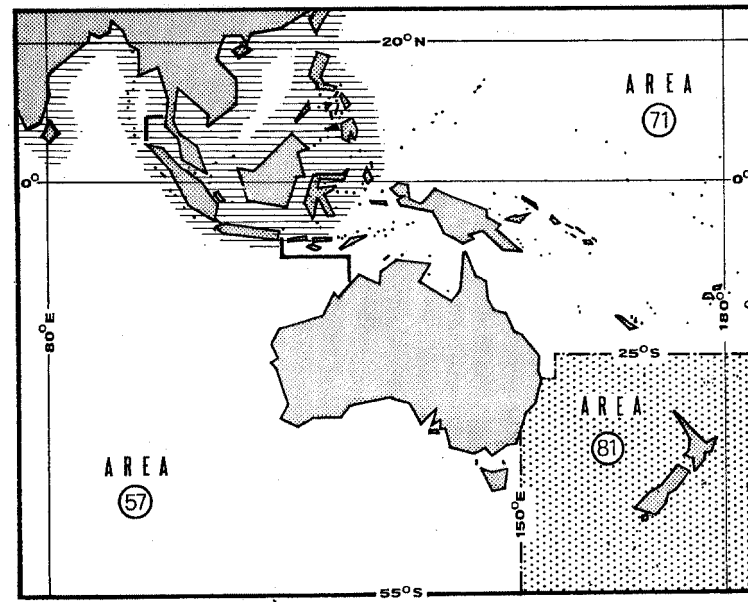
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Congresox talabonoides: pectoral fins shorter (length at least 4 times in, length of head; about 3 times in *C. talabon).*

Muraenesox cinereus, M. bagio: outer tooth row in lower jaw pointing straight upward and body greyish; also, middle canines on vomer with distinct basal lobes (blade-shaped, not needle-like).

SIZE:

Maximum: 200 cm;
common: about 150 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Coasts of India eastward to Celebes, the Philippines, and South China Sea.

Lives over soft bottoms down to about 100 m; also in estuaries.

Feeds mainly on bottom-living fishes.

PRESENT FISHING GROUNDS:

Caught in coastal waters, mostly at depths around 50 m, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with longlines at night.

Marketed fresh; predominantly used for fish balls.

MURSOC Consox 2

1974

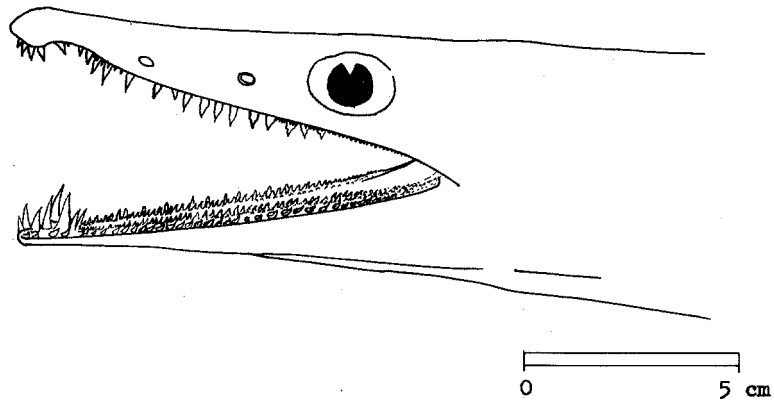
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MURAENESOCIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Congresox talabonoides (Bleeker, 1853)

SYNONYMS STILL IN USE: *Muraenesox talabonoides* (Bleeker, 1853)



VERNACULAR NAMES:

FAO: En - Indian pike-conger
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Eel-shaped fish without scales. *Outer tooth row in lower jaw leaning outward; middle canines on vomer conical* (needle-like, not blade-shaped). Dorsal and anal fins joined to caudal fin; *pectoral fins well developed, their length at least 4 times in length of head.*

Colour: head and body yellow.

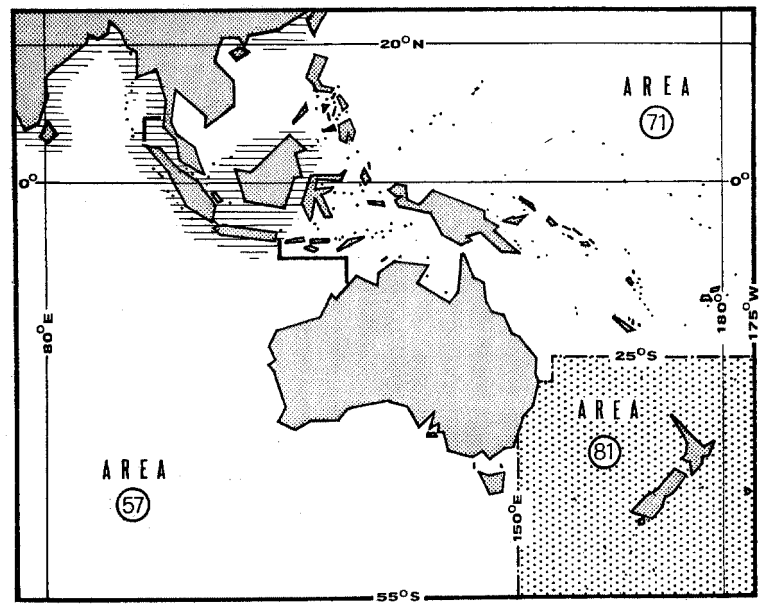
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Congresox talabon: pectoral fins longer (length about 3 times in length of head; at least 4 times in C. *talabonoides).*

Muraenesox cinereus, M. bagio: outer tooth row in lower jaw pointing straight upward and body greyish; also, middle canines on vomer with distinct basal lobes (blade-shaped, not needle-like).

SIZE:

Maximum: 200 cm; common: 150 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Coasts of India to Indonesia and Borneo, and off Hong Kong.

Lives over soft bottoms down to about 100 m; also in estuaries.

Feeds mainly on bottom-living fishes.

PRESENT FISHING GROUNDS:

Caught in coastal waters, mostly at depths around 50 m, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with longlines at night.

Marketed fresh; predominantly used for fish balls.

MURSOC Mursox 1

1974

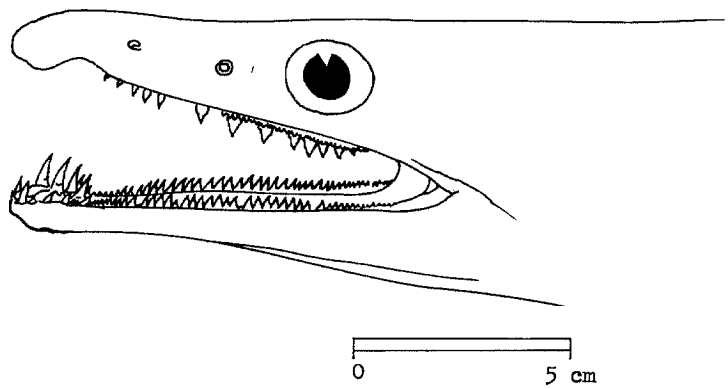
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MURAENESOCIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Muraenesox bagio (Hamilton-Buchanan, 1822)

SYNONYMS STILL IN *USE:* *Muraenesox yamaguchiensis* Katayama & Takai, 1954



VERNACULAR NAMES:

FAO: En - Common pike-conger
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Eel-shaped fish without scales. *Posterior nostril only a little closer to eye than to anterior nostril; snout long; eye 3 times in length of snout.* Mouth large, maxillary ending well behind eye; outer tooth row in lower jaw pointing straight upward; middle canines on vomer with distinct basal lobes, their bases sometimes in contact. Dorsal and anal fins joined to caudal fin; pectoral fins well developed; *35 to 38 pores in lateral line from head to above anus.*

Colour: head and body greyish.

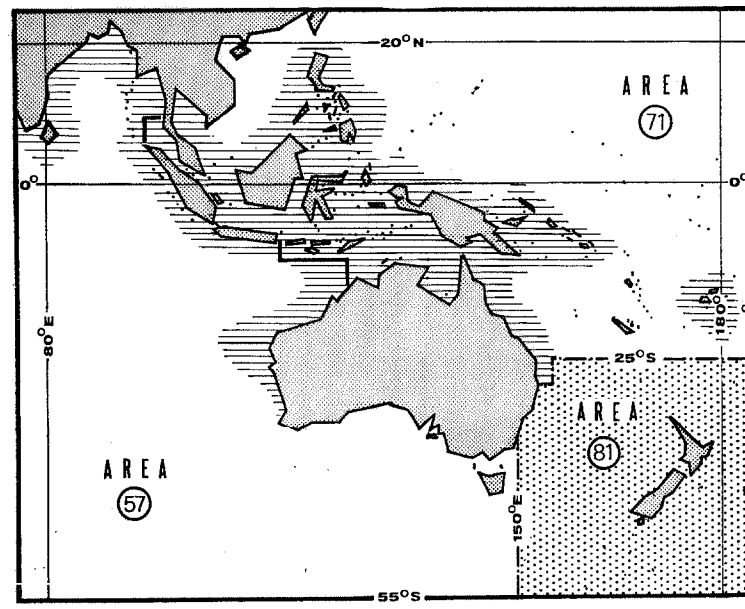
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Muraenesox cinereus: 39 to 47 pores in lateral line from head to above anus (35 to 38 in *M. bagio);* also, posterior nostril much nearer to eye than to anterior nostril, and eye 2.0 to 2.5 times in length of snout.

Congresox talabon, C. talabonoides: outer tooth row in lower jaw leaning outward and yellow in colour. Middle canines on vomer needle-like, not blade-shaped.

SIZE:

Maximum: 200 cm;
common: about 150 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area and southward well down the coasts of Australia but not reaching the southern coasts; also, westward to East Africa and eastward to Samoa.

Lives over soft bottoms down to about 100 m, also in estuaries.

Feeds mainly on bottom-living fishes.

PRESENT FISHING GROUNDS:

Caught in coastal waters, mostly at depths of 50 to 75 m, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with longlines at night.

Marketed fresh; predominantly used for fish balls.

MURSOC Mursox 2

1974

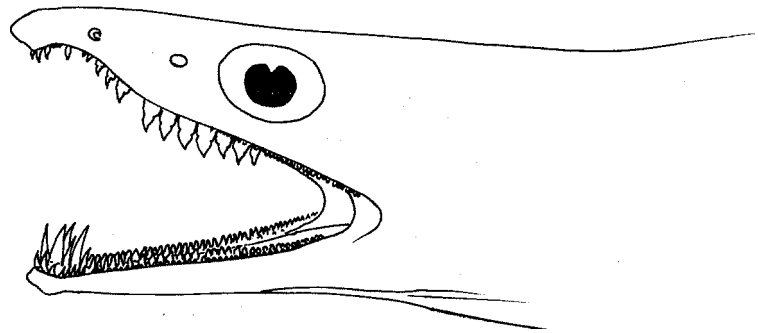
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: MURAENESOCIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Muraenesox cinereus (Forsskå1, 1775)

SYNONYMS STILL IN USE: *Muraenesox arabicus* (Schneider, 1801)



VERNACULAR NAMES:

FAO: En - Daggertooth pike-Conger
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Eel-shaped fish without scales. *Posterior nostril much nearer to eye than to anterior nostril. Snout short; eye 2.0 to 2.5 times in length of snout.* Mouth large, upper jaw ending well behind eye. Outer tooth row in lower jaw pointing straight upward; middle canines on vomer (roof of mouth) with distinct basal lobes, their bases more or less in contact. Dorsal and anal fins joined to caudal fin; pectoral fins well developed; 39 *to 47 pores in lateral line from head to above anus.*

Colour: head and body normally quite dark to grey/black.

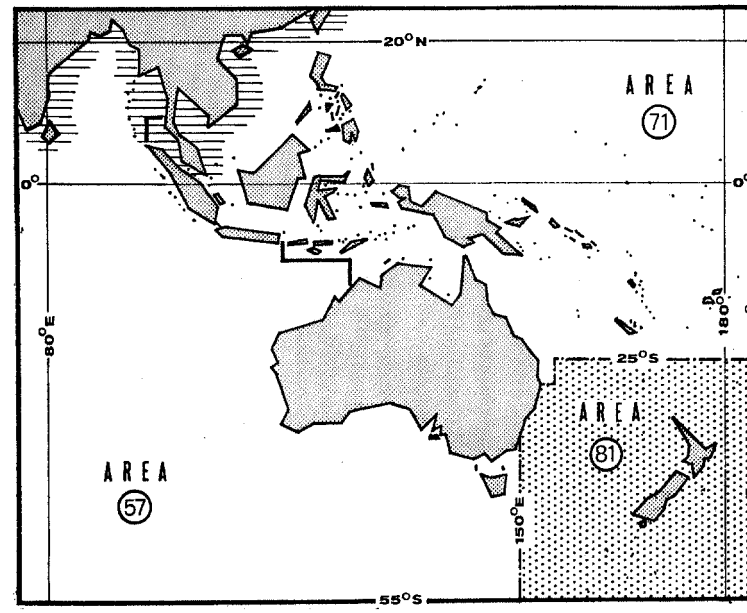
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Muraenesox bagio: 35 to 38 pores in lateral line from head to above anus (39 to 47 in *M. cinereus);* also, posterior nostril only a little closer to eye than to anterior nostril, and eye 3 times in length of snout.

Congresox talabon, C. talabonoides: outer tooth row in lower jaw leaning outward, and body yellow; also, middle canines on vomer needle-like, not blade-shaped.

SIZE:

Maximum: about 200 cm;
common: about 150 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Coasts of India, Burma and Malaysia northward to Hong Kong (not Indonesia, New Guinea or Australia).

Lives over soft bottoms down to about 100 m; also in estuaries.

Feeds mainly on bottom-living fishes.

PRESENT FISHING GROUNDS:

Caught in coastal waters, mostly at depths around 50 m. throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics for this species are reported by Malaysia only (1972: 1 300 tons).

Caught mainly with longlines at night.

Marketed fresh; predominantly used for fish balls.

N

O

NEMIP

1974

FAO SPECIES IDENTIFICATION SHEETS

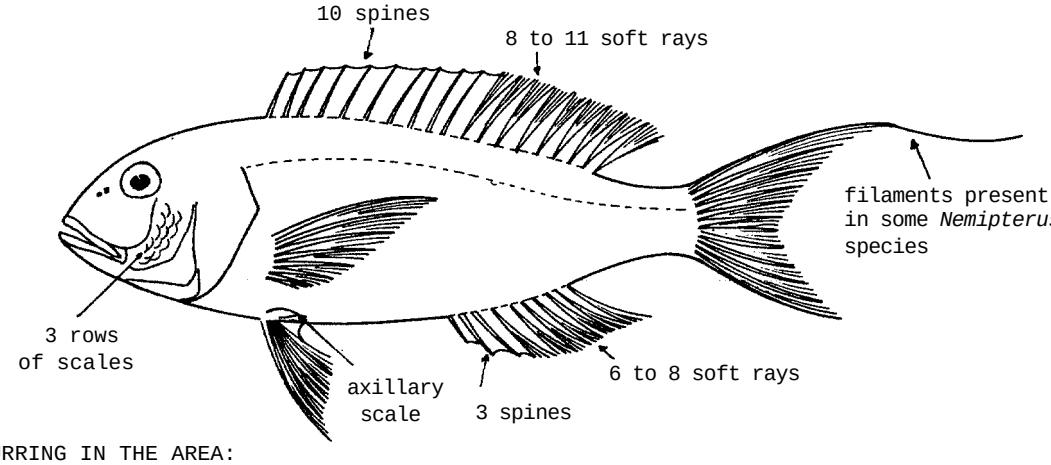
FISHING AREAS 57, 71
(E Ind. Ocean)
(W Cent. Pacific)

NEMIPTERIDAE

Threadfin breams, Monocle breams
(Some authors include Scolopsis and *Parascolopsis* in a separate family: Scolopsidae)

Small to moderate-sized, slightly, compressed fishes. Mouth terminal, small teeth in bands and in *Nemipterus* species *canine teeth in upper jaw* (sometimes also in lower jaw); a backward-pointing spine below eye in *Scolopsis* and *Parascolopsis* species. Front of head scaleless, scales beginning above eye and on cheek; *cheek with 3 rows of states;* scales on body large, ctenoid (rough to touch), in longitudinal series, easily shed. A single, curved lateral line with small to moderately large scales. Dorsal fin single, with 10 spines and 8 to 11 soft rays, originating above pectoral fin bases, its first spines sometimes prolonged into filaments; pectoral fins with 15 to 18,soft rays; pelvic fins with 1 spine and 5 soft rays, their origin below or just behind the pectoral fin bases, Ist ray sometimes elongate; a medium-sized axillary scale present above each pelvic fin; *anal fin with 3 spines and 6 to 8* soft *rays.* Caudal fin forked or emarginate, upper lobe *often with a filament.*

Colour: *extremely variable*; overall colour may be brownish, reddish, red and yellow, or greenish; *usually, but not always, a few longitudinal or vertical broad bands on body, these bands often disappearing or becoming less obvious after death;* filaments of fins usually yellow, sometimes red; a spot sometimes present near origin of lateral line and dark saddle-like marks occasionally on back. Colour pattern of juveniles often differs from adult fish and living fish can change intensity of colour pattern.



SIMILAR FAMILIES OCCURRING IN THE AREA:

Denticidae: more than 10 spines in dorsal fin.

Serranidae and Lutjanidae: those species which could be confused with the Nemipteridae have more than 7 soft rays in anal fin.

Sparidae: dorsal fin with 10 to 13 spines and 10 to 15 soft rays (10 and 8 to 11 in Nemipteridae): also, molar teeth sometimes present.

Pentapodidae: gill membranes broadly united to isthmus; also, soft anal fin rays 7 to 11 (6 to 8 in Nemipteridae).

Mullidae: 2 separate dorsal fins and 2 barbels behind chin.

Key to Genera

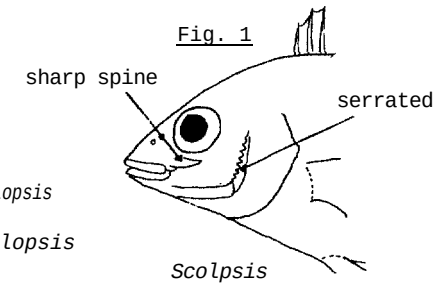
1 a. Backward-pointing spine below eye; 8 to 11 soft dorsal rays and 6 to 8 soft anal rays.

2 a. Spine below eye distinct (Fig. 1) ..... *Scolopsis*

2 b. Spine below eye feeble (Fig. 2) ..... *Parascolopsis*

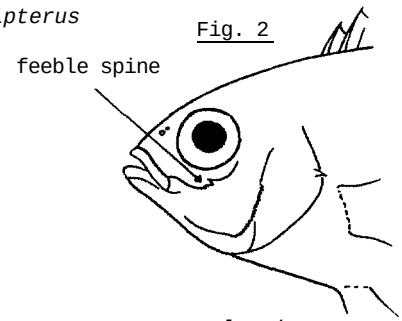
1 b. No spine below eye; 9 soft dorsal rays and 7 soft anal rays ..... *Nemipterus*

Fig. 1



Scolpsis

Fig. 2



Parascolopsis

List of Species occurring in the Area*

(Code numbers are given for those species for which Identification Sheets are included)

Nemipterus aurifilum
Nemipterus batinensis
Nemipterus bathybus NEMIP Nem 1
Nemipterus bleekeri
Nemipterus celebicus
Nemipterus delagoae NEMIP Nem 2
Nemipterus filiforms (doubtful)
Nemipterus flaviventris (doubtful)
Nemipterus flavotinea (doubtful)
Nemipterus fureosus
Nemipterus gracilis (doubtful)
Nemipterus hexodon NEMIP Nem 3
Nemipterus hypselognathus (doubtful)
Nemipterus isacanthus (doubtful)
Nemipterus japonieus NDUP Nem 4
Nemipterus luteus (doubtful)
Nemipterus marginatus NEMIP Nem 5
Nemipterus mesoprion NEMIP Nem 6
Nemipterus metopias MEMIP Nem 7
Nemipterus mulloides (doubtful)
Nemipterus nematophorus NEMIP Nem 8
Nemipterus nematopus (doubtful)
Nemipterus nemurus NEMIP Nem 9
Nemipterus oveniides
Nemipterus peronii NEMIP Nem 10
Nemipterus petersi
Nemipterus ruber (doubtful)
Nemipterus samsonensis
Nemipterus smithii
Nemipterus sumbawensis (doubtful)
Nemipterus sundanensis (doubtful)
Nemipterus tambuloides NEMIP Nem 11
Nemipterus taeniopterus
Nemipterus theodorei
Nemipterus totu NEMIP Nem 12
Nemipterus upeneoides (doubtful)
Nemipterus virgatus NEMIP Nem 13
Nemipterus worcesteri (doubtful)
Nemipterus zysron (doubtful)

Parascolopsis eriomrna
Parascolopsis inermis

Scolopsis bilineatus
Scolopsis cancellatus
Scolopsis citiatus
Scolopsis dubiosus
Scolopsis frenatus
Scolopsis ghanam
Scolopsis leucotaenia
Scolopsis margaritifer
Scolopsis monogramma
Scolopsis personatus
Scolopsis phaeops
Scolopsis taeniopterus NEMIP Scol 1
Scolopsis temporatis
Scolopsis trilineatus
Scolopsis vosmeri NEMIP Scol 2
Scolopsis xenochrous

* The family Nemipteridae is badly in need of revision. A number of doubtful species are included here.

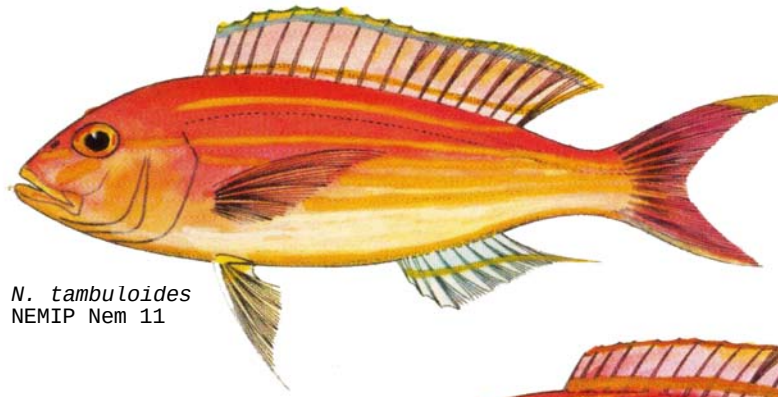
NEMIP

1974

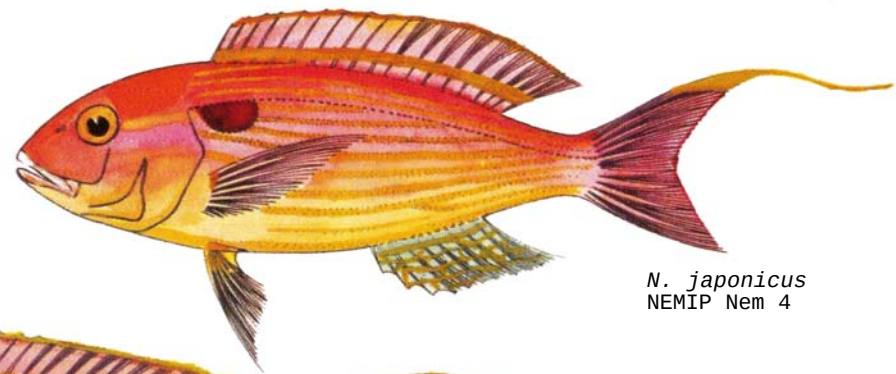
FAO Sheets

PLATE I

Fishing Areas 57,71

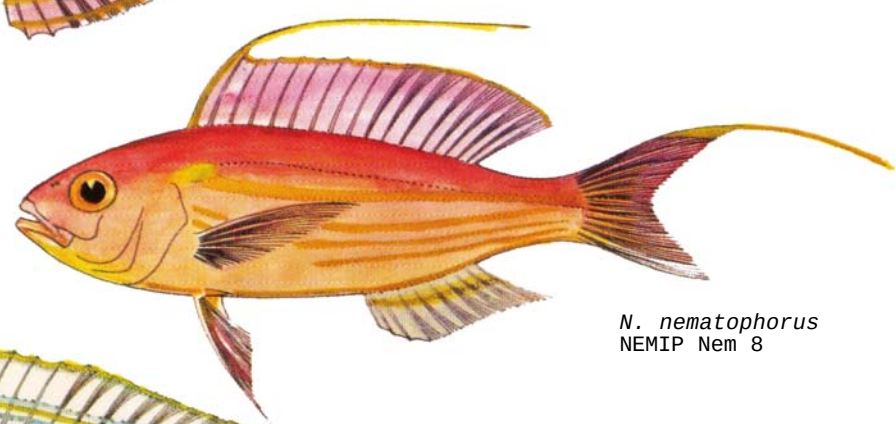


N. tambuloides
NEMIP Nem 11

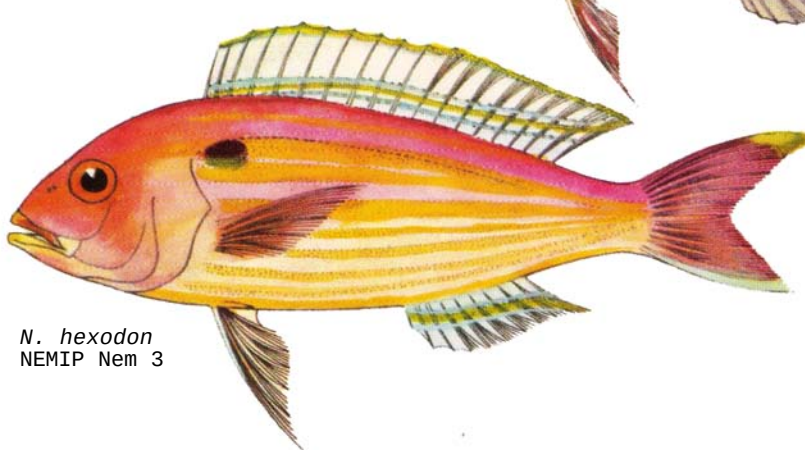


N. japonicus
NEMIP Nem 4

N. virgatus
NEMIP Nem 13



N. nematophorus
NEMIP Nem 8



N. hexodon
NEMIP Nem 3

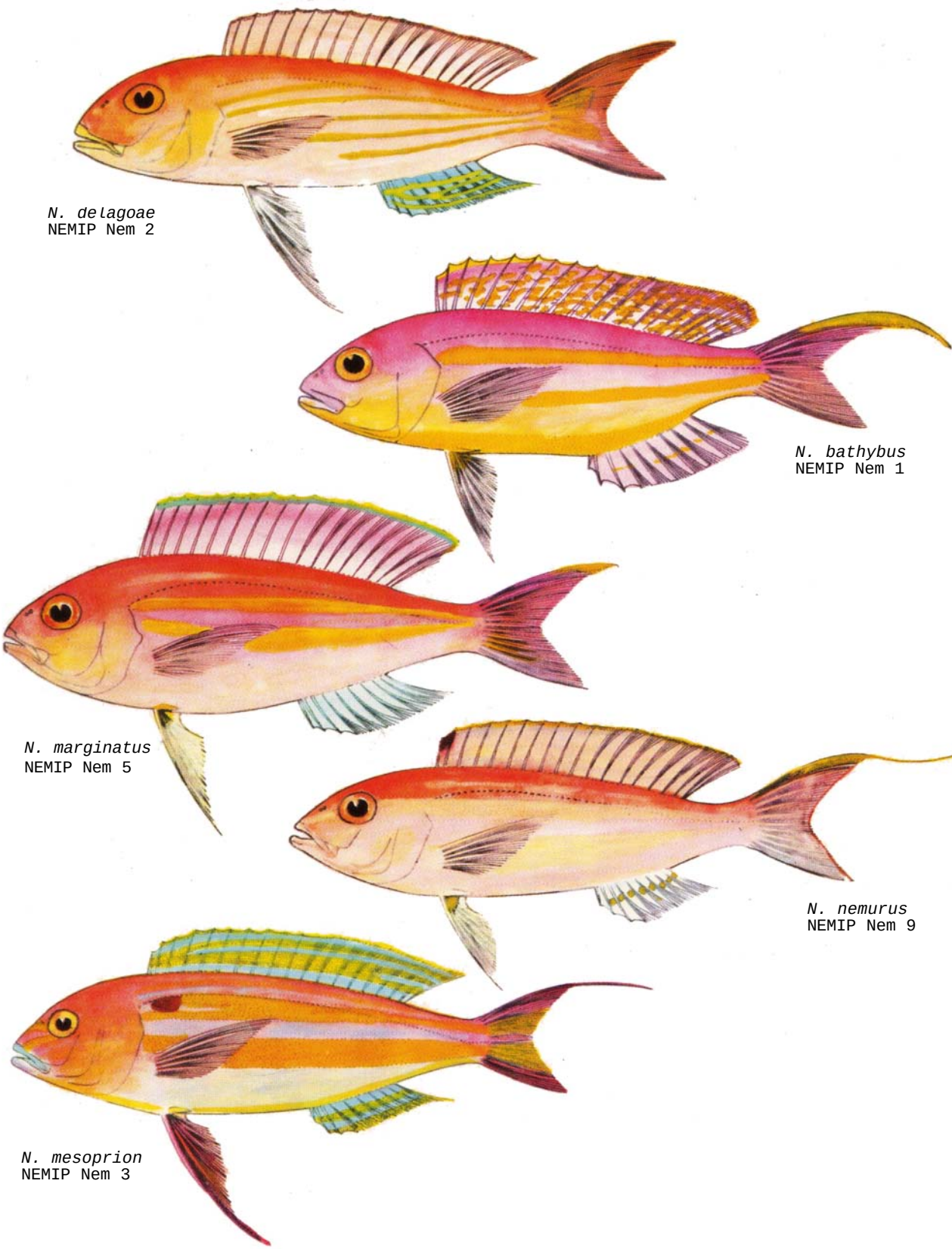
NEMIP

1974

FAO Sheets

PLATE II

Fishing Areas 57,71



N. delagoae
NEMIP Nem 2

N. bathybus
NEMIP Nem 1

N. marginatus
NEMIP Nem 5

N. nemurus
NEMIP Nem 9

N. mesoprion
NEMIP Nem 3

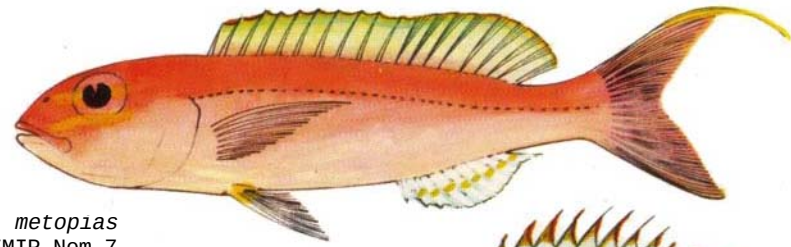
NEMIP

1974

FAO Sheets

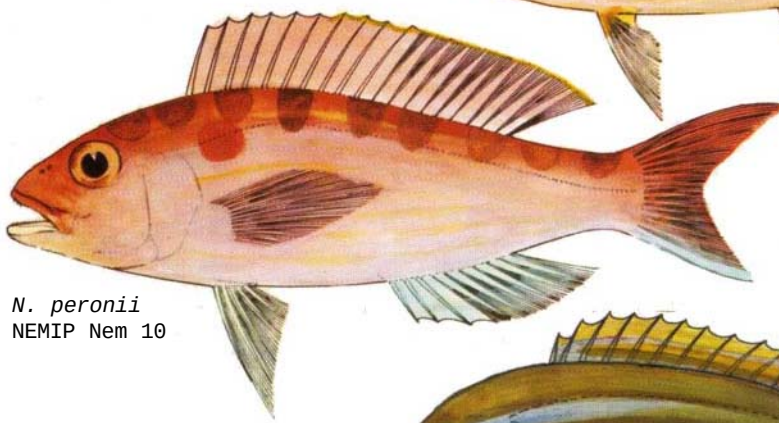
PLATE III

Fishing Areas 57,71

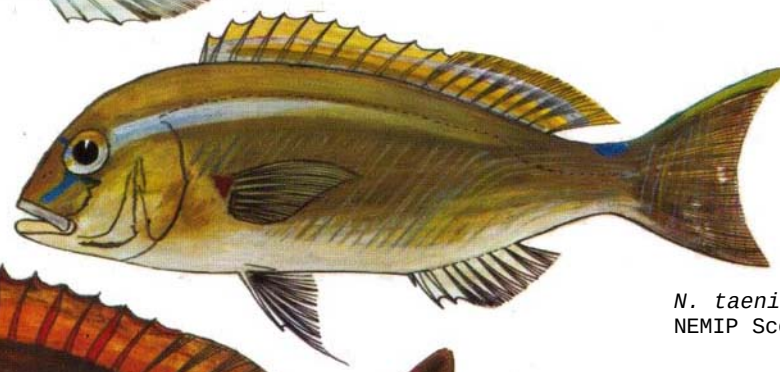


N. metopias
NEMIP Nem 7

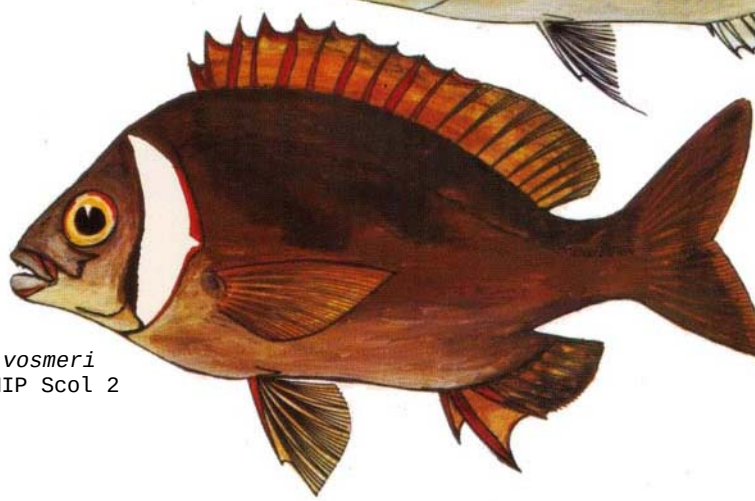
N. tolu
NEMIP Nem 12



N. peronii
NEMIP Nem 10



N. taeniopterus
NEMIP Scol 1



N. vosmeri
NEMIP Scol 2

NEMIP Nem 1

1974

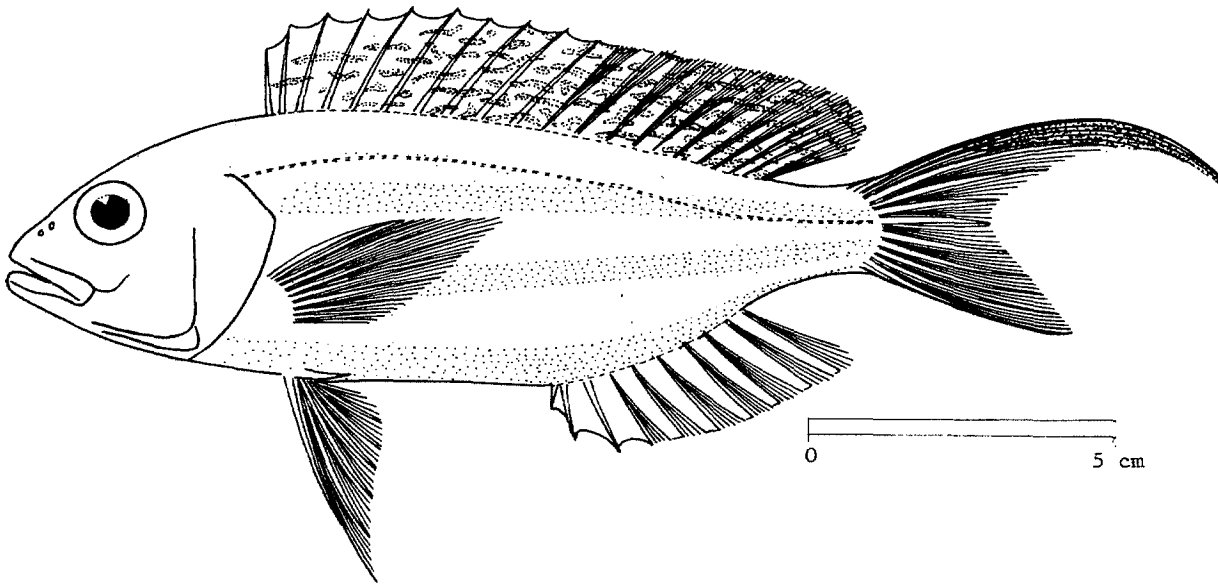
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: NEMIPTERIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nemipterus bathybus Snyder, 1911

SYNONYMS STILL IN USE: *Synagris bathybius:* Fowler, 1933



VERNACULAR NAMES:

FAO: En - Yellowbelly threadfin bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

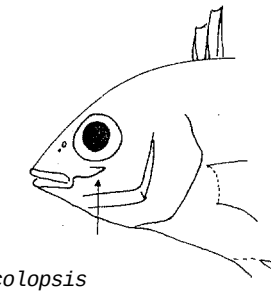
Body usually deeper than head, especially in large fish; head without spines, its anterior part scaleless. Dorsal fin single, with 10 spines and 9 soft rays; pelvic fins with an axillary scale; anal fin with 3 spines and 7 soft rays. *Upper lobe of caudal fin prolonged into a filament; no filaments in other fins.*

Colour: *body pink with 2 broad, yellow, longitudinal lines along flanks; belly with a broad, bright yellow band from throat to base of caudal fin. No spot near origin of lateral line and no dark saddles on back. Dorsal fin translucent,* pinkish or bluish, with a fine yellow line at margin and *fine wavy yellow lines in a median band* which broadens towards tail; pelvic fins translucent, pinkish or bluish, sometimes with very pale yellow median lines or blotches; *caudal fin pink, with a bright yellow upper margin and filament.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

All other *Nemipterus* species: colour pattern different; also, no caudal fin filament in *N. delagoae, N. marginatus, N. pentalineatus, N. peronii* and *N. tolu.*

Scolopsis species: a backward pointing spine below eye.



Scolopsis

SIZE (excluding tail filament):

Maximum: males 28 cm, females 24 cm;
common: 12 to 22 cm.

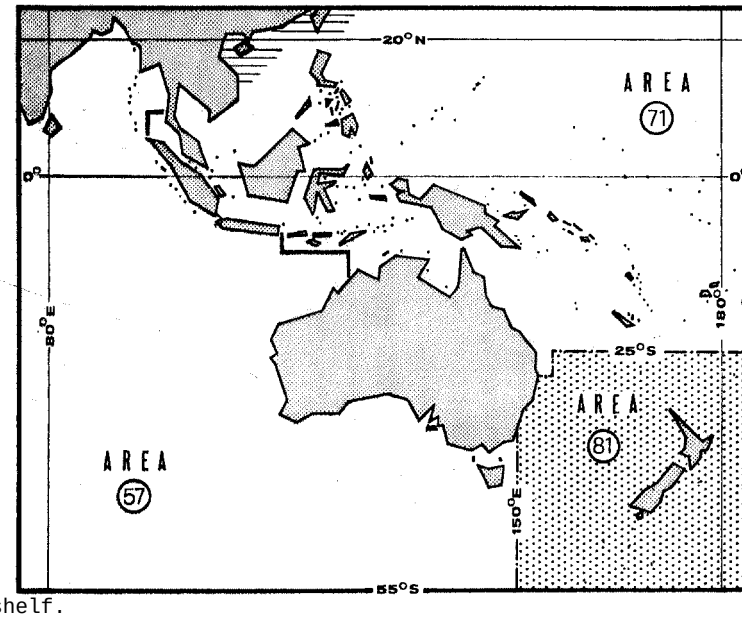
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Northern part of South China Sea (possibly in deeper waters further south); also, northward to southern Japan.

Inhabits muddy sand bottoms at depths of 50 to 250 m; smaller individuals-occur in shallower parts of the depth range.

Feeds on motile, bottom-living animals including crustaceans, squids and fishes. Small fish take mainly bottom-living copepods and ostracods.

Males grow quicker and to a larger size than females.



PRESENT FISHING GROUNDS:

Muddy sand grounds of the continental shelf.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified *Nemipterus* species in 1972 for area 71 (Western Central Pacific) was 49 400 tons (Philippines: 47 300 tons).

Caught with trawls and bottom lines; catch rates are highest in day-time.

Marketed mainly fresh; also salted and dried, dry-smoked, fermented, and as fish sauce, fish balls and cakes.

NEMIP Nem 2

1974

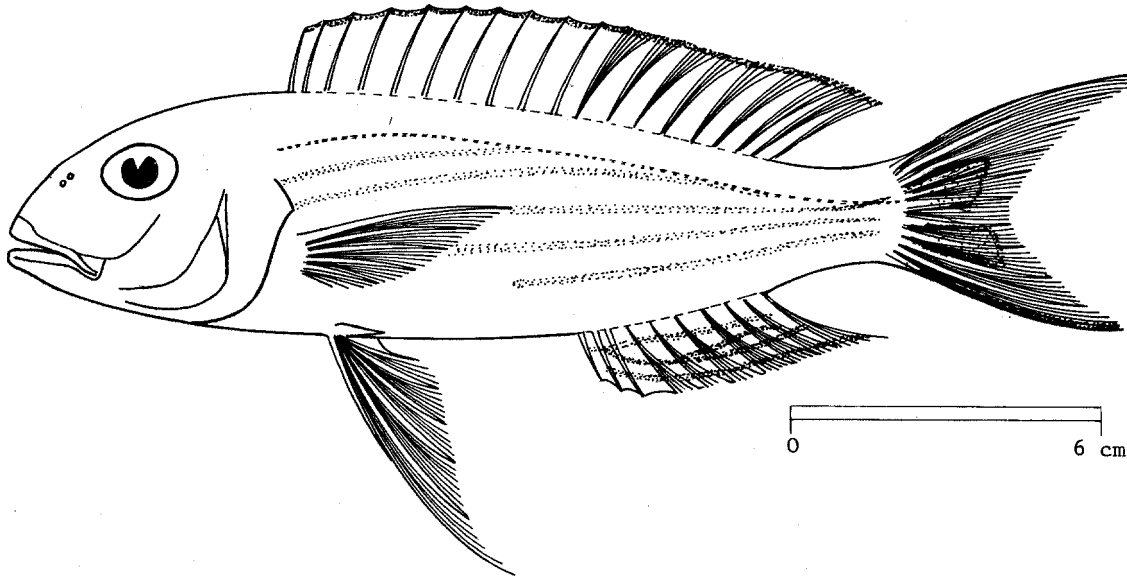
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: NEMIPTERIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nemipterus delagoae Smith, 1941

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Delagoa threadfin bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

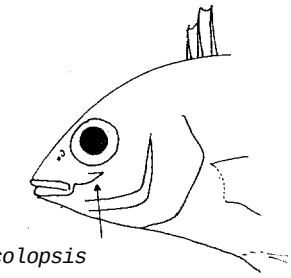
Body slender (head and body depth about equal); head without spines, its anterior part scaleless. Dorsal fin single, with 10 spines and 9 soft rays; pelvic fins with an axillary scale; anal fin with 3 spines and 7 soft rays. No *filaments in fins.*

Colour: *5 to 7 green/yellow upward-curved stripes on body,* curvature of upper stripes more marked, spaces between stripes silvery yellow; in fresh specimens the stripes appear raised. *No spot below origin of lateral line and no dark saddles on back.* Dorsal fin rosy, with a yellow/orange margin and a grey/blue band below it; pelvic fins milky white, with silvery axillary scales; *anal fin milky white or translucent blue, with 3 to 4 longitudinal yellow stripes;* caudal fin rosy, yellowish in middle, deeper red on fork margin and tips of lobes; lower margin may be whitish.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

All other *Nemipterus* species: colour pattern different; also, caudal fin filament present in many species.

Scolopsis species: a backward pointing spine below eye.



Scolopsis

SIZE:

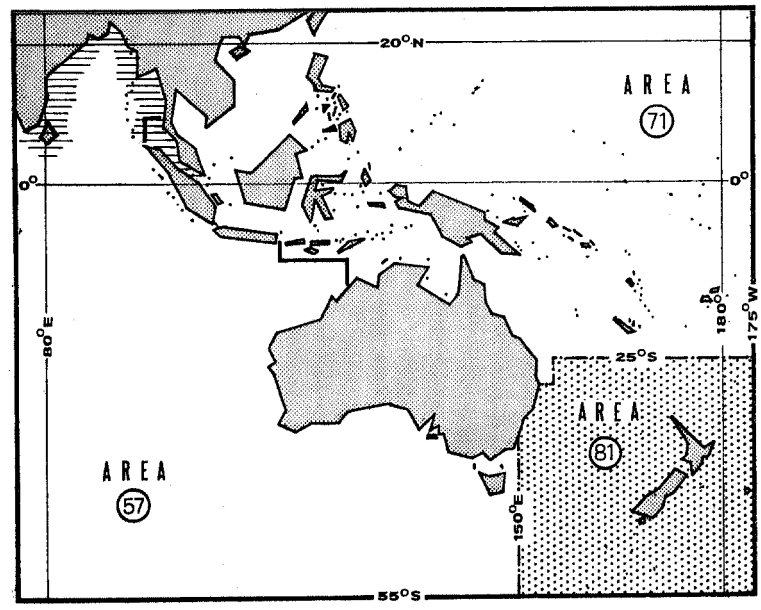
Maximum: 30 cm; Common: 12 to 25 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Bay of Bengal; also, westward to East and South Africa.

Bottom-living, to depths of 100 m.

Food and general biology unknown.



PRESENT FISHING GROUNDS:

Coastal waters throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls and lines.

Marketed fresh, dried and salted, dry-smoked, fermented, and as fish balls and cakes.

NEMIP Nem 3

1974

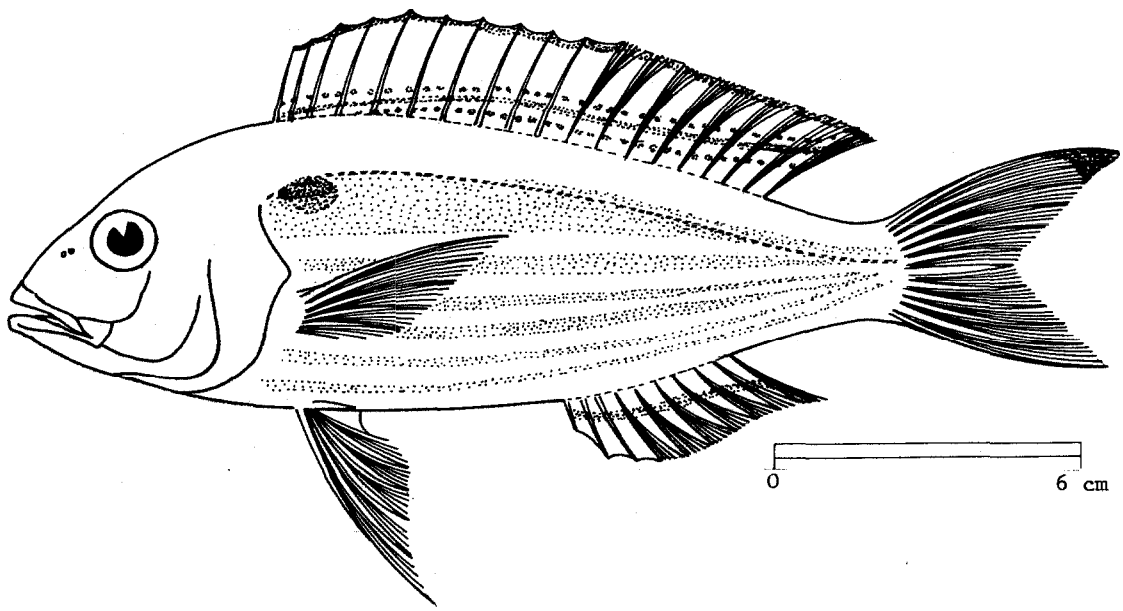
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: NEMIPTERIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nemipterus hexodon (Quoy & Gaimard, 1824)

SYNONYMS STILL IN USE: *Synagris hexodon*: Günther, 1859



VERNACULAR NAMES:

FAO: En - Ornate threadfin bream
Fr -
Sp-

NATIONAL:

DISTINCTIVE CHARACTERS

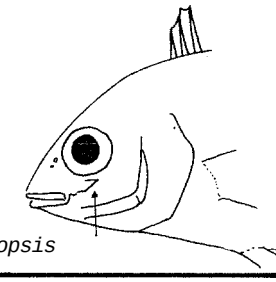
Body compressed, deeper than head; head without spines, its anterior part scaleless. Dorsal fin single, with 10 spines and 9 soft rays; pelvic fins with an axillary scale; anal fin with 3 spines and 7 soft rays. No *filaments in fins;* upper lobe of caudal fin pointed in young, blunt in older fish.

Colour: 6 to 7 yellow stripes along flanks, the stripe below lateral line broadest. *A spot (upper part red, lower part yellow/green) below origin of lateral line. Dorsal fin rosy, with a yellow margin and a well-defined green/yellow band, parallelled above and below by translucent blue bands from base of 1st spine to upper half of last soft ray;* pectoral fins rosy, the inner side of pectoral base yellow; pelvic fins hyaline, with 2nd and 3rd rays pinkish; *anal fin milky white with yellow line from base of Ist spine to tip of last soft ray;* caudal fin usually *with* white lower margin and yellow tip on upper lobe (yellow tip, less marked in young fish).

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

All other *Nemipterus* species: colour pattern different; also, caudal fin filament present in many species.

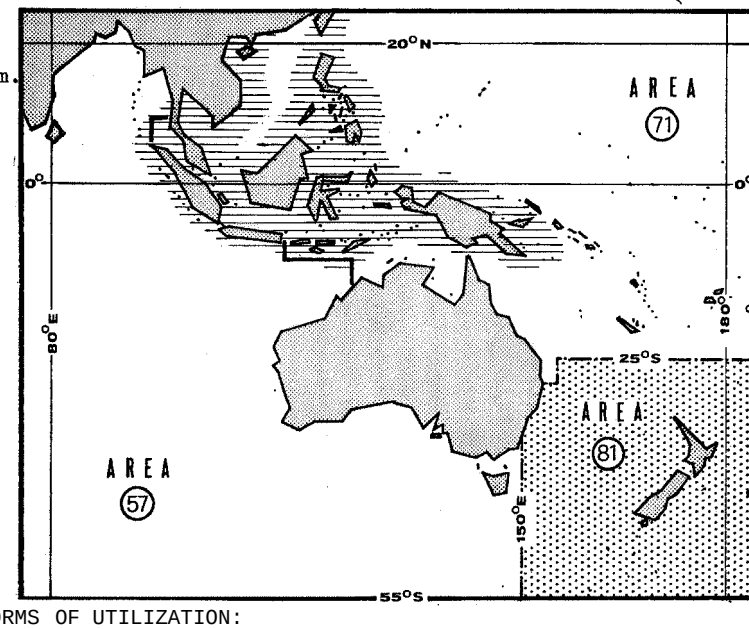
Scolopsis species: a backward pointing spine below eye.



Scolopsis

SIZE:

Maximum: 30 cm; common: 15 to 25 cm. cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Indo-Australian archipelago and northward to Hainan; perhaps more widespread, but not always correctly identified.

Bottom-living, to depths of at least 120 m.

PRESENT FISHING GROUNDS:

Coastal waters throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified *Nemipterus* species in 1972 for area 71 (Western Central Pacific) was 49 400 tons (Philippines: 47 300 tons). No data are available for area 57 (Eastern Indian Ocean).

Caught mainly with trawls and lines.

Marketed mainly fresh, whole; also dried and salted, dry-smoked, fermented, and as cakes.

NEMIP Nem 4

1974

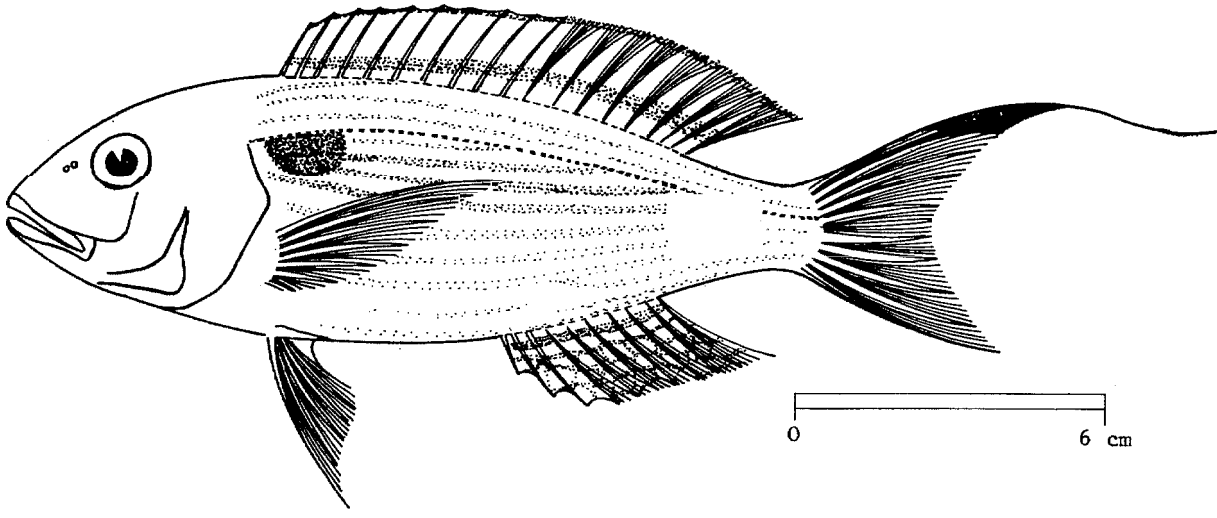
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: NEMIPTERIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nemipterus japonicus (Bloch, 1791)

SYNONYMS STILL IN USE: *Synagris japonicus*: Günther, 1859



VEINACULAR NAMES:

FAO: En - Japanese threadfin bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

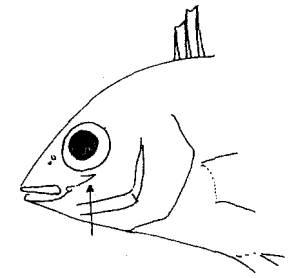
Body as deep or deeper than head; head without spines, its anterior part scaleless. Dorsal fin single, with 10 spines and 9 soft rays; pelvic fins with an axillary scale; anal fin with 3 spines and 7 soft rays. *Upper lobe of caudal fin prolonged into a filament; no filaments in other fins.*

Colour: *a brownish saddle on top of head.* 1 to 3 longitudinal yellow lines above lateral line, 7 to 9 below, and a yellow band along belly; *a bright orange/red blotch near origin of lateral line.* No dark saddles on back of body. *Dorsal fin rosy, with yellow/orange margin and* a *broad yellow band along base* (less conspicuous in fish shorter than 10 cm); pelvic fins yellowish at base and with yellow axillary scales; *anal fin milky white or pale blue with faint, wavy, yellow lines* which may form a reticulate pattern in larger fish; *caudal fin red, tip of upper lobe and filament bright yellow.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

All other *Nemipterus* species: colour pattern different; also, no caudal fin filament in *N. delagoae, N. marginatus, N. pentalineatus, N. peronii* and *N. tofu.*

Scolopsis species: a backward pointing spine below eye.



Scolopsis

SIZE (excluding dorsal filament):

Maximum: 32 cm; common: 12 to 25 cm.

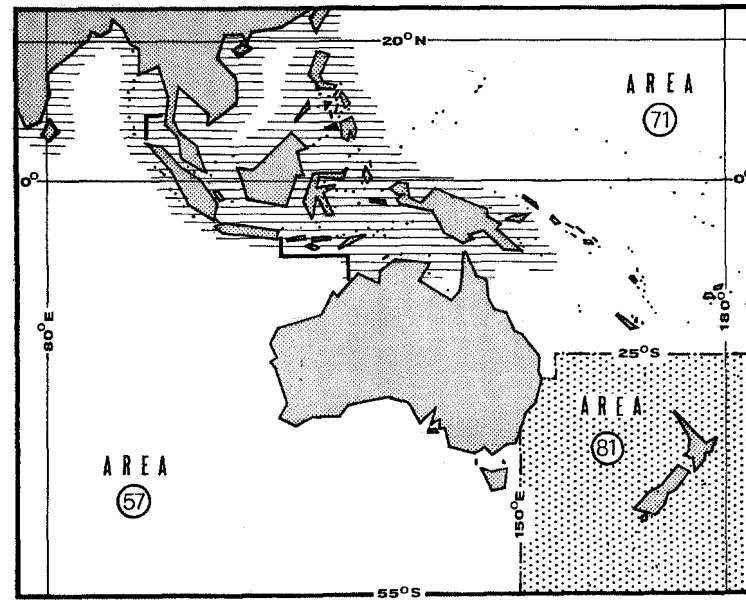
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area, possibly to northern coasts of Australia; also, westward to Red Sea (immigrant into Mediterranean).

Bottom-living, from the shoreline to 60 m; the smaller fish occur in the shallower waters.

Feeds on a wide range of bottom-living animals including worms, crustaceans, mussels, cephalopods and fishes. The diet changes little with size but smaller fish prefer small crustaceans (copepods and ostracods).

Males grow quicker and to a larger size than females.



PRESENT FISHING GROUNDS:

Coastal waters throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch o£ unclassified *Nemipterus* species in 1972 for area 71 (Western Central Pacific) was 49 400 tons (Philippines: 47 300 tons). No data are available for area 57 (Eastern Indian Ocean).

Caught mainly with bottom trawls, gill-nets, bottom-lines and stake-traps.

Marketed mainly fresh, whole; also dried and salted, dry-smoked, fermented, and as fish balls.

NEMIP Nem 5

1974

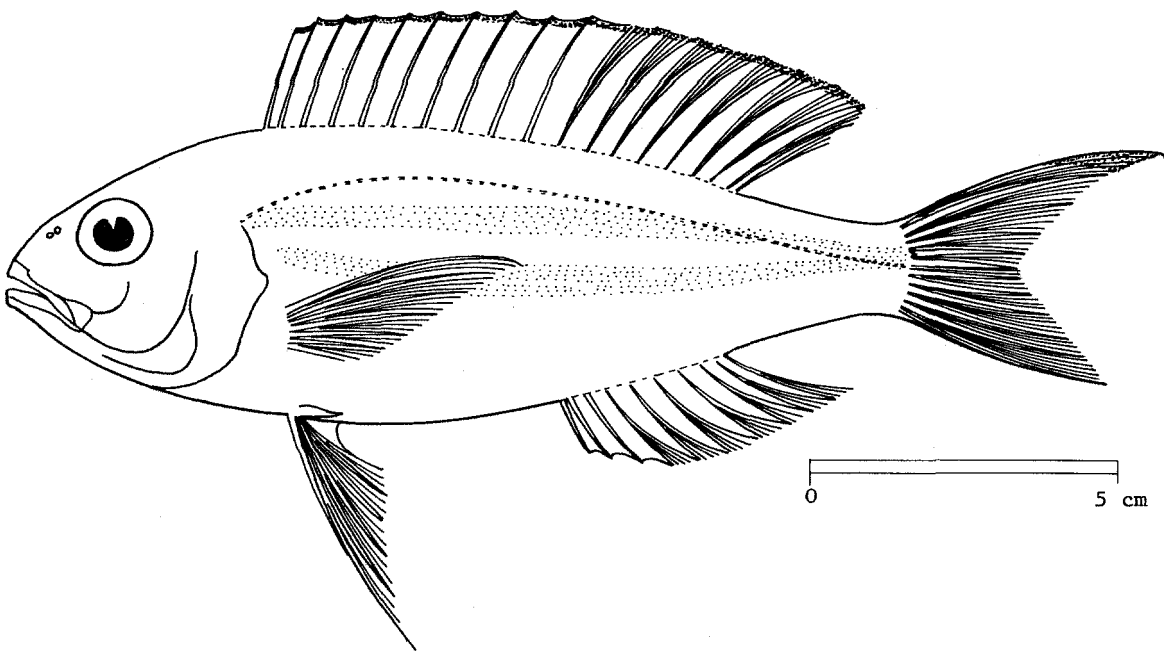
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: NEMIPTERIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nemipterus marginatus (Valenciennes, 1830)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Palefinned threadfin bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

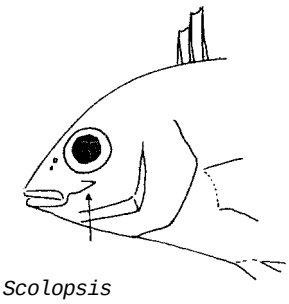
Head without spines, its anterior part scaleless. Dorsal fin single, with 10 spines and 9 soft rays; pelvic fins with an axillary scale; anal fin with 3 spines and 7 soft rays. *No filaments in fins.*

Colour: head without yellow lines, *flanks of body with two principal yellow bands,* widest in the middle, extending from behind upper part of gill cover to base of caudal fin; other less distinct bands may also be present. *No spot near origin of lateral line and no dark saddles on back. Dorsal fin rosy, paler toward its base, with a broad sulphur/yellow margin and a blue line immediately below; pelvic fins pale white, pink or hyaline, their bases and axillary scales yellow; anal fin whitish; caudal fin red, its upper lobe tipped yellow.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

All other *Nemipterus* species: colour pattern different; also, caudal fin filament present in many species.

Scolopsis species: a backward pointing spine below eye.



Scolopsis

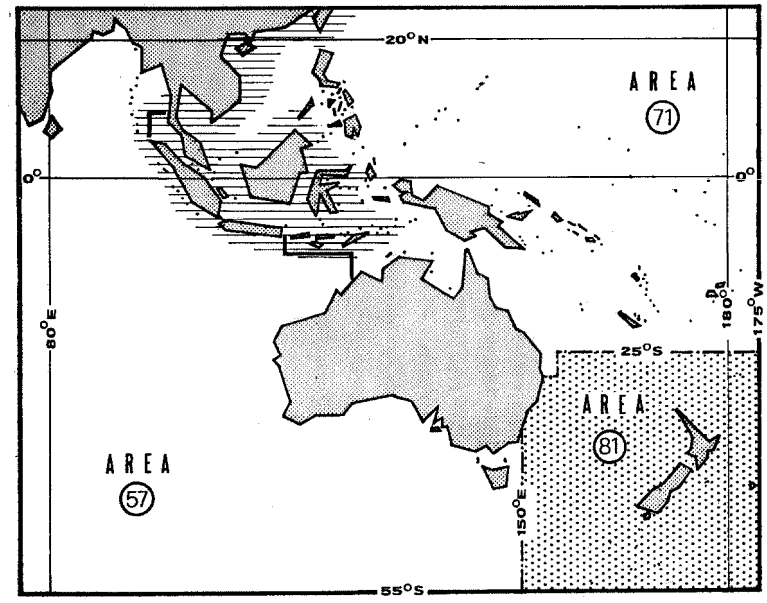
SIZE:

Maximum: 28 cm; common: 15 to 25 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Indo-Australian archipelago and northward to South China Sea (perhaps more widespread, but not always correctly identified).

Bottom-living, at depths of 30 to 100 m. Little is known of the biology of this species.



PRESENT FISHING GROUNDS:

Coastal waters off Thailand, Malaysia and Indonesia.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified *Nemipterus* species in 1972 for area 71 (Western Central Pacific) was 49 400 tons (Philippines: 47 300 tons). No data are available for area 57 (Eastern Indian Ocean).

Caught mainly with bottom trawls; also with lines.

Marketed fresh, whole; also dried and salted, dry-smoked, fermented, and as fish balls and cakes.

NEMIP Nem 6

1974

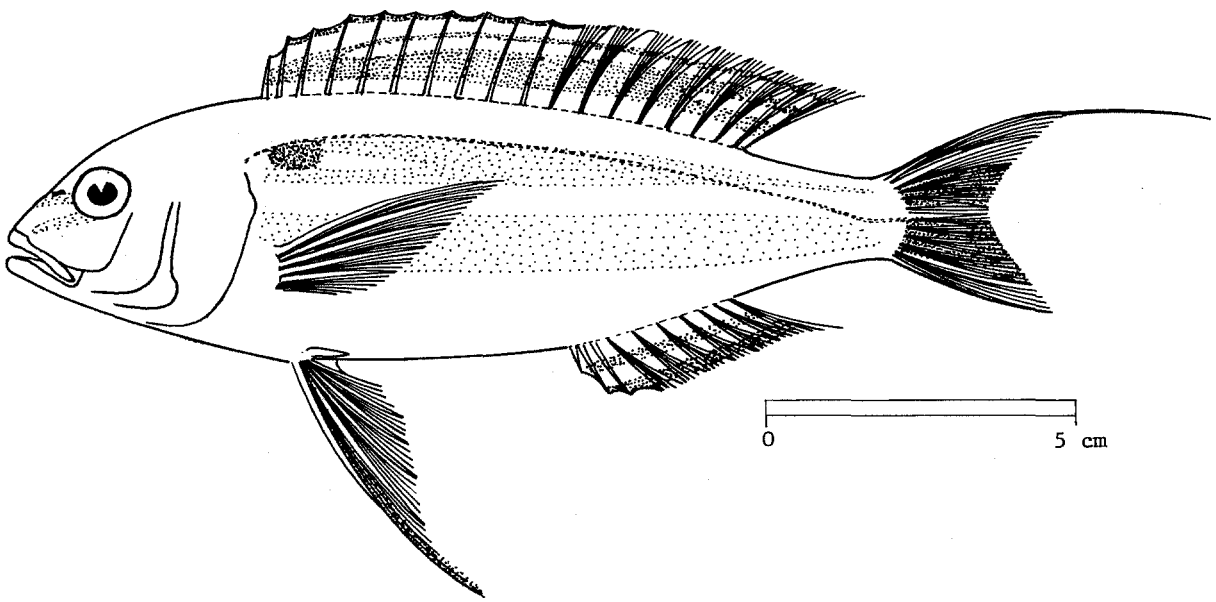
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: NEMIPTERIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nemipterus mesoprion (Bleeker, 1853)

SYNONYMS STILL IN USE: *Synagris mesoprion:* Machan, 1930



VERNACULAR NAMES:

FAO: En - Redfilament threadfin bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body slender, usually deeper than head; head without spines, its anterior part scaleless. Dorsal fin single, with 10 spines and 9 soft rays; pelvic fins with an axillary scale; anal fin with 3 spines and 7 soft rays. *Upper lobe of caudal fin prolonged into a short, fine filament, no filaments in other fins.*

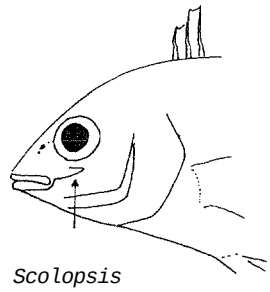
Colour: head with yellow streaks from eye to below nostrils and from eye to middle of upper jaw. 2 *broad pale yellow lines along flanks,* but other pale yellow lines may also be visible. *A red spot below origin of lateral line but no dark saddles on back.* Dorsal fin with a yellow margin and a broad yellow median longitudinal band which subdivides toward tail into 3 yellow bands separated by blue lines; *pelvic fins pink, with elongated 1st rays deep red,* and axillary scales yellow; *anal fin chalky pinkish, with two yellow longitudinal lines; caudal fin reddish, median rays yellow, outer rays and filament red.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Nemipterus celebicus: no filament on upper caudal fin lobe, and no yellow on middle rays of caudal fin.

Other *Nemipterus* species: colour pattern different; also, no caudal fin filament in *N. detagoae, N. marginatus, N. pentalineatus, N. peronii* and *N. tofu.*

Scolopsis species: a backward pointing spine below eye.



Scolopsis

SIZE (excluding caudal filament):

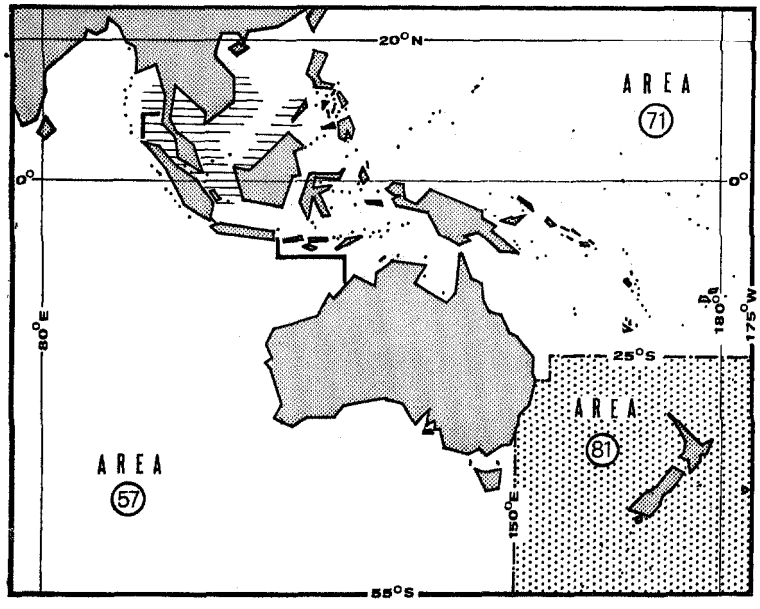
Maximum: 20 cm; common: 10 to 15 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Malay peninsula (possibly more widespread, but not always correctly identified); apparently also Gulf of Aden.

Bottom-living, to depths of 70 m.

Feeds on small bottom-living animals.



PRESENT FISHING GROUNDS:

Shallow waters of the continental shelf, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified *Nemipterus* species in 1972 for area 71 (Western Central Pacific) was 49 400 tons (Philippines: 47 300 tons). No data are available for area 57 (Eastern Indian Ocean).

Caught mainly with bottom trawls.

Marketed mainly whole, fresh; also dried and salted, dry-smoked, fermented, and as fish bails and cakes.

NEMIP Nem 7

1974

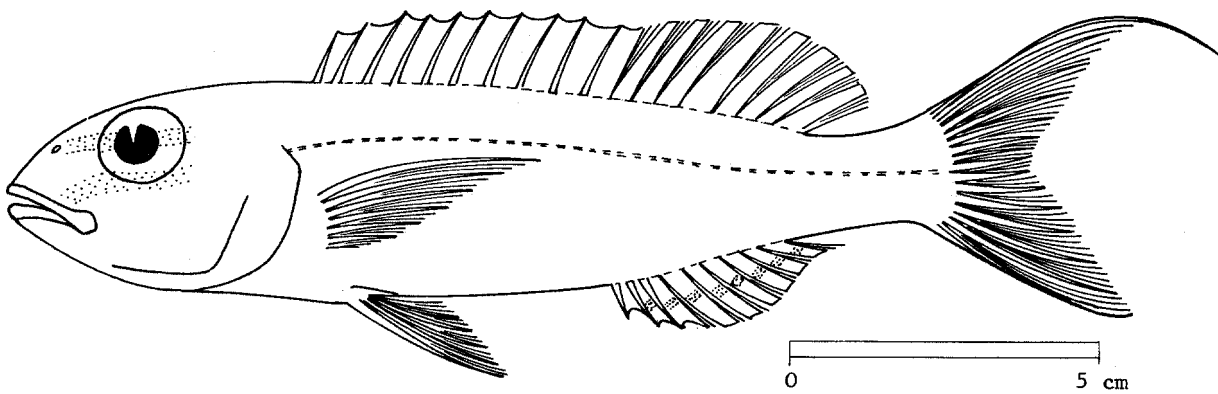
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: NEMIPTERIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nemipterus metopias (Bleeker, 1852)

SYNONYMS STILL IN USE: *Synagris metopias:* Günther, 1859



VERNACULAR NAMES:

FAO: En - Slender threadfin bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

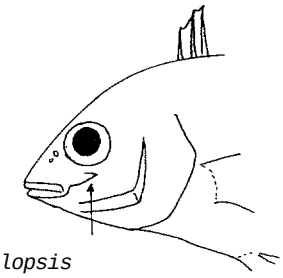
Very slender, body depth less than or equal to head depth; head without spines, its anterior part scaleless. Dorsal fin single, with 10 spines and 9 soft rays; pelvic fins with an axillary scale; anal fin with 3 spines and 7 soft rays. *Upper lobe of caudal fin prolonged into a short filament, no filaments in other fins.*

Colour: *head* pinkish brown *with 2 clearly defined, short, bright yellow bands* about half as wide as pupil, *one extending from nostril across eye (but not pupil) and the other cupping the eye and extending forward to upper, jaw; faint yellow lines along flanks and a broad yellow band along* belly, but ventral mid-line silvery. *No spot at origin of lateral line and no dark saddles on back.* Dorsal fin of pale green/yellow, with a narrow red margin parallelled immediately below by a thin yellow line and a pale blue band; pelvic fins hyaline, with a yellow axillary area and axillary scale; *anal fin white, with a median row of yellow squarish spots; caudal fin pink, with inner margin of fork deeper red, and tip of upper lobe and its filament yellow.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

All other *Nemipterus* species: colour pattern different; also, no caudal fin filament in *N. delagoae, N. marginatus, N. pentalineatus, N. peronii* and *N. tolu.*

Scolopsis species: a backward pointing spine below eye.



Scolopsis

SIZE (excluding caudal filament):

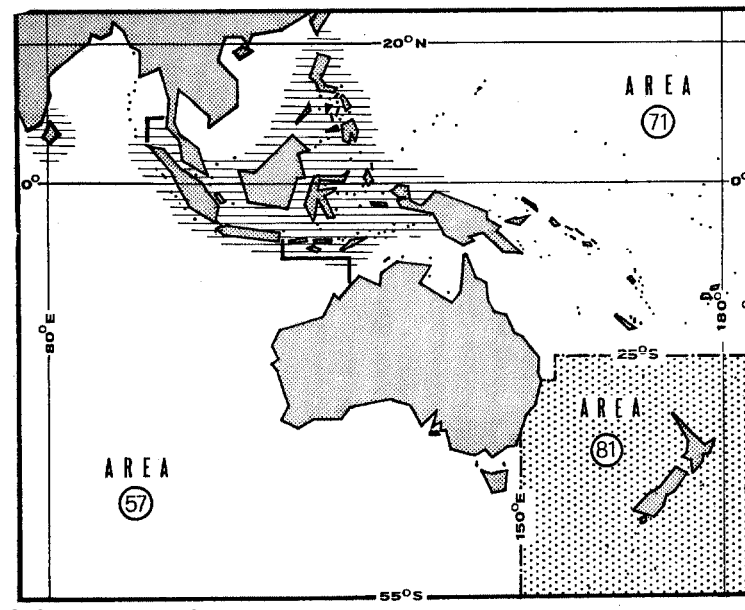
Maximum: 28 cm; common: 12 to 25 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Ceylon, west coast of Malay peninsula, Indonesia and Philippines (perhaps more widespread, but not always identified correctly); also, westward to East Africa.

Bottom-living, to depths of at least 80 m.

Nothing is known of the biology of this species.



PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The-total reported catch of unclassified *Nemipterus* species in 1972 for area 71 (Western Central Pacific) was 49 400 tons (Philippines: 47 300 tons). No data are available for area 57 (Eastern Indian Ocean).

Caught with bottom trawls and bottom lines.

Marketed fresh, whole; also salted and dried, dry-smoked, fermented, and as fish balls and cakes.

NEMIP Nem 8

1974

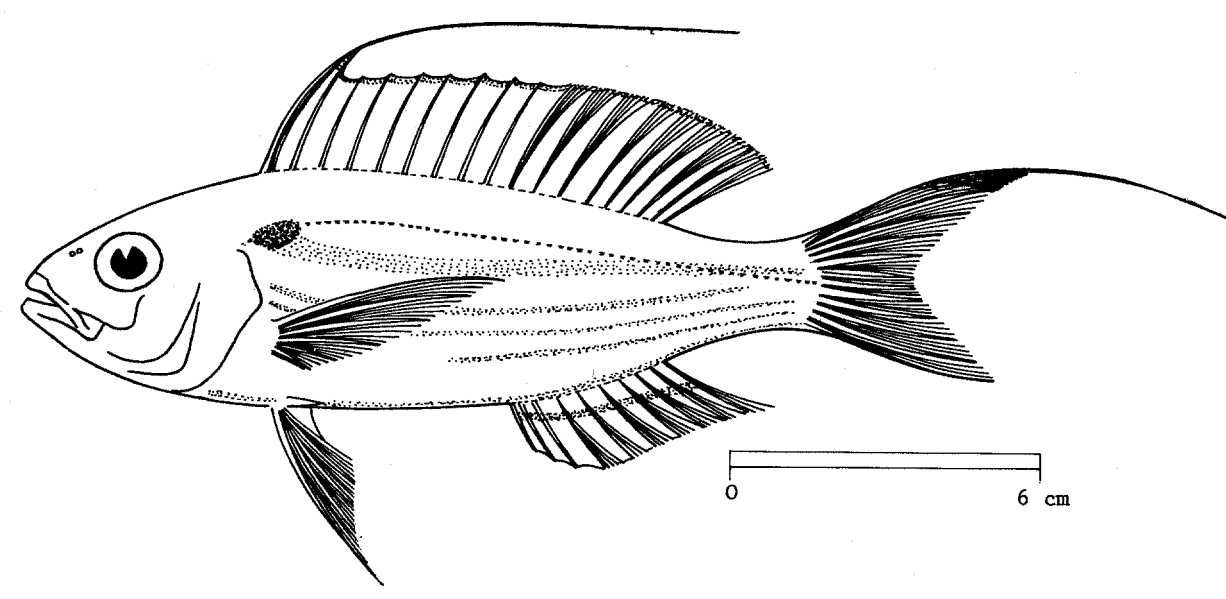
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: NEMIPTERIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nemipterus nematophorus (Bleeker, 1853)

SYNONYMS STILL IN USE: *Synagris nematophorus*: Günther, 1859



VERNACULAR NAMES:

FAO: En - Doublewhip threadfin bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

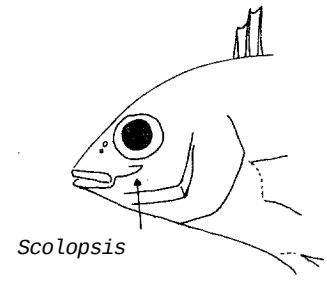
Body slender, slightly compressed; head without spines, its anterior part scaleless. Dorsal fin single, with 10 spines and 9 soft rays; *1st and 2nd spines of dorsal fin very close together and forming a single long filament;* pelvic fins with an axillary scale; anal fin with 3 spines and 7 soft rays; *upper lobe of caudal fin prolonged into a filament.*

Colour: head without yellow bands or streaks; *4 longitudinal yellow lines along flanks below lateral line; belly with a yellow stripe on each side of silvery mid-line. A yellow spot below origin of lateral line but no dark saddles on back. Filament of dorsal fin bright yellow,* rest of fin rosy, with yellow or orange margin; pelvic fins whitish, with 2nd and 3rd rays more or less pink, bases and axillary scales yellow; *anal fin milky white, hyaline or pale blue, with a single yellow stripe; caudal fin rosy, with upper tip and filament yellow.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

All other *Nemipterus* species: colour pattern different; also, lack dorsal fin filament and sometimes caudal fin filament as well.

Scolopsis species: a backward pointing spine below eye.



Scolopsis

SIZE (excluding caudal filaments):

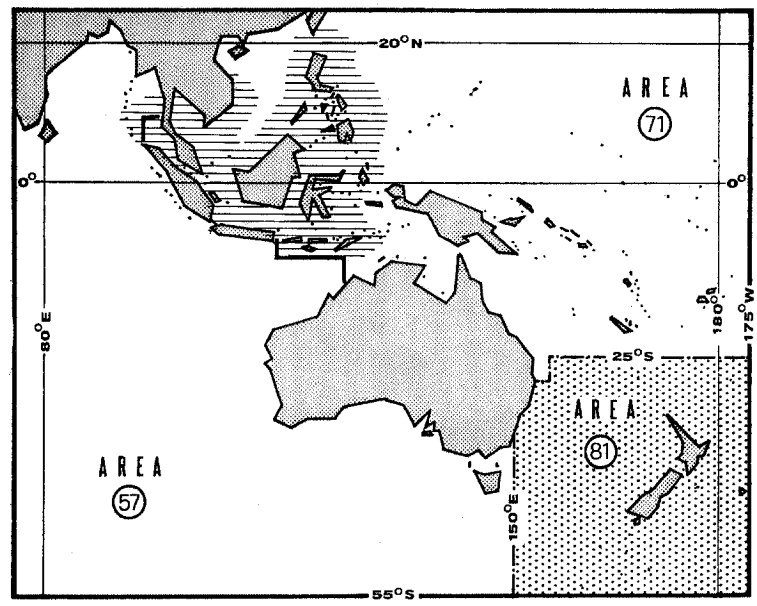
Maximum: 25 cm; common: 12 to 18 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Malay peninsula, Indonesia and Philippines (perhaps more widespread, but not always identified correctly).

Bottom-living, on coral, on rocky or muddy sand bottoms, in depths of 10 to 60 m.

Feeds mostly on small worms, crustaceans and molluscs.



PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified *Nemipterus* species in 1972 for area 71 (Western Central Pacific) was 49 400 tons (Philippines: 47 300 tons). No data are available for area 57 (Eastern Indian Ocean).

Caught mainly with bottom trawls.

Marketed mainly fresh; dried and salted, dry-smoked, fermented, and as fish balls and cakes.

NEMIP Nem 9

1974

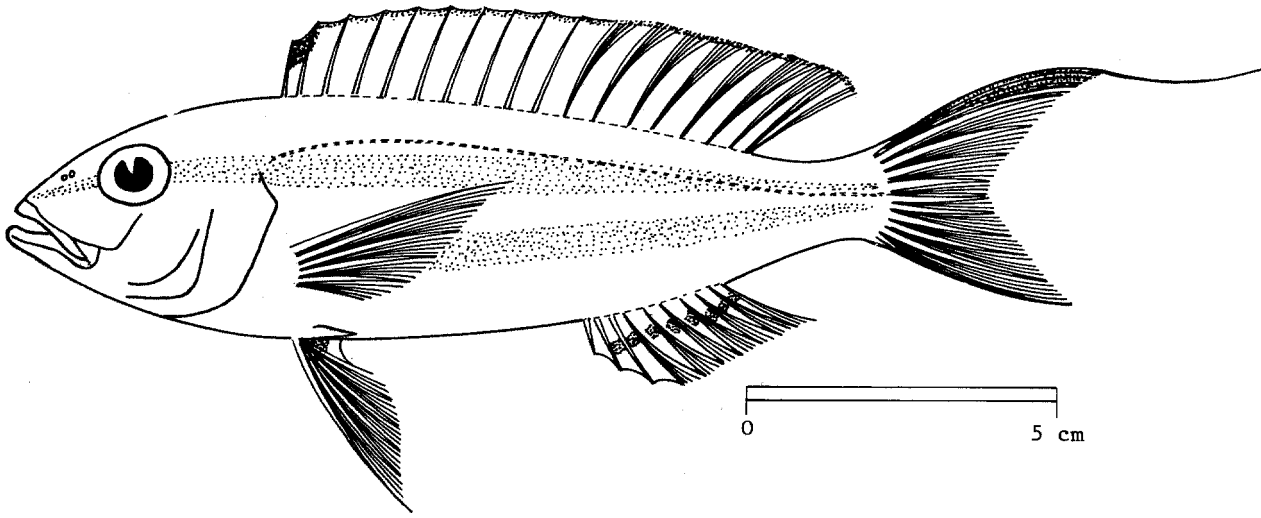
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: NEMIPTERIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nemipterus nemurus (Bleeker, 1857)

SYNONYMS STILL IN USE: *Synagris nemurus*: Günther, 1859



VERNACULAR NAMES

FAO: En - Redspine threadfin bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

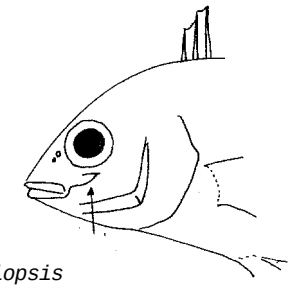
Body rather elongate and slightly compressed; head without spines, its anterior part scaleless. Dorsal fin single, with 10 spines and 9 soft rays; pelvic fins with an axillary scale; anal fin with 3 spines and 7 soft rays. *Upper lobe of caudal fin prolonged into a filament, no filaments in other fins.*

Colour: a pale yellow band extends from snout below nostrils onto body below lateral line, ending at base of caudal fin; another broad yellow band starts from base of pectoral fin narrowing toward caudal fin; other faint yellow bars present on upper part of body. *No spot at origin of lateral line* and no dark saddles on back. *Dorsal fin* rosy or yellowish, its *margin bright red between 1st and 2nd spine, and yellow throughout the rest of its length;* pelvic fins whitish, with a yellow spot at their bases and with a white axillary scale; *anal fin white, with a longitudinal series of squarish yellow spots; caudal fin rosy, with uppermost rays and filament yellow,* fork margin red.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Other *Nemipterus* species: colour pattern different; also, no caudal fin filament in *N. detagoae, N. marginatus, N. pentatineatus, N. peronii* and *N. tolu.*

Scolopsis species: a backward pointing spine below eye.



Scolopsis

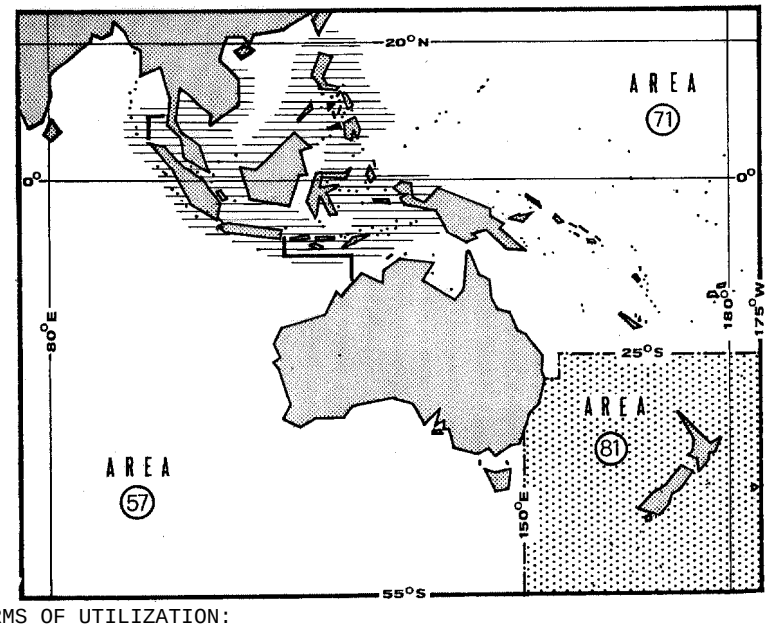
SIZE (without caudal filament):

Maximum: 25 cm; common: 12 to 18 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Andaman Sea to Philippines (perhaps more, widespread, but not always identified correctly).

Inhabits soft bottoms, from shallow waters to about 70 m.



PRESENT FISHING GROUNDS:

Mainly offshore grounds at depths of 40 to 70 m.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified *Nemipterus* species in 1972 for area 71 (Western Central Pacific) was 49 400 tons (Philippines: 47 300 tons). No data are available for area 57 (Eastern Indian Ocean).

Caught mainly with bottom trawls.

Marketed mainly fresh, whole; also salted and dried, dry-smoked, fermented, and as fish balls and cakes.

NEMIP Nem 10

1974

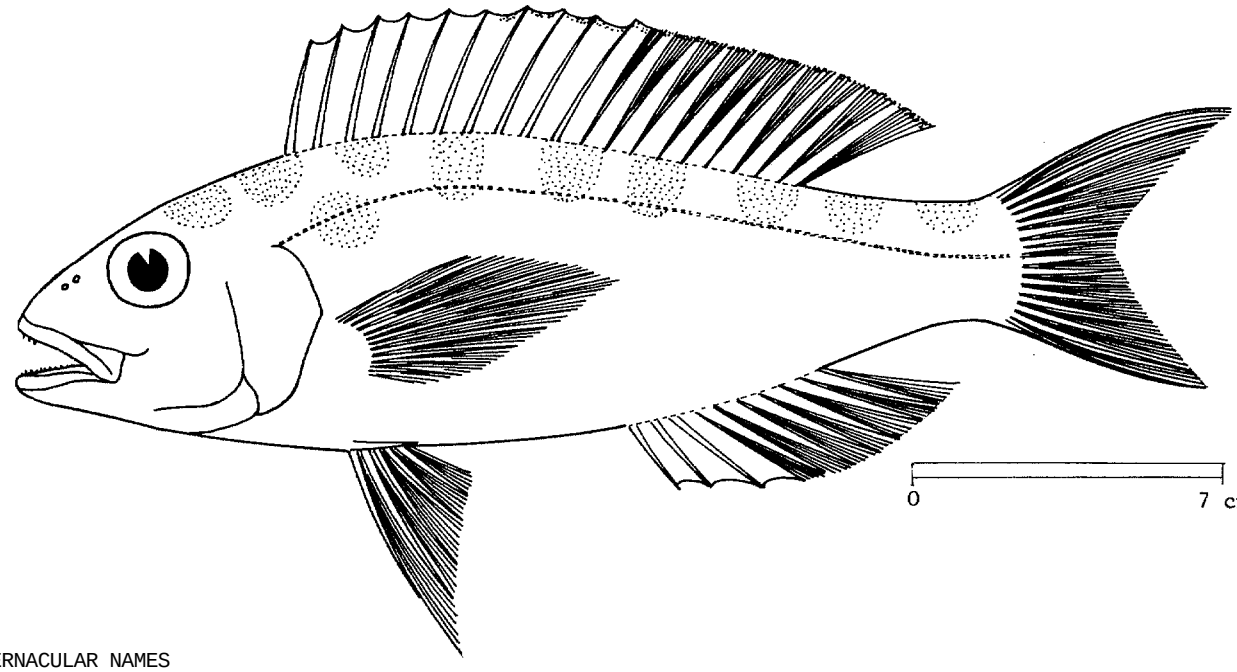
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: NEMIPTERIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nemipterus peronii (Valenciennes, 1830)

SYNONYMS STILL IN USE: *Synagris peronii*: Günther, 1859



VERNACULAR NAMES

FAO: En - Rosy threadfin bream
Fr -
Sp -

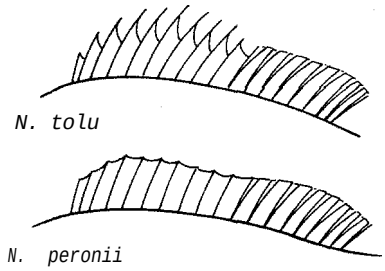
NATIONAL:

DISTINCTIVE CHARACTERS:

Body robust, deeper than head; head without spines, its anterior part scaleless. Dorsal fin single, with 10 spines and 9 soft rays; pelvic fins with an axillary scale; anal fin with 3 spines and 7 soft rays; *no filaments in fins.*

Colour: head and body rosy; faint, indistinct yellow lines along flanks. *A reddish spot just behind origin of* lateral line; usually, 9 saddle-like brown blotches *on back* (all may not be apparent in some specimens). *Dorsal fin rosy, or bluish, without conspicuous longitudinal stripes,* its margin from about 6th spine to last ray pale yellow or red; *pelvic fins* and *their axillary scales white, pinkish, or translucent; anal fin white,* sometimes translucent or with faint yellow streaks, but without *conspicuous stripes; caudal fin rosy, with whitish lower margin.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:



N. tolu

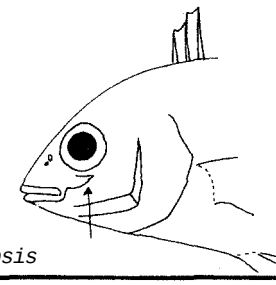
N. peronii

N. tolu: margin of dorsal fin deeply notched (entire in *N. peronii);* pelvic fins with a yellow patch at base (white in *N. peronii).*

N. oveniides: inner side of pectoral fin base yellowish (white in *N. peronii);* anal fin white, with a median row of yellow spots.

All other *Nemipterus* species: bright stripes or bands on head, body or fins; also, a filament on caudal fin in many species.

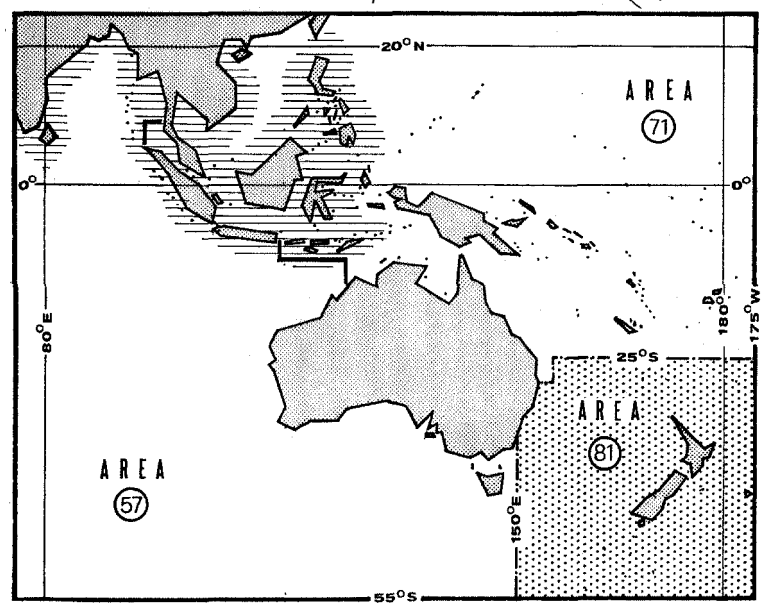
Scolopsis species: a backward pointing spine below eye.



Scolopsis

SIZE:

Maximum: 35 cm; common: 15 to 25 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area, but perhaps not southward to Australia; also, westward to Red Sea.

Bottom-living, to depths of 200 m.

Feeds predominantly on worms, crustaceans, and small molluscs.

PRESENT FISHING GROUNDS:

Continental shelf, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified *Nemipterus* species in 1972 for area 71 (Western Central Pacific) was 49 400 tons (Philippines: 47 300 tons). No data are available for area 57 (Eastern Indian Ocean).

Caught mainly with bottom trawls, lines and fish-traps.

Marketed mainly fresh, whole; also salted and dried, dry-smoked, fermented, and as fish balls or cakes.

NEMIP Nem 11

1974

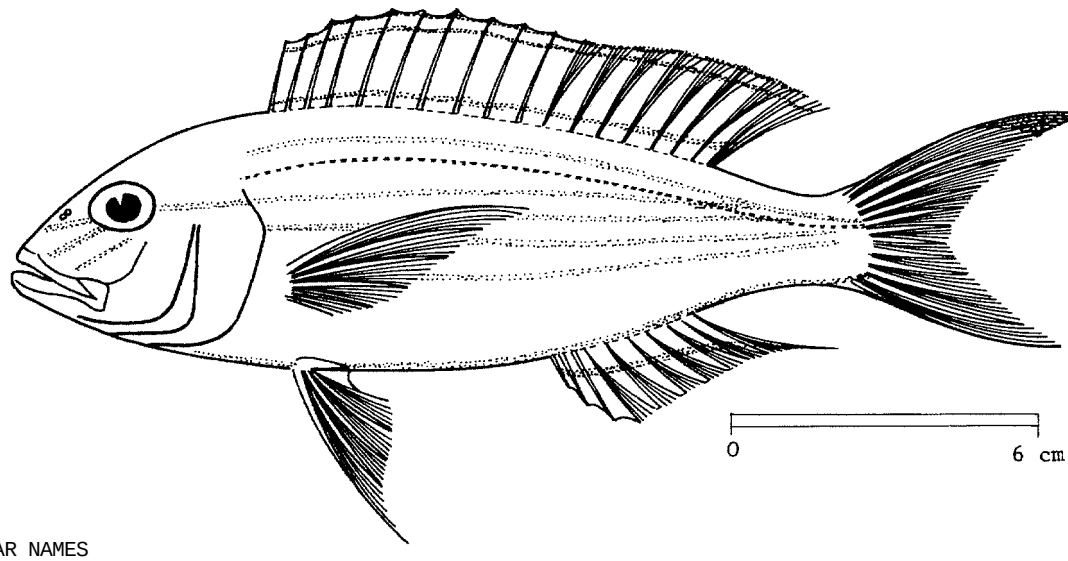
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: NEMIPTERIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nemipterus tambuloides (Bleeker, 1853)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES

FAO: En - Fivelined threadfin bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body elongate and slightly compressed; head without spines, its anterior part scaleless. Dorsal fin single, with 10 spines and 9 soft rays; pelvic fins with an axillary scale; anal fin with 3 spines and 7 soft rays; *no filaments in fins.*

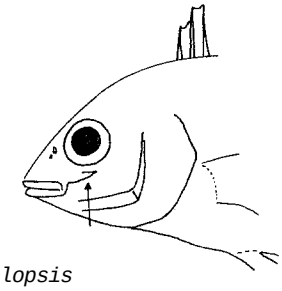
Colour: 5 *bright, clearly defined, yellow lines on body,* the uppermost above lateral line, the 2nd (longest) *from snout through eye to upper part of caudal fin base;* belly with a yellow band from throat to caudal fin base. *No blotch near origin of lateral line and no dark saddles on back. Dorsal fin rosy, with a yellow band along its base, a yellow margin and a bluish grey line just below margin,* middle of fin *sometimes* yellowish; *anal fin white, with a yellow line near its base; caudal fin* reddish, tip of upper lobe yellow.

DISTINGUISHING CHARACTERS OF SIMILAR-SPECIES OCCURRING IN THE AREA:

Nemipterus virgatus: a short red stripe at lateral line origin; caudal fin filament present; 2 yellow lines on anal fin (1 in *N. pentalineatus).*

All other *Nemipterus* species: colour pattern different; also, a caudal fin filament in many species.

Scolopsis species: a backward pointing spine below eye.



Scolopsis

SIZE:

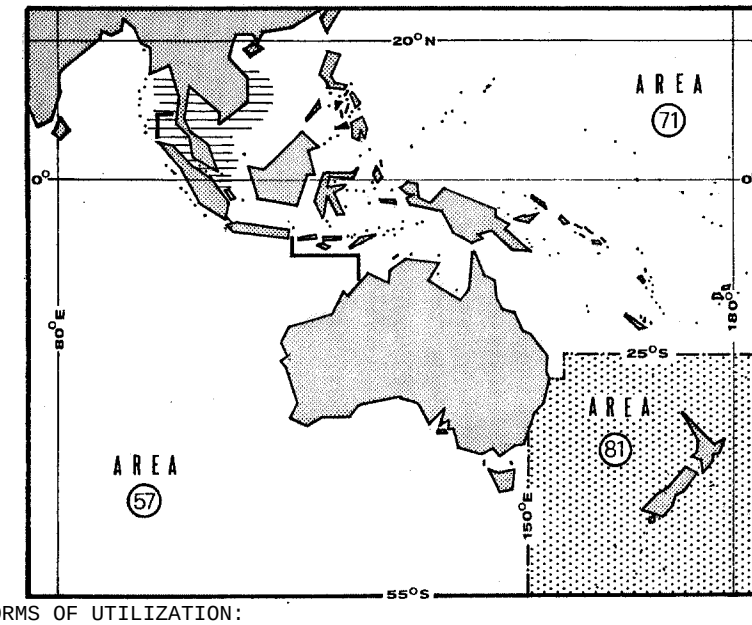
Maximum: 30 cm; common: 16 to 25 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Malay peninsula and coasts of Vietnam (perhaps more widespread, but not always correctly identified). It does not occur on the northern shelf of the South China Sea.

Bottom-living, at depths from 20 to 60 m.

Little is known of the biology of this species.



PRESENT FISHING GROUNDS:

Shallow coastal grounds, from the Andaman Sea to the coasts of Vietnam.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified *Nemipterus* species in 1972 for area 71 (Western Central Pacific) was 49 400 tons (Philippines: 47 300 tons). No data are available for area 57 (Eastern Indian Ocean).

Caught mainly with bottom trawls.

Marketed mainly fresh, whole; also salted and dried, dry-smoked, fermented, or as fish balls and cakes.

NEMIP Nem 12

1974

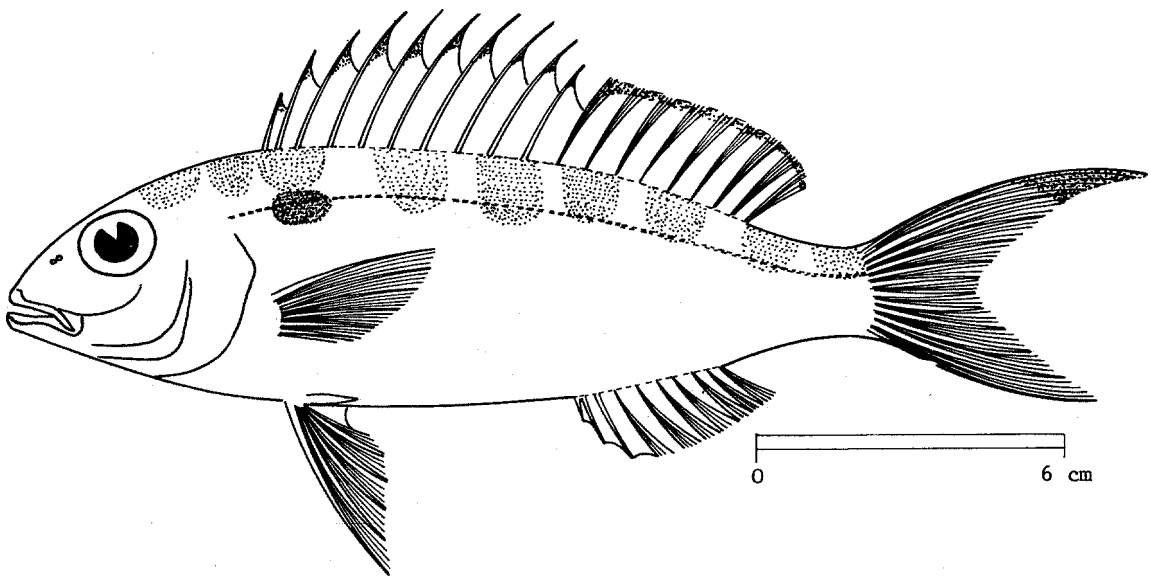
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: NEMIPTERIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nemipterus tolu (Valenciennes, 1830)

SYNONYMS STILL IN USE: *Synagris tolu*: Day,1875
Odontoglyphus tolu: Munro,1955



VERNACULAR NAMES:

FAO: En - Notched threadfin bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body slender (depth slightly greater than or equal to depth of head); head without spines, its anterior part scaleless. Dorsal fin single, with 10 spines, *of which 5th to 8th are longest,* and 9 soft rays; *interspinous membrane of dorsal fin deeply notched*; pelvic fins with an axillary scale; anal fin with 3 spines and 7 soft rays; *no filaments in fins.*

Colour: several faint yellow lines along flanks. A reddish brown spot (sometimes tinged green or yellow)at origin of lateral line; in fresh specimens, 8 to 9 indistinct, darker, saddle-like blotches along back. Dorsal fin translucent, often with a yellow bloom, its margin red, with a very narrow orange/yellow stripe immediately below; pelvic fins white, their bases and axillary scales yellow; anal fin milky white, usually translucent or partly pale yellow, particularly in the form of a median band; caudal fin rosy, its lower margin whitish, tip of upper lobe rosy or yellowish, fork margin red.

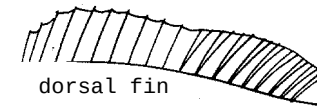
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

N. oveniides: a yellow blotch at base of pectoral fins; inside of gill opening white (yellow in *N. tolu);* dorsal fin without deeply notched margin.

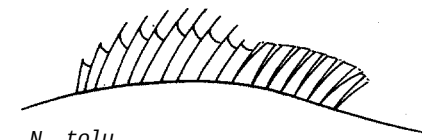
N. peronii: no yellow blotch at base of pelvic fins; inside of gill opening white (yellow in *N. tolu);* dorsal fin without deeply notched margin.

All other *Nemipterus* species: 5th to 8th dorsal fin spines not the longest; interspinous dorsal fin membrane not deeply notched.

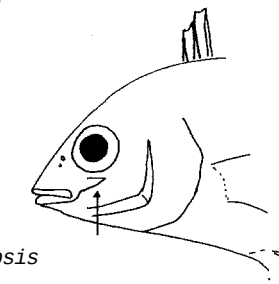
Scolopsis species: a backward pointing spine below the eye.



Other *Nemipterus* species



N. tolu



Scolopsis

SIZE:

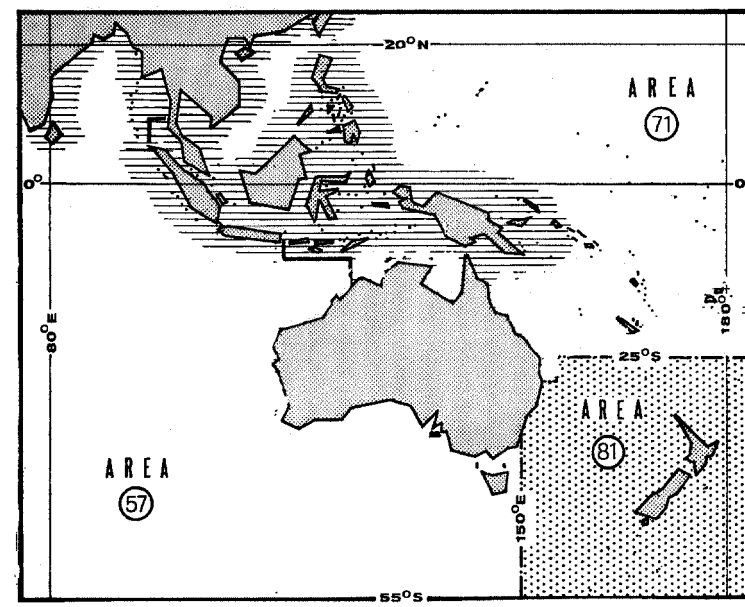
Maximum: 30 cm; common: 15 to 25 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area, but perhaps not to Australian coasts; also, westward to western Indian Ocean.

Bottom-living, usually in waters shallower than 60 m, but sometimes at greater depths.

Feeds on bottom-living animals.



PRESENT FISHING GROUNDS:

Shallow grounds, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified *Nemipterus* species in 1972 for area 71 (Western Central Pacific) was 49 400 tons (Philippines: 47 300 tons). No data are available for area 57 (Eastern Indian Ocean). *N. tolu* usually makes up a significant portion of *Nemipterus* catches in shallow coastal waters.

Caught mainly with bottom trawls, lines and stake-traps.

Usually marketed fresh, whole; also salted and dried, dry-smoked, fermented, and as fish balls and cakes.

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1974

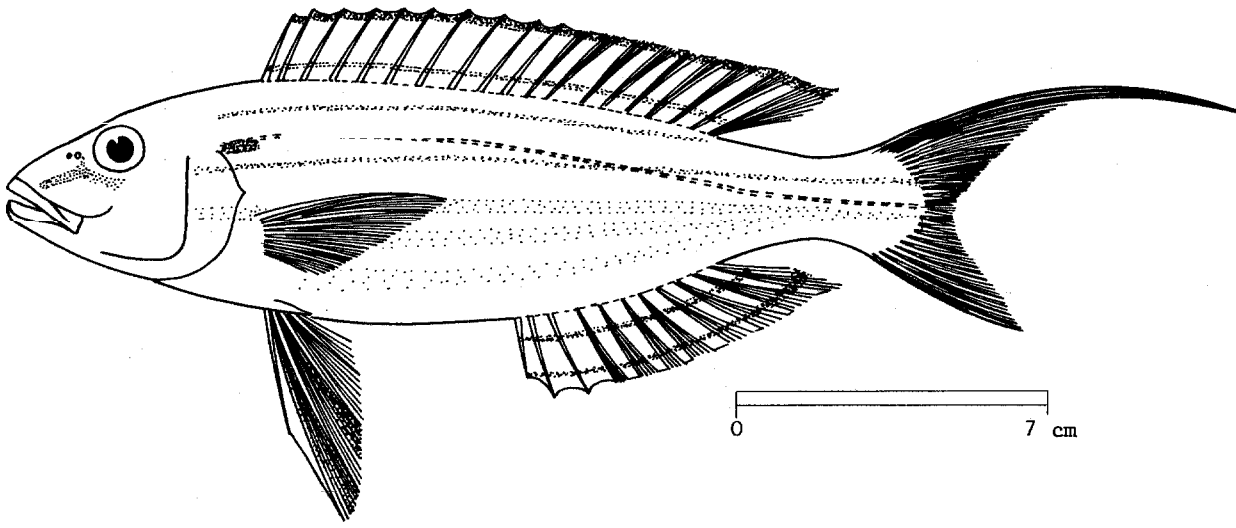
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: NEMIPTERIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nemipterus virgatus (Houttuyn, 1792)

SYNONYMS STILL IN USE: *Synagris virgatus:* Fowler, 1933



VERNACULAR NAMES:

FAO: En - Golden threadfin bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body slender, deeper than head; head without spines, its anterior part scaleless. Dorsal fin single, with 10 spines and 9 soft rays; pelvic fins with an axillary scale; anal fin with 3 spines and 7 soft rays. *Upper lobe of caudal fin prolonged into a filament, no filaments in other fins.*

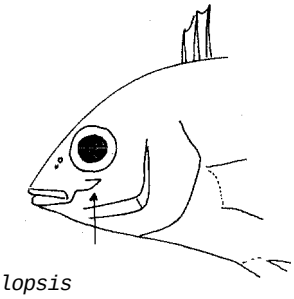
Colour upper parts of head and body reddish; lower sides and belly silvery; a yellow line on head from eye to snout; *bright yellow lines along flanks. A short (3 to 4 scales long) bright red line below origin of lateral line* but no dark saddles on back. Dorsal fin rosy, with a yellow line along its base and a yellow/orange margin. Pelvic fins rosy, but anterior soft rays (sometimes also the 4th) and axillary scales yellow; *anal fin translucent bluish or rosy,with 2 longitudinal yellow lines; caudal fin mostly pink, upper rays and filament golden.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

N. pentalineatus: no red stripe at lateral line origin and no filament in caudal fin; only 1 yellow line on anal fin (2 in *N. virgatus).*

All other *Nemipterus* species: colour pattern different; also, no caudal fin filament in *N. delagoae, N. marginatus, N. peronii* and *N. tofu.*

Scolopsis species; a backward pointing spine below eye.



Scolopsis

SIZE (excluding tail filament):

Maximum: 40 cm; common: 15 to 28 cm.

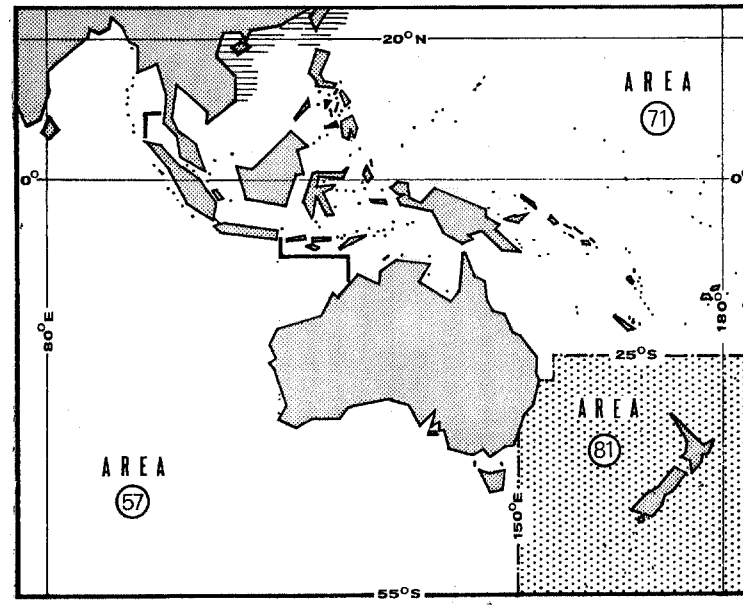
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Coasts of South Vietnam; also, northward to Japan.

Inhabits muddy sand grounds at depths of 20 to 200 m.

Feeds on motile bottom-living animals including crabs, prawns, squids, and fishes. Stomachs usually contain a variety of food items but occasionally they are packed with mysids. The diet changes little with size, but large fish prefer larger organisms.

In the South China Sea this fish reaches a maximum age of 6 years. Males grow to a larger size. Commercial landings are made up largely of 1 to 4 year-old fish.



PRESENT FISHING GROUNDS:

Muddy sand and mud grounds of the continental shelf.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unclassified *Nemipterus* species in 1972 for area 71 (Western Central Pacific) was 49 400 tons (Philippines: 47 300 tons).

Caught mainly with bottom lines (by day) and with bottom trawls. Trawl catches in the South China Sea are highest in the spawning season (February to May). Small fish (less than 10 cm total length) are taken in considerable quantities by shrimp trawlers off the south China coast in August. to September, but are discarded as trash fish.

Marketed mostly fresh; also salted and dried, dry-smoked, fermented, and as fish balls and cakes.

NEMIP Scol 1

1974

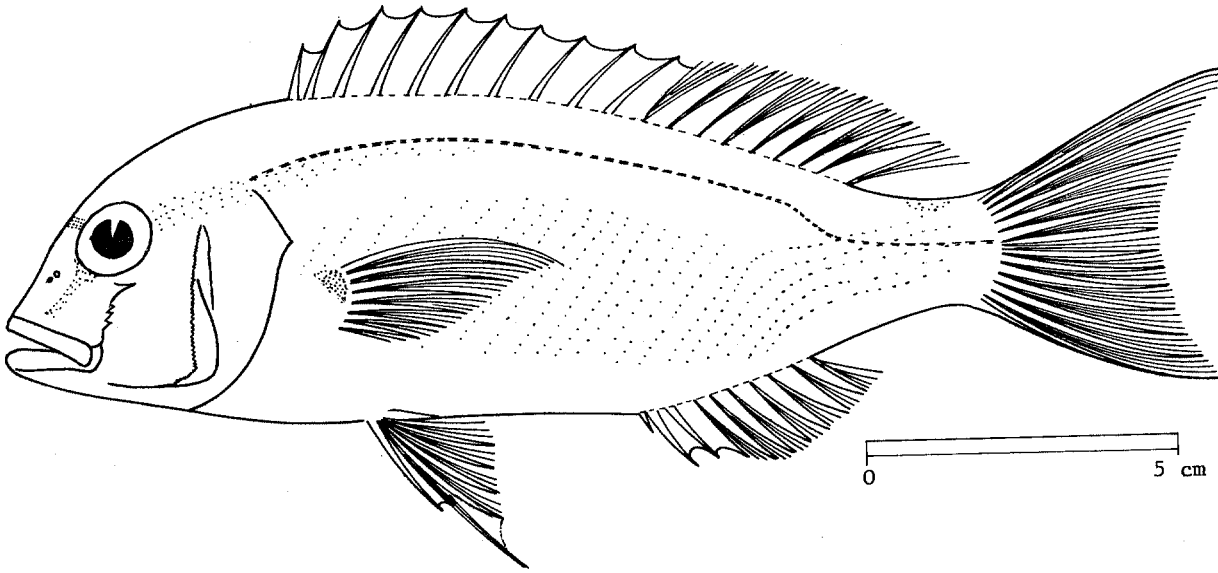
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: NEMIPTERIAAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Scolopsis taeniopterus (Valenciennes, 1830)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Lattice monocle bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body moderately elongate, compressed, body length about 3 1/2 to 3 3/4 times in total length; profile steeply convex from upper jaw to origin of dorsal fin. *A small, flat, backward-pointing spine and 2 to 3 smaller. spines below eye. Scales large, beginning on head between eyes. Anal fin with 3 spines, the 2nd stoutest and equal to or slightly longer than the 3rd;* pelvic fins with 1st soft ray elongated into a short, thread-like filament.

Colour: body colour variable, but generally greyish yellow after death; *a narrow blue band between eyes at junction of scaled and unsealed areas of head; a bluish purple line, with faint yellow bands above and below it, from eye to lower, jaw; a yellow streak from spine below eye to* gill cover may be present. *Body with faint, oblique, blue and yellow vertical lines becoming horizontal at base of caudal fin and vertical on caudal fin. Upper part of pectoral fin bases with red spot;* dorsal fin mainly yellowish, bluish along middle area, and yellow at margin; *caudal fin with faint blue and yellow vertical bars in centre and tip of upper lobe yellowish.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Other *Scolopsis* species: lack the combination of a red spot at base of pectoral fin and absence of lines on body.

Nemipterus species: no spine below eye.

SIZE:

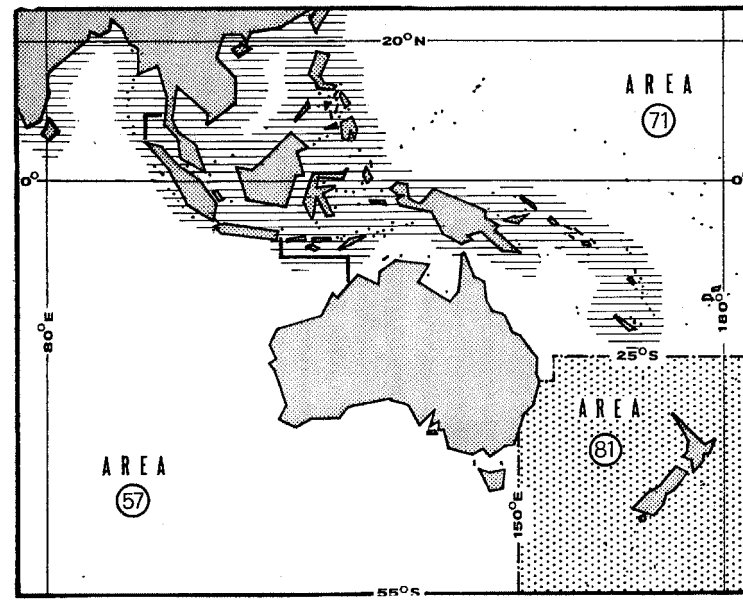
Maximum: 25 cm; common: 15 to 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area, but not recorded from Australia.

Inhabits shallow coastal waters.

Feeds on bottom-living organisms.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls and lines.

Marketed fresh (whole), dry-salted, dry-smoked, and as fermented fish balls or cakes.

NEMIP Scol 2

1974

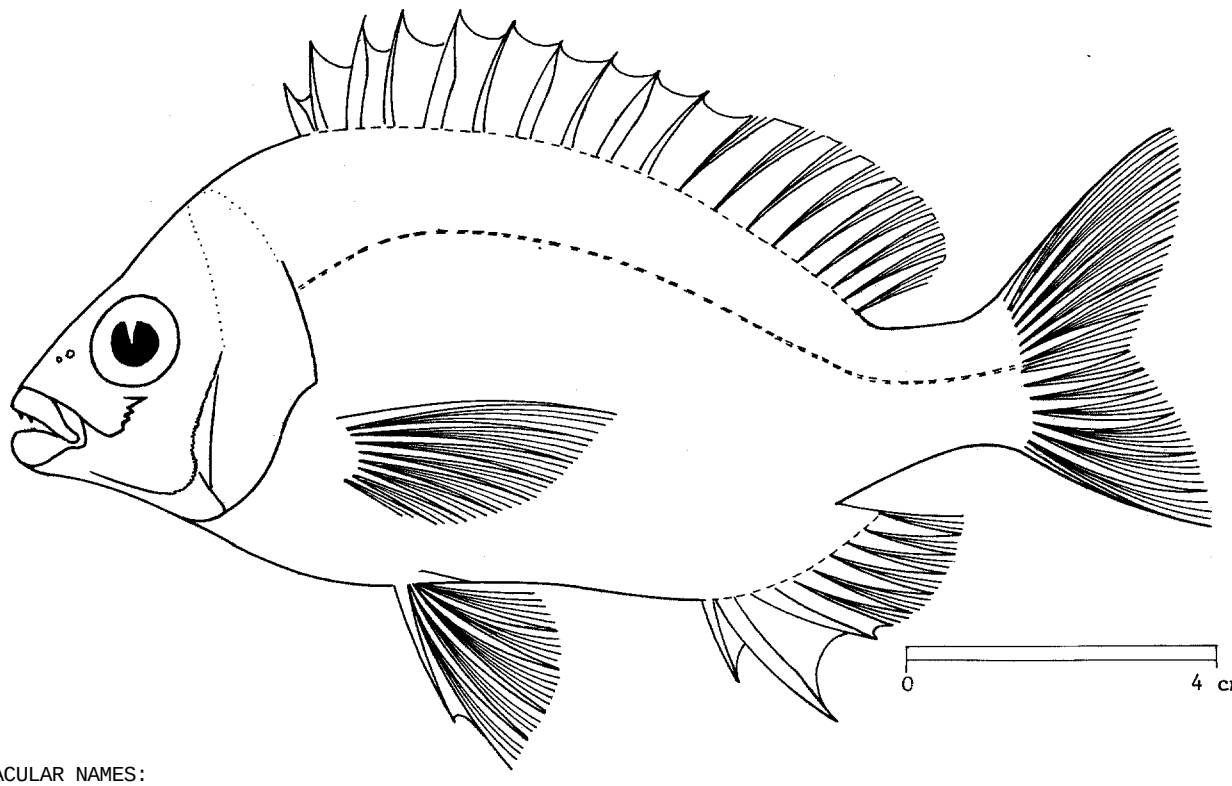
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCOLOPSIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Scolopsis vosmeri (Bloch, 1792)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Whitecheek monocle bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body compressed with very convex dorsal profile; body depth about 2 1/2 times in total length; jaws thick; eye large, *a stout backward-pointing spine just below it.* Scales large, *those on top of head begin in front of anterior nostrils.* Dorsal fin with stout spines; *anal fin with 3 stout spines, the 2nd very broad and longer than the 3rd;* pelvic fins with 1st soft ray sometimes elongated into a short, thread-like filament; caudal fin slightly forked.

Colour: body colour variable, usually dark with reddish purple tinge; *a broad, white vertical band from top of head onto gill covers;* sometimes a horizontal white band below lateral line from gill cover to below middle of dorsal fin; *scales on sides of body with dark spots*; fins greyish, tinged red.

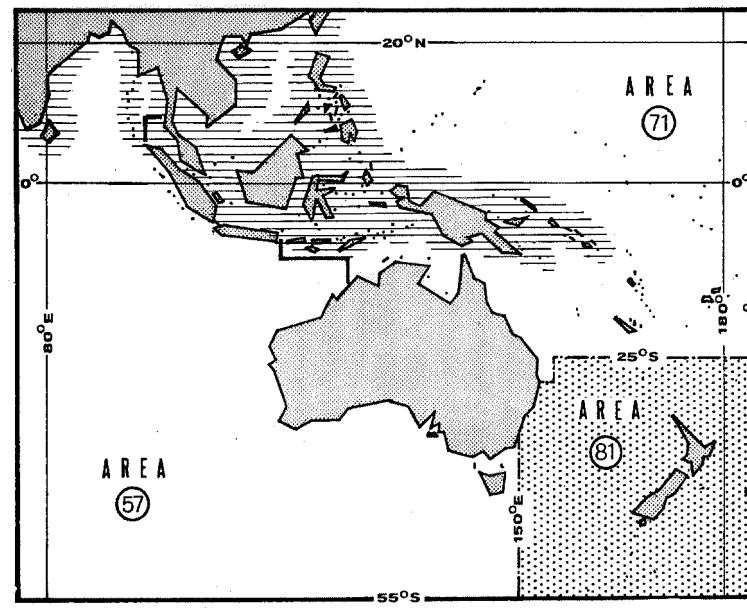
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Other *Scolopsis* species: body depth more than 3 times in total length (2 1/2 times in *S. vosmeri*).

Nemipterus species: no spine below eye.

SIZE:

Maximum: 25 cm; common: 12 to 20 cm



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area, but not recorded from Australia.

Inhabits inshore waters, mostly around islands and reefs.

Feeds on bottom-living organisms.

PRESENT FISHING GROUNDS:

Shallow waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with bottom trawls, lines and traps.

Marketed fresh ,(whole), dry-salted, dry-smoked, and as fermented fish balls or cakes; also sold as an aquarium fish.

click for previous page

P
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1974

FAO SPECIES IDENTIFICATION SHEETS

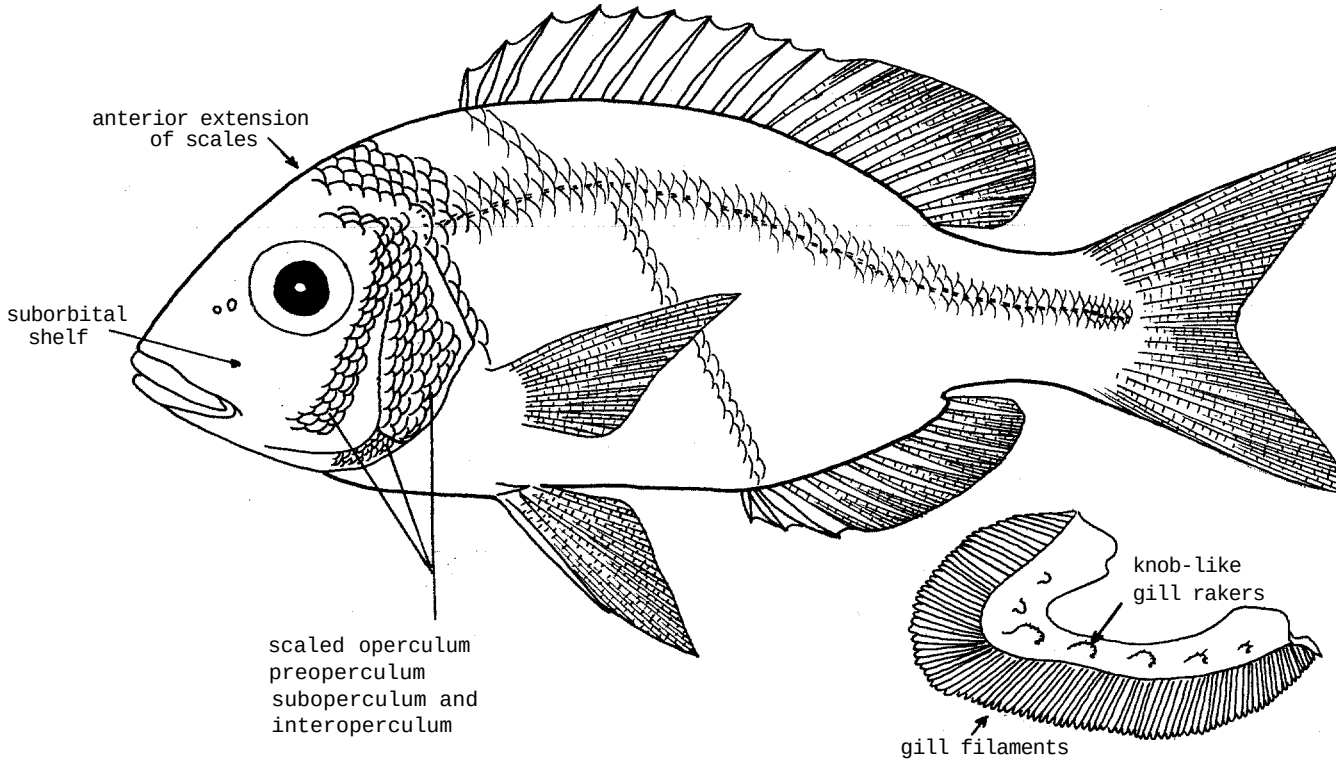
FISHING AREAS 57, 71
(E Ind. Ocean)
(W Cent. Pacific)

PENTAPODIDAE

Large-eye breams
(placed by some authors in the Lethrinidae and by others in the Nemipteridae)

Perch-like fishes with an oblong, moderately compressed body. *Eye noticeably large; interorbital region wide and flat.* Mouth terminal, horizontal or slightly oblique. *Tip of premaxilla not overlapping maxilla at hind end of mouth; maxilla broad, contained by a strong suborbital shelf when mouth is closed,* bearing in 2 genera *(Monotaxis* and *Gnathodentex)* a lengthwise denticulated ridge. Canine and/or molar teeth in jaws, usually strong; palate toothless. *Gill rakers knob-like, 5 to 6 on first arch.* A single, continuous dorsal fin with 10 slender or strong spines and 9 to 11 soft rays; pelvic fins with 1 slender or strong spine and 5 soft rays; anal fin with 3 slender or strong spines and 7 to 11 soft rays; *caudal fin invariably forked,* with a rounded or pointed tip to each lobe. *Scales ctenoid (rough),* ranging from small to moderately large; *present on operculum, preoperculum, suboperculum and interoperculum;* those on top of head beginning from hind part of interorbital region; no scales on dorsal and anal fins.

Colour: ground colour varying from silvery grey to green or dark brown; body with either longitudinal bands or vertical bars, or with a blue sheen on back superimposed by regular dark spots, blotches or streaks; fins usually varying from pale yellow to orange or red.



gill arch (innerside)

SIMILAR FAMILIES OCCURRING IN THE AREA:

Sparidae: tip of premaxilla overlaps maxilla at hind end of mouth.

Lethrinidae: no scales on preoperculum.

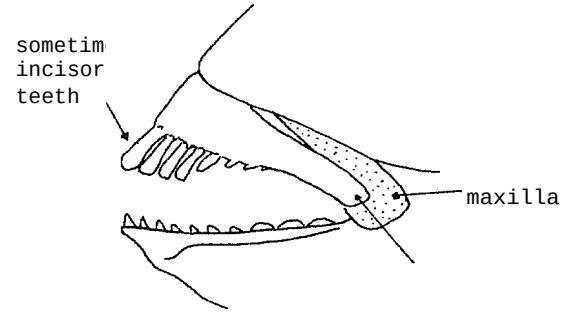
Nemipteridae: gill membranes only narrowly united across isthmus; many lack canine teeth

Lutjanidae: margin of preoperculum serrated; also, no molar teeth in jaws.

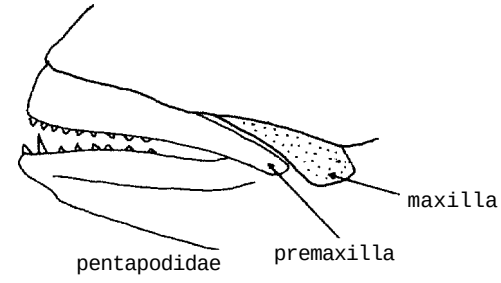
Kyphosidae: head small and scales present on snout; also, an outer row of strong, narrow incisors in jaws, and caudal fin emarginate.

Pomadasyidae: 2 to 6 pores behind lower lip and an emarginate or truncate caudal fin; also, scales on cheeks extend forward to hind end of maxilla.

Serranidae: caudal fin rounded, truncate, emarginate or lunate. but never forked.



Sparidae



Key to Genera

2 a. Maxilla with a strongly denticulated longitudinal ridge (Fig. 1)

2 a. Sides of jaws with round, flat molars preceded by a patch of small teeth and an anterior series of canines (Fig. 2); profile of head in front of eye strongly convex (Fig. 3) .....

2 b. Each jaw with a narrow band of villiform teeth, an outer series of conical teeth, and 4 canines at the front of upper jaw and 6 at the front of lower jaw (Fig. 4); profile of head in front of eye slightly convex or straight .....

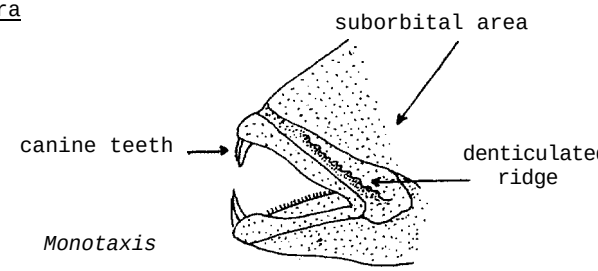
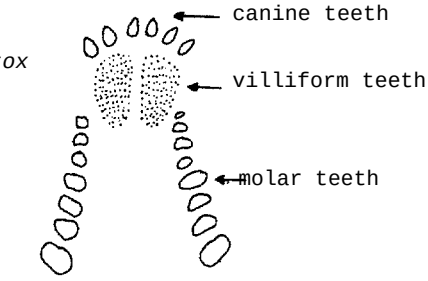


Fig. 1



Gnathodentox

Fig. 2

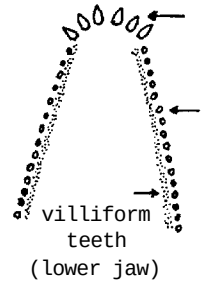


Fig. 4

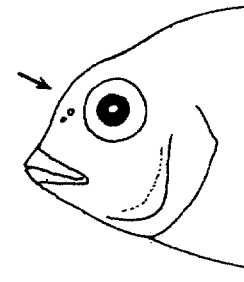


Fig. 3

Maxilla with a smooth surface devoid of denticulation.

3 a. Preoperculum fully scaled; edge of suborbital shelf free, tapering to blunt point posteriorly (Fig. 5); anal fin with 7 soft rays ..... *Pentapodus*

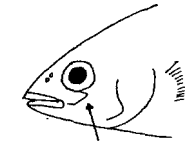


Fig. 5

3 b. Preoperculum with a broad naked border; edge of suborbital shelf not free (Fig. 6); anal fin with 10 to 11 soft rays ..... *Gymnocranius*

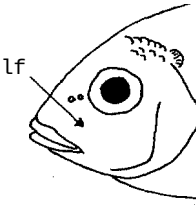


Fig. 6

List of Species occurring in the Area
(Code numbers are given for those species for which Identification Sheets are included)

Gnathodentex aurolineatus	PENTAD Gnath 1	*Mcnotaxis grandoculis*	PENTAD Mono 1
Gnathodentex mossambicus	PENTAD Gnath 2		
		Pentapodus caninus	
Gymnocranius bitorquatus		*Pentapodus helmuthi*	
Gymnocranius elongatus		*Pentapodus macrurus*	
Gyrnnocranius frenatus		*Pentapodus microdon*	
Gymnocranius griseus	PENTAD Gymno 1	*Pentapodus nenurus*	
Gymnocranius japonicus		*Pentapodus setosus*	
Gymnocranius lethrinoides		*Pentapodus vitta*	
Gymnocranius microdon			
Gymnocranius robinsoni	PENTAD Gymno 2		

PENTAP Gnath 1

1974

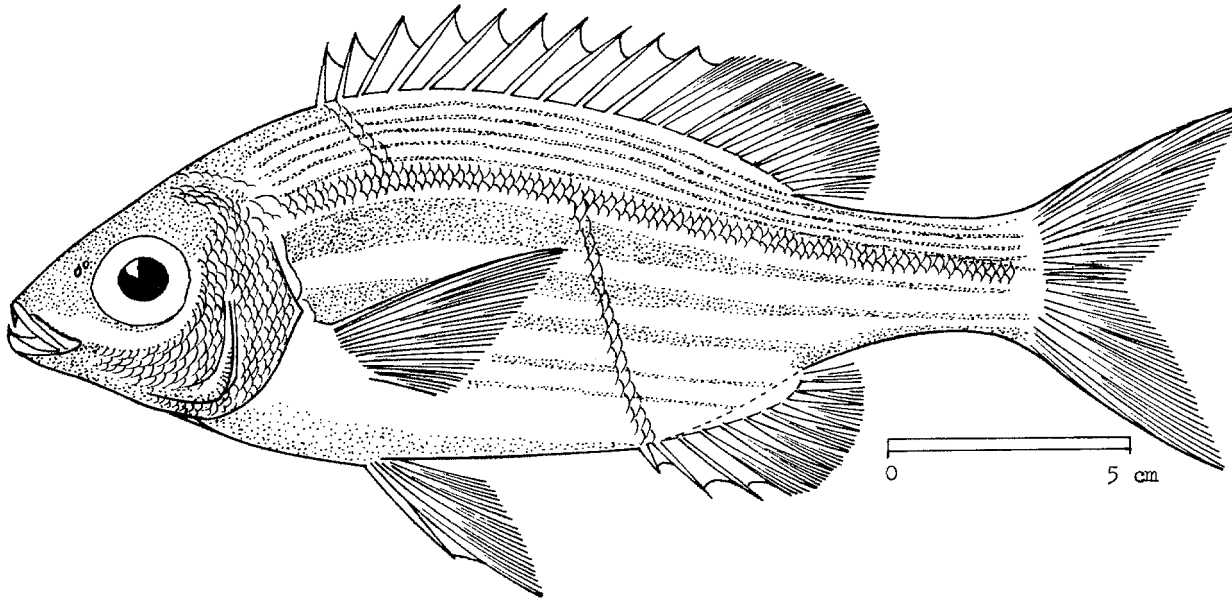
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: PENTAPODIDAE

FISHING AREAS 57, 71
(E Ind. Ocean)
(W Cent. Pacific)

Gnathodentex aurolineatus (Lacepède, 1803)

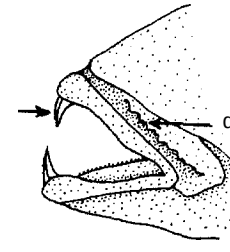
SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

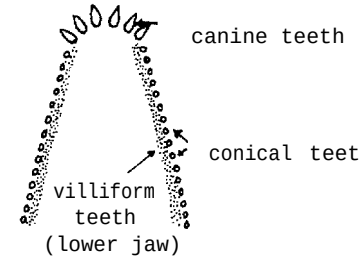
FAO: En - Striped large-eye bream
Fr -
SP -

NATIONAL:



DISTINCTIVE CHARACTERS:

Body oblong, laterally compressed, *its depth 2.7 times in standard length. Head profile straight in front of eye. Eye large, its diameter slightly greater than length of snout ; interorbital. space wide, slightly convex.* Preoperculum with a rough but not clearly serrated hind edge and outer margin scaleless. Jaw teeth in a narrow, villiform band bordered by an outer series of canine-like teeth; *anteriorly 4 moderate-sized canine teeth present in upper jaw and 6 in lower jaw. Maxilla with a longitudinal denticulated ridge;* 2 close-set round nasal openings in front of eye. Dorsal fin with 10 slender spines and 10 soft rays, the 1st to 4th spines increasing in length, *the length of 3rd spine equal to eye diameter; anal fin with 3 slender spines* and 9 soft rays, *length of 3rd spine about 1.1 times eye diameter,* anal fin base 1.5 to 1.7 times length of longest anal fin ray; *caudal fin forked with pointed tips. Scales 70 to 78 along lateral line; 5* scale rows between lateral line and lst dorsal fin spine and 6 scale rows between lateral line and 1st anal fin spine; 6 scale rows on preoperculum and 9 on operculum.



Colour: ground colour brown/green, becoming paler below; *8 pearly white longitudinal stripes on body; a broad, silvery stripe on preorbital region, continuing below eye to its posterior margin;* spinous parts of dorsal and anal fins and caudal fin light red; soft parts of dorsal and anal fins, and pectoral and pelvic fins, pale.

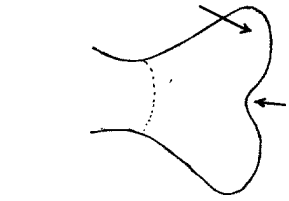
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Gnathodentex mossambicus: body much deeper, its depth 1.9 to 2.2 times in standard length (2.7 times in *G. aurolineatus),* a slightly forked caudal fin with broadly rounded lobes, much longer and stronger spines in the fins, and considerably larger and stronger scales, ranging from 41 to 47 in lateral line (70 to 78 in *G. aurolineatus).*

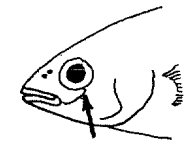
Gymrocranius species: surface of maxilla smooth.

Pentapodus species: a blunt suborbital spine below eye.

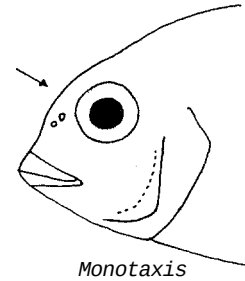
Monotaxis species: head profile strongly convex above eye; also, molar teeth at hind end of each jaw.



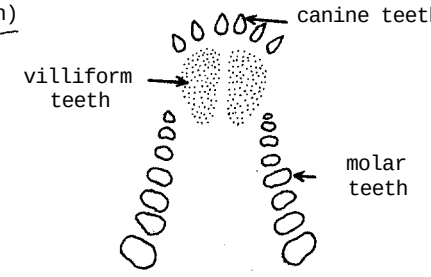
G. mossambicus
(caudal fin)



Pentapodus



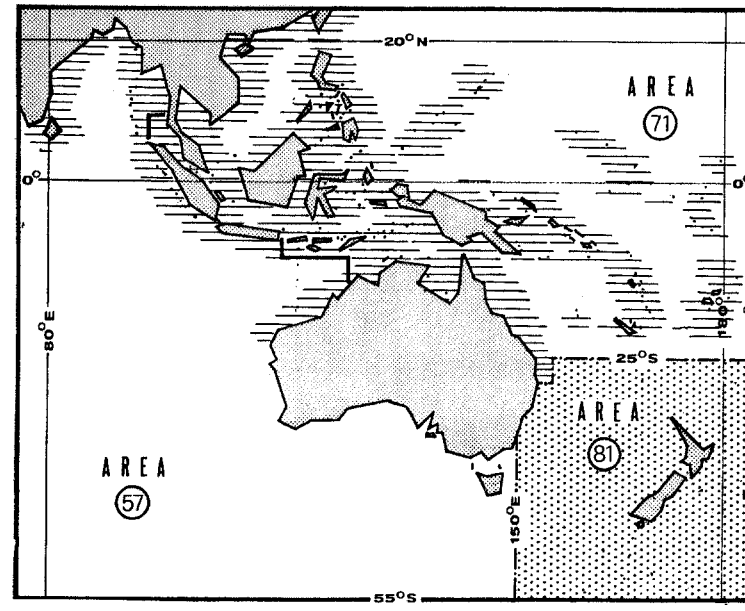
Monotaxis grandoculis



Monotaxis
(lower jaw)

SIZE:

Maximum: 30 cm; common: 20 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Probably throughout most of area, but perhaps not beyond northern coasts of Australia.

Found on coral reefs and in coastal waters, down to 20 m.

Feeds on bottom-living invertebrates and fishes.

PRESENT FISHING GROUNDS:

Shallow waters throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for. this species.

Caught mainly with traps and handlines.

Marketed mostly fresh.

PENTAP Gnath 2

1974

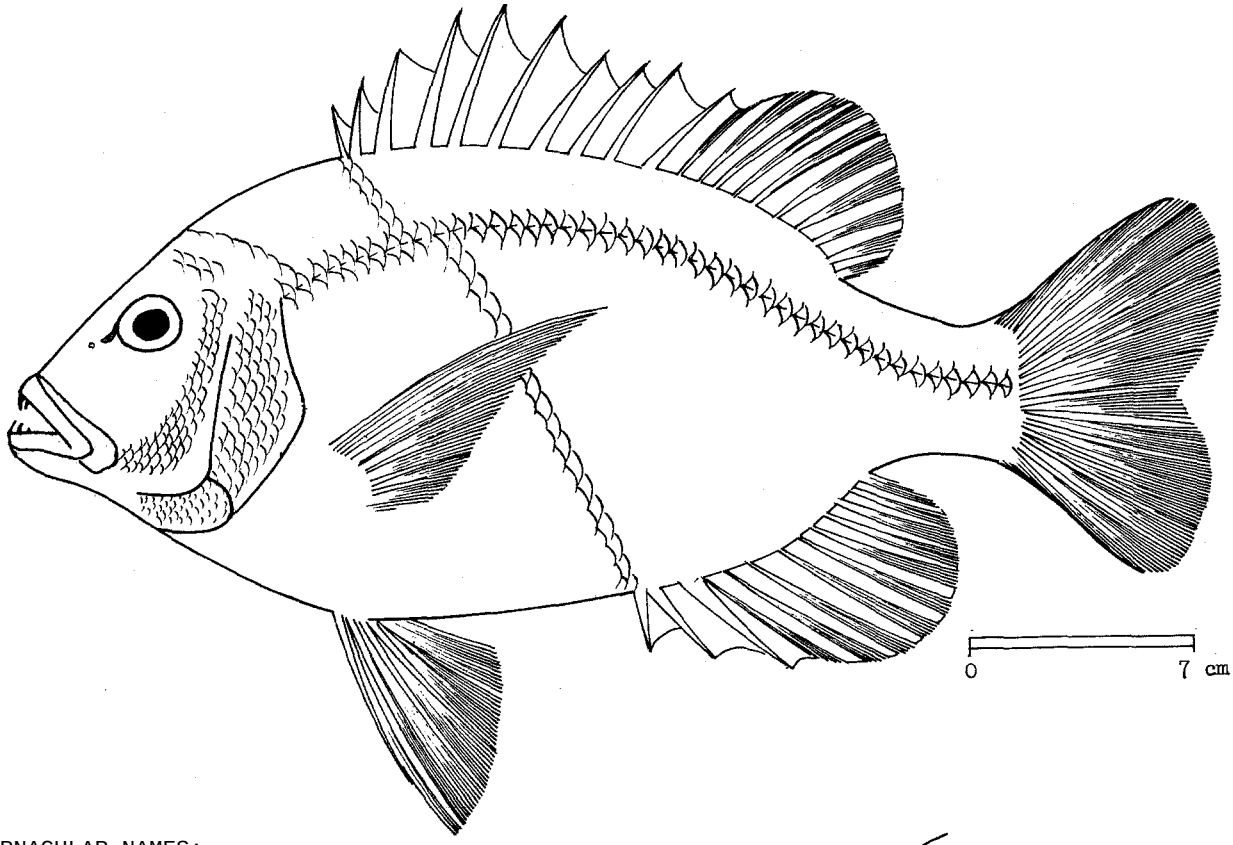
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: PENTAPODIDAE

FISHING AREAS 57, 71
(E Ind. Ocean)
(W Cent. Pacific)

Gnathodentex mossambicus Smith, 1957

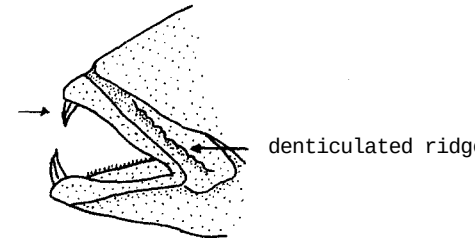
SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

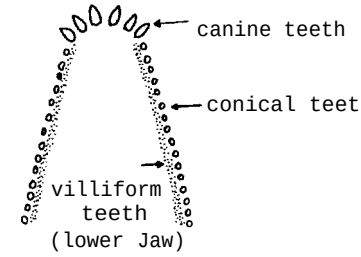
FAO: En - Mozambique large-eye bream
Fr -
Sp -

NATIONAL:



DISTINCTIVE CHARACTERS:

Body deep, rhomboid and laterally compressed, *its depth 1.9 to 2.2 times in standard length.* Head profile slightly convex. *Eye moderate in size, its diameter 2 times in snout length; interorbital space flat, its width slightly greater than eye diameter.* Preoperculum with a rough and scaleless hind margin. Jaw teeth in a narrow, villiform band bordered by an outer series of canine-like teeth; *anteriorly 4 moderate-sized canine teeth in upper jaw and 6 in lower, jaw. Maxilla with a longitudinal denticulated ridge;* 2 close-set nasal openings, the posterior one slit-like, ending close to



eye. Dorsal fin with 10 long, strong spines and 10 soft rays, *1st spine* about 2/3 the *length of the 2nd, the 2nd spine slightly longer than eye diameter, the 4th to 6th spines longest* (1.3 to 1.6 times in head length); *anal fin with 3 long, strong spines* and 10 to 11 soft rays, *the* 3rd *spine twice* as *long* as *eye diameter,* anal fin base 1.4 to 1.6 times longer than largest anal fin ray; *caudal fin very slightly forked with broadly rounded lobes. Scales 41 to 47 along lateral line*; 6 to 8 scale rows between lateral line and lst dorsal fin spine and 15 to 17 between lateral line and lst anal fin spine; 5 scale rows on preoperculum and 6 on operculum.

Colour: silvery yellowish grey above, grading to lighter shades below; *margins of scales darker; indistinct dark blotchy cross-bars on body;* dorsal, anal and caudal fins orange/olive to yellow/orange.

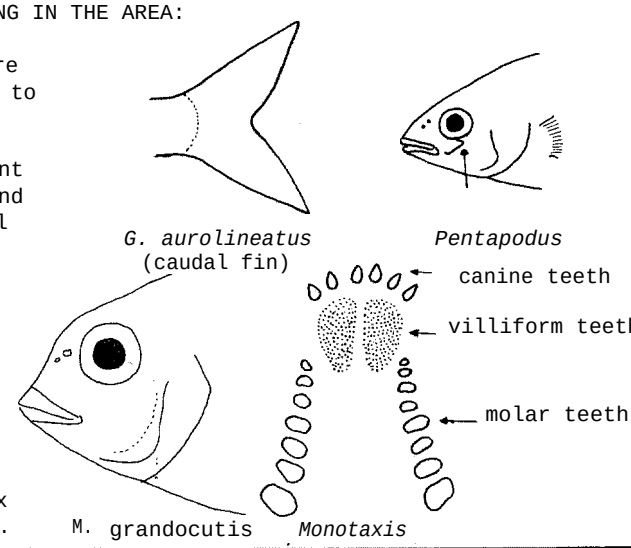
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Gnathodentex aurolineatus: body considerably more slender, its depth 2.7 times in standard length (1.9 to 2.2 in G. *mossambicus),* spines in fins shorter and weaker, a more deeply forked caudal fin with pointed lobes, a round posterior nostril located well in front of eye, pearly white longitudinal stripes on body, and much smaller scales, ranging from 70 to 78 in lateral line (41 to 47 in *G. mossambicus).*

Gymnocranius species: surface of maxilla smooth, spines in fins considerably shorter and weaker, a round posterior nostril well in front of eye, and a more deeply forked caudal fin.

Pentapodus species: a blunt suborbital spine below eye.

Monotaxis species: head profile strongly convex above eye; also, molar teeth at hind end of each jaw.



SIZE:

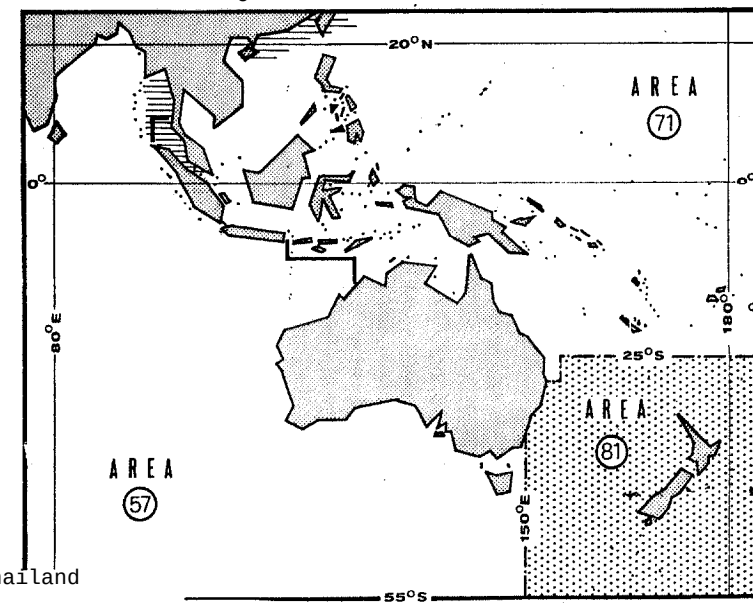
Maximum: 55 cm; common: 35 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Recorded only from western coasts of Malay Peninsula; also, northern Mozambique and South China and Japan.

Found on outer edge of continental shelf, from 140 to 180 m.

Feeds on bottom-living invertebrates and fishes.



PRESENT FISHING GROUNDS:

Deeper trawling grounds off western Thailand and South China.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom longlines and bottom trawls.

Marketed mostly fresh.

PENTAP Gymno 1

1974

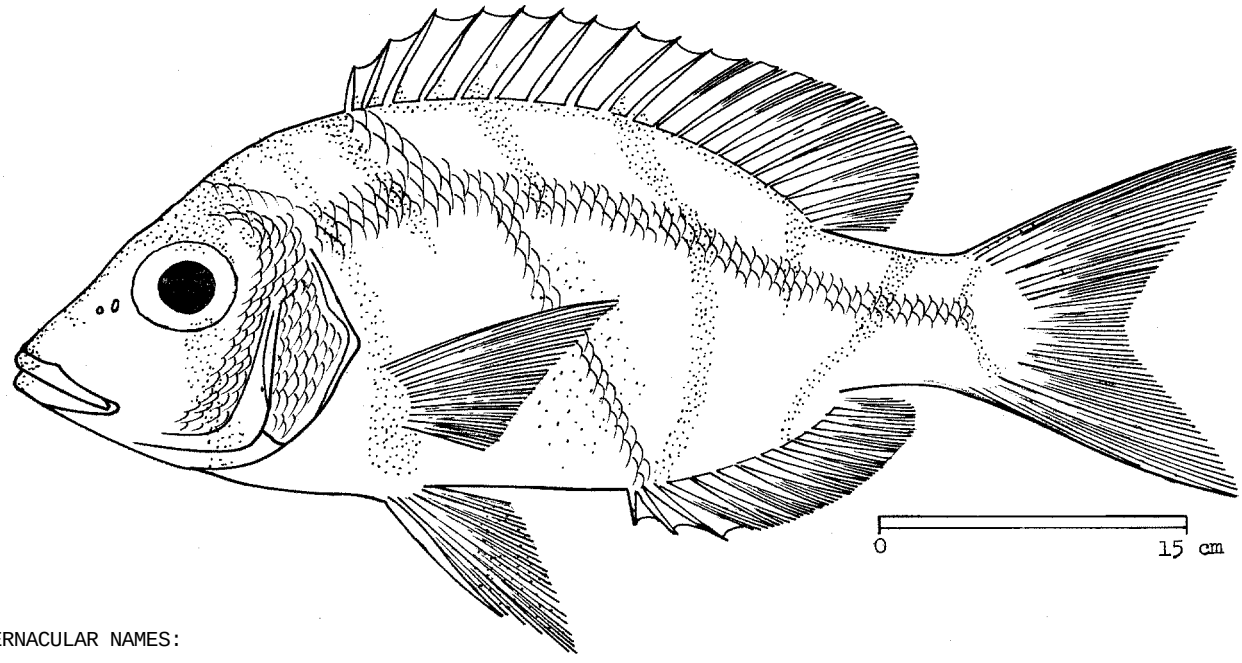
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: PENTAPODIDAE

FISHING AREAS 57, 71
(E Ind. Ocean)
(W Cent. Pacific)

Gymnocranius griseus (Schlegel, 1843)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Grey large-eye bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oblong, laterally compressed, *its depth 2.0 to 2.3 (young) or 2.5 to 2.8 (adults) times in standard length. Dorsal profile of head smoothly convex. Eye large, its diameter shorter than length of snout in young, 1.2 to 1.3 times in snout length in adults;* interorbital space moderately wide, its width about equal to eye diameter. Preoperculum with rough hind edge and hind margin scaleless. 6 moderate canines in front of each jaw, conical teeth at sides and fine teeth within. *Maxilla with a smooth surface;* 2 closely set round nasal openings in front of eye. Dorsal fin with 10 spines and 10 soft rays, the 1st to 4th spines increasing in length, *the length of 3rd spine greater than eye diameter;* anal fin with 3 slender spines and 9 soft rays, *length of 3rd spine about equal to eye diameter, anal fin base 2.1 to 2.5 times longer than longest anal fin ray;* caudal fin forked with pointed tips. *Scales 47 to 51 along lateral line;* 6 between lateral line and 1st dorsal fin spine; 16 to 19 between lateral line and 1st anal fin spine; 4 to 5 rows on preoperculum, and 6 to 7 rows on operculum.

Colour: *silvery grey/blue dorsally becoming silvery white ventrally; in young specimens, head and body with 5 to 8 irregular dark bands, 1 from between eyes through suborbital region to pre-operculum, 1 from front of dorsal fin to hind margin of operculum and base of pectoral fin, and others on body and caudal peduncle; in adults, remnants of bands usually present.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE .AREA:

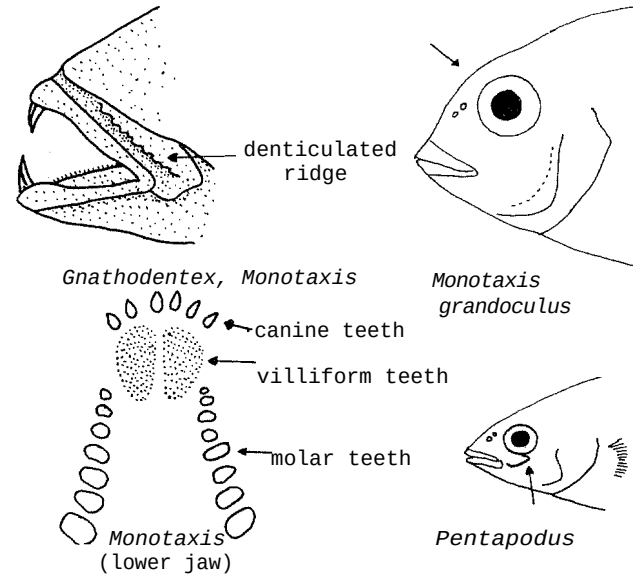
Gymnocranius elongatus: caudal fin very deeply forked, the median rays shorter than eye diameter, and with red hind margin.

Other *Gymnocranius* species: no dark cross-bands through eye and on body.

Gnathodentex species: a longitudinal denticulated ridge on maxilla; also, longer and stronger fin spines and a slightly forked caudal fin with broadly rounded lobes in *G. mossambicus*.

Pentapodus species: a blunt suborbital spine below eye.

Monotaxis species: head profile strongly convex above eye and a longitudinal, denticulated ridge on maxilla; also, molar teeth at hind end of each jaw.



SIZE:

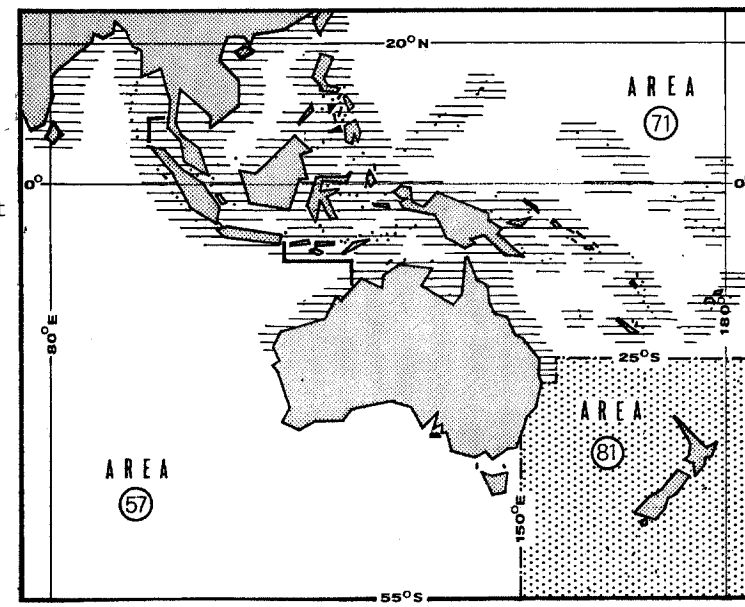
Maximum: 80 cm; common: 60 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of area but perhaps not beyond northern coasts of Australia.

Found in coastal waters down to 80 m.

Feeds on bottom-living crustaceans and fishes.



PRESENT FISHING GROUNDS:

Coastal waters throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls, bottom longlines and handlines.

Marketed mostly fresh.

PENTAP Gymno 2

1974

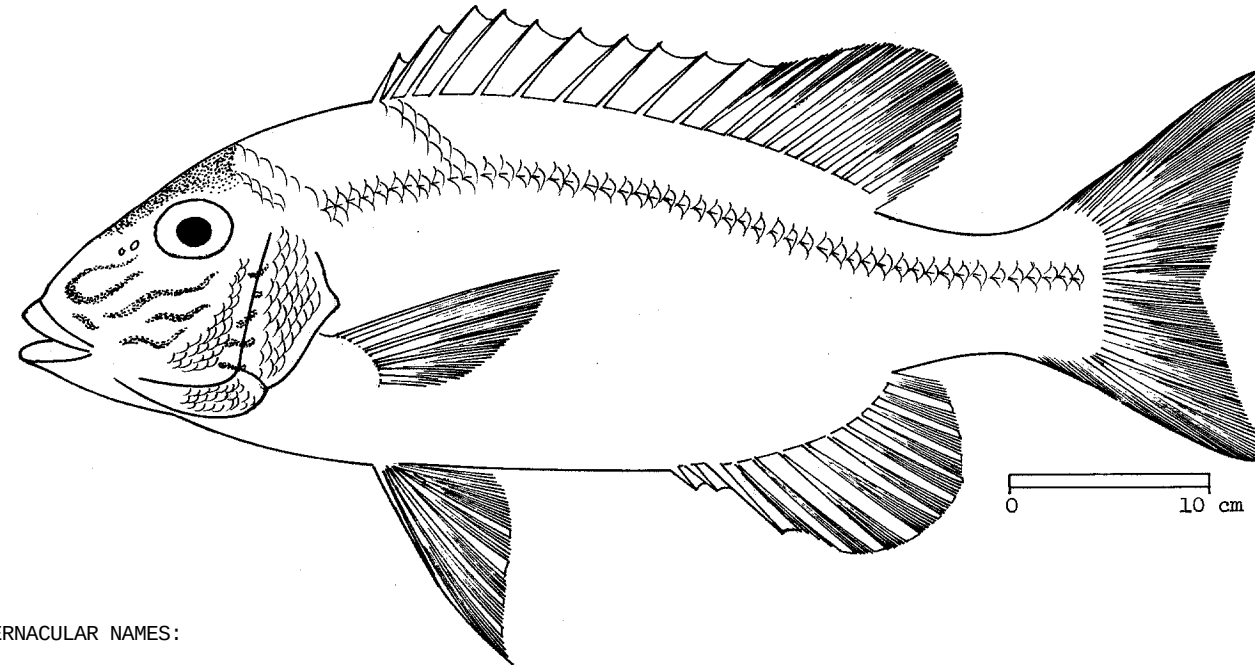
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: PENTAPODIDAE

FISHING AREAS 57, 71
(E Ind. Ocean)
(W Cent. Pacific)

Gymnocranius robinsoni (Gilchrist & Thompson, 1908)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Blue-lined large-eye bream
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oblong, laterally compressed, *its depth 2.3 to 2.7 times in standard length. Dorsal profile of head smoothly convex. Eye moderate in size, its diameter slightly shorter than length of snout; interorbital space wide, its width equal to or slightly greater than length of snout.* Preoperculum with a rough hind edge and hind margin scaleless. 6 moderate canines in front of each jaw, conical teeth at sides and fine teeth within. *Maxilla with a smooth surface.* 2 close-set round nasal openings in front of eye. Dorsal fin with 10 spines and 10 to 11 soft rays, 1st to 4th spines increasing in length, *the length of 3rd spine greater than eye diameter; anal fin with 3 slender spires* and 9 to 10 soft raps, the length of 3rd spine slightly greater than eye diameter, *anal fin base 1.8 times longer than longest anal fin ray;* caudal fin forked with pointed lobes. *Scales 45 to 49 along lateral line;* 6 to 7 between lateral line and lst dorsal fin spine; 4 to 5 rows on operculum.

Colour: *silvery grey/blue above becoming silvery white below; cheeks, snout and operculum with many wavy blue lines; median fins orange/yellow.*

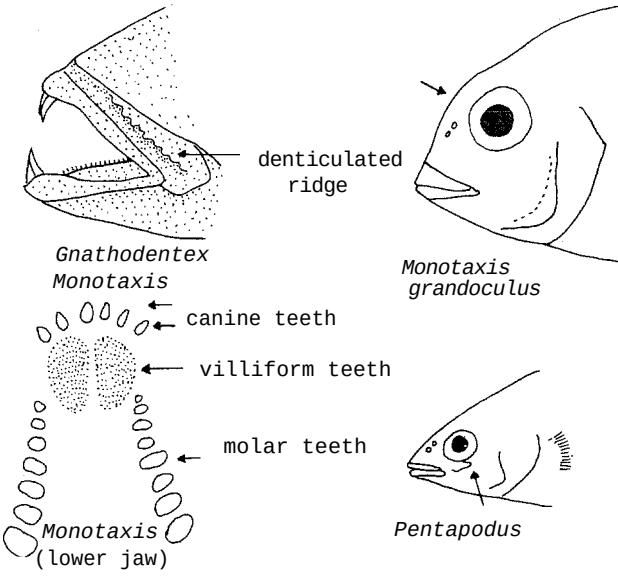
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Other *Gymnocranius* species: no wavy blue streaks on head.

Gnathodentex species: a longitudinal denticulated ridge on maxilla; longer and stronger fin spines and a. slightly forked caudal fin with broadly rounded lobes in *G. mossambicus.*

Pentapodus species: a blunt suborbital spine below eye.

Monotaxis species: head profile strongly convex over eye and a longitudinal, denticulated ridge on maxilla; also, molar teeth at hind end of each jaw.



SIZE:

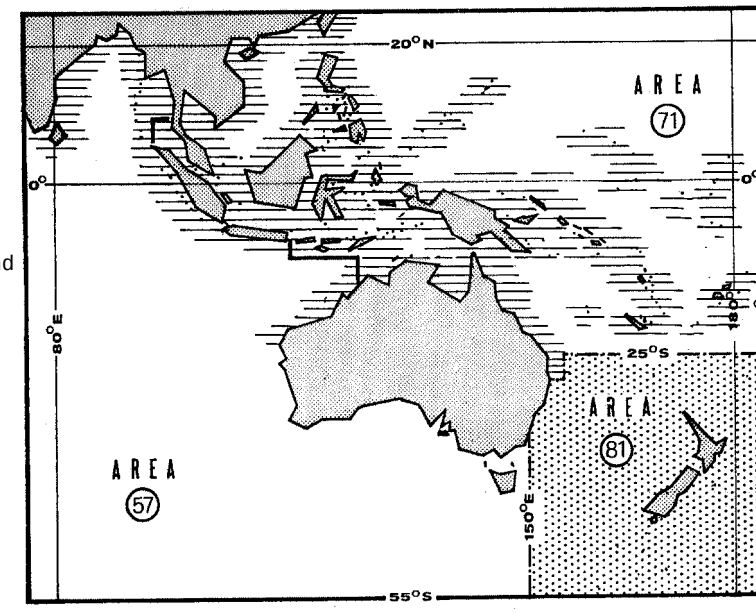
Maximum: 80 cm; common: 60 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of area but perhaps not beyond northern coasts of Australia.

Found on coral and rocky reefs and in coastal waters down to 80 m.

Feeds on bottom-living invertebrates and fishes.



PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom longlines, handlines, gillnets and traps.

Marketed mostly fresh; also dried-salted.

PENTAP Mono 1

1974

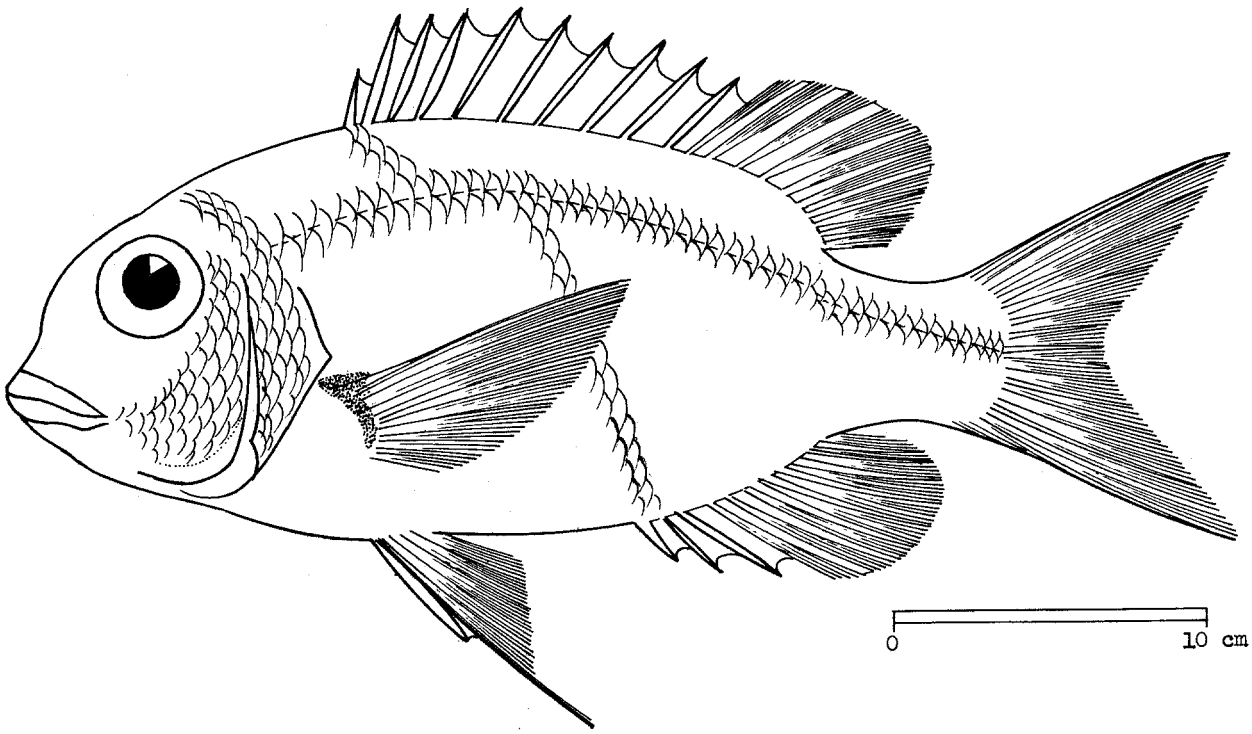
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: PENTAPODIDAE

FISHING AREAS 57, 71
(E Ind. Ocean)
(W Cent. Pacific)

Monotaxis grandoculis (Forsskål, 1775)

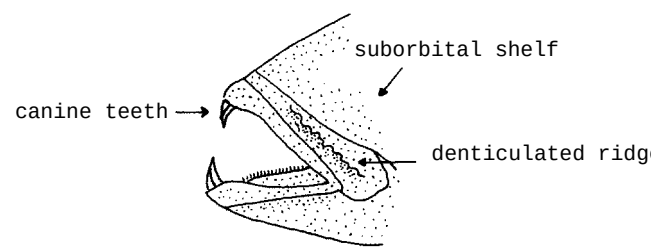
SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

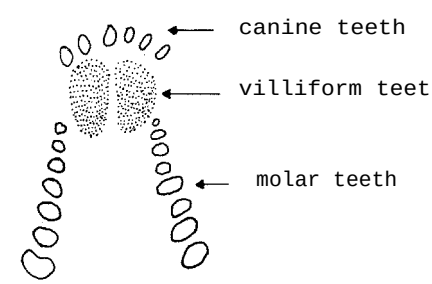
FAO: En - Humpnose large-eye bream
Fr -
Sp -

NATIONAL:



DISTINCTIVE CHARACTERS:

Body oblong, laterally compressed, its depth 2.2 to 2.4 times in standard length. *Head profile strongly convex in front of eye. Eye large, its diameter slightly shorter than length of snout; interorbital space wide, flat.* Preoperculum with a roughly serrated hind edge and hind margin scaleless. *A broad patch of small teeth in jaws anteriorly followed by a series of 6 to 7 round, flat molars on each side,* and *preceded by canines in front of each jaw. Maxilla with a longitudinal denticulated ridge. 2 close-set round nasal openings in front of eye.*



Monotaxis
(lower jaw)

Dorsal fin with 10 slender spines and 10 soft rays, *the 1st spine half the size of 2nd, otherwise all spines nearly equal (2nd spine about equal to eye diameter; anal fin with 3 spines* and 9 soft rays, the 3rd spine 1.2 to 1.3 times the eye diameter, *anal fin base as long as longest anal soft ray; caudal fin forked with pointed tips. Scales 46 to 47 along lateral line;* 5 scales between lateral line and lst dorsal fin spine and 14 to 15 between lateral line and lst anal fin spine; 5 *to 6 rows of scales on preoperculum and opereulum.*

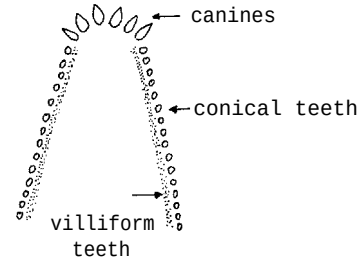
Colour: *ground colour bluish grey above,* paler below; *centres of scales silvery; area over and around eye yellow or orange;* median fins yellowish orange; *occasionally a few dark brown scales on sides.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

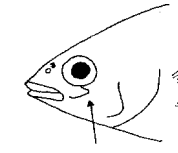
Gymnocranius species: surface of maxilla smooth.

Gnathodentex species: no molar teeth in jaws.

Pentapodus: no molar teeth in jaws; a blunt postorbital spine below eye.



Gnathodentex
(lower jaw)



Pentapodus

SIZE:

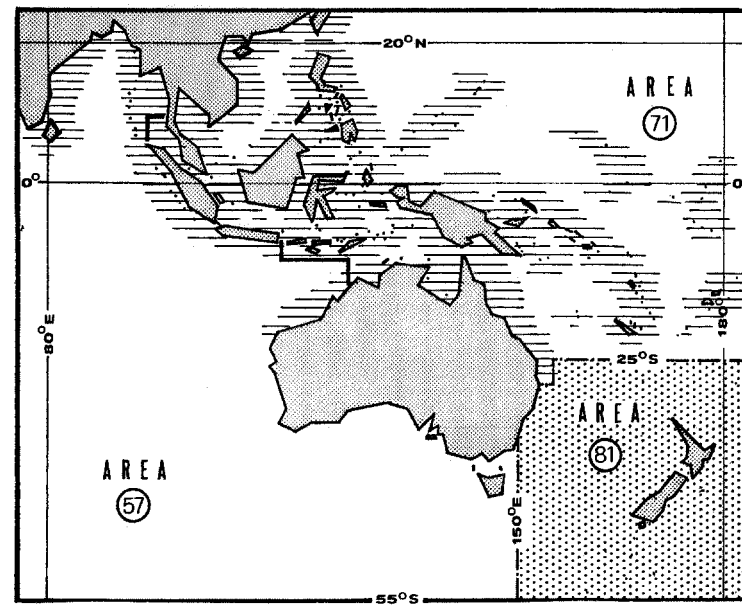
Maximum: 60 cm; common: 40 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of area, but perhaps not beyond northern coasts of Australia.

Found on coral reefs and in coastal waters, down to 60 m.

Feeds on bottom-living invertebrates and fishes.



PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with gill nets, traps, bottom longlines and handlines.

Marketed mostly fresh.

POLYN

1974

FAO SPECIES IDENTIFICATION SHEETS

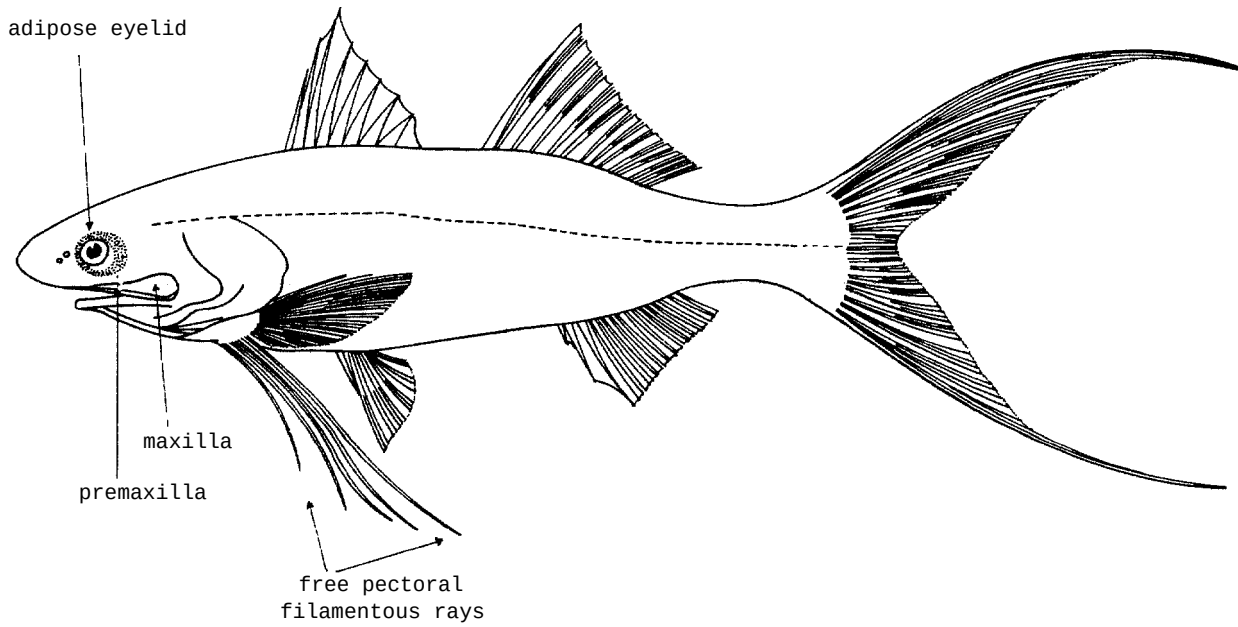
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

POLYNEMIDAE

Threadfins, tasselfishes

Medium-sized fishes with an oblong or more or less elongate and compressed body. Head scaly, with *conical snout projecting beyond large mouth;* maxilla expanded posteriorly, reaching to well behind eye; mouth bordered by slightly protractile pre-maxillae; only small villiform teeth in jaws and palatines, sometimes on vomer. Eyes with adipose tissue. 2 widely separated dorsal fins, the 1st with 7 to 8 feeble spines; *pectoral fins in two parts, the upper normal, the lower with 3 or more free filamentous rays;* pelvic fins abdominal, lying a little behind bases of pectoral fins. anal fin with 2 to 3 spines followed by branched rays, lying below base of 2nd dorsal fin; caudal fin forked. Body curved with weakly ctenoid (rough) scales; *lateral line continued onto caudal fin.*

Colour: silvery, golden or light brown, sometimes with darkish blotch at the shoulder or dark longitudinal lines on body; fins yellowish or more or less dusky.



SIMILAR FAMILIES OCCURRING IN THE AREA:

Peristediidae (sea robins), Dactylopteridae (flying gurnards): also have some. free. pectoral fin rays, but head with strong bony armour; also, pectoral fins enormous in Dactylopteridae.

Other bony fishes with 2 dorsal fins: have normal pectoral fins without free rays in lower part of fin.

Key to Genera

1 a. Lower lip fully developed; no external teeth; 5 or more free pectoral filaments ..... *Polynemus*

1 b. Lower lip restricted to corner of mouth; teeth extending to outer edges of jaws; 3 or 4 free pectoral filaments ..... *Eleutheronema*

lower lip
Polynemus

lower lip
Eleutheronema

List of Species occurring in the Area

(Code numbers are given for those species for which 1dentificatiou Sheets are included)

Eleutheronema tetradactylum	POLYN Eleu 1	*Polynemus microstoma*	
Eleutheronema tridactylum		*Polynemus nigripinnis*	
		Polynemus paradiseus	POLYN Poly 5
Polynemus borneensis		*Polynemus pfeifferi*	
Polynemus dubius		*Polynemus plebeius*	POLYN Poly 2
Polynemus heptadactylus	POLYN Poly 4	*Polynemus sealei*	
Polynemus hexanemus		*Polynemus sexfilis*	
Polynemus indicus	POLYN Poly 1	*Polynemus sextarius*	POLYN Poly 3
Polynemus intermedius		*Polynemus sextarius mullani*	
Polynemus kuru		*Polynemus sheridani*	
Polynemus macrochir		*Polynemus specularis*	
Polynemus macrophthaumus		*Polynemus verekeri (= P. intermedius)*	
Polynemus melanochir		*Polynemus xanthonemus*	

POLYN Eleu 1

1974

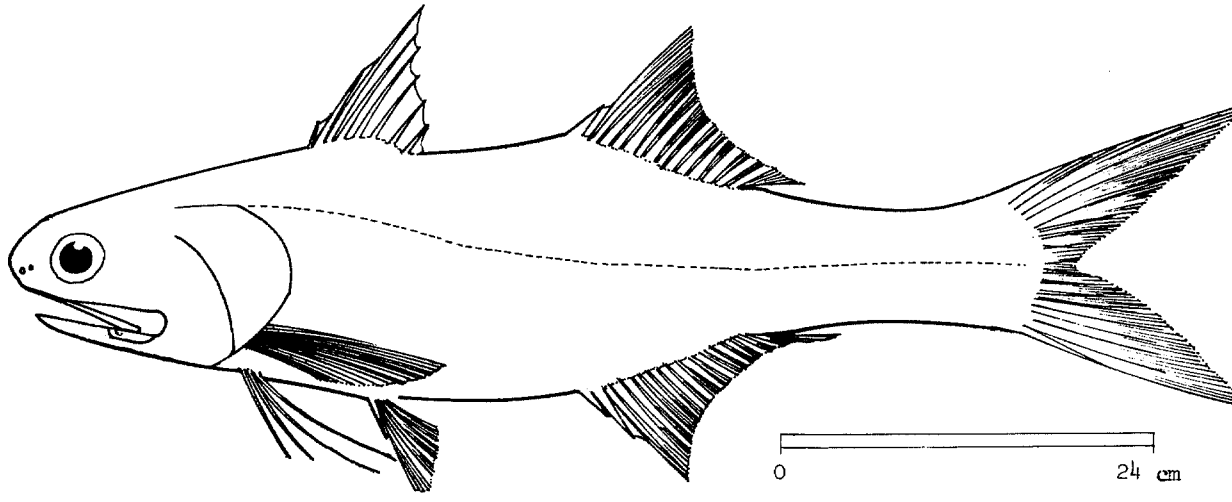
FAO SPECIES IDENTIFICATION SHEETS

FAMILY POLYNEMIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Eleutheronema tetradactylum (Shaw, 1804)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En Fourfinger threadfin
Fr
Sp

NATIONAL:

DISTINCTIVE CHARACTERS:

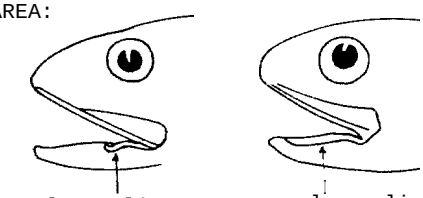
The largest of the threadfins. Body more or less elongate and compressed. Snout projecting, mouth very large, with small teeth. *Lips absent except for lower lip near corner of mouth. Eyes large* (eye diameter 4.5 to 5 times in head length). Pectoral fin in two parts, upper part with all rays unbranched, *lower with 4 free filamentous rays of which the upper filament is the longest, reaching to pelvic fin base;* caudal fin forked with lobes equal. Scales small, ctenoid (rough to touch).

Colour: body silvery green above, cream below; dorsal and caudal fins grey, dusky at edges, pelvic and anal fins orange, pectoral filamentous rays white.

DISTINGUISHING CTARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Eleutheronema tridaetylum: only 3 free pectoral filamentous rays.

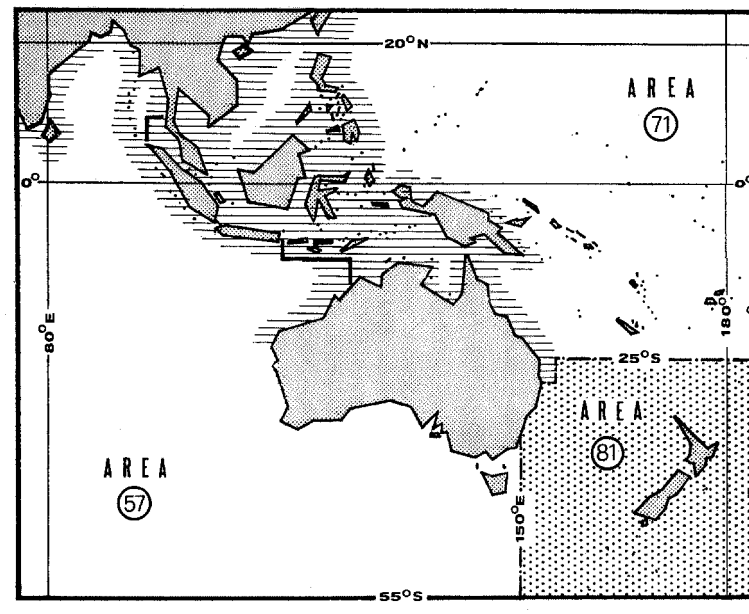
All other polynemid species: lower lip well developed.



Eleutheronema *Polynemus*

SIZE:

Maximum: 200 cm;
common: 45 to 50 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to Queensland (Australia); also, western coasts of India.

Lives mainly over shallow muddy bottoms in coastal waters; also enters rivers.

Feeds mainly on small crustaceans and fishes.

PRESENT FISHING GROUNDS:

Caught in shallow coastal waters and lower reaches of larger rivers.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of Polynemidae in 1972 was:

area 57 (Eastern Indian Ocean): negligeable quantities (Australia only)
area 71 (Western Central Pacific): 1 700 tons (Australia: 200 tons;
Malaysia: 1 000 tons;
Singapore: 500 tons)

Caught mainly with beach seines, longlines, traps and bottom trawls.

Marketed fresh, frozen and dried-salted.

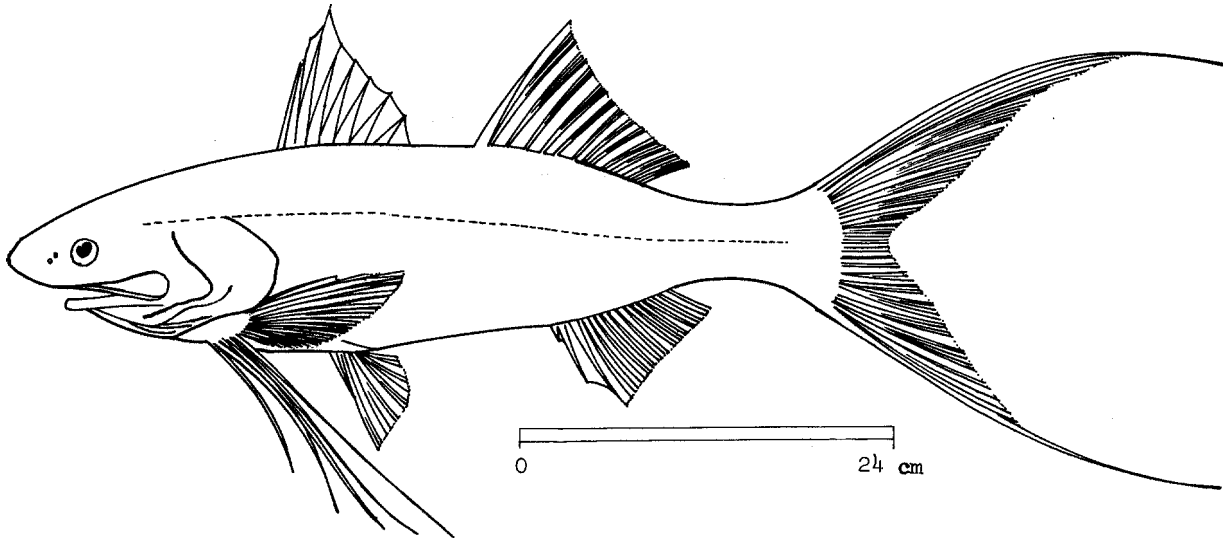
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: POLYNEMIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Polynemus indicus Shaw, 1804

SYNONYMS STILL IN USE: *Polydactylus indicus* (Shaw, 1804)



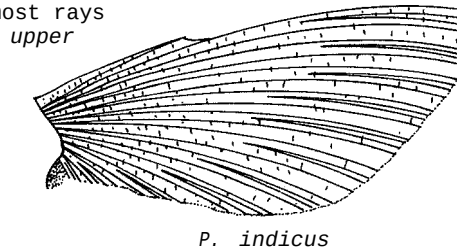
VERNACULAR NAMES:

FAO: En - Indian threadfin
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oblong and somewhat compressed. Snout projecting, mouth large, with small teeth; *upper lip absent, lower lip well developed.* Eyes very small (eye diameter 7 times in head length), with adipose tissue. Pectoral fin in two parts, upper part with most rays branched, *lower with 5 free filamentous rays, of which the upper is the longest, reaching nearly to anal fin origin; caudal fin deeply lunate, with pointed lobes ending in filaments.* Scales small, ctenoid (rough to touch).



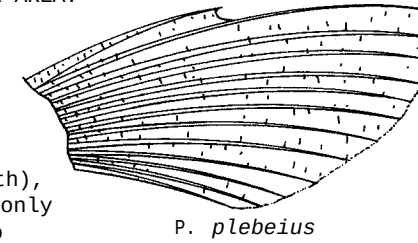
P. indicus

Colour: body purple/black, with faint dusky stripes; all fins yellow.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Polynemus sheridani: 5 free pectoral filamentous rays, but all upper pectoral fin rays unbranched.

Polynemus plebeius: 5 free pectoral filamentous rays, but all upper pectoral fin rays unbranched; also, a deeper body, larger eyes (eye diameter 3.8 to 4.0 times in head length), shorter free pectoral filamentous rays, the longest reaching only to end of pelvic fin, and caudal fin lobes not prolonged into filaments.



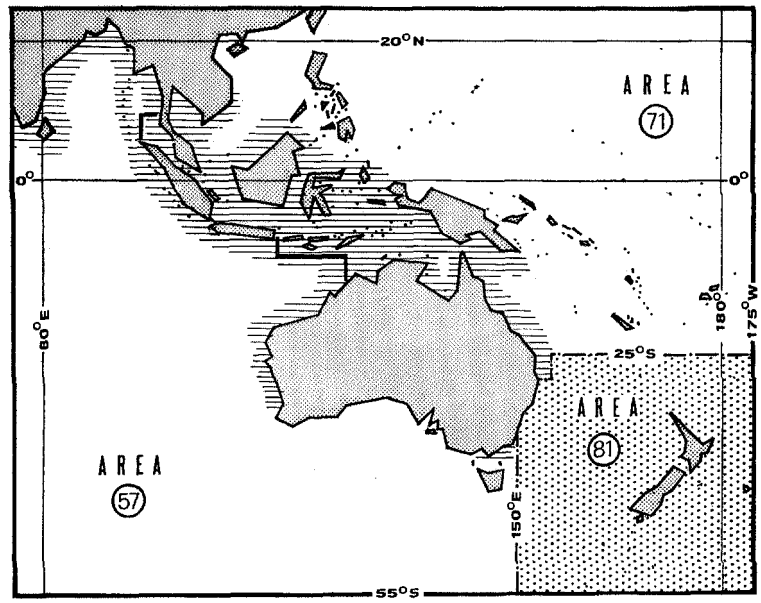
P. *plebeius*
P. sheridani

Polynemus microstoma: 5 free pectoral filamentous rays, but a distinctive black blotch at beginning of lateral line, above pectoral fin origin.

All other polynemid species: 3 to 4, or 6 to 8 free pectoral filamentous rays (5 in *P. indicus*).

SIZE:

Maximum: 142 cm;
common: 70 to 80 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to New South Wales (Australia); also, westward to East Africa.

Lives mainly over shallow muddy and sandy bottoms of the continental shelf, occasionally entering rivers, rare beyond depths of 60 m.

Feeds mainly on small bottom-living crustaceans, especially prawns and crabs, and small fishes.

PRESENT FISHING GROUNDS:

Shallow muddy and sandy parts of the continental shelf, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of Polynemidae in 1972 was:

area 57 (Eastern Indian ocean): negligeable quantities (Australia only)
area 71 (Western Central Pacific): 1 700 tons (Australia: 200 tons;
Malaysia: 1 000 tons;
Singapore: 500 tons

Caught mainly with beach seines, bottom drift nets, traps, longlines and bottom trawls.

Marketed fresh, frozen and dried-salted.

POLYN Poly 2

1974

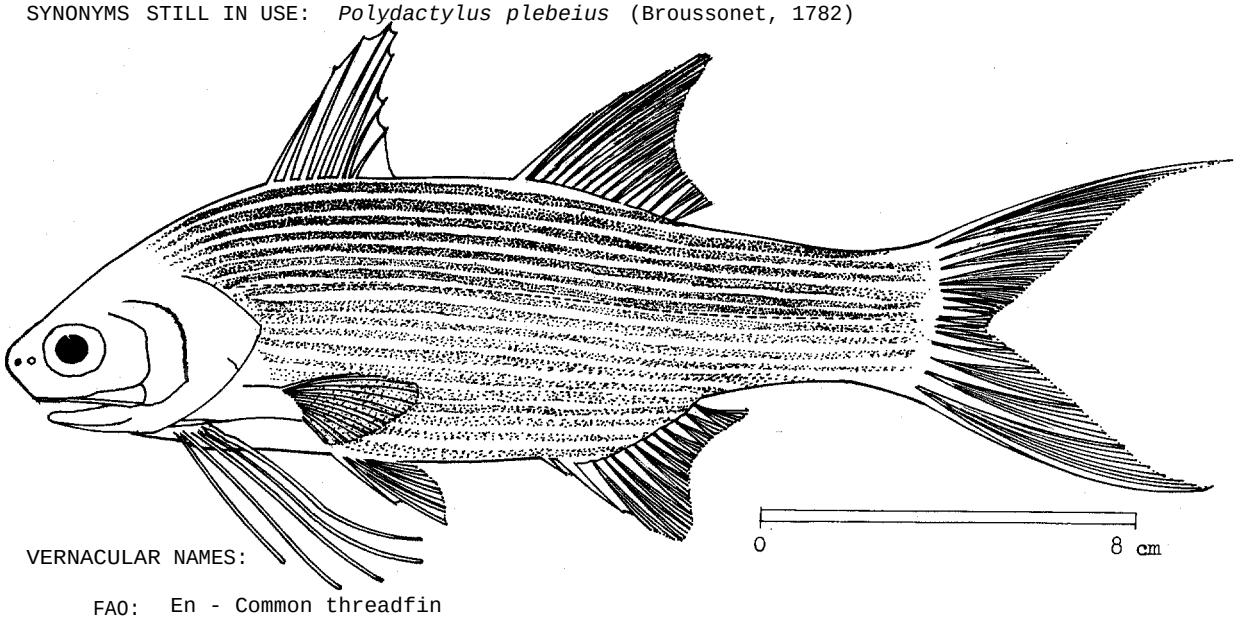
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: POLYNEMIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Polynemus plebeius Broussonet, 1782

SYNONYMS STILL IN USE: *Polydactylus plebeius* (Broussonet, 1782)



VERNACULAR NAMES:

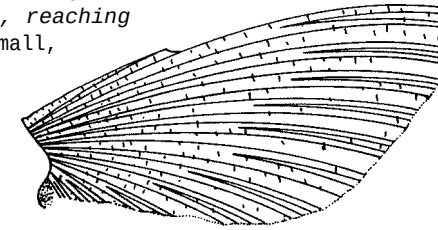
FAO: En - Common threadfin
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oblong and somewhat compressed. Snout projecting, mouth large, with small teeth; *upper lip absent, lower lip well developed. Eyes large* (eye diameter 3.8 to 4.0 times in head length), with adipose tissue. Pectoral fin in two parts, upper part with all rays unbranched, *lower with 5 free filamentous rays, of which the upper 2 are the longest, reaching to end of pelvic fin;* caudal fin with lobes equal. Scales small, ctenoid (rough to touch).

Colour: body golden olive, with narrow dusky stripes; *pectoral fins black,* inner side of pelvic fins white, outer side grey, dorsal and caudal fins grey-edged.

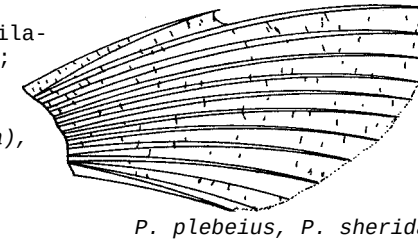


P. indicus, P, microstoma

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Polynemus indicus and *P. microstoma:* 5 free pectoral filamentous rays but most of the upper pectoral fin rays branched; also, longer free pectoral filamentous rays reaching to anal fin origin (*P. indicus),* and a black blotch at the beginning of lateral line, above origin of pectoral fins (*P. microstoma),*

Polynemus sheridani: 5 free pectoral filamentous rays and upper pectoral rays simple, but the free pectoral filamentous rays reach the anal fin origin.

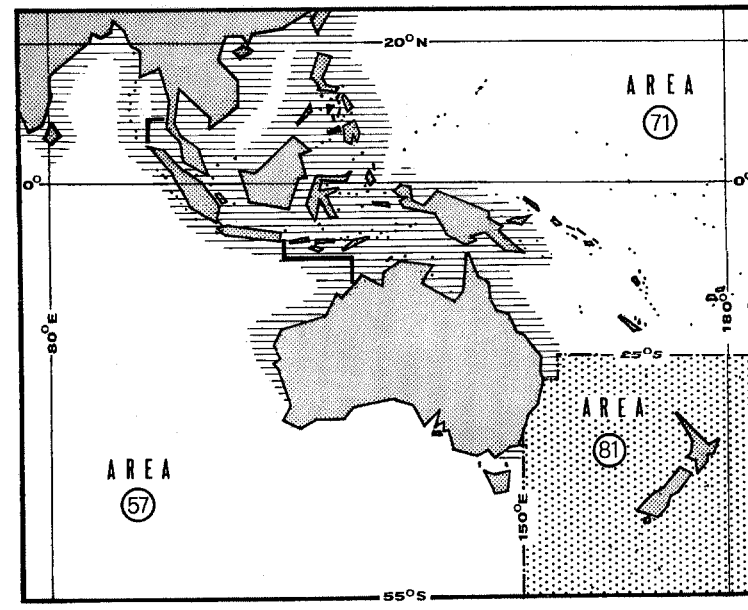


P. plebeius, P. sheridani

All other polynemid species: 3 to 4, or 6 to 8 free pectoral filamentous rays.

SIZE:

Maximum: 45 cm; common: 25 to 30 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to New South Wales (Australia); also, westward to East Africa.

Lives mainly over shallow muddy bottoms on the continental shelf.

Feeds mainly on small crustaceans (especially shrimps and tiny crabs), fishes and other bottom-living organisms.

PRESENT FISHING GROUNDS:

Caught over shallow muddy bottoms of the continental shelf, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of Polynemidae in 1972 was:

area 57 (Eastern Indian Ocean): negligeable quantities (Australia only)
area 71 (Western Central Pacific): 1 700 tons (Australia: 200 tons;
Malaysia: 1 000 tons;
Singapore: 500 tons)

Caught mainly with beach seines and bottom trawls.

Marketed fresh, frozen and dried-salted.

POLYN Poly 3

1974

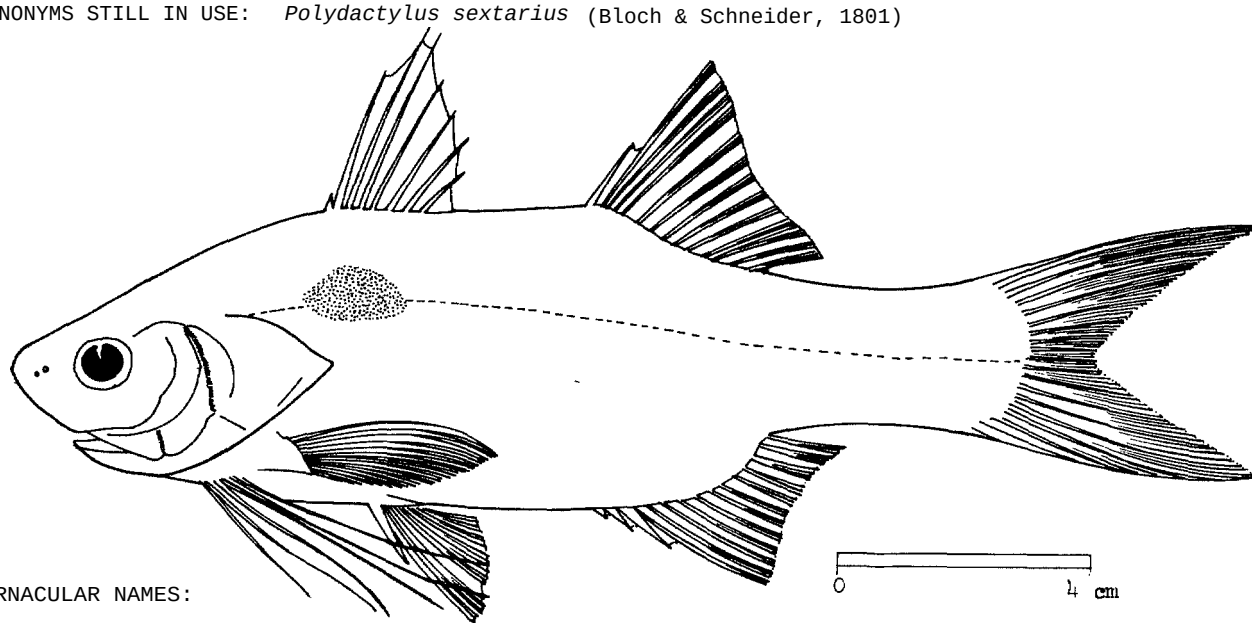
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: POLYNEMIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Polynemus sextarius Bloch & Schneider, 1801

SYNONYMS STILL IN USE: *Polydactylus sextarius* (Bloch & Schneider, 1801)



VERNACULAR NAMES:

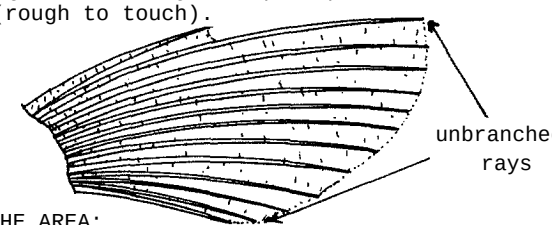
FAO: En - Blackspot threadfin
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oblong and somewhat compressed. Snout projecting, mouth moderately large, with small teeth; *upper lip absent, lower well developed. Eyes large* (eye diameter 3.0 to 3.8 times in head length), with adipose tissue. Pectoral fin in two parts, *upper part with almost all rays branched, lower with 6 free filamentous rays, of which the upper two are longest, reaching to tip of pelvic fin;* caudal fin forked with lobes equal. Scales small, ctenoid (rough to touch).

Colour: golden olive above, silvery below; fins yellowish with black spots; inner side of operculum pigmented with black; *a large black blotch at beginning of lateral line.*

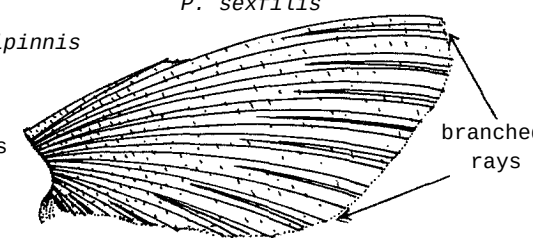


P. sexfilis

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Polynemus sexfilis, P. hexanemus, P. pfeifferi, P. nigripinnis and P. *kuru:* 6 free pectoral filamentous rays but the upper pectoral fin rays unbranched.

Polynemus xanthonemus: 6 free pectoral filamentous rays and branched upper pectoral fin rays, but lacks the black blotch at the beginning of the lateral line.



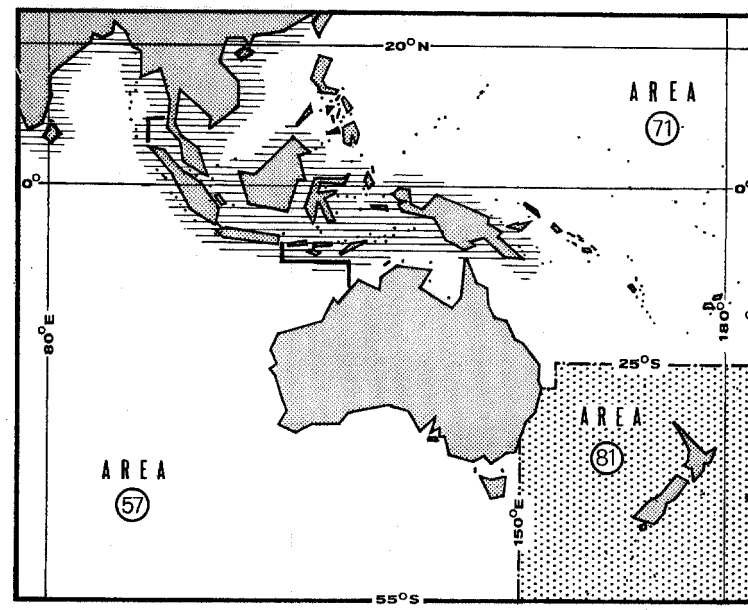
P. sextarius

Polynemus sextarius multani: an unequal number of free pectoral fin rays with an additional 7th ray in the left fin or the right; 7 free pectoral fin rays in both fins are not uncommon, in which case it can be dis*tinguished from P. heptadactylus* by having branched rays in the upper part of the pectoral fin.

All other polynemid species: either 3 to 5, or 7 to 8 free pectoral filamentous rays.

SIZE:

Maximum: 30 cm; common: 15 to 20 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area, but not southward to Australian coasts; also, westward to Pakistan.

Lives over shallow sandy shores and in estuaries.

Feeds mainly on small crustaceans (especially shrimps), fishes and bottom-living organisms.

PRESENT FISHING GROUNDS:

Caught over shallow sandy bottoms of the continental shelf, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with beach seines and bottom trawls.

Marketed fresh, frozen and dried-salted.

POLYN Poly 4

1974

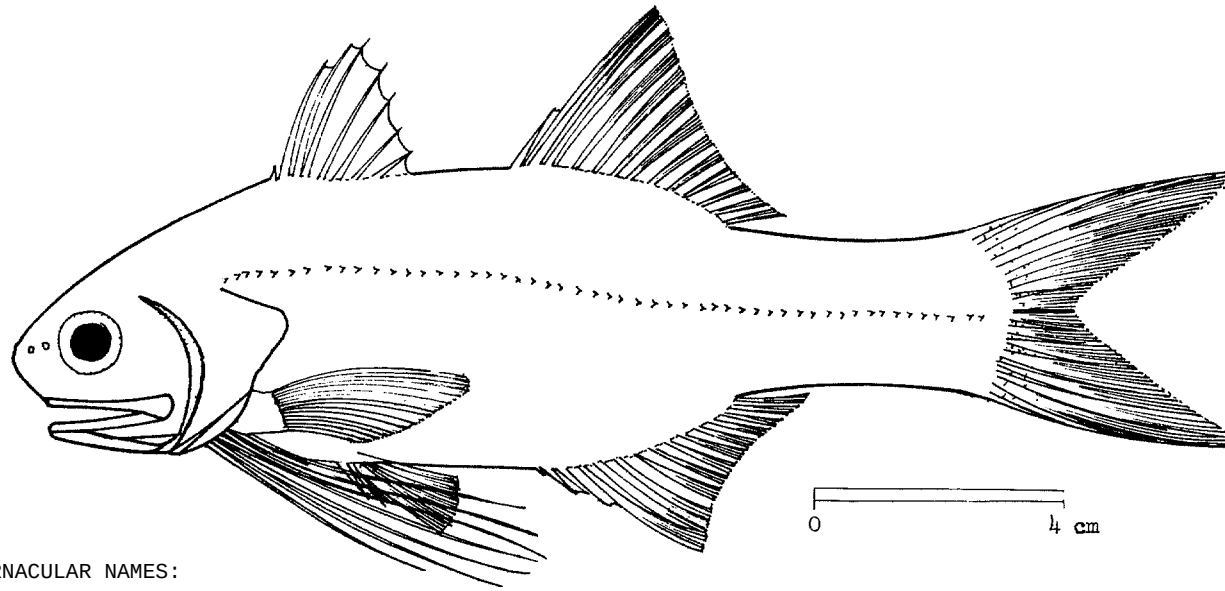
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: POLYNEMIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Polynemus heptadactylus Cuvier, 1829

SYNONYMS STILL IN USE: *Polydactylus heptadactylus* (Cuvier, 1829)
Polydactylus multiradiatus (Günther, 1860)



VERNACULAR NAMES:

FAO: En - Sevenfinger threadfin
Fr -
SP -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oblong and somewhat compressed. Snout projecting, mouth large, with small teeth; *upper lip absent, lower lip well developed. Eyes large* (eye diameter 3.5 times in head length), with adipose tissue. Pectoral fin in two parts, upper part with all rays unbranched, *lower with 7 free filamentous rays, of which the 3rd, 4th and 5th are the longest, reaching to anal fin origin;* caudal fin forked with lobes equal. Scales large, ctenoid (rough to touch).

Colour: back brown, flanks golden; pectoral fins black, as also margins of other fins.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

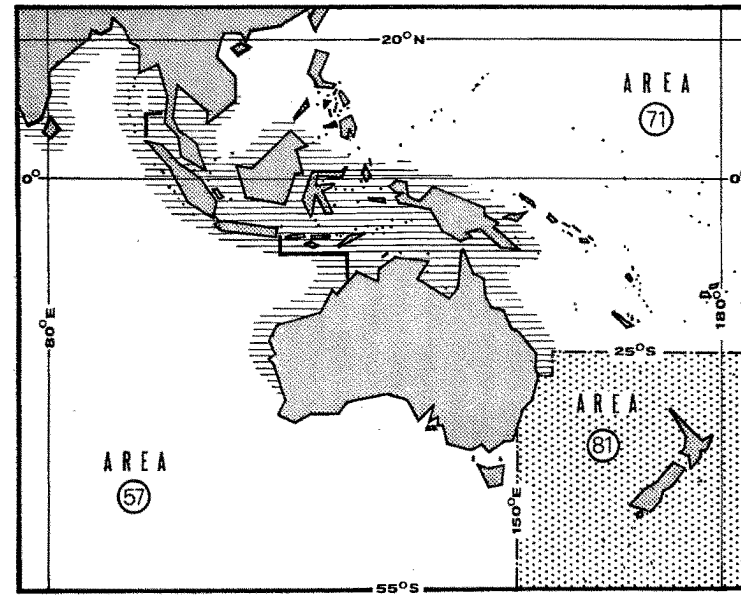
Polynemus intermedius, P. verekeri, P. paradiseus, P. borneensis, P. dubius, P. macrophthalmus and *P. melanochir:* 7 free pectoral filamentous rays, but the longest rays reaching or extending beyond tip of caudal fin.

P. specularis: the longest free pectoral filamentous rays reaching only to pelvic fin base.

All other polynemid species: 3 to 6 or 8 free pectoral filamentous rays.

SIZE:

Maximum: 27 cm; common: 12 to 15 cm



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Northwestern part of area (but not South China Sea); southward to northern coasts of Australia; also, westward to Pakistan.

Lives mainly over shallow muddy bottoms of the continental shelf; also in brackish waters.

Feeds mainly on small crustaceans (especially shrimps), fishes and bottom-living organisms.

PRESENT FISHING GROUNDS:

Caught in the shallow waters of the continental shelf and in large brackish lakes.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of Polynemidae in 1972 was:

area 57 (Eastern Indian Ocean): negligeable quantities (Australia only)
area 71 (Western Central Pacific): 1 700 tons (Australia: 200 tons;
Malaysia: 1 000 tons;
Singapore: 500 tons)

Caught mainly with beach seines, set gill nets, traps and bottom trawls.

Marketed fresh, frozen and dried-salted.

POLYN Poly 5

1974

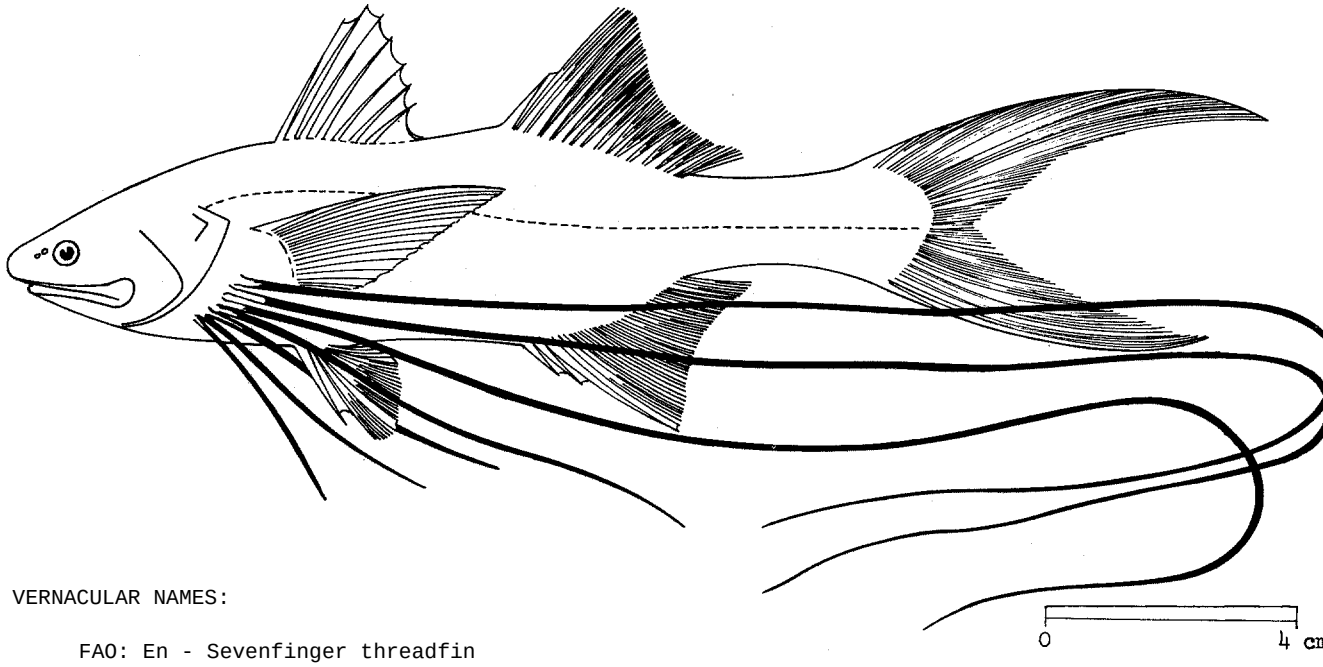
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: POLYNEMIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Polynemus paradiseus Linnaeus, 1758

SYNONYMS STILL IN USE: *Polynemus hilleri* (Fowler, 1905)



VERNACULAR NAMES:

FAO: En - Sevenfinger threadfin
Fr -
SP -

NATIONAL

DISTINCTIVE CHARACTERS:

Body elongate and somewhat compressed. Snout projecting, mouth large, with small teeth. *Upper lip absent, lower lip well developed. Eyes small (eye diameter about 8 times in head length),* with adipose tissue. Pectoral fin in two parts, upper part with all rays unbranched, *lower with 7 free filamentous rays, of which the three upper ones are the longest - about twice the length of fish.* Caudal fin deeply forked, with upper lobe longer than lower. Scales moderately large, ctenoid (rough to touch).

Colour: body generally golden with a shade of grey along back; all fins greyish.

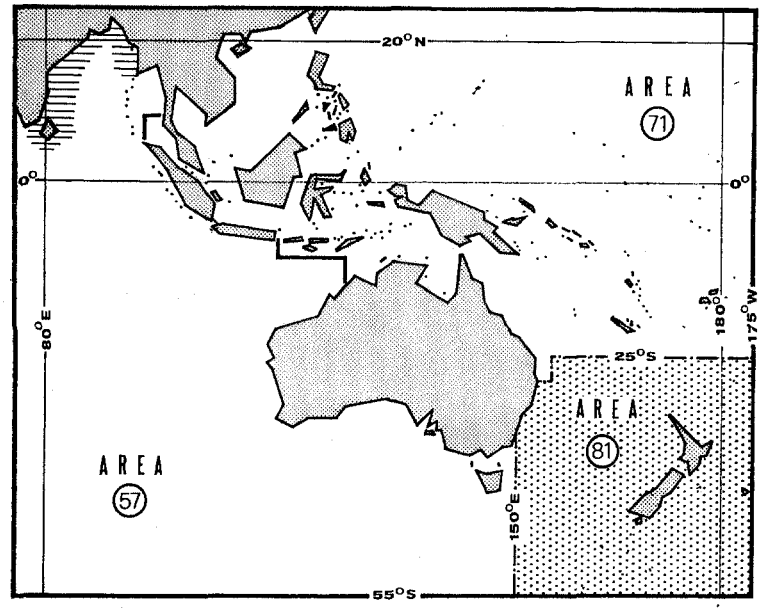
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Polynemus longipectoralis: 2 upper pectoral filamentous rays extending beyond caudal fin tip by about the length of the head, and body, but the 3rd filament reaching only to tip of caudal fin, the others shorter; a freshwater species, common in the streams of Malaysia and Thailand.

All other polynemid species: longest pectoral filamentous rays shorter, much less than twice the length of fish.

SIZE:

Maximum: 23 cm; common: 12 to 17 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Bay of Bengal; also, westward to Pakistan.

Lives over shallow sandy bottoms, regularly entering freshwaters during breeding season.

Feeds mainly on crustaceans (especially shrimps), small fishes, and bottom-living organisms.

PRESENT FISHING GROUNDS:

Caught in shallow waters of the continental shelf and lower reaches of rivers.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with fine-meshed beach seines, set gill nets and bottom trawls.

Marketed mostly fresh.

POMAD

1974

FAO SPECIES IDENTIFICATION SHEETS

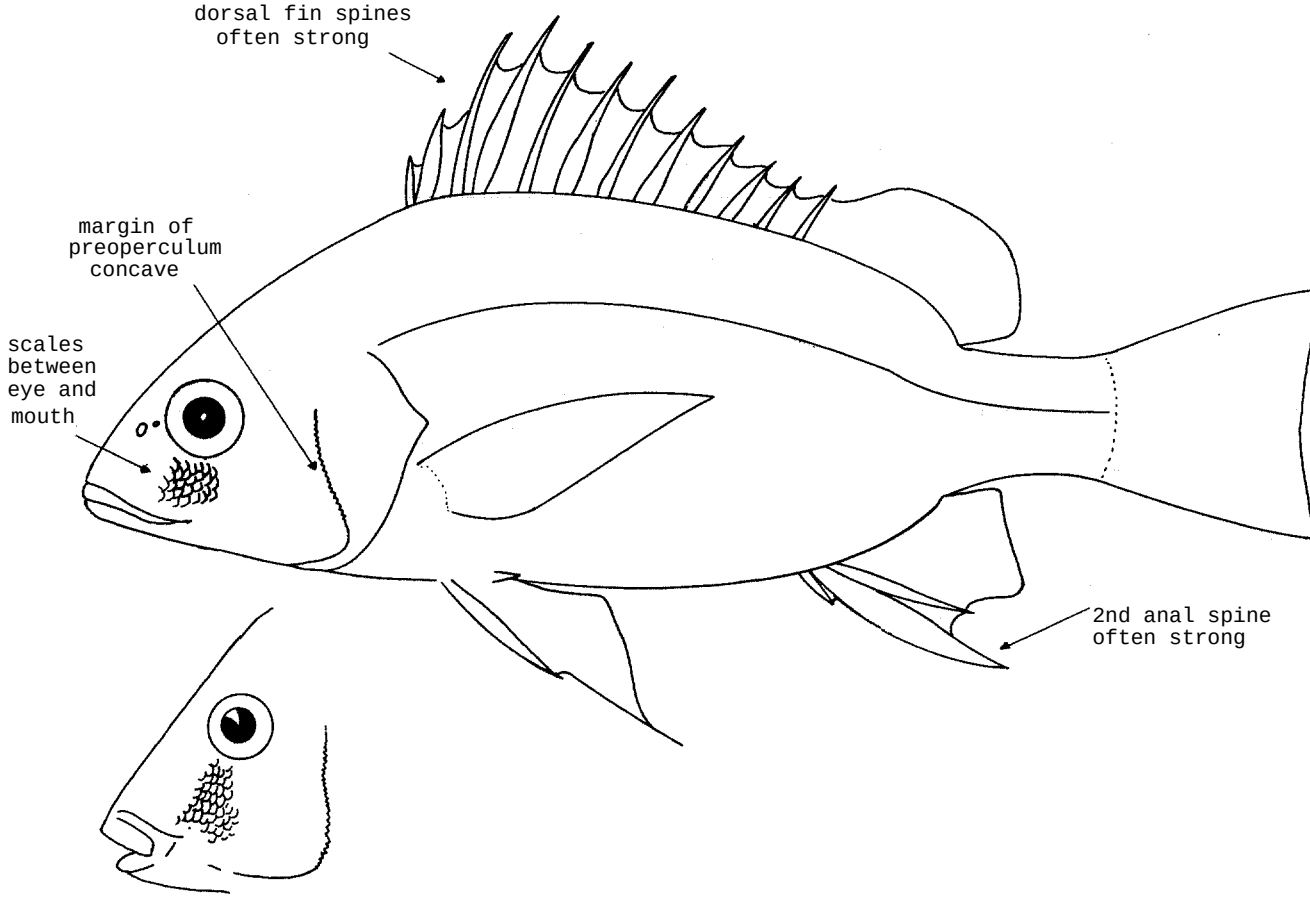
FISHING AREAS 57, 71
(E Ind. Ocean)
(W Cent. Pacific)

POMADASYIDAE

Grunts, Sweetlips
(Some authors place *Plectorhynchus* in a separate family, the Plectorhynchidae)

Oblong, compressed, perch-like fishes. Head profile strongly convex; *scales present on entire head* (except front of snout, lips and chin). Mouth small or moderate, lips thick, *tip of upper jaw hidden when mouth closed. Chin with 2 pores anteriorly and a median groove, or 6 pores and no groove in Plectorhynchus.* Teeth conical, in a narrow band in each jaw, the outer series enlarged but no canines; *palate toothless. Hind margin of suborbital not exposed.* Preoperculum with hind margin slightly concave and serrated; operculum with 1 indistinct spine. Dorsal fin single, with 9 to 15 strong spines and 12 to 26 soft rays; pectoral fins long, 1st ray sometimes forming a short filament; pelvic fins below base of pectoral fins, with 1 spine and 5 soft rays; anal fin with 3 spines, the 2nd often very strong, and 7 to 9 soft rays; caudal fin truncate or emarginate (rounded in juveniles). Scales ctenoid (rough to touch), small or moderate.

Colour: highly variable, ranging from uniformly coloured to banded, blotched and spotted.

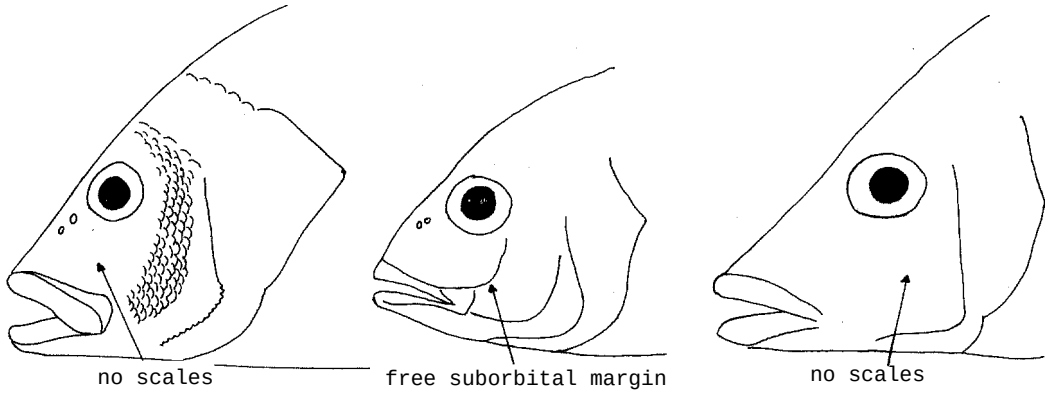


SINIILAR FANIILIES OCCURRING IN THE AREA:

Lutjanidae: hind tip of upper jaw still exposed when mouth closed, teeth usually present in palate, no scales between eye and mouth, and spines of dorsal and anal fins weaker.

Lethrinidae: no scales on preoperculum, and its hind edge not serrated; also, only 8 to 9 soft dorsal fin rays.

Nemipteridae: no pores on chin and hind margin of suborbital exposed; also, 8 to 11 soft dorsal fin rays (12 to 26 in Pomadasyidae).



Lutjanidae Nemipteridae Lethrinidae

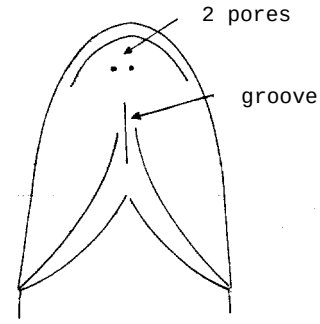
Key to Genera

1 a. Chin with 2 pores and a longitudinal groove (Fig. 1); fin spines strong, 2nd anal fin spine often enlarged.

2 a. At most, faint grey longitudinal stripes along flanks ..... Pomadasys

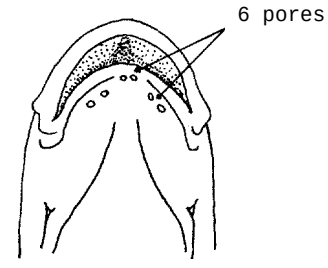
2 b. Very distinct dark longitudinal stripes along flanks ..... *Rhoniscus*

1 b. Chin with 6 pores and no groove (Fig.2); fin spines often weak .... *Plectorhynchus*



Pomadasys

Fig. 1



Plectorhynchus

Fig. 2

FAO Sheets | POMADASYIDAE | Fishing Areas 57, 71

List of Species occurring in the Area
(Code numbers are given for those species
for which Identification Sheets are included

Plectorhynchus cinctus	
Plectorhynchus diagrammus	
Plectorhynchus goldmanni	
Plectorhynchus lineatus	
Plectorhynchus nigrus	
Plectorhynchus orientalis	
Plectorhynchus pictus	POMAD Plect 1
Plectorhynchus schotaf	

Pomadasys argenteus	
Pomadasys argyreus	
Pomadasys auritus	
Pomadasys furcatus	
Pomadasys guoraca (? = P. argyreus)	
Pomadasys hasta	POMAD Pomad 1
Pomadasys maculatus	POMAD Pomad 2
Pomadasys olivaceum	
Pomadasys opercularis	

Rhoniscus furcatus

POMAD Plect 1

1974

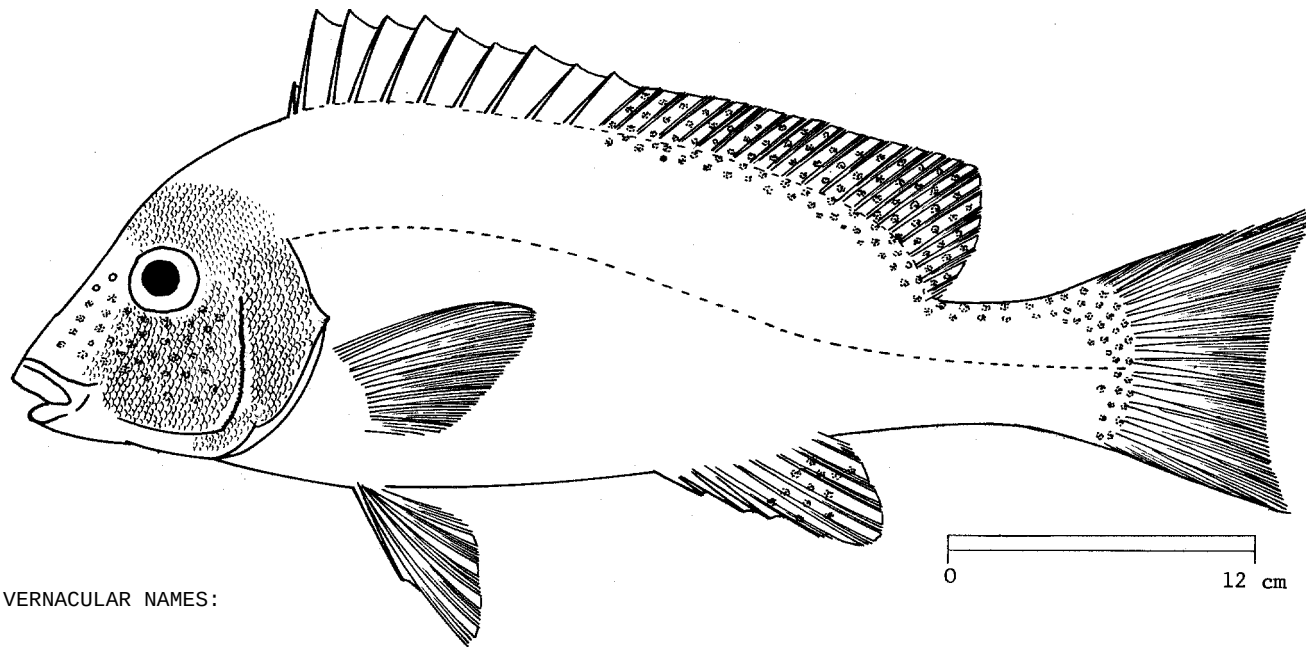
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: POMADASYIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Plectorhynchus pictus (Thunberg, 1792)

SYNONYMS STILL IN USE: *Spilotichthys pictus:* Munro , 1955



VERNACULAR NAMES:

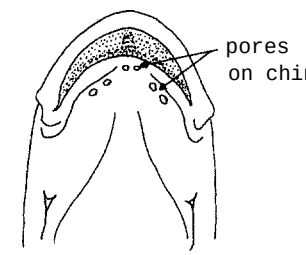
FAO: En - Painted sweetlip
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oblong, compressed; *head covered with scales to in front of eyes; scales covering preoperculum to its edge,* which is serrated. Mouth small, *lips thick; 6 pores on chin behind lower lip, but no longitudinal groove;* small teeth in jaws in a band of 4 to 5 rows, with an outer row of enlarged teeth, but no canines; *roof of mouth without teeth on vomer and palatine bones.* Dorsal fin with 9 to 10 spines, *the second one much longer than the first,* and 23 to 26 rays; anal fin with 3 spines and 6 to 8 soft rays. Scales small, ctenoid (rough to touch), 82 to 117 in lateral series.

Colour: longitudinal black bands in juveniles, spots in adults; in large individuals the spots may become small or indistinct; sometimes faint yellow spots on head.

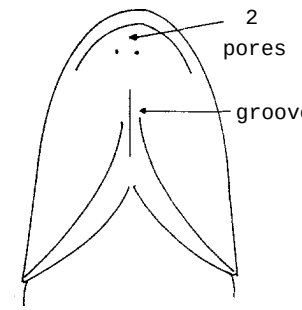


Plectorhynchus pictus

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

All other *Plectorhynchus* species: 12 to 14 spines in dorsal fin (9 to 10 in *P. pictus*); also, other species usually have distinctive bars or stripes.

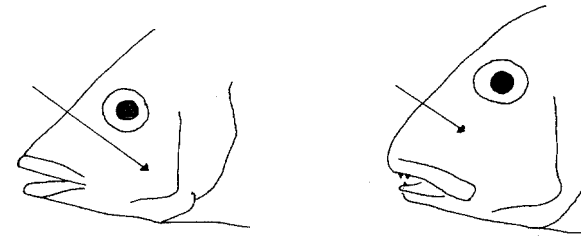
Pomadasys species: only 2 pores on chin and a longitudinal groove; also, second dorsal spine only a little longer than first spine, and 11 to 15 dorsal spines.



Pomadasys

Lethrinus species: no scales on pre-operculum and a more pointed snout.

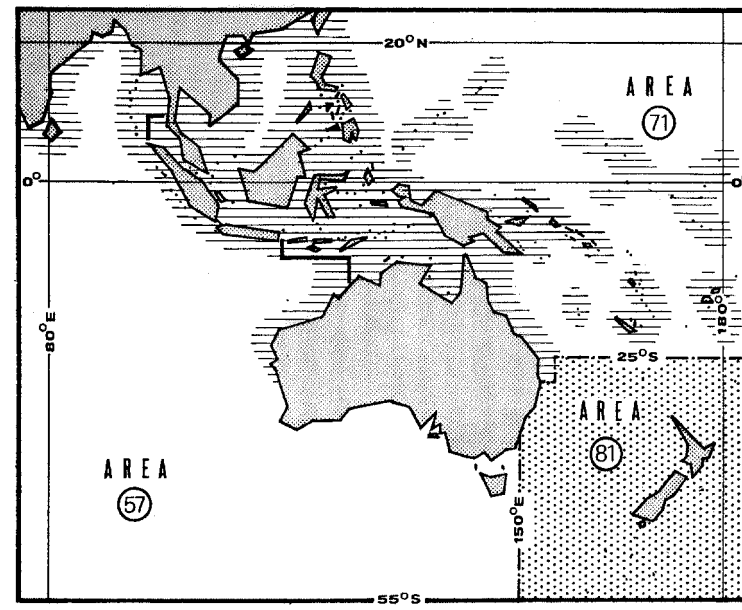
Lutjanus species: no scales between eye and mouth, teeth often present on palate and canines often present in jaws.



Lethrinus *Lutjanus*

SIZE:

Maximum: 60 cm; common: 45 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to tropical coasts of Australia; also, westward to East Africa.

Shallow coastal areas and coral reefs, and down to 80 m.

Feeds on bottom invertebrates and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with handlines, traps, bottom longlines and trawls.

Marketed mainly fresh.

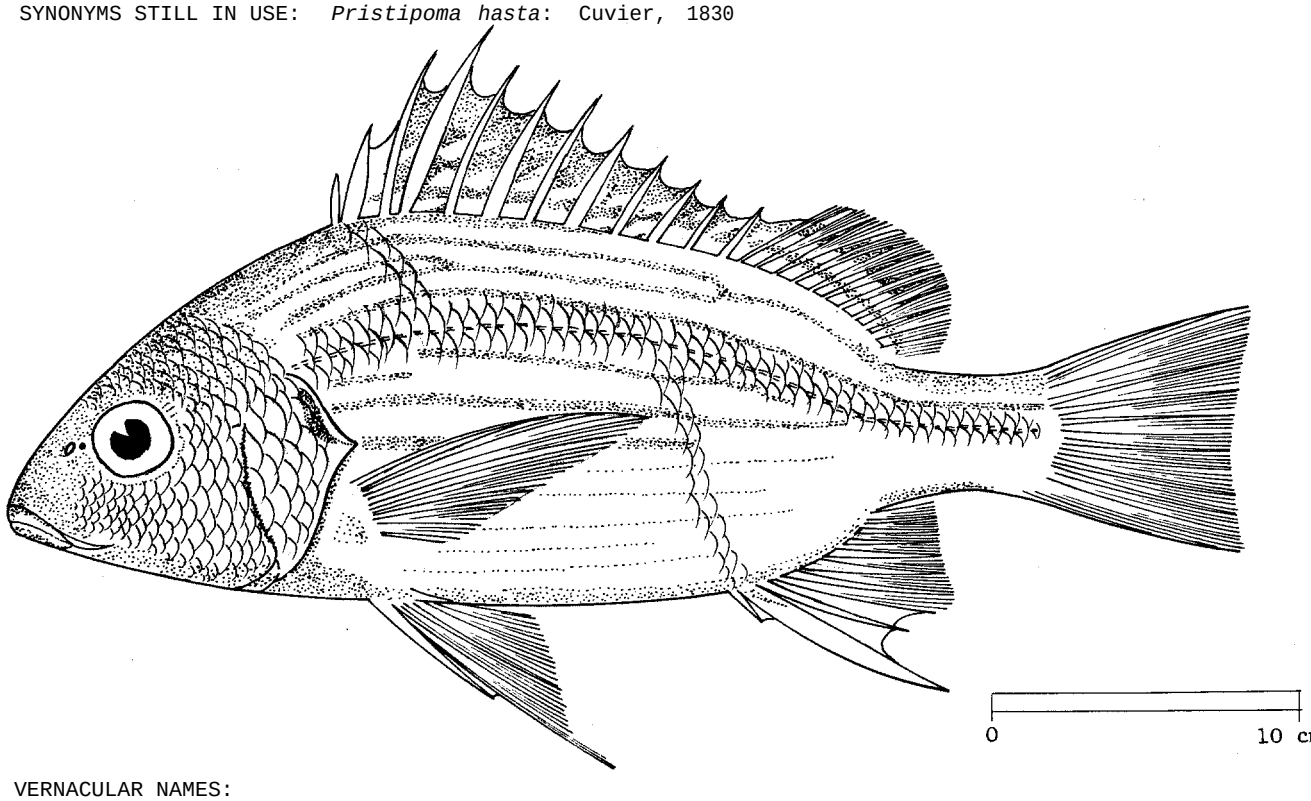
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: POMADASYIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pomadasys hasta (Bloch, 1790)

SYNONYMS STILL IN USE: *Pristipoma hasta*: Cuvier, 1830



VERNACULAR NAMES:

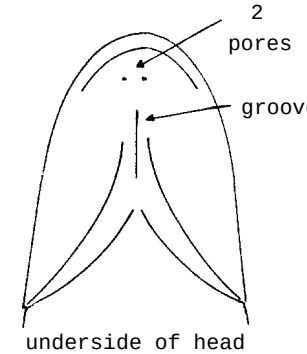
FAO: En - Lined silver grunt
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

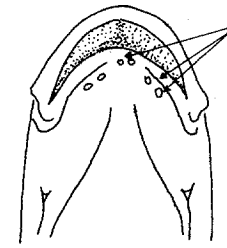
Body oblong and compressed, its *depth* 2.5 to 2.8 *times in standard length;* head blunt, *its upper profile convex;* mouth small, lips moderately thick; upper jaw reaching to below front border of eye; teeth small, pointed, in narrow bands, outer series enlarged. *Two pores on chin and a central longitudinal groove behind chin. Dorsal fin with* 12 *spines and 13 to 15 soft rays; anal fin with 3 spines and 7 to 8 soft rays.* Scales moderate, ctenoid (rough to touch from tail to head), also present on head (excluding snout). Lateral line slightly arched.

Colour: body silvery grey, *with 4 to 5 interrupted and faint longitudinal dark grey lines along flanks, 3 to 4 of these above lateral line; dorsal fin with 2 to 3 rows of brown spots,* other fins yellowish.



underside of head
Pomadasys

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:



Plectorhynchus

Pomadasys maculatus: black blotches present on nape and back, and a large blotch on spinous portion of dorsal fin.

Pomadasys argyreus, Pomadasys olivaceum: dorsal fin without spots, body silvery.

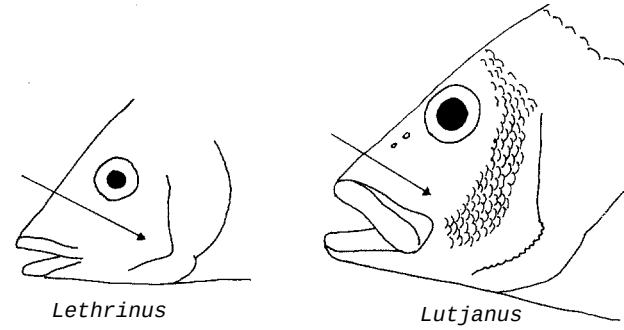
Rhoniscus species: very distinct longitudinal stripes on body.

Plectorhynchus species: 6 pores on chin, but no longitudinal groove behind chin.

Lethrinus species: no scales on preoperculum.

Nemipterus and *Scolopsis* species: only 10 spines in dorsal fin (11 to 15 in *Pomadasys).*

Lutjanus species: no scales between eye and mouth; dorsal and anal spines weaker.


Lethrinus *Lutjanus*

SIZE:

Maximum: 80 cm; common: 40 to 50 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

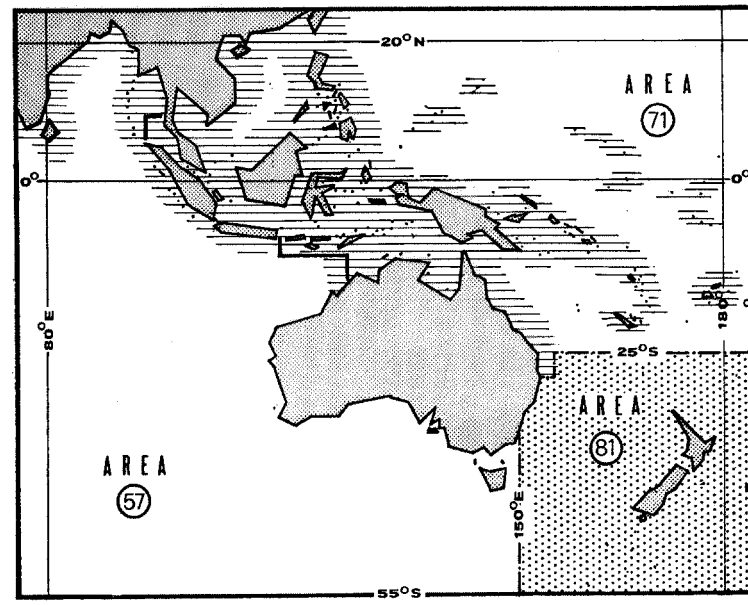
Throughout northern part of area and southward to Queensland; also, westward to East Africa and northward to Taiwan.

Inhabits coastal waters, to depths of 60 m.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with bottom trawls, bottom longlines, gillnets and traps.

Marketed fresh; also salted.

POMAD Pomad 2

1974

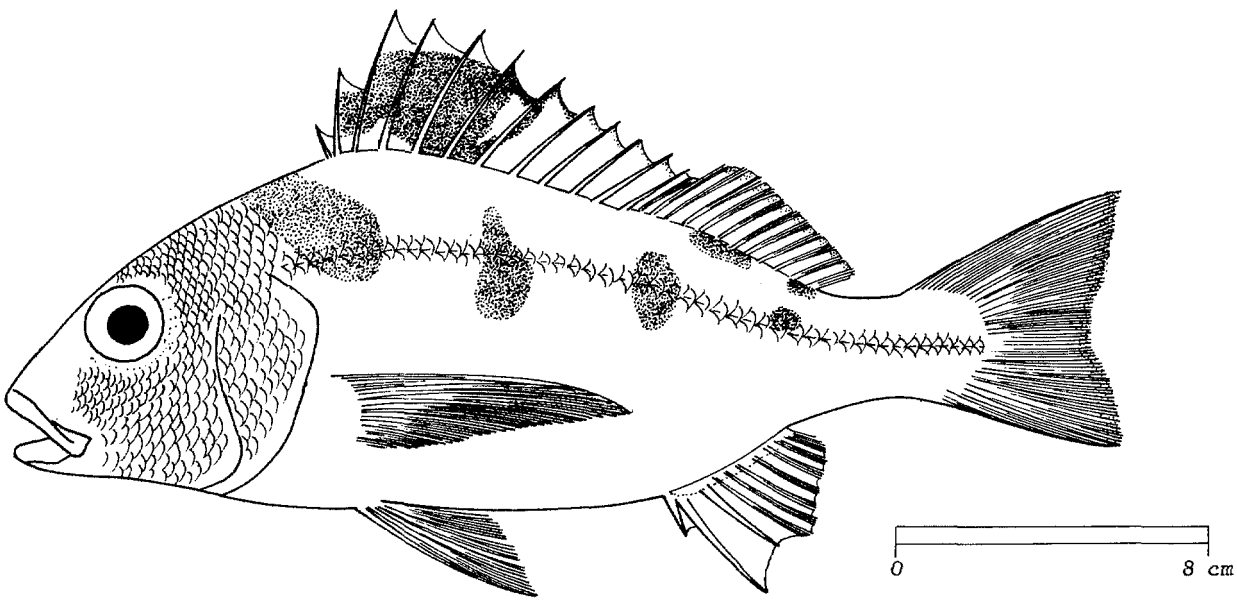
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: POMADASYIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pomadasys maculatus (Bloch, 1797)

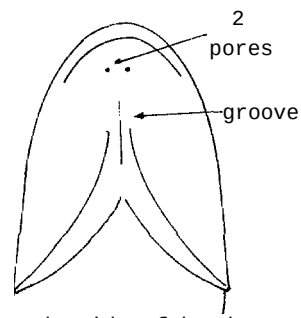
SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Blotched grunt
Fr -
Sp -

NATIONAL:

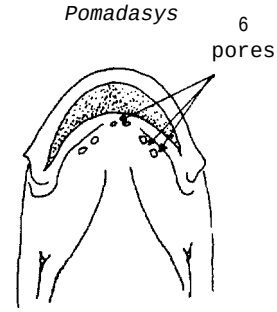


underside of head
Pomadasys

DISTINCTIVE CHARACTERS:

Body oblong and compressed, *its depth 2.7 to 2.9 times in standard length;* head blunt, *its upper profile convex;* mouth small, lips moderately thick; upper jaw reaching to below front border of eye; teeth small, pointed, in narrow bands, outer series enlarged. *Two pores on chin and a central longitudinal groove behind chin. Dorsal fin with 12 spines and 14 to 15 soft rays; anal fin with 3 spines and 7 to 8 soft rays.* Scales moderate, ctenoid (rough to touch from tail to head), also present on head (excluding snout). Lateral line slightly arched.

Colour: body silvery grey, head purplish, *nape and back with a series of incomplete cross-bars* (one on nape the most conspicuous); *spinous part of dorsal fin with a large black blotch;* dorsal and caudal fins edged with black, other fins yellowish.



Plectorhynchus

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURING IN THE AREA:

Pomadasys hasta: dorsal fin spotted, longitudinal rows of spots or transverse bands on flanks.

Pomadasys argyreus, Pomadasys olivaceum: no black blotches on flanks.

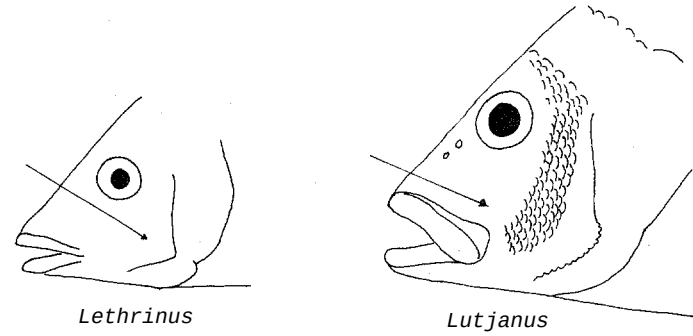
Rhoniseus species: very distinct longitudinal stripes on body.

Pleetorhynchus species: 6 pores on chin, but no longitudinal groove behind chin.

Lethrinus species: no scales on pre-operculum.

Nemipterus and Scolopsis species: only 10 spines in dorsal fin (11 to 15 in *Pomadasys).*

Lutjanus species: no scales between eye and mouth; dorsal and anal spines weaker.



SIZE:

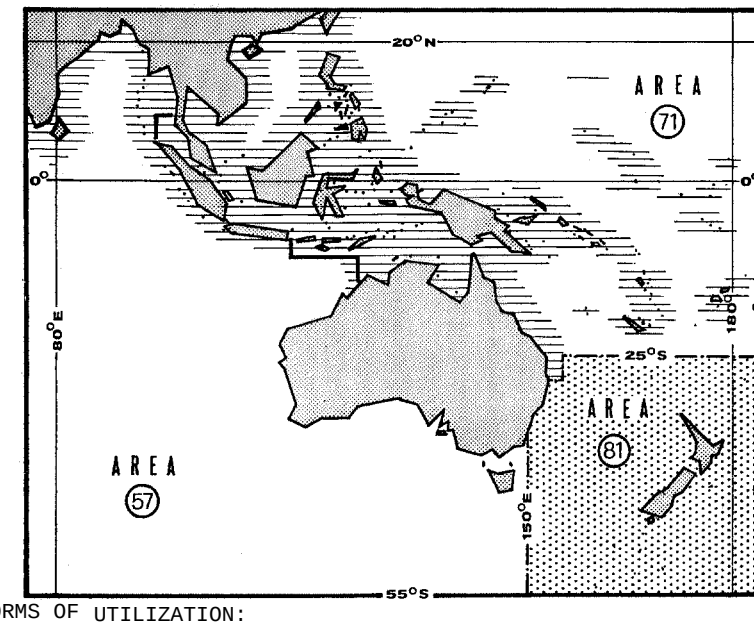
Maximum: 50 cm; common: 15 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to Queensland; also, westward to East Africa and northward to Taiwan.

Inhabits coastal waters, to depths of 40 m.

Feeds on crustaceans and fishes.



PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with bottom trawls, handlines and traps.

Marketed fresh.

POMAD Pomad 3

1974

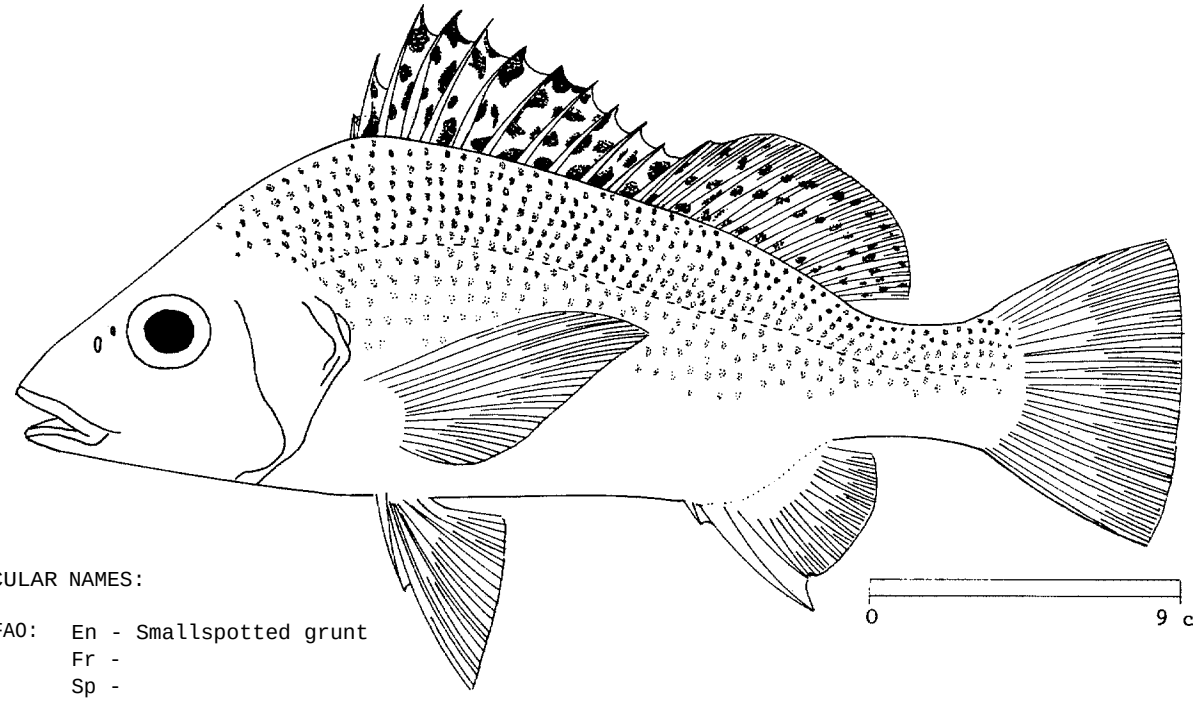
FAO SPECIES IDENTIFICATION SHEETS

FAMILY POMADASYIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pomadasys opercularis (Playfair, 1866)

SYNONYMS STILL IN USE: *Pristipoma operculare:* Day, 1878
Pomadasys operculare: Smith, 1949



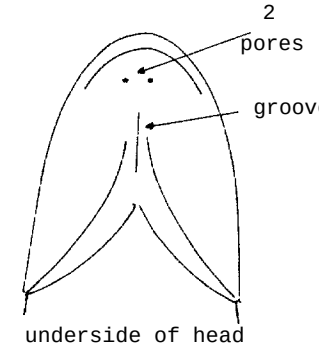
VERNACULAR NAMES:

FAO: En - Smallspotted grunt
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oblong and compressed, *its depth about 3 times in standard length;* head blunt, *its upper profile straight or concave* (large adults); mouth small, lips fairly thick; maxilla reaching to nostrils; teeth small, pointed, in narrow bands, outer series enlarged. Two *pores on chin and a central longitudinal groove behind chin. Dorsal fin with 12 spines and 13 to 16 soft rays; anal fin with 3 spines and 8 to 10 soft rays.* Scales moderate, ctenoid (rough to touch), also present on head (excluding snout). Lateral line slightly arched.



underside of head
Pomadasys

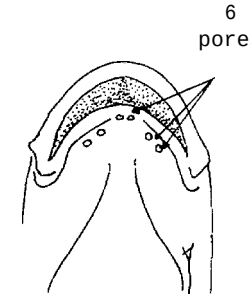
Colour: back grey/green shading to silvery white on belly; *back and flanks with numerous small dark brown spots that extend also onto dorsal fin;* pelvic and anal fins dark.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Other *Pomadasys* species: at most rather faint spots on body (in *P. hasta* forming definite longitudinal lines) or large blotches (*P. maculatus).*

Rhoniscus species: very distinct longitudinal stripes on body.

Plectorhynchus species: 6 pores on chin, but no longitudinal groove behind chin.

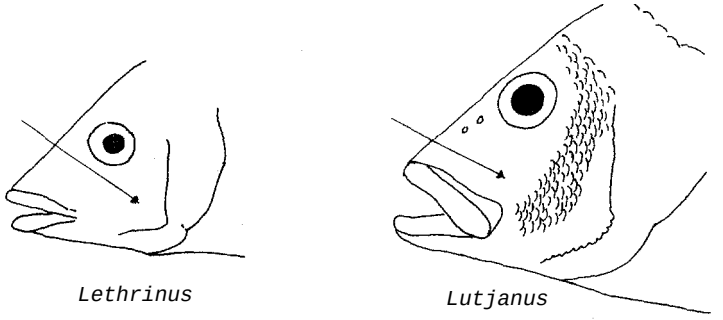


Plectorhynchus

Lethrinus species: no scales on pre-operculum.

Nemipterus species: only 10 spines in dorsal fin (11 to 15 in *Pomadasys*).

Lutjanus species: no scales between eye and mouth; dorsal and anal spines weaker.



Lethrinus *Lutjanus*

SIZE:

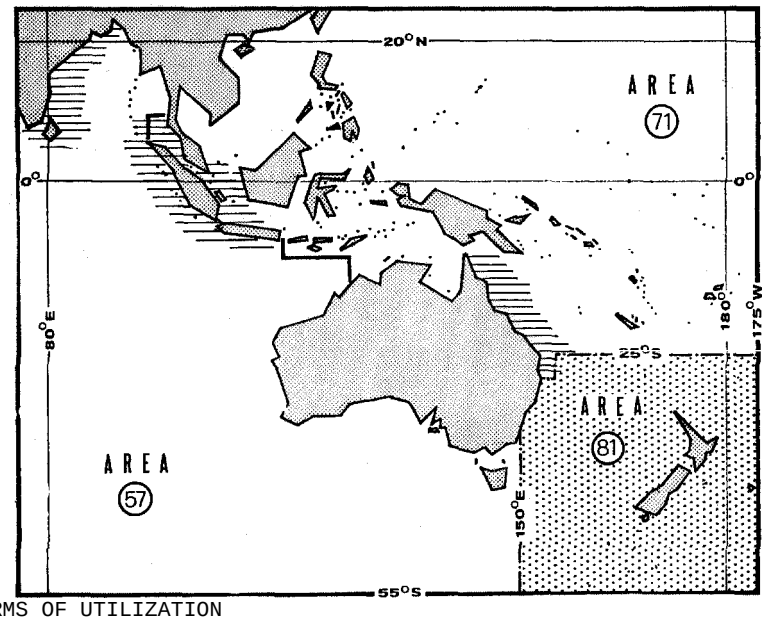
Maximum: about 50 cm; common: 25 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

India, Philippines and Queensland, but perhaps elsewhere in area; also, westward to South Africa.

Inhabits coastal waters, sheltered estuaries and tidal creeks.

Feeds on crustaceans and fishes.



PRESENT FISHING GROUNDS:

Throughout its range but especially in South Africa and Queensland (Australia).

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION

Separate statistics are not reported for this species.

Caught with bottom trawls, bottom longlines, gillnets and traps.

Marketed fresh, also salted; flesh excellent, tasty, improved by bleeding the fish.

POMAT

1974

FAO SPECIES IDENTIFICATION SHEETS

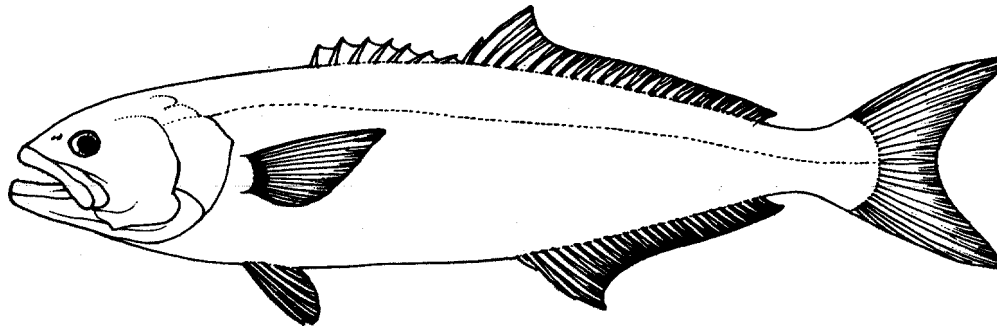
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

POMATOMIDAE

Bluefishes

Large fishes with a sturdy; compressed body and large head. *Mouth large and terminal, jaws with sharp, compressed teeth* in a single series. *Two dorsal fins, the 1st short, often low, with 7 to 8 feeble spines connected by a membrane,* the 2nd long, with 1 spine and 23 to 28 soft fin rays; anal fin a little shorter than soft dorsal fin, with 2 spines and 23 to 27 soft fin rays; caudal fin forked, but not deeply so. *Scales small,* covering head and body; lateral line almost straight.

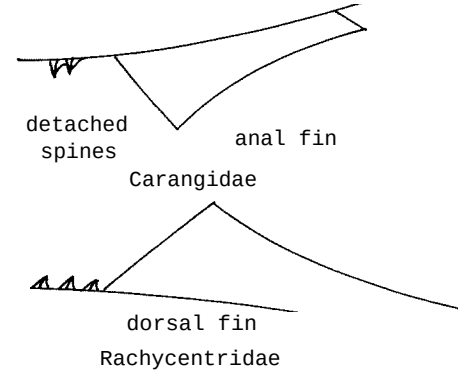
Colour: back greenish blue, sides and belly silvery.



SIMILAR FAMILIES OCCURRING IN THE AREA:

Carangidae: 2 detached spines in front of anal fin; also, scutes on caudal peduncle in many species.

Rachycentridae: spines of dorsal fin short, isolated, not connected by a membrane.



Key to Genera

1 a. Eye small; spinous dorsal fin low; soft dorsal and anal fins each with about 25 finrays ..... *Pomatomus*

l b. Eye large; spinous dorsal fin high; soft dorsal and anal fins each with about 13 finrays ..... *Scombrops*

List of Species occurring in the Area
(Code numbers are given for those species for *which* Identification Sheets are included)

Pomatomus saltator POMAT Pomat 1

Scombrops hoops

(The genus *Neoseombrops* and sometimes also *Howella* have been placed in this family by some authors.)

POMAT Pomat 1

1974

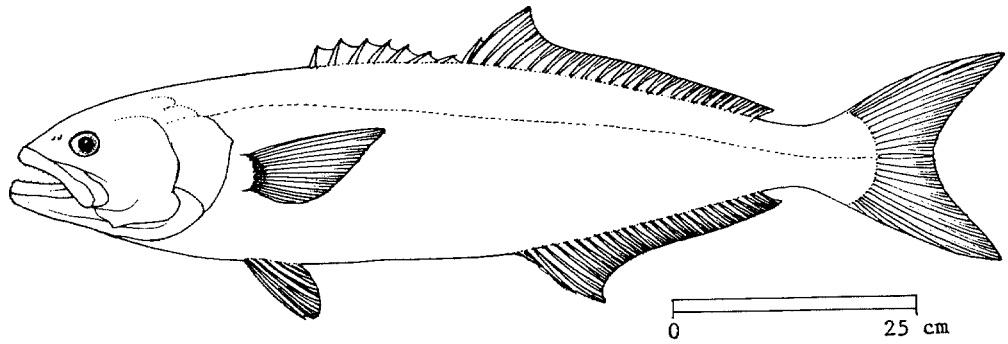
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: POMATOMIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pomatomus saltator Linnaeus, 1758

SYNONYMS STILL IN USE: *Temnodon saltator* (Valenciennes, 1833)



VERNACULAR NAMES:

FAO: En - Bluefish
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

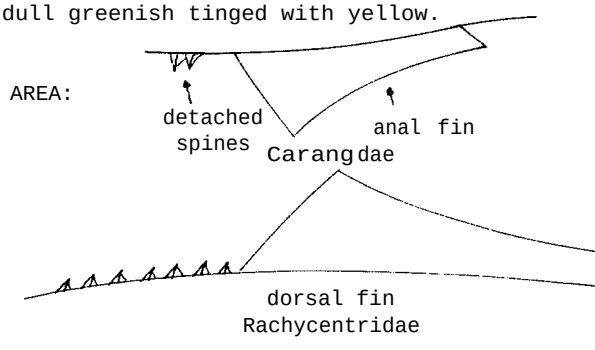
A large species with a sturdy, compressed body and large head. Mouth large, terminal, lower jaw sometimes slightly projecting; *jam teeth sharp, compressed,* in a single series. *Two dorsal fins, the 1st short and low, with 7 to 8 feeble spines connected by a membrane,* the 2nd long with 1 spine and 23 to 28 soft rays; pectoral fin short, not reaching to origin of soft dorsal fin; anal fin a little shorter than soft dorsal fin, with 2 spines and 23 to 27 soft fin rays; caudal fin forked, but not deeply so. *Scales small,* covering head and body and bases of fins; lateral line almost straight.

Colour: *back greenish blue, sides and belly silvery;* dorsal and anal fins pale green tinged with yellow; pectoral fins bluish at base; caudal fin dull greenish tinged with yellow.

DISTINCTION FROM MOST SIMILAR SPECIES OCCURRING IN THE AREA:

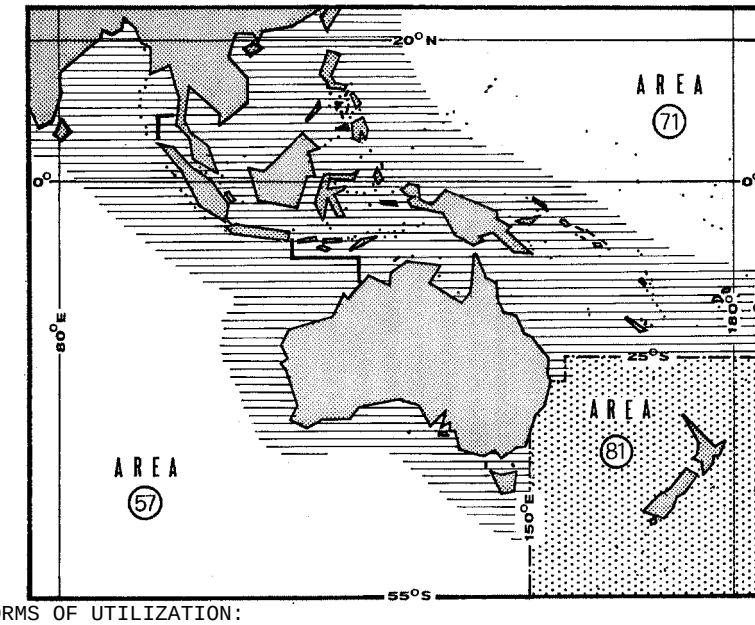
Carangidae: 2 detached spines in front of anal fin; also, scutes on caudal peduncle in many species.

Rachycentridae: spines of dorsal fin short, isolated, not connected by a membrane.



SIZE:

Maximum: 110 cm; common: 30 to 60 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout whole area as far south as Tasmania (Australia).

A powerful, swift fish, the young hunting in schools, the adults in loose groups, often attacking shoals of mullet or other fishes and destroying numbers apparently far in excess of feeding requirements.

PRESENT FISHING GROUNDS:

Coastal waters throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

The total reported catch for this species in 1472 was:

area 57 (Eastern Indian Ocean): 100 tons (Australia only)
area 71 (Western Central Pacific): 400 tons (Australia only)

Caught mainly with gill nets, lines and purse seines.

Marketed mostly fresh; also dried-salted.

PRIAC

1974

FAO SPECIES IDENTIFICATION SHEETS

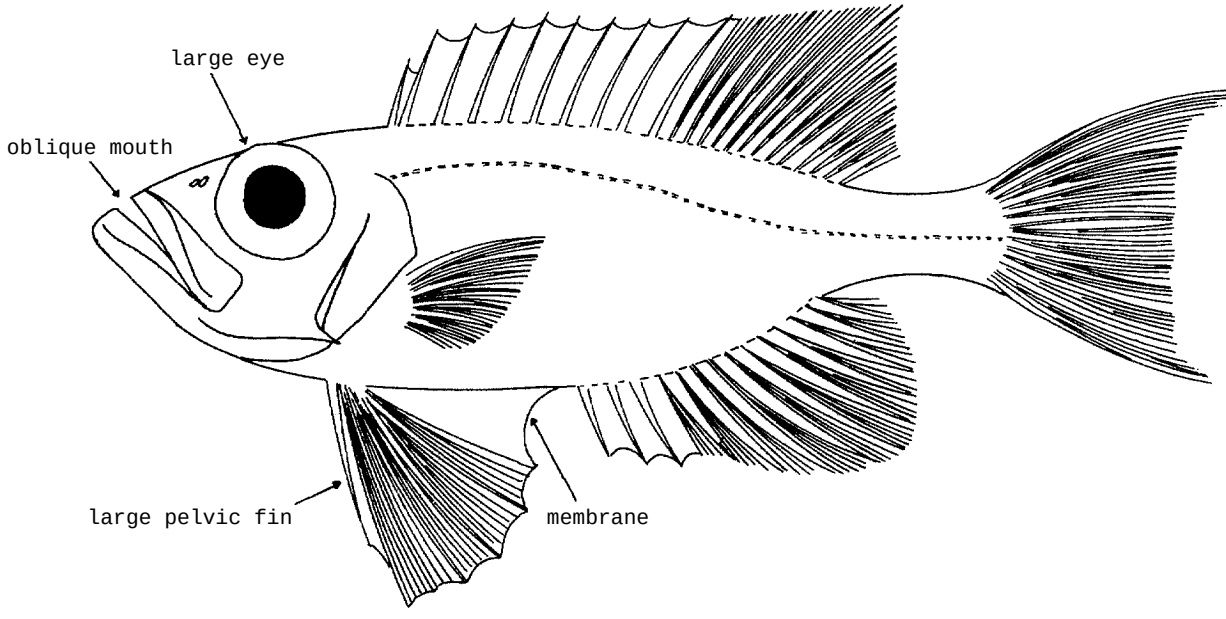
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

PRIACANTHIDAE

Bigeyes, bulleyes

Body ovoid, *with small, rough scales difficult to detach. Mouth large and oblique; eye very large;* head completely covered with scales. A *single dorsal fin with ID spines and 11 to 15 soft* rays; pectoral fins small, rounded or pointed, with 18 to 20 soft rays of which the uppermost are the longest. *No axillary scale. Pelvic fins large, originating in advance of pectoral fin and joined to body along their length by a membrane,* with a single, very strong spine and 5 soft rays. Anal fin with 3 spines and 10 to 16 soft rays. Caudal fin truncate or lunate.

Colour: *red,* fins may be spotted or dark-coloured; body may have vertical bands or blotches.



SIMILAR FAMILIES OCCURRING IN THE AREA:

(No other similar fishes have the hind margin of the pelvic fins united to the body by a membrane).

Glaucosomidae: only 8 dorsal fin spines; also, pelvic fins smaller than pectoral fins.

Holocentridae: 4 anal fin spines, the 3rd often greatly enlarged, and seales large.

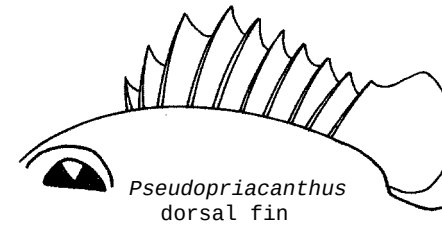
Berycidae: dorsal fin short, not nearly reaching to caudal peduncle.

FAO Sheets PRIACANTHIDAE Fishing Areas 57,71

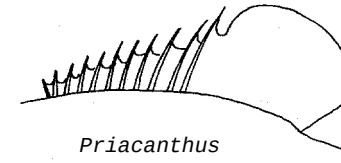
Key to Genera

1 a. Body ovate, middle spines of dorsal fin longest; scales large, more than 55 in lateral line ..... *Pseudopriacanthus*

1 b. Body oblong, last spine of dorsal fin longest; scales more than 70 in lateral line ..... *Priacanthus*



Pseudopriacanthus dorsal fin



Priacanthus dorsal fin

List of Species occurring in the Area
(Code numbers are given for those species for which Identification Sheets are, included)

Priacanthus hoops
Priacanthus cruentatus
Priacanthus hamrur
? Priacanthus junonus
Priacanthus macracanthus PRIAC Priac 1
Priacanthus tayenus PRIAC Priac 2
? Priacanthus velabundus
Pseudopriacanthus niphonius

PRIAC Priac 1

1974

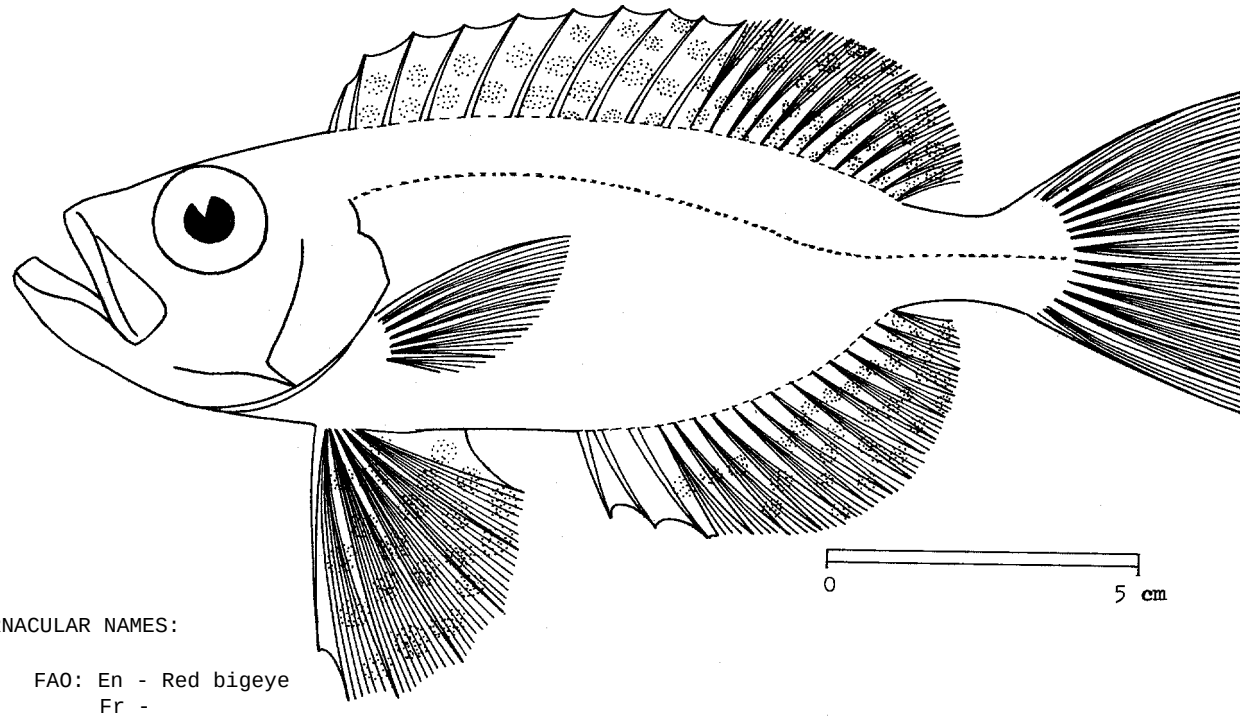
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: PRIACANTHIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Priacanthus macracanthus Cuvier, 1829

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Red bigeye
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

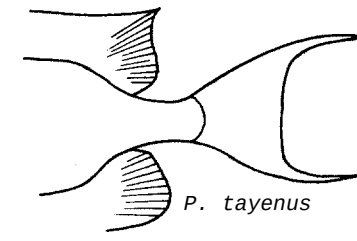
Body stocky and compressed, *eye very large.* Soft part of dorsal fin and anal fin rounded; pelvic fins shorter than head, *joined to body by a membrane; caudal fin truncate or slightly emarginate, without filaments.* Scales small, rough, difficult to detach.

Colour: body crimson red, silvery below; *dorsal, pelvic, and anal fins with yellow spots.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

P. tayenus: caudal fin lunate, lobes often with filaments; also, pelvic fins with black spots, other fins without spots.

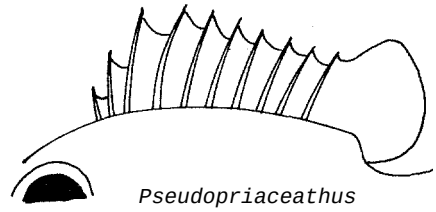
P. cruentatus: no spots on pelvic fins, but black spots on soft parts of dorsal and anal fins and on caudal fin; caudal fin usually with a black margin.



Priacanthus hamrur: pelvic fins black or partly black; no spots but usually dusky margins on dorsal, anal and caudal fins; sometimes vertical bars on body.

Priacanthus hoops: pelvic fins black and much longer than head.

Pseudopriacanthus niphonius: last dorsal fin spine shorter than 4th to 6th spines, and no distinct spine on preoperculum. Young fish often have darker lines on body, and scattered black spots may occur on soft parts of dorsal and anal fins and on caudal fin.



Pseudopriaceathus dorsal fin

SIZE:

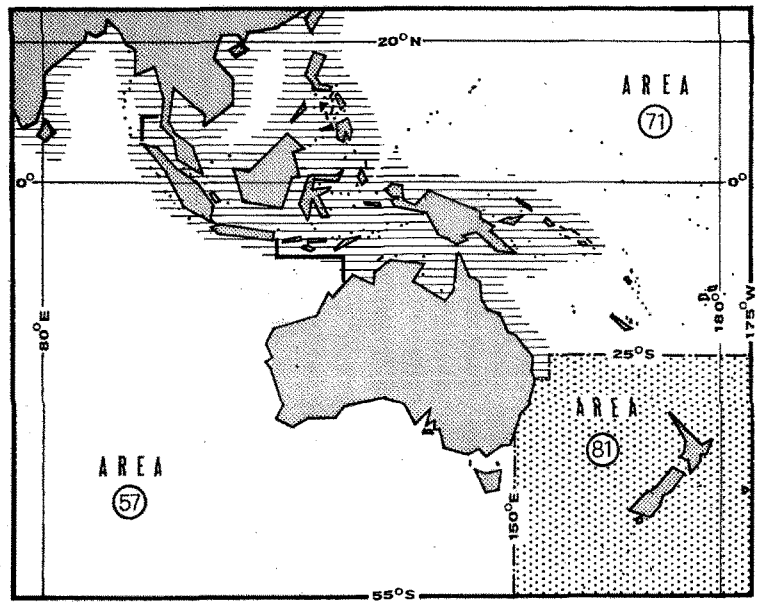
Maximum: 30 cm; common: 15 to 25 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Judo-Australian archipelago southward to New South Wales (Australia); westward possibly to eastern part of Bay of Bengal; northward to Japan.

Bottom-living from shallow waters to depths of 200 m. Small fish occur mainly inshore.

Feeds on a wide range of bottom-living animals.



PRESENT FISHING GROUNDS:

Mainly shallower grounds of continental shelf, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls; catch rates are highest at dawn and dusk; also taken with lines by day.

Marketed mostly fresh, whole; also dried-salted and made into fish balls.

PRIAC Priac 2

1974

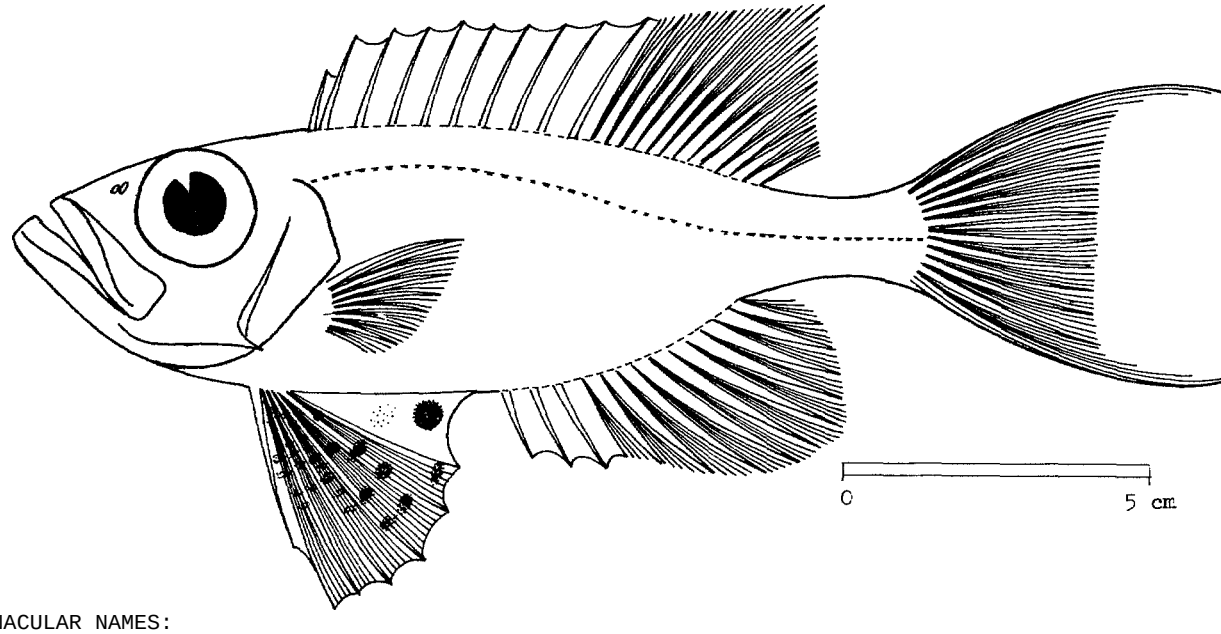
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: PRIACANTHIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Priacanthus tayenus Richardson 1846

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Purple-spotted bigeye
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

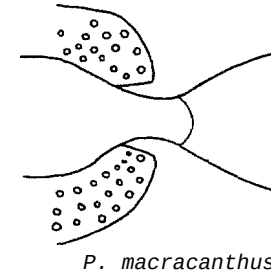
Body stocky and compressed, *eye very large.* Soft parts of dorsal and anal fins angulate or pointed; pelvic fins shorter than head, *joined to body by a membrane; caudal fin lunate, often with both upper and lower filaments.* Scales small, rough, difficult to detach.

Colour: body brilliant crimson red, paler below. *Pelvic fins with distinct blackish red spots, other fins without spots.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

P. macracanthus: caudal fin truncate or slightly emarginate, soft parts of dorsal and anal fins rounded, and yellow/brown spots on dorsal, anal and pelvic fins.

F. cruentatus: caudal fin truncate or slightly emarginate; soft parts of dorsal and anal fins rounded; no spots on pelvic fins but black spots on soft parts of dorsal and anal fins and on caudal fin, the latter usually with a black margin.

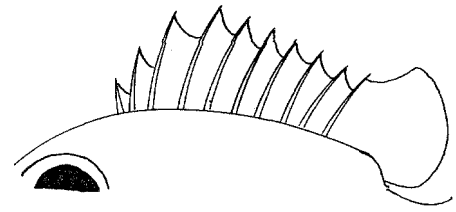


P. macracanthus

P. hamrur: black or partly black pelvic fins, no spots but usually a dusky margin to dorsal, anal and caudal fins. Bars sometimes present on body.

P. boops: pelvic fins black and much longer than head.

Pseudopriacanthus niphonius: last dorsal fin spine shorter than 4th to 6th spines, and no distinct preopercular spine. Young fish often have light bars on body.



Pseudopriacanthus dorsal fin

SIZE (excluding caudal fin filaments):

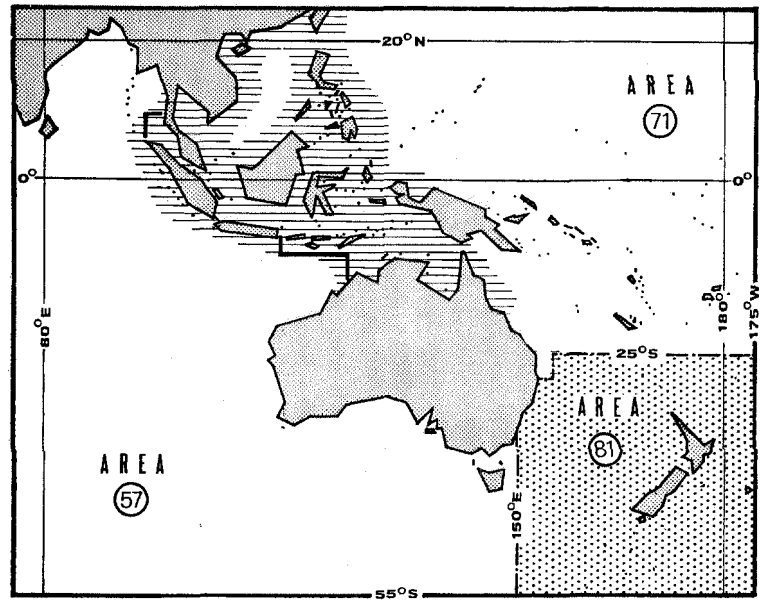
Maximum: 30 cm; common: 15 to 25 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to northern Queensland (Australia); also, westward to East Africa.

A bottom fish found in shallow water and down to depths of 150 to 200 m. Small fish mainly occur inshore.

Feeds on a wide range of bottom-living animals.



PRESENT FISHING GROUNDS:

Mainly shallower grounds of the continental shelf, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls; catch rates are highest at dawn and dusk; also taken with lines by day.

Marketed mostly fresh, whole; also dried-salted or made into fish balls.

PSET

FAD SPECIES IDENTIFICATION SHEETS

1974

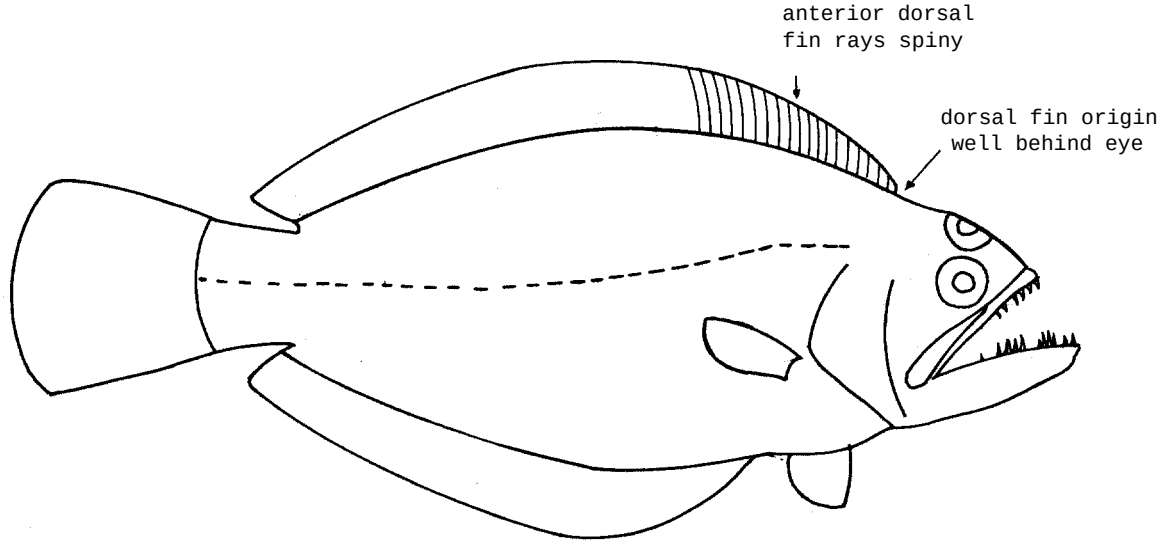
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

PSETTODIDAE

Indian halibuts

Body oval and flat. Both eyes on left or right side; *upper eye very close to dorsal edge. Dorsal fin origin well behind eyes; anterior dorsal fin rays spinous.* Mouth large with strong teeth.

Colour: eyed side brownish, *sometimes* with dark cross-bars; blind side pale.



SIMILAR FAMILIES OCCURRING IN THE AREA:

No other flatfishes have the dorsal fin with spiny rays and beginning well behind the eyes.

Key to Genera

Psettodes only

List of Species occurring in the Area
(Code numbers are given for those species
for which Identification Sheets are included)

Psettodes erumei PSET Pset 1

PSET Pet I

1974

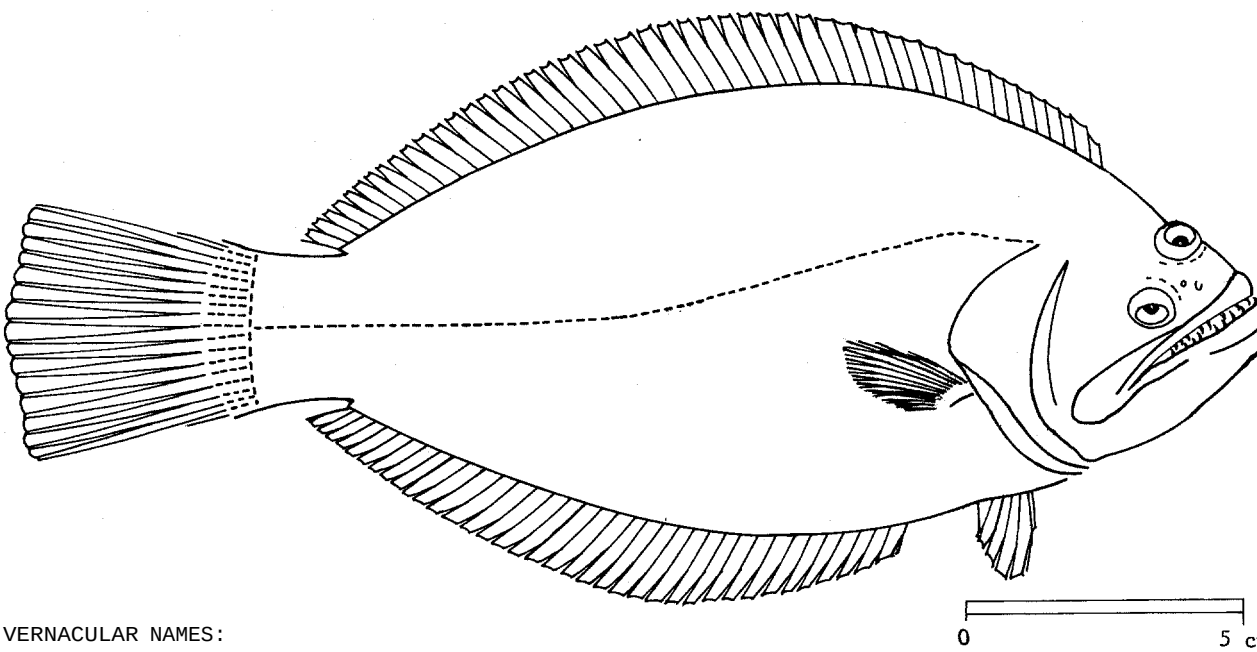
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: PSETTODIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Psettodes erwnei (Schneider, 1801)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Indian halibut
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oval and flat, but thicker than in most other flatfishes. Both eyes on left or right side. *Upper eye lying immediately below dorsal edge. Dorsal fin origin well behind eyes;* anterior fin rays spinous. Lateral line almost straight. *Mouth large with strong teeth*; maxillary extends well beyond hind edge of lower eye. Gill rakers not developed.

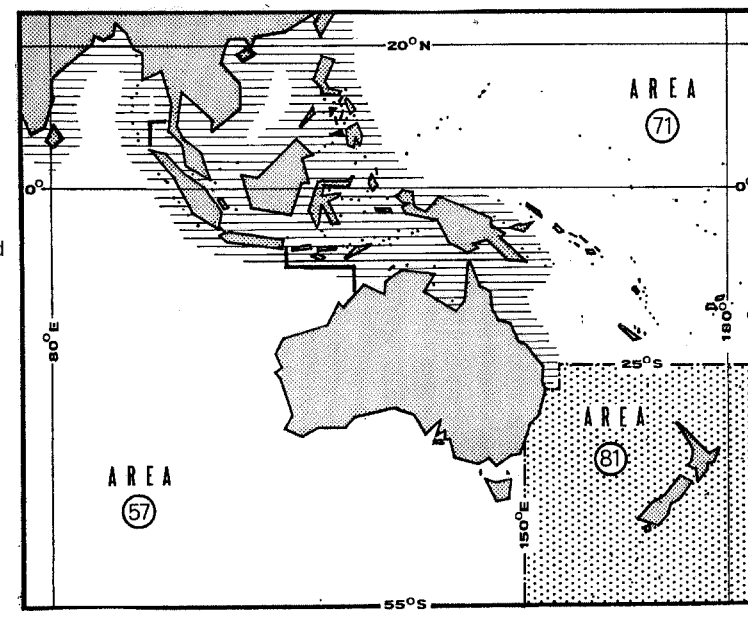
Colour: usually brownish/ greyish, sometimes with 4 broad, dark cross-bars.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

All other flatfishes: dorsal fin origin above or in front of upper eye; also, anterior rays of dorsal fin soft and flexible.

SIZE:

Maximum: about 60 cm;
common: 20 to 40 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Northwestern part of area and southward to eastern coast of Australia; also, westward to East Africa.

Lives on muddy and sandy bottoms of the continental shelf down to about 100 m.

Feeds mainly on bottom-living animals.

PRESENT FISHING GROUNDS:

Continental shelf.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not collected for this species.

Caught mainly with bottom trawls.

Marketed mainly fresh.

RACH

1974

FAO SPECIES IDENTIFICATION SHEETS

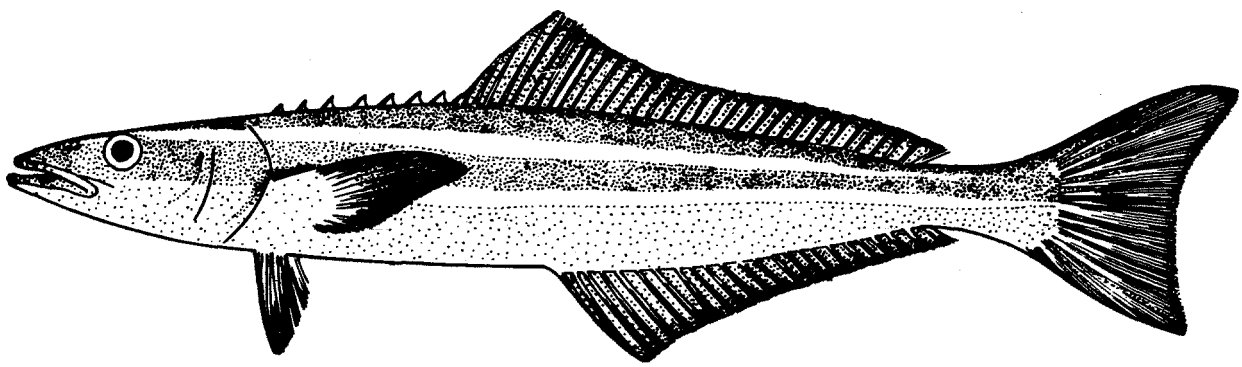
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

RACHYCENTRIDAE

Cobias, sergeantfishes

Body elongate, subcylindrical, with *broad depressed head.* Eye small, *encircled by a narrow adipose eyelid.* No *keels or scutes at caudal base.* Two dorsal fins, *the first composed of very short, broad isolated spines not connected by a membrane* and depressible into a groove; no finlets; pectoral fins pointed and set low down on body; caudal fin lunate in adults (but rounded in young and median rays prolonged). Scales small, embedded in thick skin.

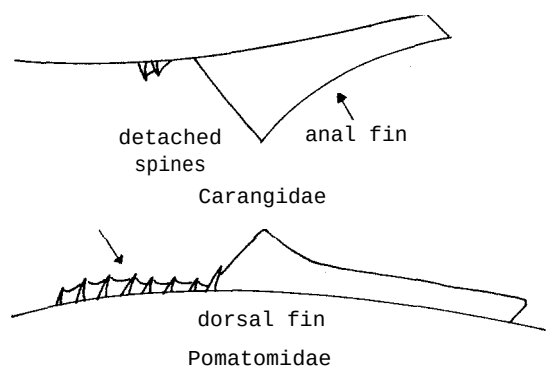
Colour: back dark brown, abdomen yellow; *1 or 2 silvery bands along flanks.*



SIMILAR FAMILIES OCCURRING IN THE AREA:

Carangidae: 2 detached spines in front of anal fin; also, scutes on caudal peduncle in many species.

Pomatomidae: spines of dorsal fin connected by a membrane; also, head and body deeper.



Key to Genera

Rachycentron only

List of Species occurring in the Area
(Code numbers are given for those species
for which Identification Sheets are included)

Rachycentron canadus RACH Rach 1

RACH Rach 1

1974

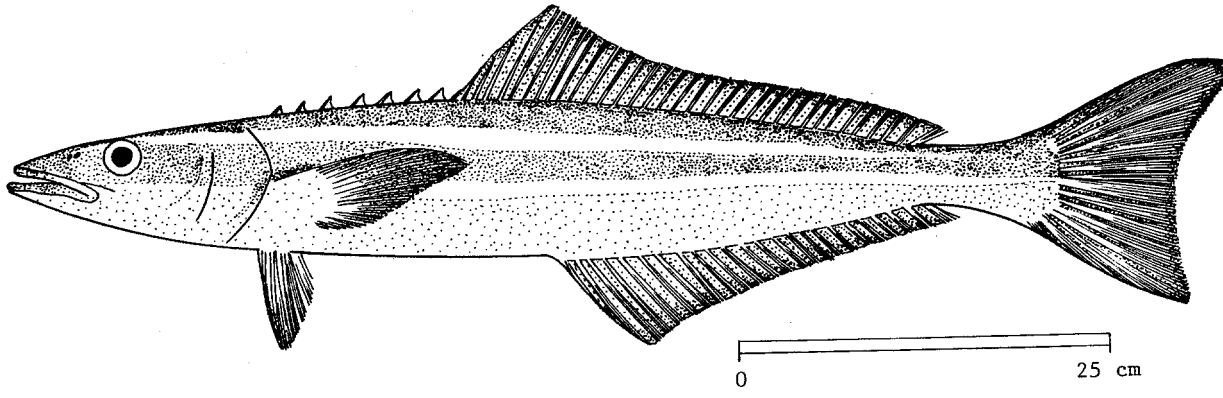
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: RACHYCENTRIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Rachycentron canadus (Linnaeus, 1766)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Cobia
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

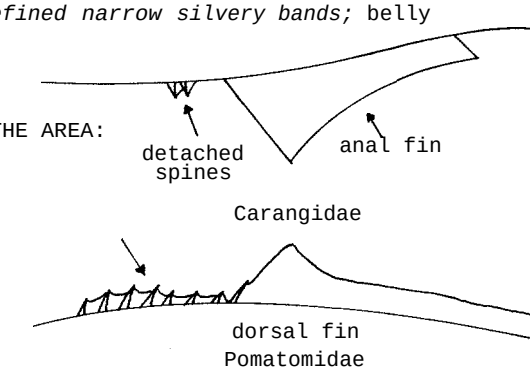
Body elongate, subcylindrical; *head broad and depressed. Mouth large,* terminal, with projecting lower jaw; villiform teeth in jaws and on roof of mouth and tongue. *1st dorsal fin* with 7 to 9 (usually 8) *short but strong isolated spines, not connected by a membrane;* 2nd dorsal fin long, anterior rays somewhat elevated in adults; pectoral fin pointed, becoming more falcate with age; anal fin similar to dorsal, but shorter; *caudal fin lunate in adults, upper lobe longer than lower (caudal fin rounded in young, the central rays much prolonged).* Scales small, embedded in thick skin; lateral line slightly waving anteriorly.

Colour: back and flanks dark brown, *with 2 sharply defined narrow silvery bands;* belly yellowish.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

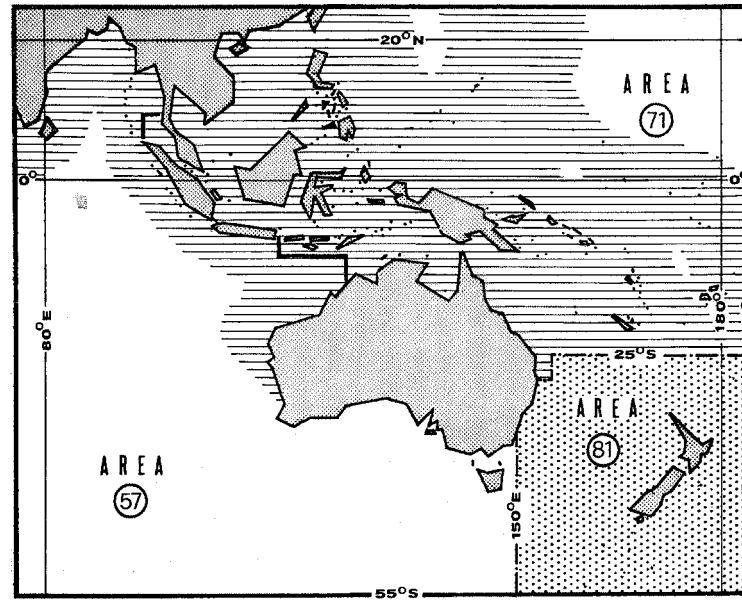
Carangidae: 2 detached spines in front of anal fin; also, scutes on caudal peduncle in many species.

Pomatomidae: spines of dorsal fin connected by a membrane; also, body and head deeper and no stripes on flanks.



SIZE:

Maximum: 180 cm;
common: 80 to 100 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout the area except for southern Australia.

Pelagic, but also found over shallow coral reefs and off rocky shores, occasionally in estuaries.

Feeds on crabs, squids and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls, with handlines, and by trolling.

Marketed mostly fresh.

S_1

SCIAEN

1974

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

SCIAENIDAE

Croakers, drums

Coastal and estuarine fishes with fairly elongate bodies, moderately compressed: whole head and snout usually scaled. Snout rounded or bluntly pointed, *mouth terminal* (mid-water species) *or inferior* (bottom-dwellers), eye small or moderate, in anterior half of head. *Pores often conspicuous on snout and at front of lower jaw* (mental pores) (Fig. 6); fleshy rostral fold on underside of snout, often with lobes (Fig. 6); barbel sometimes present on chin. Teeth mainly small, but outer teeth of upper jaw, and sometimes inner teeth of lower jaw, enlarged; canines may be present (twice the length of other teeth).

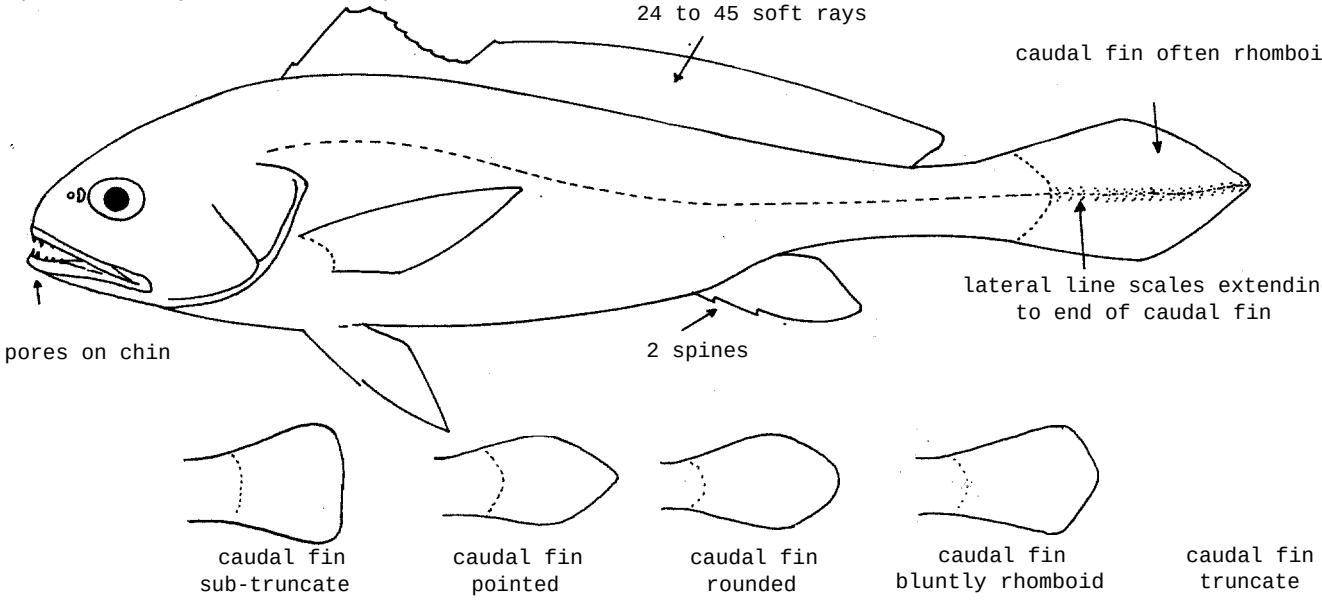
Swimbladder present in all Indo-Pacific species, carrot-shaped (Figs. 1 to 5), hammer-shaped (Fig. 15) or anchor-shaped (Fig. 14) and bearing small tubules (diverticula) which may be simple (Fig. 1) or branched (Figs. 5, 14, 15) and which may project forward to skull, backward along body or reach laterally into muscles. Swimbladders often dried by fishermen and used commercially.

Ear capsules large, *the largest otolith* (ear-stone) being the sagitta, which *has characteristic tadpole-like marking on lower surface* (Fig. 8); 'head' of tadpole usually oval but sometimes almost circular *(Collichthys)* or truncated and bent at front (Fig. 17) *(Johnius, Johnieops, Xathala);* 'tail' of the tadpole often J-shaped (Fig. 9) and meeting edge of otolith (except in *Argyrosomus),* but T-shaped (Fig. 8) in *Atrobucca, Pennahia, Otolithes* and *Chrysochir.*

Dorsal fin long, divided by a notch into anterior part with 6 to 10 flexible spines and posterior part with 1 spine and 21 to 45 rays (usually 23 to 32). Pectoral fins with 16 to 19 rays, pelvic fins with 1 spine and 5 soft rays; a*nal fin with only 2 spines*, the first short, the second variable, and 7 to 13 soft rays; caudal fin truncate to rhomboid (long and tapering in juveniles) (see sketches below).

Scales cycloid (smooth) or ctenoid (rough); *lateral line scales extending to end of caudal fin.*

Colour: green/blue on back, flanks silvery white to golden yellow, sometimes with black or dusky blotches, lines or spots. Fins pale, dusky black or yellow, sometimes with dark blotches. Some *species* with yellow luminous patches.



SIMILAR FAMILIES OCCURRING IN THE AREA:

Usually have 3 spines in the anal fin (2 in Sciaenidae), and lateral line scales ending at caudal fin base (continued to tip of caudal fin in Sciaenidae); usually lack pores on snout and chin (often conspicuously present in Sciaenidae); also, swimbladder usually simple (often with some or many appendages, in some cases branched and complex, in Sciaenidae).

Key to Genera

SCIAENIDAE

1 a. Swimbladder* without appendages; a barbel on chin with a pore at its tip ..... *Umbrina*

1 b. Swimbladder with appendages

2 a. Swimbladder with only one or two pairs of simple or branched appendages (Fig. 1)

3 a. Swimbladder appendages wholly directed forward from anterior end of bladder (Fig. 2)

4 a. Swimbladder appendages not extending through transverse septum into head; gill rakers short, 6 to 8 on lower part of first arch; teeth short, firm, sub-equal, in bands; caudal fin slightly emarginate; mouth and lining of gill cover yellow ..... *Atractoscion*

4 b. Swimbladder appendages extending in front of transverse septum into head (Fig. 2)

5 a. Second anal spine long and strong, 16 to 21% of standard length; lower gill rakers 8 to 9 ..... *Macrospinosa*

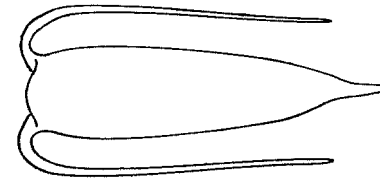
5 b. Second anal spine about 127, of standard length; lower gill rakers 22 to 23 ..... *Kathala*

3 b. Swimbladder appendages with at least the main part lying parallel to the bladder (Fig. 1)

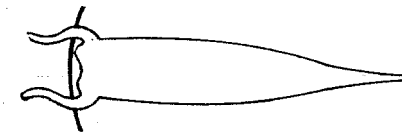
6 a. Swimbladder appendages simple tubes, without extensions into head, either lying beside the bladder or embedded in the abdominal muscles (Fig. 1); soft dorsal fin rays 21 to 27 ..... *Bahaba*

6 b. Swimbladder appendages with branches into the head; soft dorsal fin rays 27 to 45

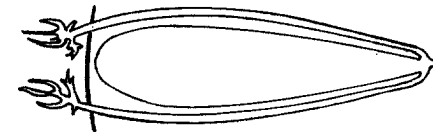
7 a. Swimbladder appendages attached to posterior end of bladder (Fig. 3) ..... *Otolithoides*



Bahaba - swimbladder
Fig. 1



Kathala - swimbladder
Fig. 2

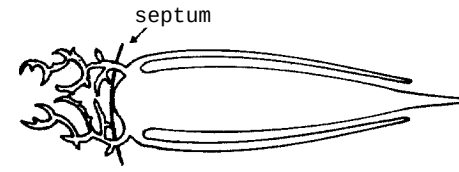


otolithoides - Swimbladder
Fig. 3

Cannot be seen without dissecting fish

7 b. Swimbladder appendages attached to anterior end of bladder and immediately dividing into branches (Fig. 4)

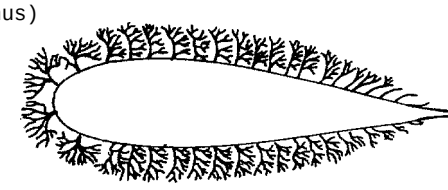
8 a. Swimbladder appendages of each side dividing into one cephalic and one abdominal branch, the former branching only in front of the transvers septum (Fig. 4) ..... *Panna*



Panna - Swimbladder
Fig. 4

8 b. Swimbladder appendages of each side dividing into several branches, of which some turn forward into head, the others backward into the abdomen ... (undescribed genus)

2 b. Swimbladder with more than two pairs of arborescent appendages



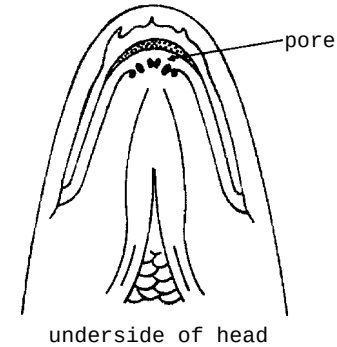
Protonibea - Swimbladder
Fig. 5

9 a. Swimbladder carrot-shaped (Fig. 5)

10 a. Anterior pair of arborescent appendages of Swimbladder branching on posterior surface of transverse septum and not entering head

11 a. Outer upper teeth enlarged and spaced, but no outstanding canines

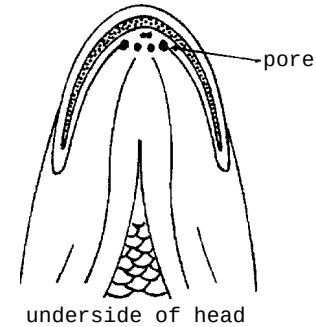
12 a. Pores on chin of the "false five" pattern, those of first pair close together behind tip of jaw and united by a groove (Fig. 6); lower fins dark .... *Protonibea*



underside of head
Fig. 6

12 b. First pair of pores small, on front of chin, one on each side of tip of jaw, one or two pairs behind them (Fig. 7); 2nd anal spine weak

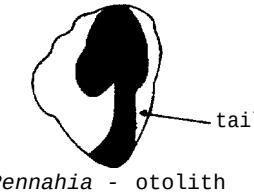
13 a. Swimbladder appendages without a well developed dorsal limb, the posterior ones parallel to wail of bladder; 'tail' of tadpole-shaped impression of otolith (ear-stone)* only slightly curved (Fig. 8) .... *Pennahia*



underside of head
Fig. 7

13 b. Swimbladder appendages each with a short or long branched dorsal limb as well as a ventral; posterior appendages simpler, very short, at right angles to wall of bladder

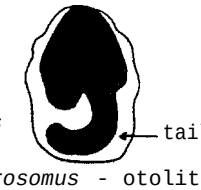
14 a. 'Tail' of tadpole-shaped impression of otolith only slightly curved (Fig. 8) .. *Atrobucca*



Pennahia - otolith
Fig. 8

* Can be extracted by opening skull bone behind eyes or by cutting through inner wall of gill cavity

14 b. 'Tail' of tadpole-shaped impression of otolith strongly curved, J-shaped (Fig. 9) ..... *Argyrosomus*

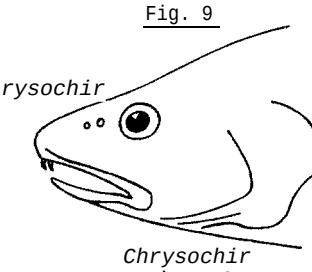


Argyrosomus - otolith
Fig. 9

11 b. One or two pairs of outstanding canine teeth in upper or both jaws

15 a. Canines in upper jaw only; mouth inferior (Fig. 10) ..... *Chrysochir*

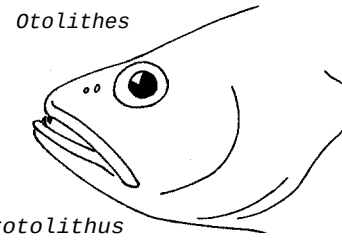
15b. Canines in both jaws; mouth terminal or lower jaw projecting (Fig. 11)



Chrysochir
Fig. 10

16 a. Soft anal fin rays 7 or 8; swimbladder appendages not wrapped around the main bladder ..... *Otolithes*

16 b. Soft anal fin rays 10 or 11 (if 7 to 8, then anal fin origin before middle of soft dorsal); some or all appendages branching on top of swimbladder ..... *Pterotolithus*



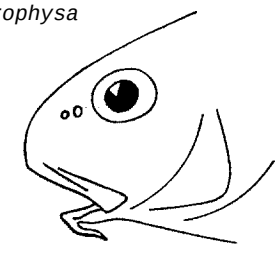
Otolithes
Fig. 11

10 b. Anterior pair of swimbladder appendages extending into head and branching between skull and upper gill arches

17 a. A pair of chin barbels ..... *Daysciaena*

17 b. A single barbel (Fig. 12) ..... *Dendrophysa*

17 c. No barbels on chin

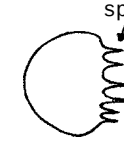


Dendrophysa
Fig. 12

18 a. No luminous tissue; no knob on tip of lower jaw

19 a. No patches of extremely rough scales on head; 2nd anal spine 8.5 to 177 of standard length ..... *Nibea*

19 b. Scales on top of head, anterior part of back and belly extremely rough (with enlarged, erect spinules) (Fig. 13); 2nd anal spine 7.6 to 8.5% of standard length ..... *Aspericorvina*

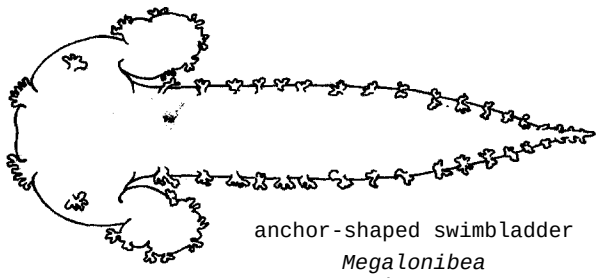


Aspericorvina - scale
Fig. 13

18 b. Luminous tissue on lower parts of head and body; lower jaw with a toothed knob at tip

20 a. 19 pairs of swim-bladder appendages, the last 9 with short dorsal and long ventral limbs; 7 soft anal fin rays ..... (undescribed genus)

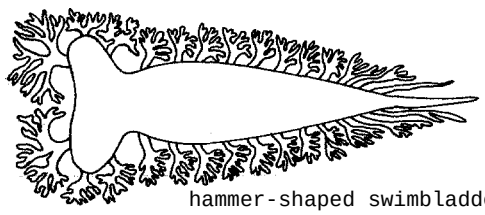
20 b. 21 to 32 pairs of swimbladder appen-dages with dorsal and ventral limbs well developed; 7 to 12 soft anal fin rays ..... *Collichthys*



anchor-shaped swimbladder
Megalonibea
Fig. 14

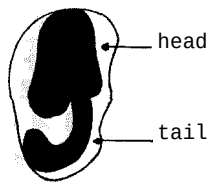
9 b. Swimbladder anchor-shaped (Fig. 14); 'head' of tadpole-shaped impression of otolith oval, 'tail' J-shaped (Fig. 16) ..... *Megalonibea*

9 c. Swimbladder hammer-shaped (Fig. 15); 'head' of tadpole-shaped impression of otolith truncated and obliquely bent, 'tail' expanded to form hollow cone (Fig. 17)



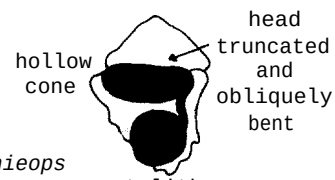
hammer-shaped swimbladder
Johnius
Fig. 15

21 a. Teeth of lower jaw sub-equal; enlarged teeth of upper jaw not widely spaced; mouth inferior ..... *Johnius*



otolith
Megalonibea
Fig. 16

21 b. Inner lateral teeth of lower jaw enlarged; outer teeth of upper jaw enlarged and spaced; mouth usually terminal .... *Johnieops*



otolith
Johnius
Fig. 17

List of Species occurring in the Area
(Code numbers are given for those species
for which Identification Sheets are included)

Argyrosomus amoyensis	SCIAEN Argyr 2
Argyrosomus hololepidotus	SCIAEN Argyr 3
Argyrosomus japonicus	SCIAEN Argyr 4
Argyrosomus miiuy	SCIAEN Argyr 5
Aspertcorvina jubata	SCIAEN Asper 1
Atrobucca nibe	SCIAEN Atro 1
Bahaba chaptis	SCIAEN Baha 1
Bahaba polykladiskos	
Bahaba taipingensis	SCIAEN Baha 2
Chrysochir aureus	SCIAEN Chrys 1
Collichthys crocea	SCIAEN Coll 1
Collichthys lucidus	
Collichthys niveatus	
Collichthys potyactis	
Daysciaena albida	SCIAEN Daysc 1
Dendrophysa russelli	SCIAEN Dend 1
Johnieops aneus	
Johnieops borneensis	
Johnieops dussumieri	SCIAEN Johps 1
Johnieops novaeguineae	
Johnieops pacificus (doubtful)	
Johnieops parvus	
Johnieops ptagiostoma (doubtful)	
Johnieops sina	SCIAEN Johps 2
Johnieops tingi	
Johnieops vogleri	SCIAEN Johps 3
Johnieops weberi (doubtful)	
Johnius belangerii	SCIAEN John 1
Johnius carouna	
Johnius carutta	SCIAEN John 2
Johnius coitor	SCIAEN John 3
Johnius dussumieri	SCIAEN John 4
Johnius hypostomus	
Johnius macropterus	
Johnius mannarensis	
Johnius novaehollandiae	
Johnius trachycephalus	SCIAEN John 5
Kathala axiltaris	SCIAEN Kath 1
Macrospinosa cuja	
Megalonibea fusca	
Nibea albiflora	SCIAEN Nib 1
Nibea bleekeri (doubtful)	
Nibea chui	SCIAEN Nib 2
Nibea maculata	SCIAEN Nib 3
Nibea mitsukurii	
Nibea semifasciata	SCIAEN Nib 4
Nibea semiluctuosa	SCIAEN Nib 5
Nibea soldado	SCIAEN Nib 6
Otolithes cuvieri	SCIAEN Otol 1
Otolithes ruber	SCIAEN Otol 2
Ototithoides biauritus	SCIAEN Otold 1
Otolithoides pama	SCIAEN Otold 2
Otolithoides perarmata	
Panna microdon	SCIAEN Pan 1
Pennahia argentata	SCIAEN Penn 1
Pennahia macrocephalus	SCIAEN Penn 2
Pennahia macrophthatmus	SCIAEN Penn 3
Pennahia pawak	SCIAEN Penn 4
Protonibea diacanthus	SCIAEN Proto 1
Pterotolithus lateoides	SCIAEN Ptero 1
Pterotolithus maculatus	SCIAEN Ptero 2
Umbrina robinsonii	
Umbrina ronchus	
Umbrina sinuata	

SCIAEN Argyr 2

1974

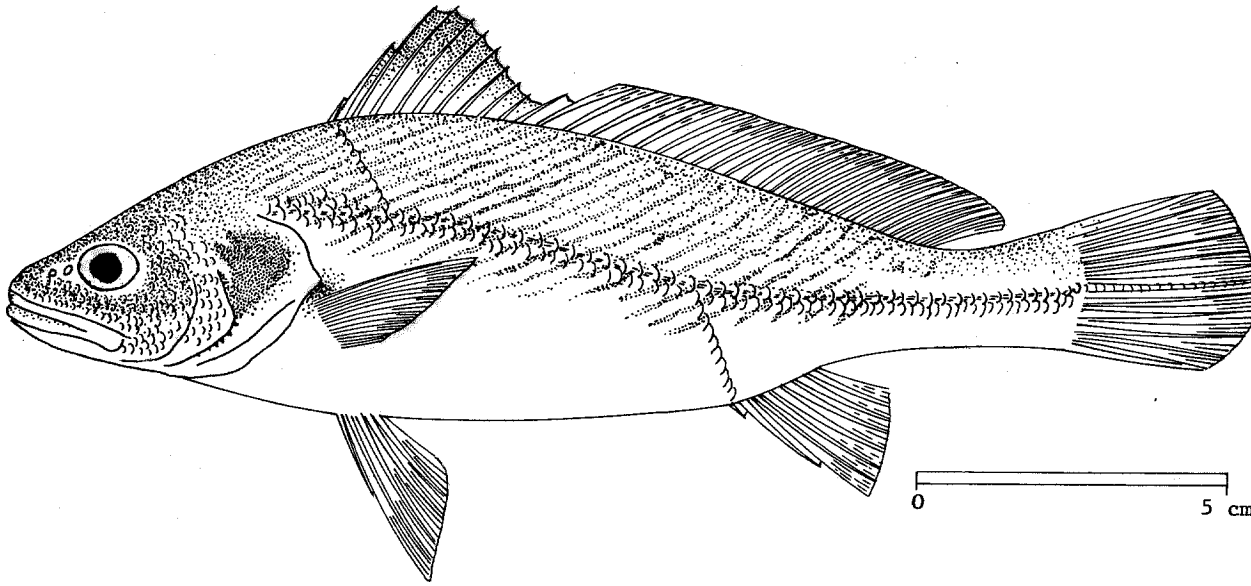
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Argyrosomus amoyensis (Bleeker, 1863)

SYNONYMS STILL IN USE: *Pseudosciaena amoyensis* Bleeker, 1863
? *Sciaena bleekeri:* Day, 1876
? *Argyrosomus bleekeri:* Talwar & Joglekar, 1972
Nibea miichthyoides Chu, Lo & Wu, 1963



VERNACULAR NAMES:

FAO: En - Amoy croaker
Fr -
Sp -

NATIONAL:

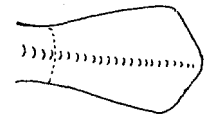
DISTINCTIVE CHARACTERS:

A fairly large species with a large terminal mouth; jaws meeting evenly in front, the upper reaching to below hind part of eye, the lower a little more than half of head length. Teeth differentiated into large and small; large teeth form outer series in upper jaw, inner series in lower; *no canine teeth.* Gill rakers rather slender, 8 on lower part of first arch. *Swimbladder carrot-shaped, with 22 to 29 pairs of arborescent appendages* of approximately equal size, branching in a rather ragged-looking fan shape; none entering head. *Dorsal fin with 10 spines, followed by a notch,* second part of the fin with 1 spine and 25 to 28 Soft rays; pectoral fin short, about 17% of standard length; *anal fin with 2 spines and 7 soft rays,* the 2nd spine ½ the length of the longest soft fin ray or 1/4 of head length; *caudal fin rhomboid.* Scales cycloid (smooth) on snout and below eye, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

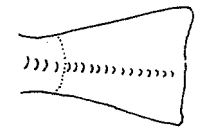
swimbladder, ventral view

Colour: *brownish oblique wavy streaks on upper half of body, a pale yellow longitudinal stripe above lateral line,* a black spot at pectoral fin base and a dark blotch on gill cover.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:



A. amoyensis



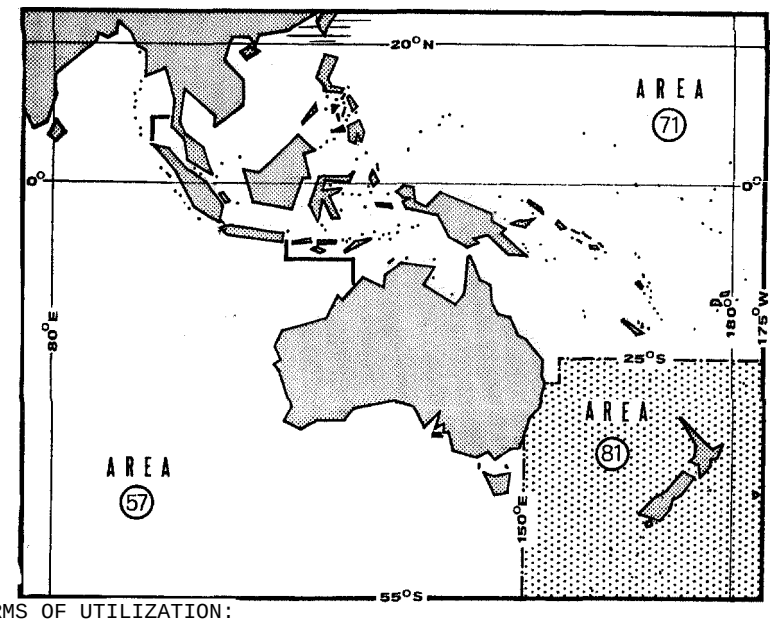
A. hototepidotus

Argyrosomus hototepidotus, A. japonicas and *A. miiuy:* more swimbladder appendages (25 to 34 pairs; 22 to 29 in *A. anmoyensis*); also, pectoral fins longer in *A. hototepidotus* and *A. miiuy* (19 to 21% of standard length; 17% in *A. amoyensis);* caudal fin truncate or almost truncate in *A. hototepidotus* and *A. japonicas* (rhomboid in *A. amoyensis);* the 4th to 6th swimbladder appendages enlarged in *A. miiuy*.

Nibea species: anal spines much stronger.

SIZE:

Maximum: 38 cm; common: 25 to 30 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Southern Chinese waters and perhaps (known as *bleekeri)* in the Western Indian Ocean.

Inhabits coastal waters.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species within the area. The total reported catch of unclassified croakers and drums in *1972* was:

area *57* (Eastern Indian Ocean): 41 900 tons (India only)
area *71* (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Argyr 3

1974

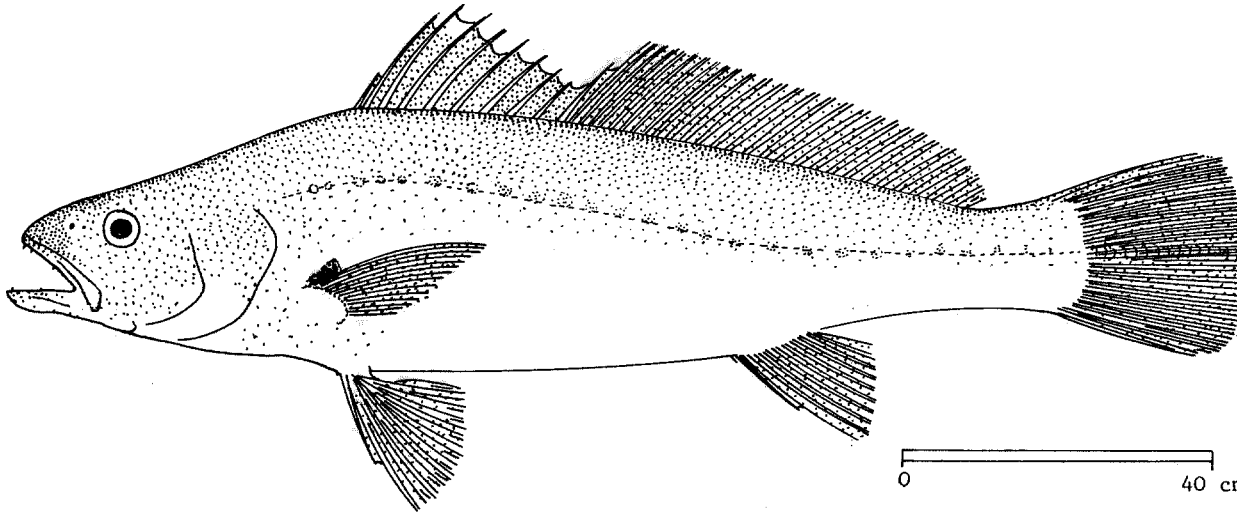
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Argyrosomus hololepidotus (Lacepède, 1802)

SYNONYMS STILL IN USE: *Sciaena antarctica* Castelnau, 1872



VERNACULAR NAMES:

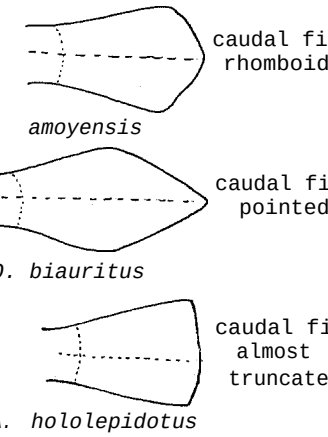
FAO: En - Southern meagre
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A large, fairly elongate species (body depth rarely less than 3 times in standard length), with a terminal mouth; jaws meeting evenly in front or the lower slightly longer, the upper reaching back to about eye centre, the lower about 1/2 of head length. Teeth differentiated into large and small; the large forming outer series in upper jaw, inner series in lower jaw, only the large teeth visible in large specimens; *no canine teeth.* Lower gill rakers 8 to 10. *Swimbladder carrot-shaped, with 25 to 35 pairs of arborescent appendages,* none of which enters the head. *Dorsal fin with 10 spines, followed by a notch,* second part of the fin with 1 spine and 26 to 29 soft rays; pectoral fin short, 19 to 217 of standard length, or 1 1/2 times in head length; *anal fin with 2 spines and 7 soft rays,* the 2nd spine weak and about 1/2 the length of longest soft ray; *caudal fin almost truncate or with upper corner pointed and lower one rounded.* Scales cycloid (smooth) on snout and below eyes, else where ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: grey/brown on back shading to silvery grey on flanks and belly; fins reddish; a black dot at pectoral fin base.



DISTINQJISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

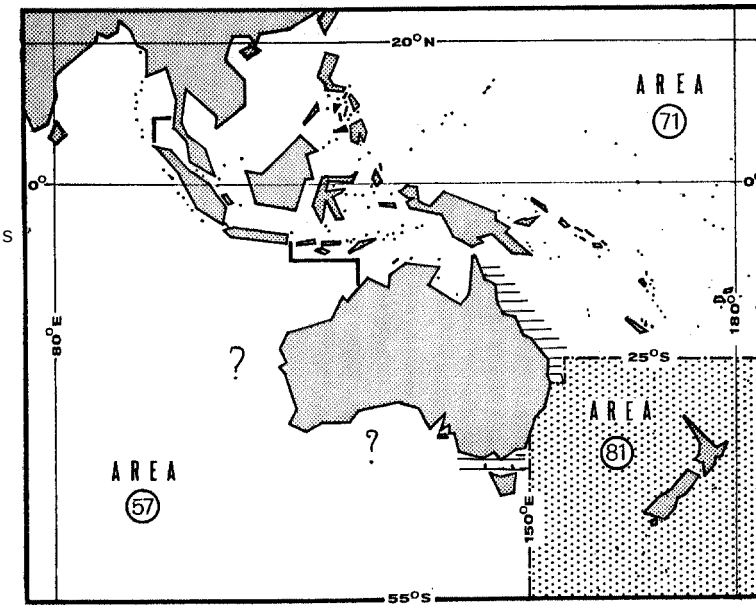
Argyrosomus amoyensis, A. miiuy: caudal fin rhomboid; also, in *A. amoyensis* fewer swimbladder appendages (22 to 29 pairs; 25 to 35 in *A. hololepidotus*).

Argyrosomus japonicus: fewer swimbladder appendages (26 pairs) and shorter pectoral fins (15 to 177 of standard length; 19 to 217 in *A. hololepidotus).*

Otolithoides biauritus: caudal fin pointed and more soft dorsal fin rays (27 to 32; 26 to 29 in *A. hololepidotus*); also, only 1 pair of swimbladder appendages.

SIZE:

Maximum: 200 cm; common: 150 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Queensland and New South Wales, perhaps also southern and western Australia; also, western Indian Ocean and westward to Mauritania, South Africa and mouth of Congo River.

Inhabits coastal waters.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the-area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Argyr 4

1974

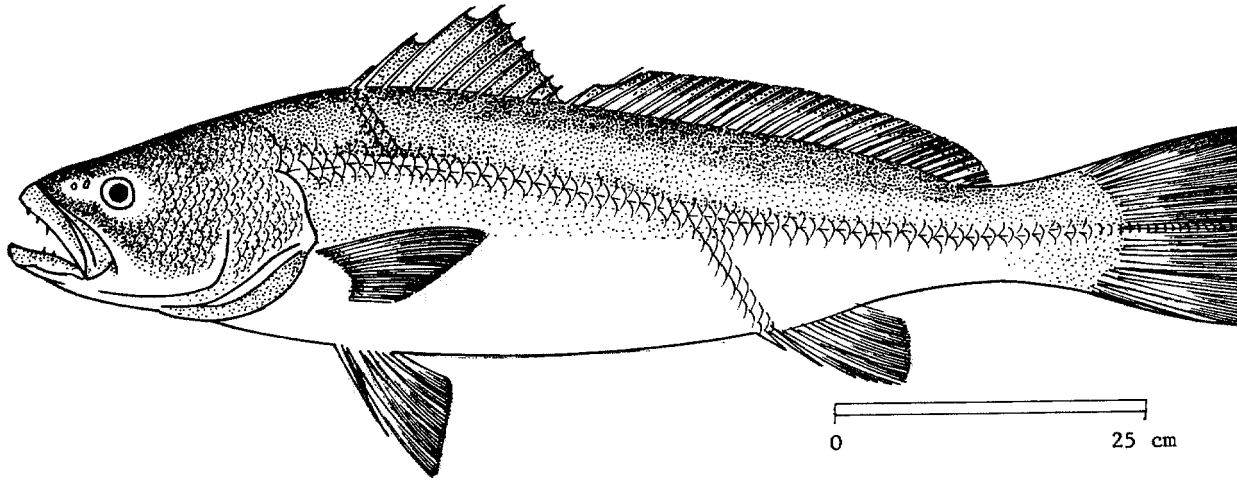
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Argyrosomus japonicus (Temminck & Schlegel, 1833)

SYNONYMS STILL IN USE: *Nibea japonica:* Matsubara, 1937; Chu, Lo & Wu, 1963
Argyrosomus japonicus: Lin, 1940; Matsubara, 1955



VERNACULAR NAMES:

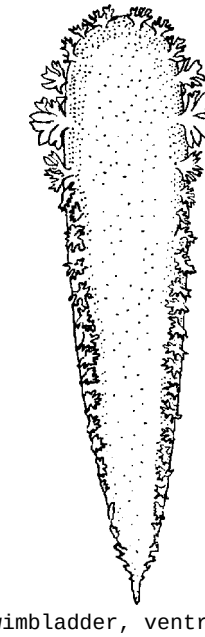
FAO: En - Japanese meagre
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A large, elongate species with an acute snout and a large terminal mouth, the jaws meeting evenly in front or the lower slightly longer, the upper reaching back to below hind part of eye. Teeth differentiated into large and small; large teeth form outer series in upper jaw, intermixed with small teeth in lower jaw; *no canine teeth.* Lower gill rakers 9, short and with denticulations. *Swimbladder carrot-shaped, with about 26 pairs of short appendages, branched in a palmate manner,* the 4th to 6th or the 5th to 7th bigger than the others, none entering head, the posterior few very short, at right angles to the main bladder. *Dorsal fin with 10 spines, followed by a deep notch,* second part of the fin with 1 spine and 27 to 29 soft rays, not scaly; pectoral fin short, not longer than length of head behind eye; *anal fin with 2 spines and 6 to 7 soft rays,* the 2nd spine weak, about half the length of longest soft ray; *caudal fin nearly truncate, biconcave.* Scales cycloid (smooth) on snout and below eye, otherwise ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: no distinctive colouration.



swimbladder, ventral view

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

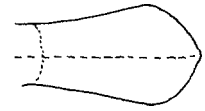
Argyrosomus miiuy: more swimbladder appendages (30 to 34 pairs; 26 in *A. japonicus),* dorsal and anal fins scaly, and caudal fin rhomboid (truncate or biconcave in *A. japonicus*).

Argyrosomus *amoyensis:* 22 to 29 pairs of swimbladder appendages, none enlarged (26 pairs in *A. japonicus),* and caudal fin rhomboid.

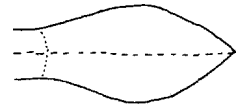
Argyrosomus *hololepidotus:* more swimbladder appendages (25 to 17% in A. *japonicus).*

Bahaba taipingensis: caudal fin long and pointed and strong 2nd anal fin spine; also, only one pair of swimbladder appendages.

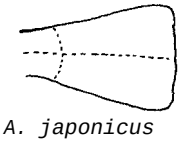
Nibea species: 2nd anal fin spine very strong.



A. amoyensis
A. miiuy



B. taipingensis



A. japonicus

SIZE:

Maximum: 180 cm; common: 70 to 120 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

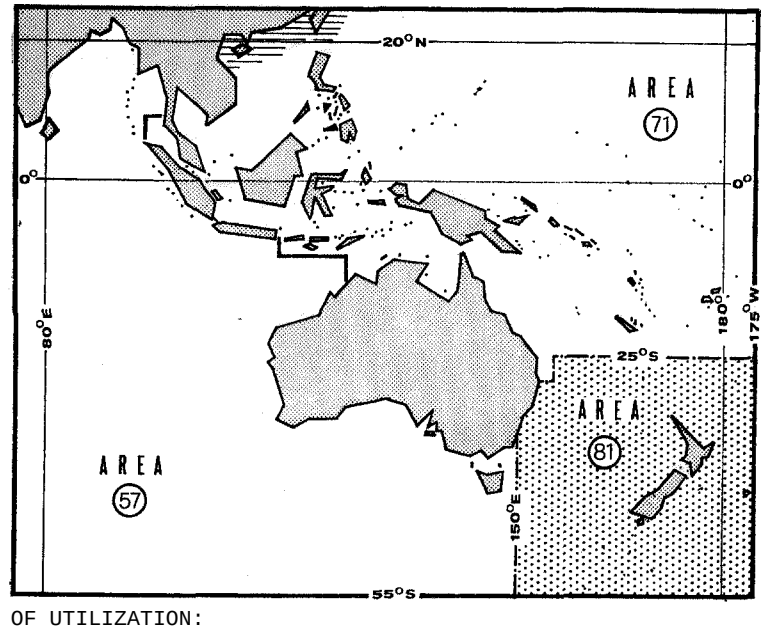
Southern China, northward to southern Japan.

Inhabits coastal waters, down to 40 m.

Feeds chiefly on crustaceans, also on fishes.

PRESENT FISHING GROUNDS:

Along coasts of China and southern Japan.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with gill nets, bottom trawls, handlines and longlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Argyr 5

1974

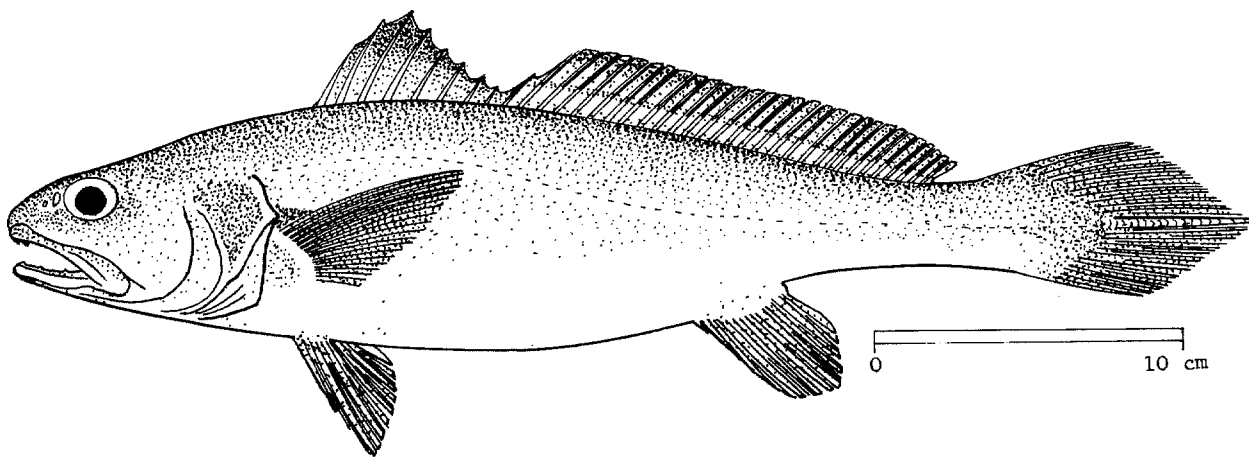
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Argyrosomus miiuy (Basilewsky, 1855)

SYNONYMS STILL IN USE: *OtoLithus fauvelii* Peters, 1881
Miichthys miiuy: Lin, 1938; Chu, Lo & Wu, 1963
Nibea imbricata Matsubara, 1937
Miichthys imbricatus: Matsubara, 1955



VERNACULAR NAMES:

FAO: En - Mi-iuy croaker
Fr -
Sp -

NATIONAL:

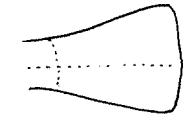
DISTINCTIVE CHARACTERS:

A fairly large, elongate species (body depth about 4 times or more in standard length), *with an acute snout and large, terminal mouth;* upper jaw reaching back to behind the eye, lower jaw to more than 1/2 of head length. Teeth differentiated into large and small; the large forming outer series in upper jaw, intermixed with smaller teeth in lower jaw; *2nd and 3rd pairs of teeth in upper jaw enlarged but not canines.* Lower gill rakers 8 to 10. *Swimbladder large, carrot-shaped, with 30 to 34 pairs of arborescent tubules, fine and much branched in adult,* none entering head; each appendage with well developed dorsal and ventral limbs. *Dorsal fin with 8 to 9 spines, followed by a notch,* second part of the fin with 1 spine and 28 to 30 soft rays; pectoral fin short, about 5 times or more in standard length; *anal fin with 2 spines and 7 soft rays,* the 2nd spine weak, about 1/2 the length of longest soft ray; *caudal fin rhomboid or pointed, becoming blunter in large fishes.* Scales cycloid (smooth) on snout and below eye, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: no distinctive colouration.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

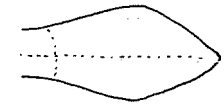
Argyrosomus japonicus: caudal fin truncate or biconcave; shorter and fewer swimbladder appendages (26 pairs; 30 to 34 in *A. miiuy*), of which the 4th to 6th are enlarged; also, the upper jaw does not reach back to behind the eye and the pectoral fins are shorter (15 to 17% of standard length; 20% in *A. miiuy*).



caudal fin almost truncate

A. japonicus

Argyrosomus amoyensis: swimbladder appendages fewer (22 to 29 pairs; 30 to 34 in *A. miiuy*), all about same size; also, oblique lines on upper flanks and not reaching back to behind eye in adults.



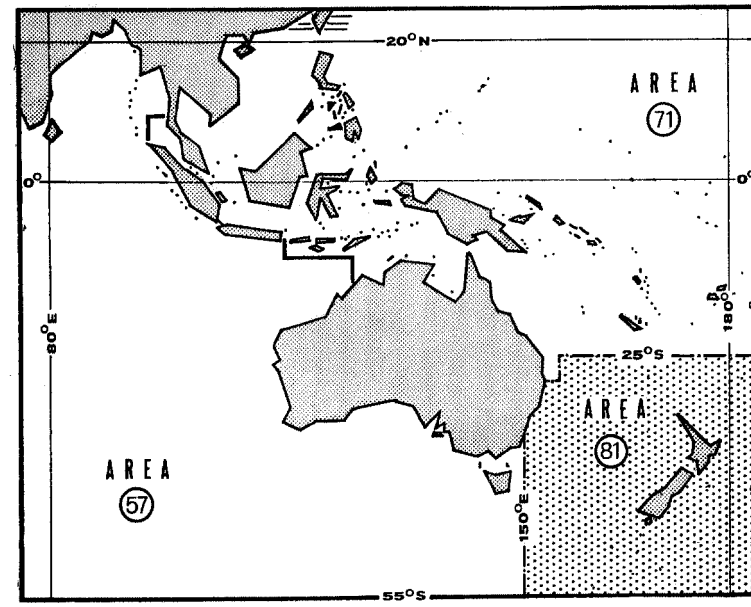
caudal fin pointed

A. miiuy

Argyrosomus hololepidotus: caudal fin truncate and upper jaw not reaching back to behind eye in adults.

SIZE:

Maximum: 60 cm; common: 40 to 50 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Chinese waters; also northward to Korea.

Inhabits coastal waters.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Asper 1

1974

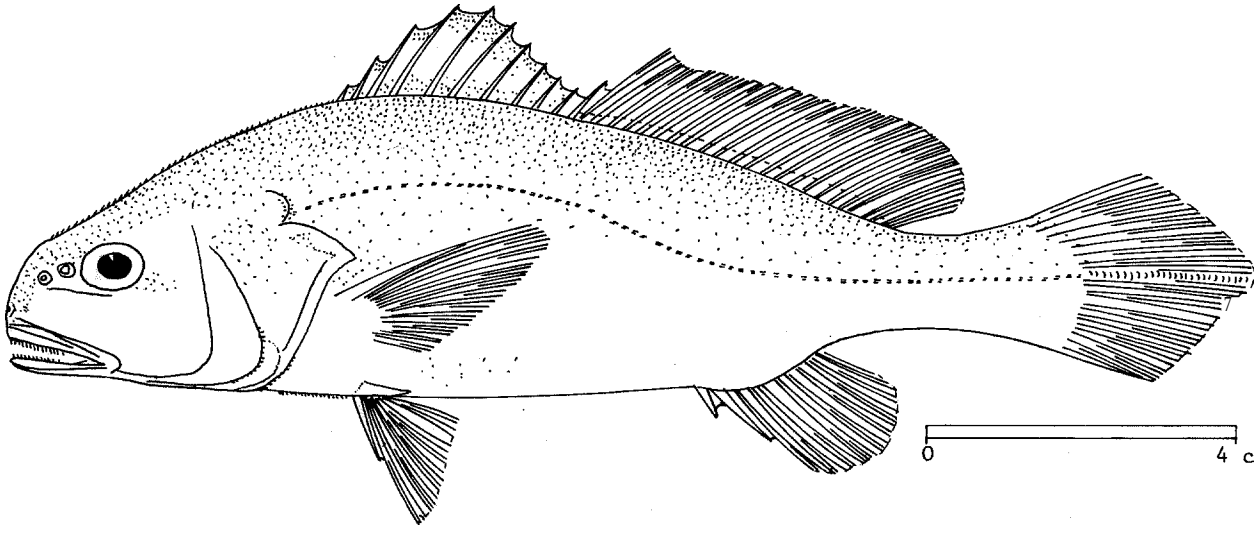
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Aspericorvina jubata (Bleeker, 1855)

SYNONYMS STILL IN USE: *Johnius jubatus:* Weber & de Beaufort, 1936
Johnius (Aspericorvina) melanobrachium Fowler, 1934



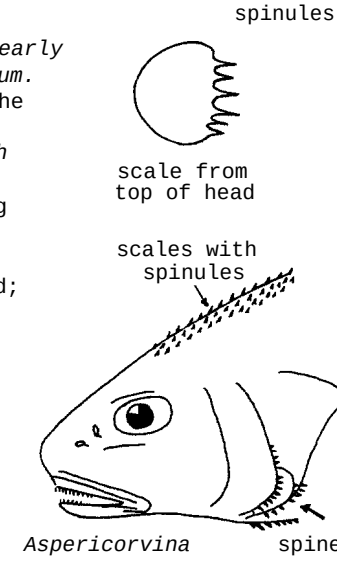
VERNACULAR NAMES:

FAO: En - Prickly croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A small species with the snout slightly projecting; mouth small and nearly inferior. Sharp spines edging pre-opercutum, sub-opercutum and inter-operculum. Teeth differentiated into large and small in upper jaw, the large forming the outer series, largest at front of *jaw; no enlarged teeth in lower jaw.* Lower gill rakers 8, short. *Swimbladder carrot-shaped (at least in the young), with about 16 pairs of appendages, all except the last arborescent,* the first branching in the head above the gills; posterior end of bladder lying along base of 2nd anal fin spine. *Dorsal fin with 10 spines, followed by a notch,* second part of the fin with 1 spine and 22 to 24 soft rays; *anal fin with 2 spines and 7 to 8 soft rays,* the 2nd spine about 1/4 the length of the head; *caudal fin rhomboid, ending in a point below midline. Scales on head. back (to end of spinous part of dorsal fin) and belly ctenoid (rough to touch), with 5 to 6 strong projecting spines on hind margin; elsewhere, scales* cycloid (smooth); *lateral line scales reaching to tip of caudal fin.*



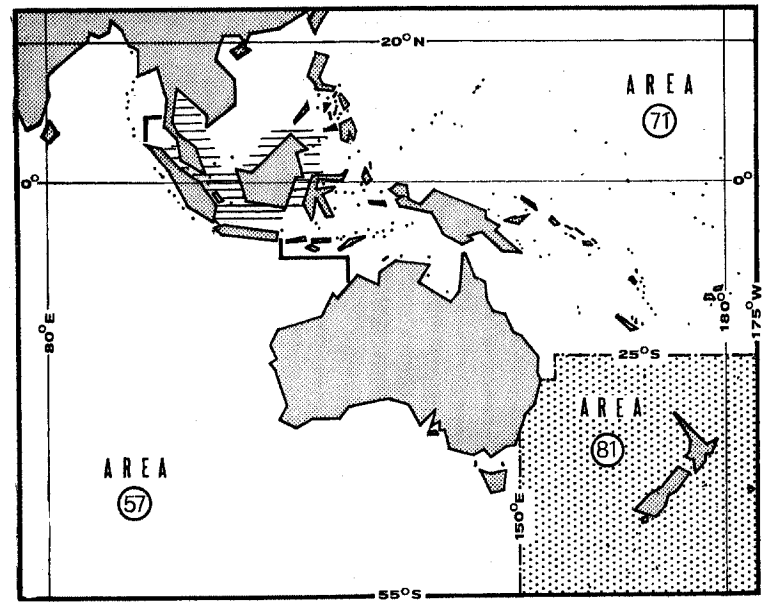
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Johnius species: lack rough scales and denticulations on gill cover; also, swimbladder hammer-shaped (otherwise, snout and dentition similar).

All other croaker species: lack such rough scales and markedly denticulate edges to sub-operculum, pre-operculum and inter-operculum.

SIZE:

Maximum: about 18 cm;
common: 10 to 15 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Borneo, Sumatra, Thailand.

Inhabits coastal waters.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons;
Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Atro 1

1974

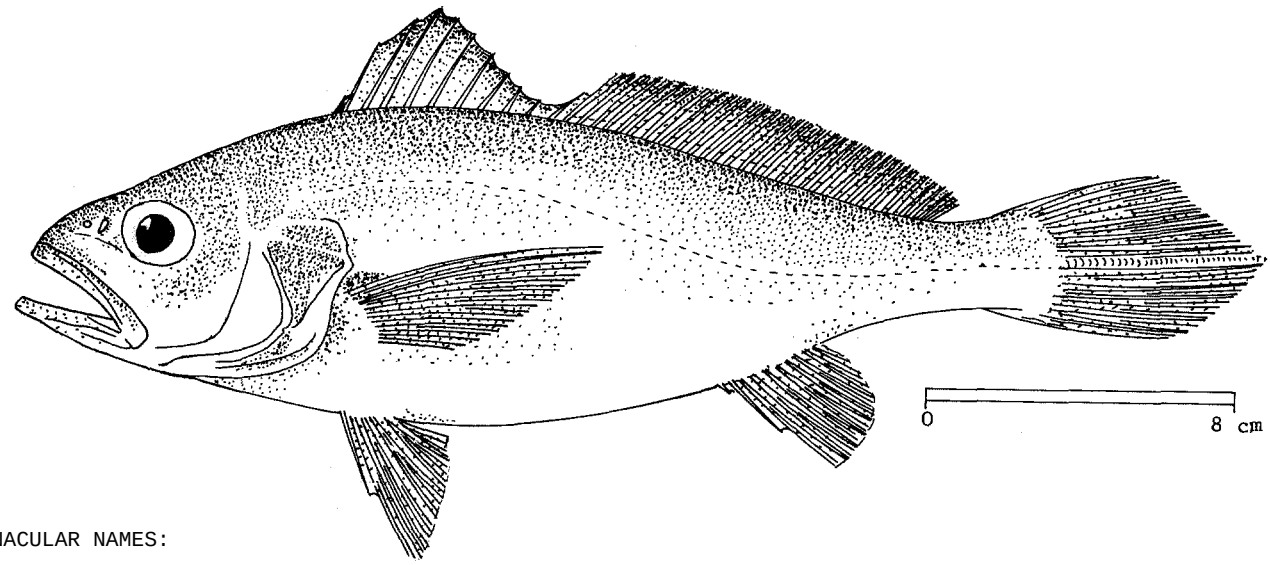
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Atrobucca nibe (Jordan & Thompson, 1911)

SYNONYMS STILL IN USE:
Nibea nibe: Matsubara, 1935
Argyrosomus nibe: Lin, 1938
Atrobucca nibe: Chu, Lo & Wu, 1963
Nibea pingi Wang, 1935



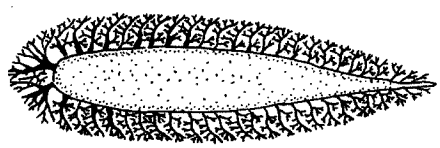
VERNACULAR NAMES:

FAO: En - Blackmouth croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A small and rather deep-bodied species (body depth 27 to 297 of standard length). *Mouth terminal,* upper jaw a little less than half of head length and reaching to below middle of eye, lower yaw a little more than half of head length. Teeth differentiated into large and small; the large forming outer series in upper jaw, inner series in lower; *no canine teeth.* Lower gill rakers 9 to 12, rather slender. *Swimbladder carrot-shaped, with 24 to 30 pairs of branched appendages,* each with a dorsal and a ventral limb, regularly arranged so that the twiglets of the dorsal limb point backwards, those near the tip of the ventral limb forwards; no appendages entering the head. *Dorsal fin with 10 spines, followed by a notch,* second part of the fin with 29 to 31 soft rays, *pectoral fin long, nearly equal to body depth; anal fin with 2 spines and 7 soft rays,* the 2nd spine slender, about 3/4 the length of the longest soft ray; *caudal fin rhomboid. Lateral line scales reaching to tip of caudal fin.*



swimbladder
ventral view

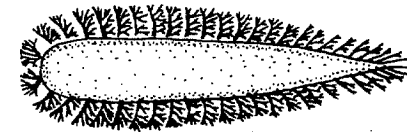
swimbladder
lateral view

Colour: *linings of mouth, gill chamber and body cavity black.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Atrobucca marleyi: lining of mouth and gill chamber paler; also, swimbladder appendages shorter.

Pennahia argentata: extremely similar, but soft dorsal fin rays fewer (25 to 28; 29 to 31 in *A. nibe*), and lower gill rakers fewer (8 to 9; 9 to 12 in *A. vibe);* also, lacks the distinctive black lining to the mouth, gill chamber and body cavity, and swimbladder appendages simple, wing-like.



swimbladder, ventral view
P. argentata

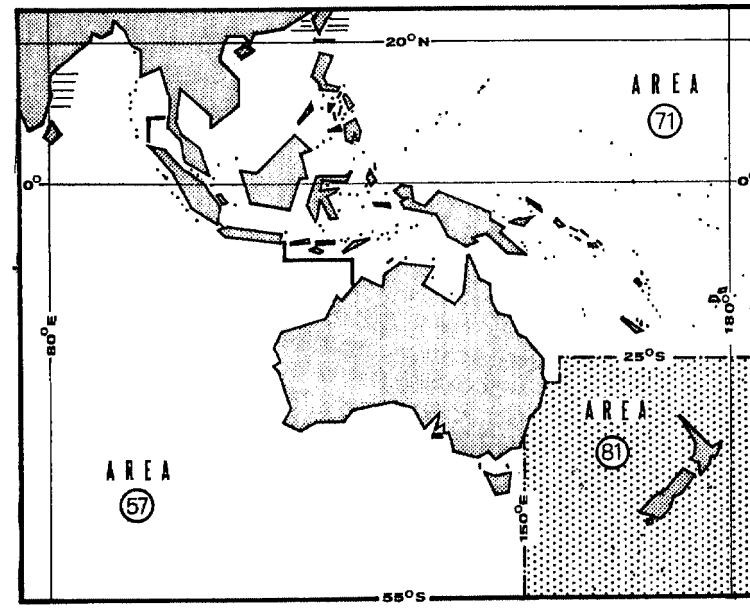
SIZE:

Maximum: 45 cm; common: 19 to 23 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Chinese and Japanese waters, at depths of 45 to 100 m; also, eastern coast of India

inhabits shallower parts of range in East China Sea during spawning season (May/June).



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, longlines and handlines.

Marketed fresh, also dried-salted; swimbladder dried.

SCIAEN Baha 1

1974

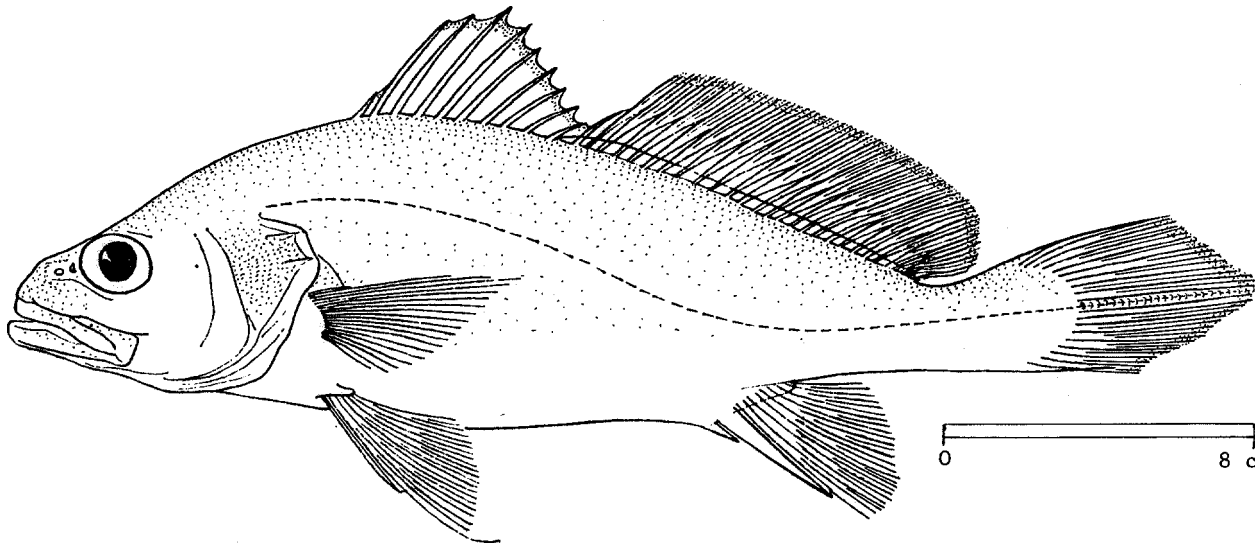
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Oean)
(W Cent. Pacific)

Bahaba chaptis (Ham. Buch., 1822)

SYNONYMS STILL IN USE: *Bola chaptis* Ham. Buch., 1822
Bahaba chaptis: Trewavas & Talwar, 1972; Talwar & Datta, 1972



VERNACULAR NAMES

FAO: En - Chaptis bahaba
Fr -
Sp -

NATIONAL:

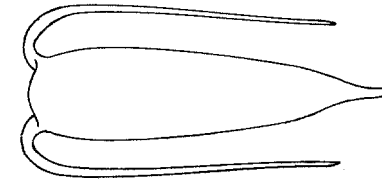
DISTINCTIVE CHARACTERS:

A large-mouthed species, lower jaw projecting slightly, its length more than 1/2 of head length; upper jaw reaching back to below hind margin of eye. Teeth differentiated into large and small, the large forming outer series in upper jaw, intermixed with smaller teeth in lower jaw; *no canine teeth.* Lower gill rakers 7 to 8. *Swimbladder carrot-shaped with only one pair of appendages,* each a simple tube, arising from anterior end and lying along the side of the main bladder for about 1/2 the length of the latter. *Dorsal fin with 10 spines, followed by a notch,* second part of the fin with 1 spine and 24 to 26 soft rays; *pectoral fin rather short,* about 5 times in standard length; *anal fin with 2 spines and 7 soft rays, the 2nd spine stout* and 2/3 to 3/4 the length of longest soft fin ray; *caudal fin tapering (in young).* Scales cycloid (smooth) on snout and below and behind eye, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

swimbladder
Bahaba chaptis

Colour: in life unknown, but margins of dorsal and caudal fins black in preserved specimens.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:



swimbladder
B. taipingensis

B. polykladiskos: 27 soft dorsal fin rays.(24 to 26 in *B. chaptis)* and a much wider interorbital space (22.6% of head length; 14 to 18% in *B. chaptis).*

B. taipingensis: fewer dorsal fin spines (8 to 9; 11 in *B. chaptis)* and more lower gill rakers (11 to 12; 7 to 8 in *B. chaptis);* also, swimbladder appendages longer and embedded in muscle.

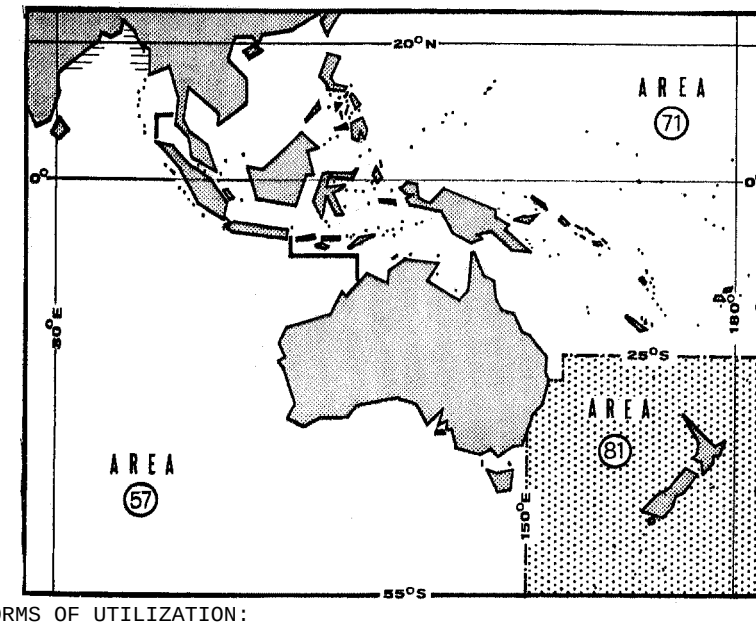
Otolithoides species: more soft rays in dorsal fin (27 to 45; 24 to 26 in *B. chaptis);* also, swimbladder appendages attached to *posterior* end of bladder.

Nibea and *Johnius* species: swimbladder with numerous appendages (carrot-shaped in *Nibea,* hammer-shaped in *Johnius*).

All other Indo-Pacific croakers: have a different form of swimbladder.

SIZE:

Maximum: 50 cm; common: 20 to 30 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Bay of Bengal and Burma.

Inhabits coastal waters and lower parts of rivers.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Baha 2

1974

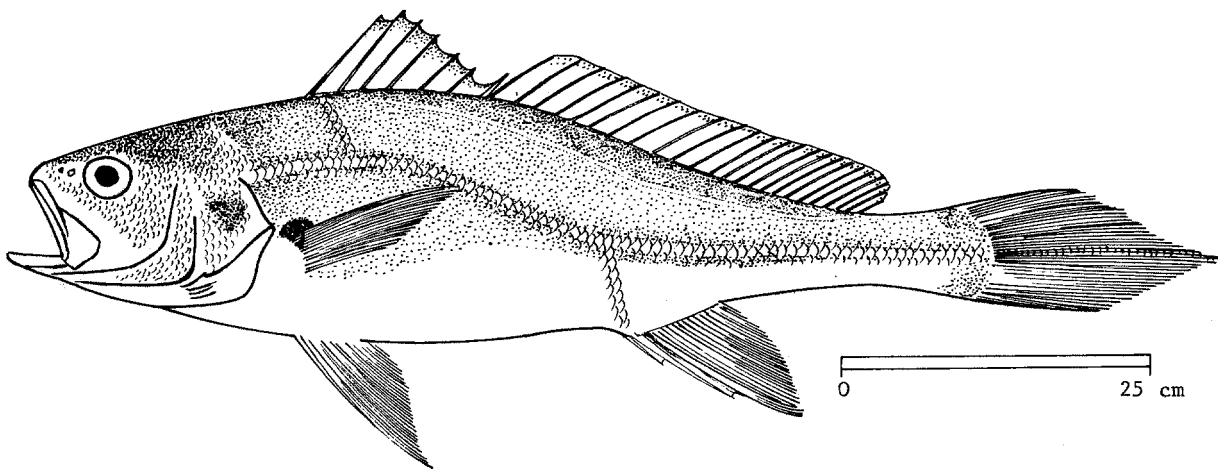
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Bahaba taipingensis (Herre, 1932)

SYNONYMS STILL IN USE: *Nibea taipingensis* Herre, 1932
Nibea flavolabiata Lin, 1935
Bahaba flavolabiata: Lin, 1938; Chu, Lo & Wu, 1963
Otolithes (Bahaba) lini Herre, 1935



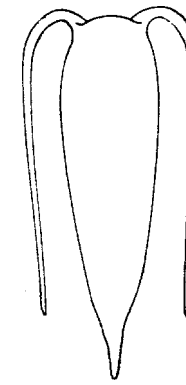
VERNACULAR NAMES:

FAO: En - Chinese bahaba
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A large, elongate species with a terminal mouth, lower jaw projecting slightly, upper jaw reaching to below hind part of eye. Teeth differentiated into large and small in both jaws; the large forming outer series in upper jaw, inner series in lower jaw. Lower gill rakers 11 to 12. *Swimbladder carrot-shaped, with only 1 pair of appendages arising at the anterior end* and extending, embedded in the muscles of the abdominal wall, to hind end of abdomen. *Dorsal fin with 7 to 8 spines, followed by a notch,* second part of the fin with 1 spine and 21 to 25 soft rays; *pectoral fin short,* 16% (adults) or 20 to 22.5% (young) of standard length; *anal fin with 2 spines and 7 soft rays, the 2nd spine very strong,* as long as soft rays in young, 2/3 of soft rays in adults; *caudal fin long and pointed in young, bluntly rhomboid in adults.* Scales cycloid (smooth) on snout and below and behind eye, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*



swimbladder

Colour: grey mixed with orange on back, greyish on sides to whitish below. Lower fins pale, dorsal fin with dark margin; a black spot at pectoral axil.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

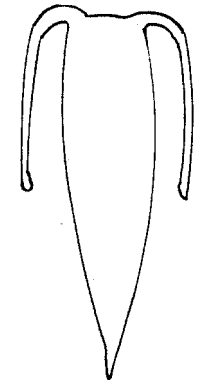
Bahaba chaptis (Indian Ocean) and *B. polyktadiskos* (Borneo to Vietnam): more dorsal fin spines (10; 7 to 8 in *B. taipingensis),* more soft dorsal fin rays (24 to 27; 21 to 25 in *B. taipingensis)* and fewer lower gill rakers (7 to 8; 11 to 12 in *B. taipingensis);* also, swimbladder appendages shorter and not embedded in muscle.

Otolithoides species: more dorsal fin spines (9 to 12) and more soft dorsal fin rays (27 to 45); also, swimbladder appendages attached to *posterior* end of bladder, and 2nd anal spine shorter and weaker.

Nibea and *Johnius* species: swimbladder with numerous appendages (carrot-shaped in *Nibea,* hammer-shaped in *Johnius).*

Macrospinosa cuja: 2nd anal spine also strong, but swimbladder appendages go forward and not backward.

All other Indo-Pacific croakers: have a different form of swimbladder.



swimbladder
B. chaptis

SIZE:

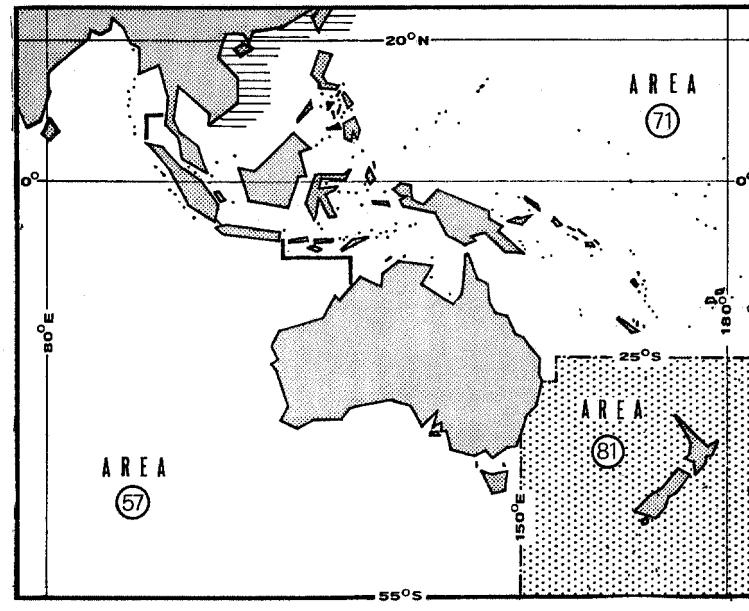
Maximum: 150 cm; common: 90 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Chinese and Korean waters, especially at the great estuaries.

Inhabits inshore and shallow coastal waters down to 40 m.

Feeds on fishes and invertebrates, mainly crustaceans.



PRESENT FISHING GROUNDS:

Shallow waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

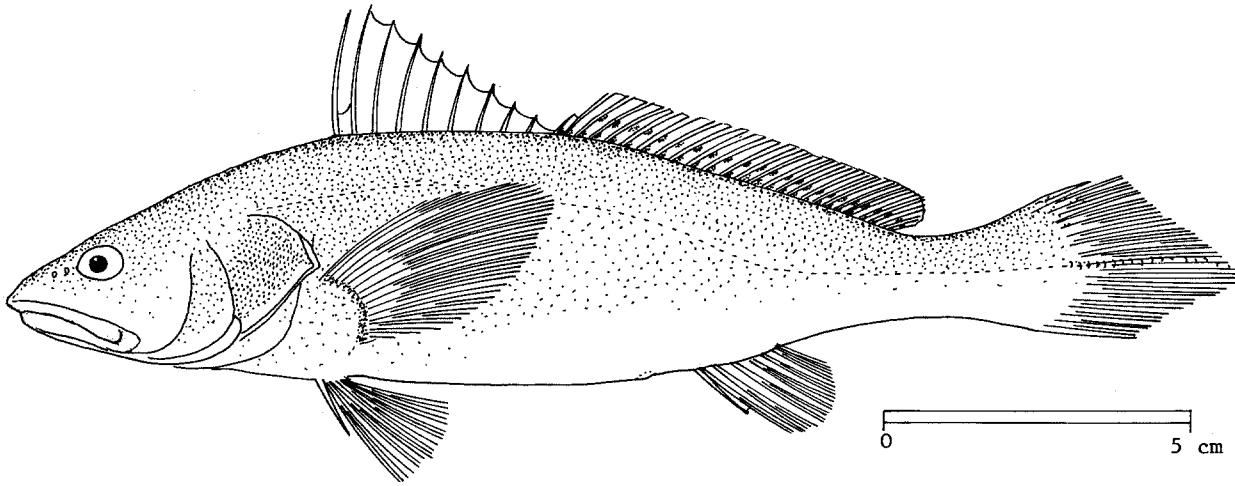
FAO SPECIES IDENTIFICATION SHEETS

FAMIILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Chrysochir aureus (Richardson, 1846)

SYNONYMS STILL IN USE: *Chrysochir aureus:* Trewavas & Yazdani, 1966
Sciaena ophiceps Alcock, 1889
Johnius birtwistlei Fowler, 1933
Pseudosciaena acuta Tang, 1937
Nibea acuta: Lin, 1938; Chu, Lo & Wu, 1963



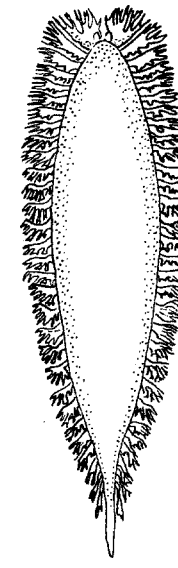
VERNACULAR NAMES:

FAO: En - Reeve's croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A rather slender species with an acute snout and large, nearly horizontal and inferior mouth; upper jaw extending back to below hind margin of eye, overshooting the lower jaw in front; lower jaw more than 1/2 of head length. Teeth differentiated into large and small in both jaws; the large forming outer series in upper jaw, *with 1 or 2 canine teeth (twice the length of enlarged teeth) at tip of jaw;* large teeth in inner series in lower jaw, *but no lower canine teeth.* Lower gill rakers 8 to 9, the first 2 to 5 reduced to short stumps. *Swimbladder carrot-shaped, with 27 to 30 pairs of arborescent appendages,* none entering head. *Dorsal fin with 10 spines, followed by a notch,* second part of the fin with 1 spine and 26 to 27 soft rays; pectoral fin long; *anal fin with 2 spines and 6 to 7 soft rays,* the 2nd spine rather weak, about 1/2 the length of the soft rays; *caudal fin pointed.* Scales cycloid (smooth) on snout and below eye, elsewhere finely ctenoid (slightly rough to touch); *lateral line scales reaching to tip of caudal fin.*



swimbladder
ventral view

Colour: metallic blue above shading to silvery below. Pectoral fins yellow, other fins grey suffused with orange.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Otolithes and *Pterotolithus* species: mouth terminal or lower jaw projecting; canine teeth present also in lower jaw.

Nibea species: 2nd anal fin spine long and strong, and swimbladder with first pair of appendages reaching forward into head.

Other croaker species: canine teeth either absent, weak or equally strong in both jaws (one or two pairs of canine teeth in upper jaw only in *C. aureus).*

SIZE:

Maximum: 31 cm; common: 20 to 25 dm.

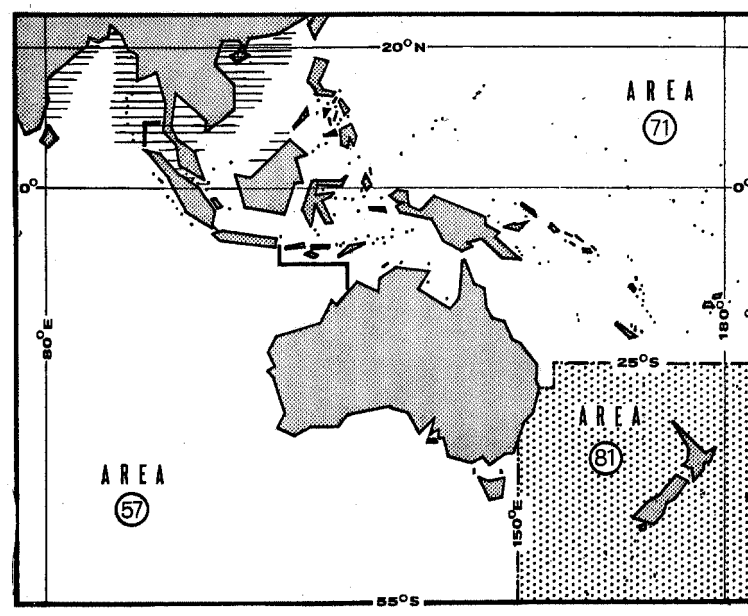
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Bay of Bengal to southern China (Kwaag-tung).

Inhabits shallow coastal waters.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Coll 1

1974

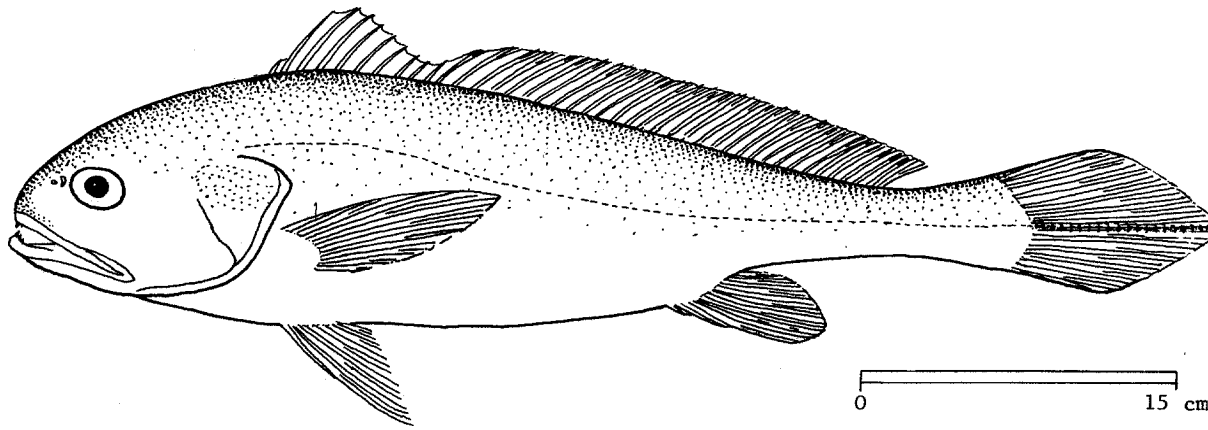
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Collichthys crocea (Richardson, 1846)

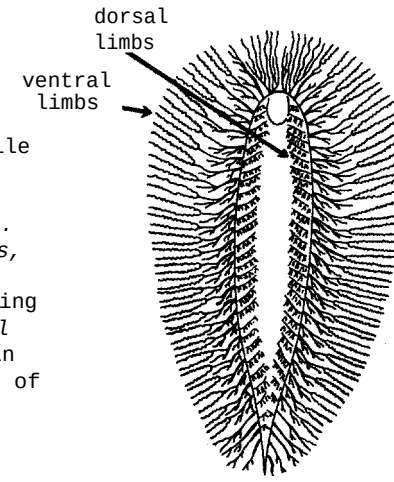
SYNONYMS STILL IN USE: *Pseudosciaena crocea*: C.Y. Chu, 1960; Chu, Lo & Wu, 1963
Pseudosciaena amblyceps: Bleeker, 1863



VERNACULAR NAMES:

FAO: En - Large yellow croaker
Fr -
Sp -

NATIONAL:



swimbladder
dorsal view

DISTINCTIVE CHARACTERS:

A large croaker, with a rather blunt snout and rounded upper profile of head; *mouth large, terminal;* upper jaw reaching back to behind eye, *lower jaw with a toothed knob at tip.* Teeth differentiated into large and small in both jaws, *but no canine teeth. Lower gill rakers 16 to 19. Swimbladder carrot-shaped, with 27 to 32 pairs of arborescent appendages,* the first entering the head, the others with a dorsal limb branching on the dorso-lateral surface of the main bladder and a ventral limb branching around the viscera, with a long ventral fork of two equal prongs. *Dorsal fin with 9 to 10 spines, followed by a low notch,* second part of the fin with no spine and 30 to 35 soft rays; pectoral fin moderate, about 3/4 of head length; *anal fin with 2 spines and 7 to 9 soft rays, the 2nd spine weak; caudal fin pointed.* Scales cycloid (smooth) on head and above pectoral fin, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: *body yellow, darker above and golden sheen below; ventral scales yellow (luminous organs); fins all yellow;* lips sometimes red; lining of body cavity light dusky grey.

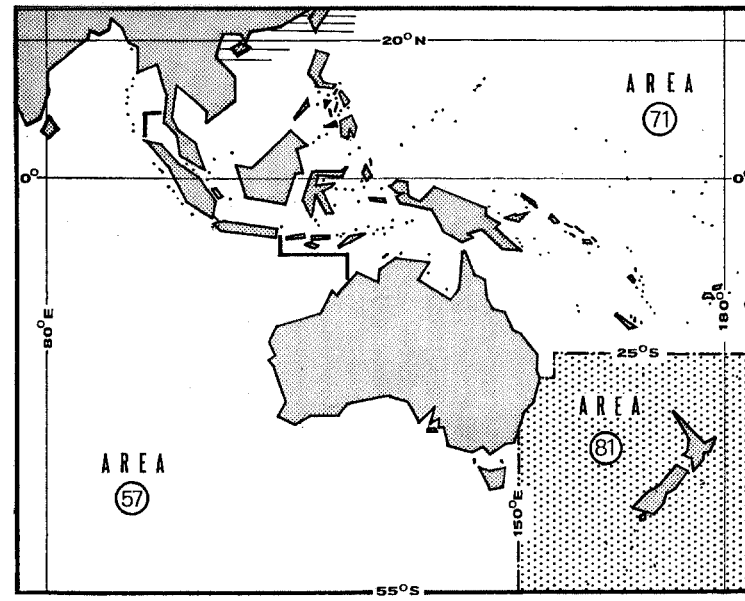
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Other *Collichthys* species with yellow luminous patches on belly: of smaller size and have either fewer soft dorsal fin rays (28 to 29; 30 to 35 in *C. crocea)* or more soft anal fin rays (9 to 10 or 11 to 13; 7 to 9 in *C. crocea).*

All other croakers: lack yellow luminous patches on belly.

SIZE:

Maximum: 80 cm; common: 60 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Chinese coast.

Inhabits coastal waters and estuaries; a seasonal migratory species, spawning in spring and autumn in turbid waters, close to river estuaries.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Shallow waters, along the Chinese coast.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, longlines and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Daysc 1

1974

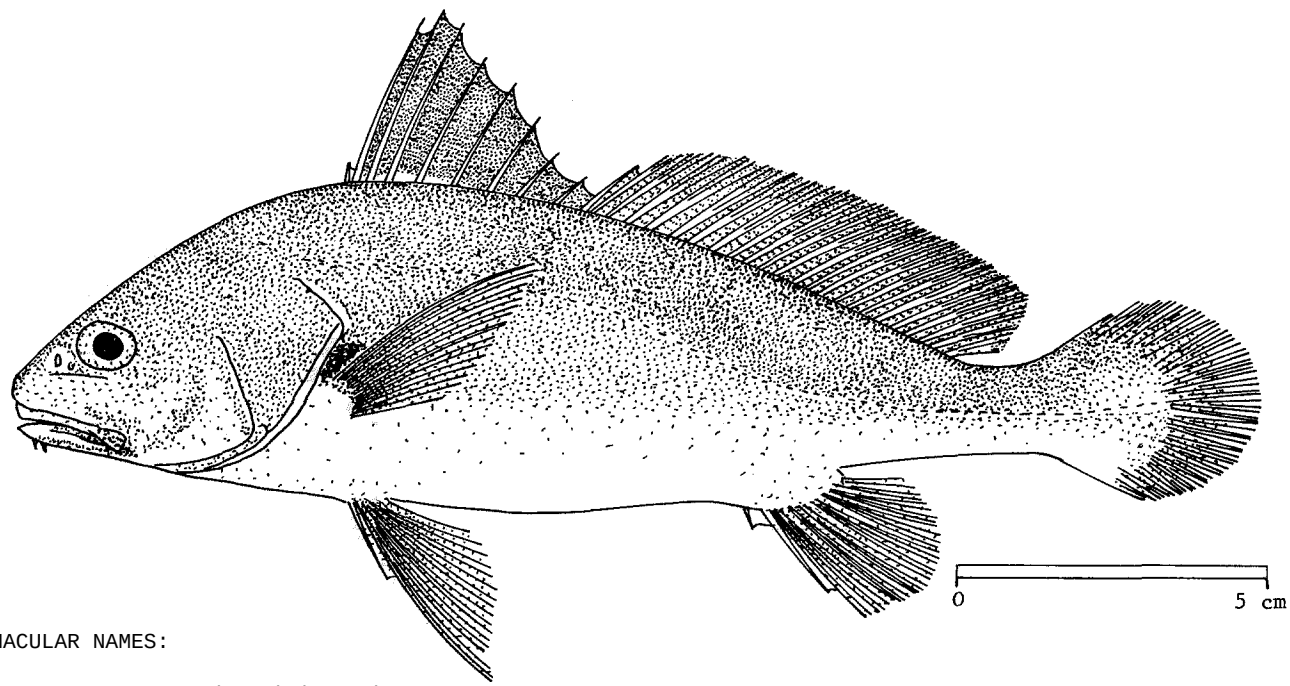
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Daysciaena albida (Cuvier, 1830)

SYNONYMS STILL IN USE: *Sciaena albida:* Day, 1876
Daysciaena albida: Talwar, 1970; Trewavas, 1971
Dendrophysa hooghliensis Sinha & Rao, 1969



VERNACULAR NAMES:

FAO: En - Two-bearded croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A fairly large species, with an oblong body, its depth 3 to 4 times in its length (excluding caudal fin); *snout rounded and projecting only slightly beyond tip of upper jaw; mouth terminal or* only slightly inferior; lower jaw a little less than 1/2 of head length; *a pair of small, tapering barbels on chin.* Teeth differentiated into large and small, especially in upper jaw, the large forming the outer series (inner series in lower jaw); *no canine teeth.* Lower gill rakers 7 to 9, with several toothed plates below. *Swimbladder carrot-shaped, with about 17 pairs of appendages,* one posterior simple, the rest arborescent, the anterior sending some of its twiglets into the head. *Dorsal fin with 9 to 10 spines, followed by a deep notch,* second part of the fin with 1 spine and 23 to 26 soft rays; pectoral fin moderate, about 3/4 of head length; *anal fin with 2 spines, and 7 soft rays, the 2nd spine long and strong,* up to 1/2 of head length; *caudal fin bluntly rhomboid in adults.* Scales cycloid (smooth) on front part of head, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: in preserved fishes, faint darker spots in oblique series along scale rows in some specimens.

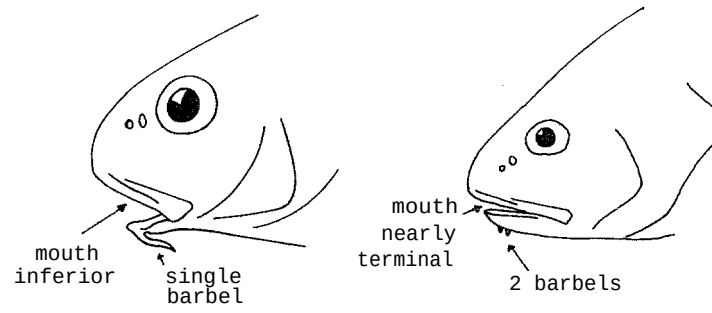
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Dendrophysa russelli: mouth inferior and only a single barbel on chin.

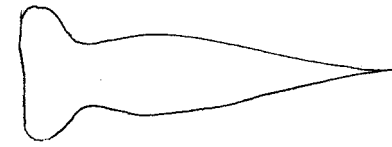
Johnius species with barbel on chin: swimbladder hammer-shaped and 2nd anal spine shorter; only one barbel on chin (2 in *D. albida).*

Umbrina species with barbel on chin: a pore lies at tip of barbel (not at its base); also, swimbladder has no appendages.

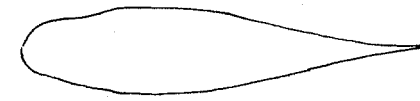
Nibea species: lack barbels on chin.



Dendrophysa russelli *Daysciaena albida*



swimbladder, hammer-shaped (appendages omitted)
Johnius



swimbladder, carrot-shaped (appendages omitted)
Dendrophysa

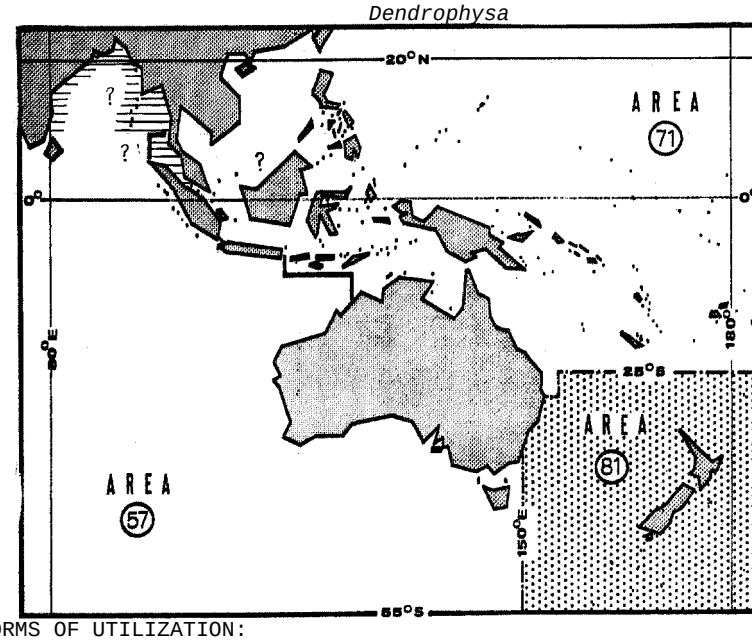
SIZE:

Maximum: 36 cm; common: 20 to 25 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Calcutta and eastern coast of India, possibly eastward to Borneo.

Inhabits shallow coastal waters and estuaries.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Dend 1

1974

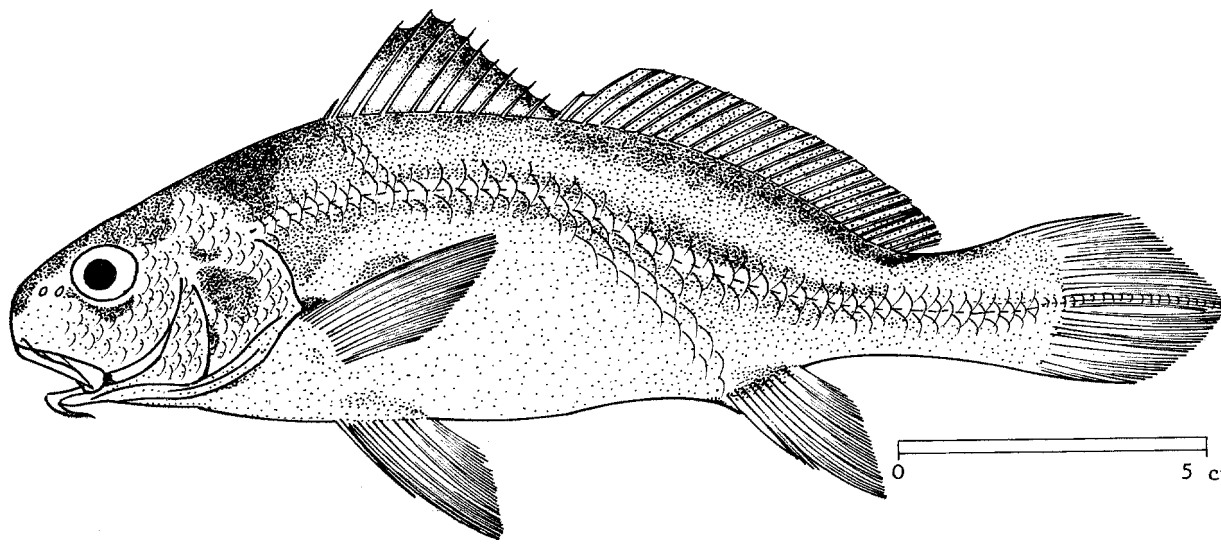
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Dendrophysa russelli Cuvier, 1830

SYNONYMS STILL IN USE: *Umbrina russelli* Cuvier, 1830
Sciaena russelli: Bleeker, 1874; Weber & de Beaufort, 1936; Lin, 1938; Chu, Lo & Wu, 1963



VERNACULAR NAMES:

FAO: En - Goatee croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A fairly small species with an oblong body, its depth 3 to 4 times in standard length; *snout rounded and projecting slightly beyond tip of upper jaw; mouth inferior;* upper jaw less than 1/2 of head length; *a single barbel on chin.* Teeth not well differentiated into large and small, the large ones not widely spaced and forming outer series in upper jaw; *no canine teeth.* Lower gill rakers 8. *Swimbladder carrot-shaped, with about 15 pairs of arborescent appendages,* the first entering the head, the last bifid and parallel to tubular end of bladder. *Dorsal fin with 10 spines, followed by a deep notch,* second part of the fin with 1 spine and 26 to 28 soft rays; pectoral fin moderate, about 3/4 of head length; *anal fin with 2 spines and 7 soft rays,* the 2nd spine strong and a little less than 1/2 of head length; *caudal fin rhomboid.* Scales cycloid (smooth) on front part of head and lower parts of dorsal and anal fins, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

swimbladder
ventral view

Colour: back grey, shading to white on belly; upper edge of spiny part of dorsal fin dark.

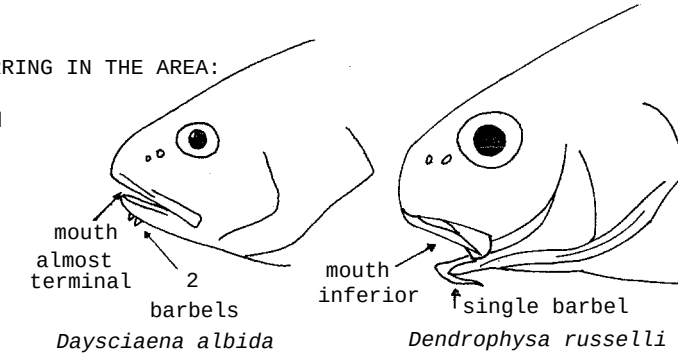
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Daysciaena albida: mouth nearly terminal and a pair of barbels on chin.

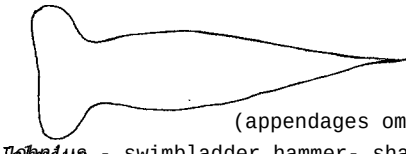
Johnius species with barbel on chin: swim-bladder hammer-shaped and 2nd anal spine shorter.

Umbrina species with barbel on chin: a pore lies at tip of barbel (not at its base); also, swimbladder has no appendages.

Nibea species: lack a barbel on chin.



Daysciaena albida — *Dendrophysa russelli*


(appendages omitted)

Johnius - swimbladder hammer- shaped

SIZE:

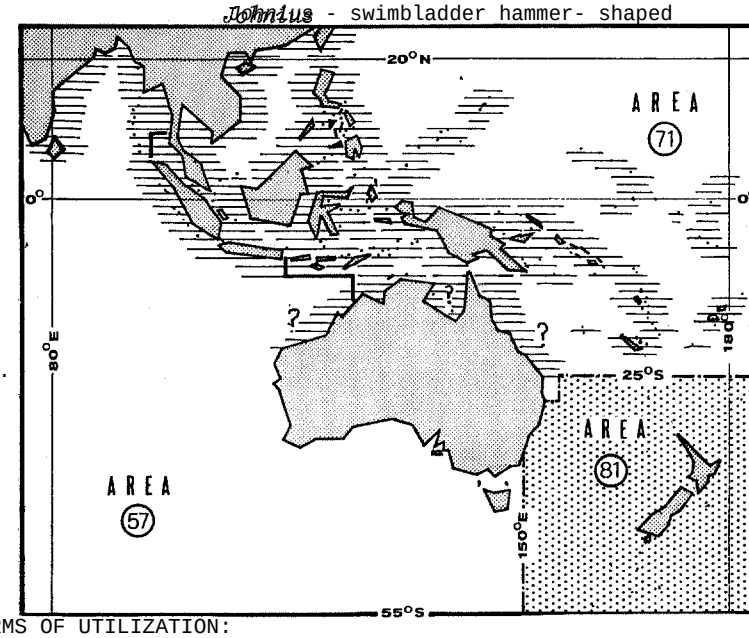
Maximum: 25 cm; common: 15 cm.

GEOGRAPHICAL DISTRIBUTION, AND BEHAVIOUR:

Throughout most of northern part of area, and perhaps to northern Australian coasts.

Found in-coastal waters, down to 40 m.

Feeds on small fishes and invertebrates.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, handlines, gill nets and traps.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN John 1

1974

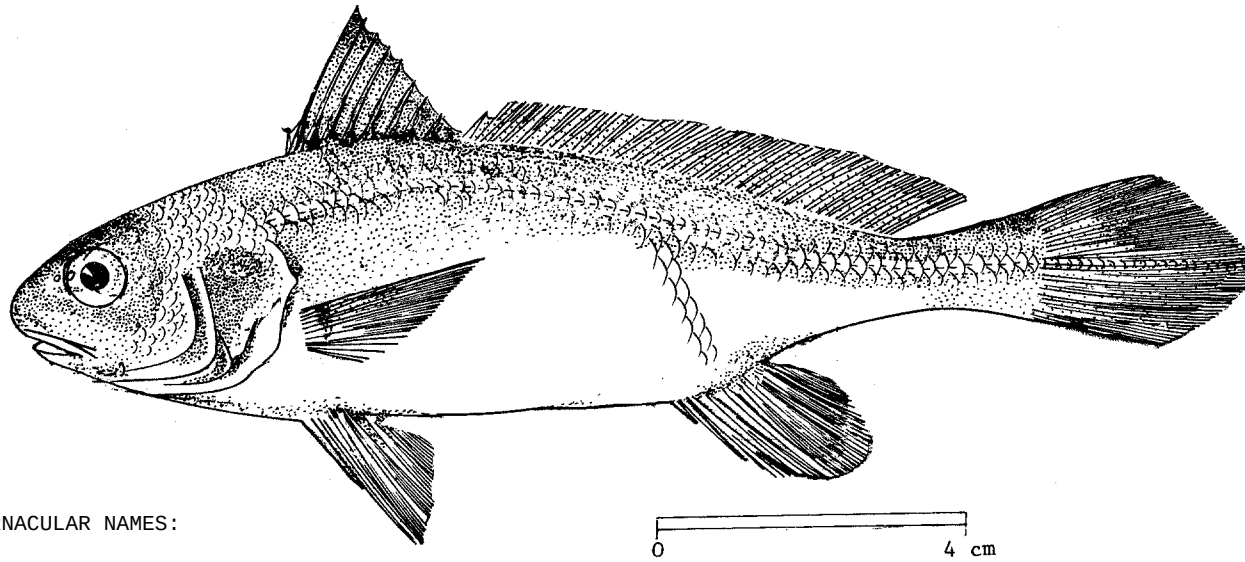
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Johnius belangerii (Cuvier, 1830)

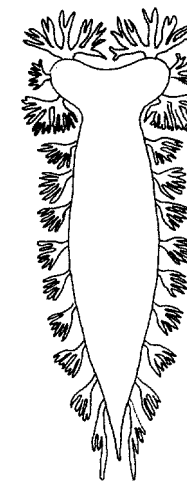
SYNONYMS STILL IN USE:
Sciaena belengeri: Day, 1876
Corvina lobata Cuvier, 1830
Sciaena (Corvina) nasus Steindachner, 1866
Corvina australis Günther, 1880
Johnius fasciatus Chu, Lo & Wu, 1963
Sciaena novaehollandiae: Ogilby, 1918



VERNACULAR NAMES:

FAO: En - Belanger's croaker
Fr -
Sp -

NATIONAL:



swimbladder
ventral view

DISTINCTIVE CHARACTERS:

A medium-sized species with a steeply rounded snout; mouth small, slightly inferior; upper jaw reaching to below pupil; *no barbel on chin.* Teeth differentiated into large and small in upper jaw only, the large forming outer series; *no canine teeth.* Lower gill rakers 8 to 10, short. *Swimbladder hammer-shaped, with 11 to 13 pairs of arborescent appendages,* the first entering the head and sending a palmate branch to the front of the pectoral arch. *Dorsal fin with 9 to 10 spines, followed by a deep notch,* second part of the fin with 1 spine and 27 to 31 soft rays; pectoral fin moderate, about 3/4 of head length; *anal fin with 2 spines and 7 to* 8 soft rays, the 2nd spine rather strong and about 1/3 of head length; *caudal fin rhomboid.* Scales cycloid (smooth) on snout and lower parts of head, elsewhere strongly ctenoid (very rough to touch); *lateral line scales reaching to tip of caudal fin.*

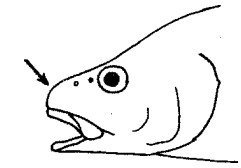
Colour: darkly pigmented, but pigment sometimes irregular, sometimes concentrated into short dark bars along back or on dorsal fin; *spinous part of dorsal fin black,* lower fins also black in many cases; a dark blotch shows through gill cover.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Johnius dussumieri: barbel present on chin.

Johnius coitor: snout prominent and swollen; also, more gill rakers (10 to 13; 8 to 10 in *J. belangerii).*

Johnius dussumieri



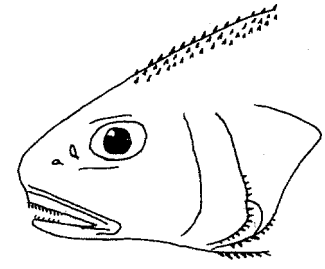
Johnius coitor

Johnius carutta, J. trachycephatus: cycloid scales on body (or weakly ctenoid on belly and near tail in *J. carutta);* also, lower gill rakers more in *J. trachicephalus* (12 to 13).

Johnius hypostomus: more soft dorsal fin rays (32 to 34; 27 to 31 in *J. belangerii).*

Johnieops species: teeth enlarged in lower as well as in upper jaw.

Aspericorvina jubata: scales extremely rough and denticulate on head, back and belly; also, gill cover bones with denticulations.



Aspericorvina

Johnius belangerii

SIZE:

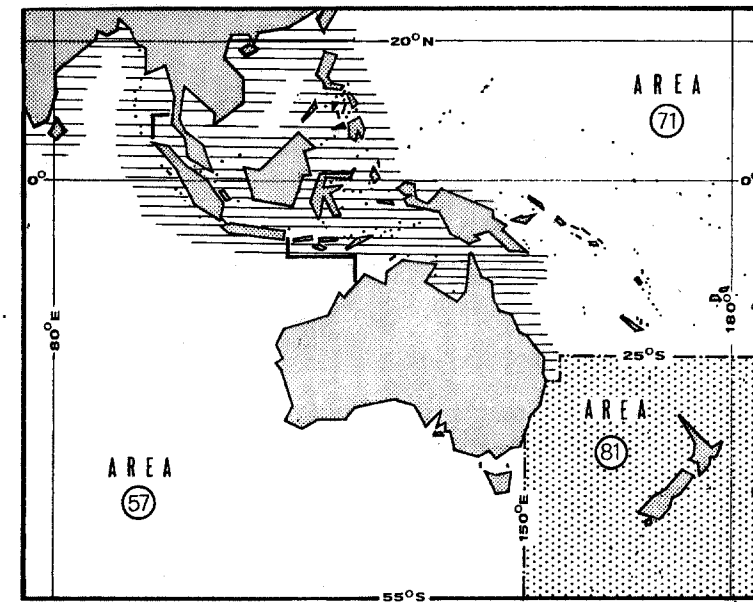
Maximum: 28 cm; common: 15 to 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area and southward to New South Wales (Australia).

Inhabits coastal waters, down to 40 m.

Feeds on invertebrates.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, traps and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN John 2

1974

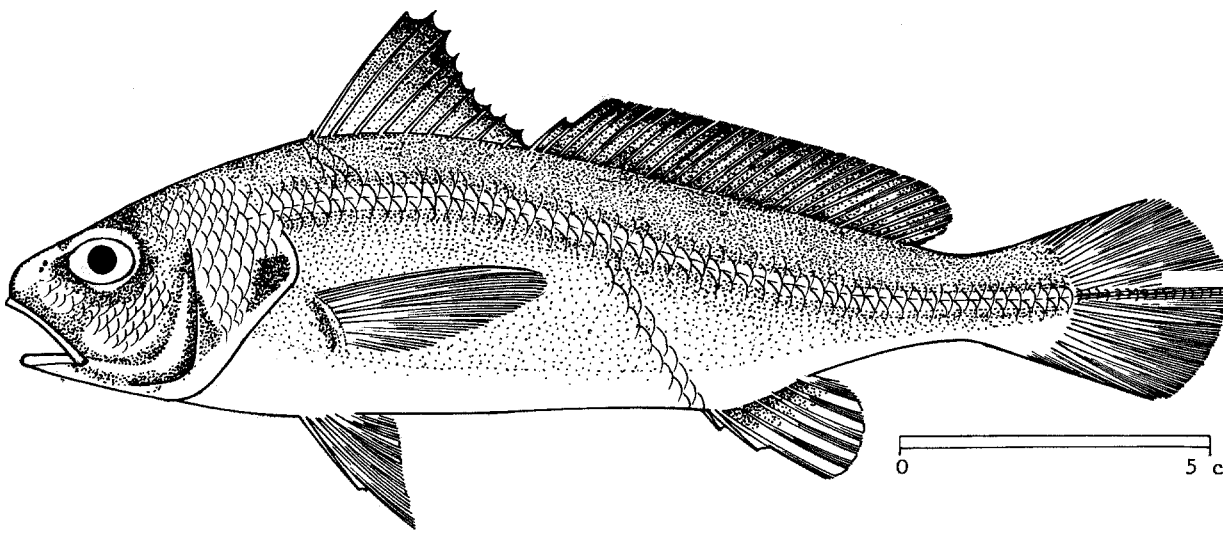
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Johnius carutta Bloch, 1793

SYNONYMS STILL IN USE: *Sciaena carutta:* Day, 1876



VERNACULAR NAMES

FAO: En - Karut croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A small species with a rounded snout and a small, low-set, nearly horizontal and inferior mouth; lower jaw about 1/3 of head length; *no barbel on chin.* Teeth differentiated into large and small in upper jaw only, the large forming outer series; *no canine teeth.* Lower gill rakers 8 to 9. *Swim-bladder hammer-shaped, with about 16 pairs of arborescent appendages,* the first entering head and sending a palmate branch to the front of pectoral arch. *Dorsal fin with 9 to 10 spines, followed by a deep notch,* second part of the fin with 1 spine and 25 to 28 soft rays; pectoral fin moderate, about 3/4 of head length; *anal fin with 2 spines and 7 soft rays,* the 2nd spine weak, about 1/4 of head length; *caudal fin rhomboid.* Scales of head and upper part of body cycloid (smooth), elsewhere (especially lower part of body and toward tail) some scales weakly ctenoid (visible with lens); scales present also on soft parts of dorsal and anal fins; *lateral line scales reaching to tip of caudal fin.*

Colour: upper 2/3 of body dark grey *with a yellow or white streak along lateral line.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Johnius dussumieri: barbel present on chin.

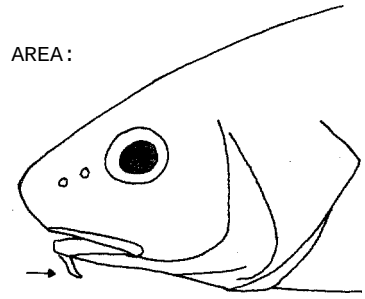
Johnius trachycephalus: snout prominent and more gill rakers (12 to 13; 8 to 9 in *J. carutta);* also, no white or yellow lateral streak on flanks.

Johnius belangerii, J. coitor: scales ctenoid (rough to touch) on whole of body; no white or yellow lateral streak on flanks; also, *J. coitor* has more gill rakers (10 to 13).

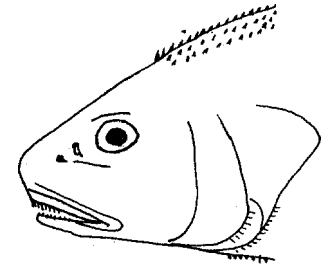
Johnius hypostomus: more soft dorsal fin rays (32 to 34); 25 to 28 in *J. carutta).*

Johnieops species: teeth enlarged in lower as well as in upper jaw.

Aspericorvina jubata: scales extremely rough and denticulate on head, back and belly; also, gill cover bones with denticulations.



Johnius dussumieri



Aspericorvina, jubata

SIZE:

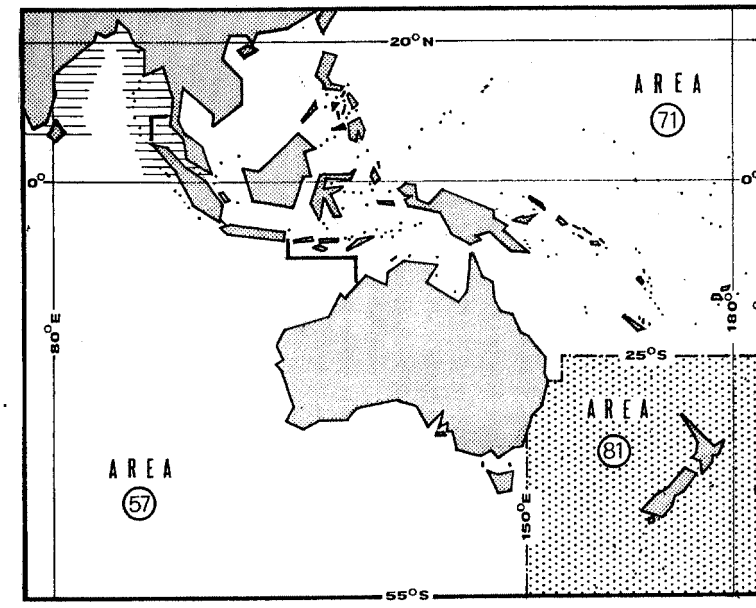
Maximum: 30 cm; common: 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Western coast of Malay Peninsula and Bay of Bengal; also westward to western coast of India.

Inhabits inshore waters down to 40 m.

Feeds on small fishes and invertebrates.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, traps and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN John 3

1974

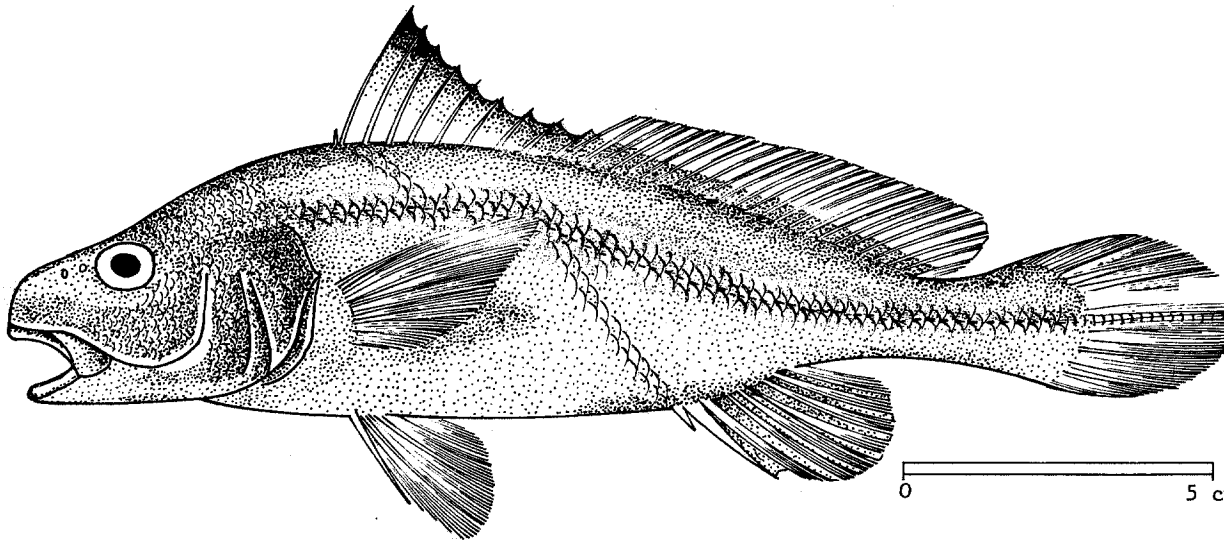
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Johnius coitor (Ham. Buch., 1822)

SYNONYMS STILL IN USE: *Sciaena coitor:* Day, 1876
Wak coitor: Lin, 1938; Chu, Lo & Wu, 1963



VERNACULAR NAMES:

FAO: En - Coitor croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A small species with a swollen snout projecting well beyond lower, jaw; mouth inferior; upper jaw reaching to below middle of eye; *no barbel on chin.* Teeth differentiated into large and small in upper jaw, not, or but little, in lower jaw, the large forming outer series in upper jaw; *no canine teeth.* Lower gill rakers 10 to 13, with one or two minute stumps occasionally in front. *Swimbladder hammer-shaped, with 11 to 13 pairs of arborescent appendages,* the first entering head. *Dorsal fin with 10 spines, followed by a low notch,* second part of the fin with 1 spine and 26 to 28 soft rays; pectoral fin moderate, about 3/4 of head length; *anal fin with 2 spines and 7 to 8 soft rays, the 2nd spine strong and up to 1/2 of head length; caudal fin rhomboid* or rounded at tip. Scales cycloid (smooth) on operculum and lower parts of head, elsewhere ctenoid (rough to touch); *Lateral line scales reaching to tip of caudal fin.*

Colour: light golden yellow with a light purple/blue sheen; spinous part of dorsal fin with dusky to black border; soft part of dorsal, anal and caudal fins with a dull green/grey border.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

J. dussumieri: barbel present on chin.

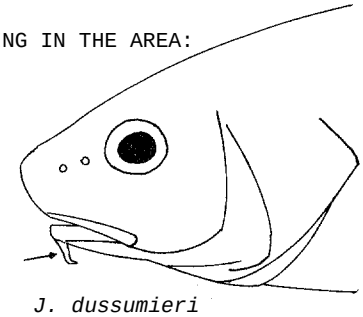
Johnius belangerii: snout steep and rounded, not swollen; also, fewer lower gill rakers (8 to 10; 10 to 13 in *J. coitor).*

Johnius carutta, J. trachycephalus: cycloid (smooth) scales on body (weakly ctenoid (rough) on belly and near tail in *J. carutta);* lower gill rakers only 8 to 9.

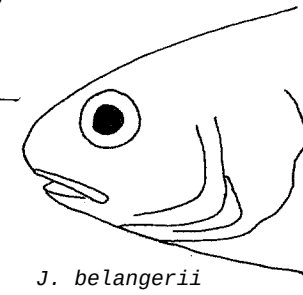
Johnius hypostomus: more soft dorsal fin rays (32 to 34; 26 to 28 in *J. coitor).*

Johnieops species: teeth enlarged in lower as well as in upper jaw.

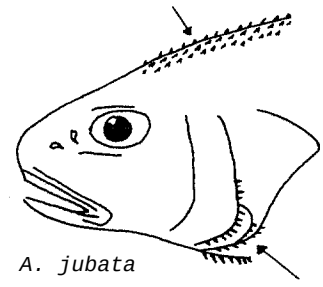
Aspericorvina jubata: scales extremely rough and denticulate on head, back and belly; also, gill cover bones with denticulations.



J. dussumieri



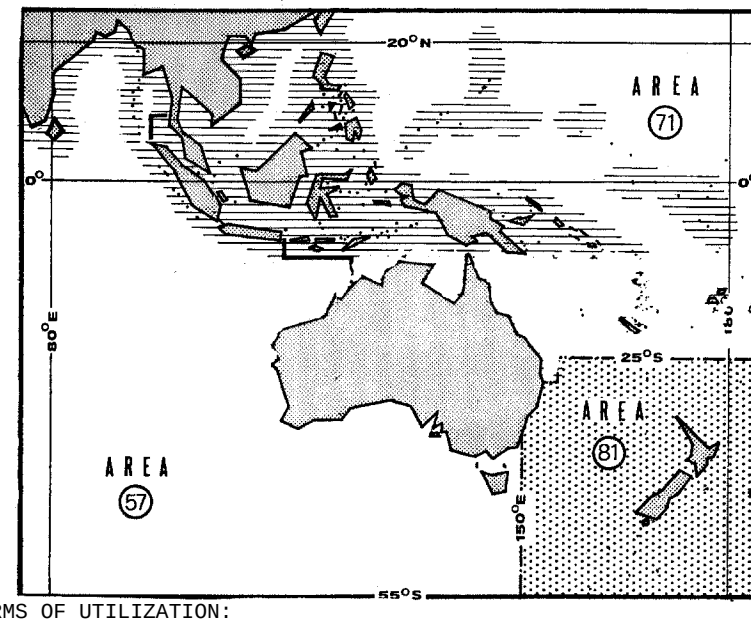
J. belangerii



A. jubata

SIZE:

Maximum: 16 cm; common: 13 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area.

Inhabits inshore and coastal waters, down to 40 m; also estuaries.

Feeds on small fishes and invertebrates.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons;
Malaysia: 4 500 tons)

Caught with bottom trawls, traps and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN John 4

1974

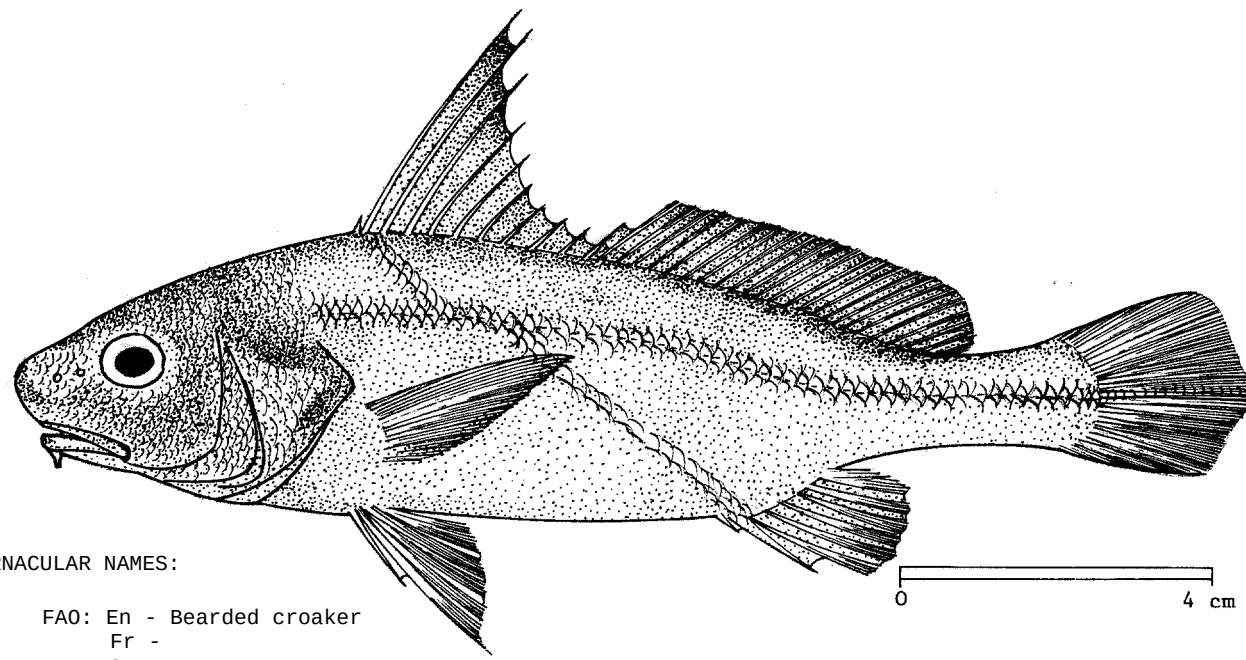
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Johnius dussumieri (Valenciennes, 1833)

SYNONYMS STILL IN USE:
Umbrina dussumieri Valenciennes, 1833
Sciaena dussumieri: Bleeker, 1874; Fowler, 1933; Weber & de Beaufort, 1936; Lin, 1938
Dendrophysa dussumieri: Trewavas, 1964
Johnius amblycephalus: Chu, Lo & Wu, 1963
Umbrina fuscolineata: von Bonde, 1923



VERNACULAR NAMES:

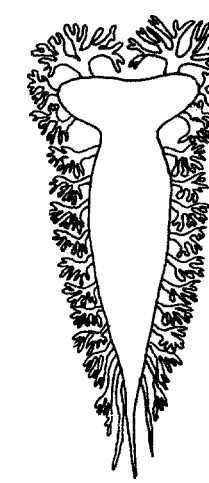
FAO: En - Bearded croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A medium-sized species with a rounded, projecting snout and an inferior mouth; upper jaw reaching to below hind part of pupil, lower jaw less than 1/2 of head length; a blunt barbel on chin. Teeth differentiated into large and small in upper jaw only, the large forming outer series; *no canine teeth.* Lower gill. rakers 6 to 9, the anterior minute. *Swimbladder hammer-shaped, with 14 to 15 pairs of appendages,* all except one or two posterior arborescent, the first branching in the head. *Dorsal fin with 10 spines, followed by a deep notch,* second part of the fin with 1 spine and 24 to 26 soft rays; pectoral fin moderate, about 3/4 of head length; *anal fin with 2 spines and 7 soft rays,* the 2nd spine weak; *caudal fin rhomboid. Scales on body cycloid (smooth); lateral line scales reaching to tip of caudal fin.*

Colour: upper part of the rather high spinous dorsal fin black; no other distinctive markings.



swimbladder
ventral view

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Johnius macropterus, J. mannarensis: ctenoid (rough to touch) scales present on body, more lower gill rakers in *J. macropterus* (10 to 12; 6 to 9 in *J. dussumieri)* and more soft dorsal fin rays (30 to 32 or 27; 24 to 26 in *J. dussumieri).*

Other *Johnius* species: lack a barbel on chin.

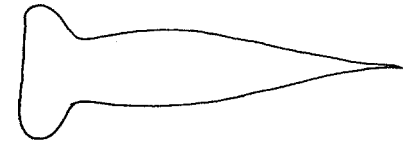
Johnieops species: teeth enlarged in lower as well as in upper jaw.

Dendrophysa russelli, D. albida: also has a barbel on chin, but the swimbladder is carrot-shaped (hammer-shaped in *J. dussumieri);* also, more soft dorsal fin rays in *D. russelli* (27 to 28).

Daysciaena albida: two barbels on chin; also, swimbladder carrot-shaped.

Umbrina sinuata: a pore lies at tip of barbel; also, no appendages on swimbladder.

swimbladder (appendages omitted)
Dendrophysa



swimbladder (appendages omitted)
Johnius

SIZE:

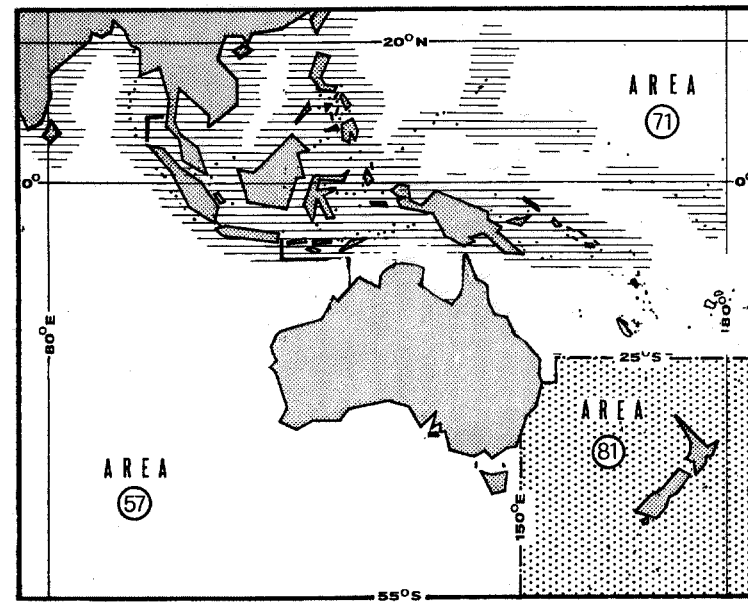
Maximum: 18 cm; common: 15 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Abundant throughout northern part of area; also, westward to East Africa.

Inhabits coastal waters, down to 40 m.

Feeds on small fishes and invertebrates.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch for unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, traps and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN John 5

1974

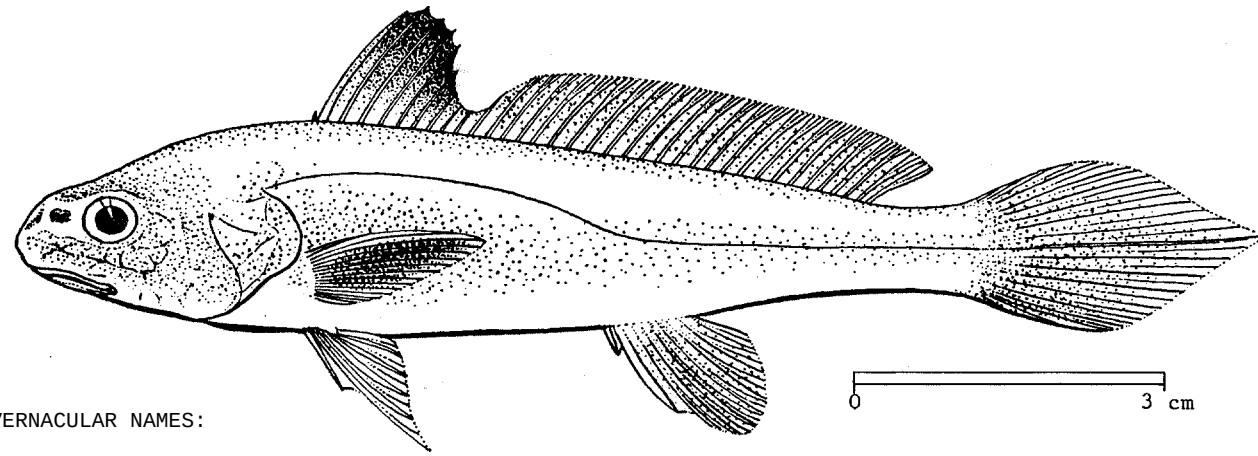
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Johnius trachycephalus (Bleeker, 1850)

SYNONYMS STILL IN USE: *Johnius osseus* (but not of Day): Fowler, 1933, 1937
Otolithoides siamensis Fowler, 1934



VERNACULAR NAMES:

FAO: En - Leaftail croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

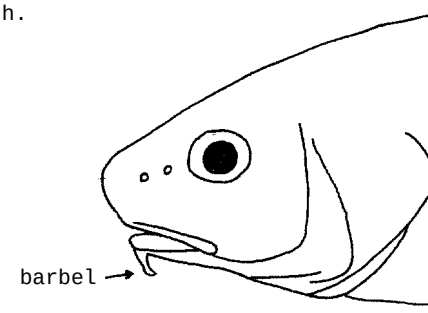
A small species with a prominent, swollen snout projecting beyond the upper jaw; mouth inferior; upper jaw reaching to below hind part of eye; *no barbel on chin*. Teeth differentiated into large and small in upper jaw, not, or but little, in lower jaw, the large forming outer series in upper jaw; *no canine teeth.* Lower gill rakers 12 to 13, the first two or three often mere stumps, those near joint of arch long and slender. *Swimbladder hammer-shaped, with about 11 pairs of much branched arborescent appendages,* the first entering the head and sending a palmate branch to the front of the pectoral arch. *Dorsal fin with 8 to 9 spines, followed by a notch,* second part of the fin with 1 spine and 24 to 27 soft rays; pectoral fin moderate, about 3/4 of head length; *anal fin with 2 spines and 6 to 7 soft rays, the 2nd spine strong and about* 1/3 *of head length; caudal fin rhomboid. Scales on head and body cycloid (smooth); lateral line scales reaching to tip of caudal fin.*

Colour: back grey, flanks lighter-, belly silver; fins yellowish.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Johnius dussumieri: barbel present on chin.

Johnius coitor: ctenoid (rough to touch) scales present on body, and 2nd anal spine longer and stroneer.



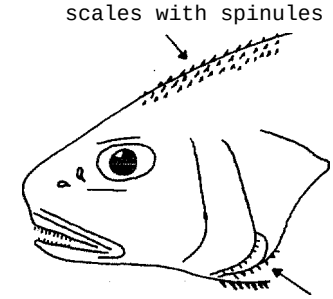
J. dussumieri

Johnius belangerii, J. carutta: fewer lower gill rakers (8 to 10; 12 to 13 in *J. trachycephalus*) and a blunt or short snout; also, *J. carutta* has a yellow or white lateral streak along flanks, and *J. belangerii* has strongly ctenoid scales on body (very rough to touch).

Johnius hypostomus: more soft dorsal fin rays (32 to 34; 24 to 27 in *J. trachycephalus*).

Johnieops species: teeth enlarged in lower as well as in upper jaw.

Aspericorvina jubata: scales extremely rough and denticulate on head, back and belly; also, gill cover bones with denticulations.



A. jubata

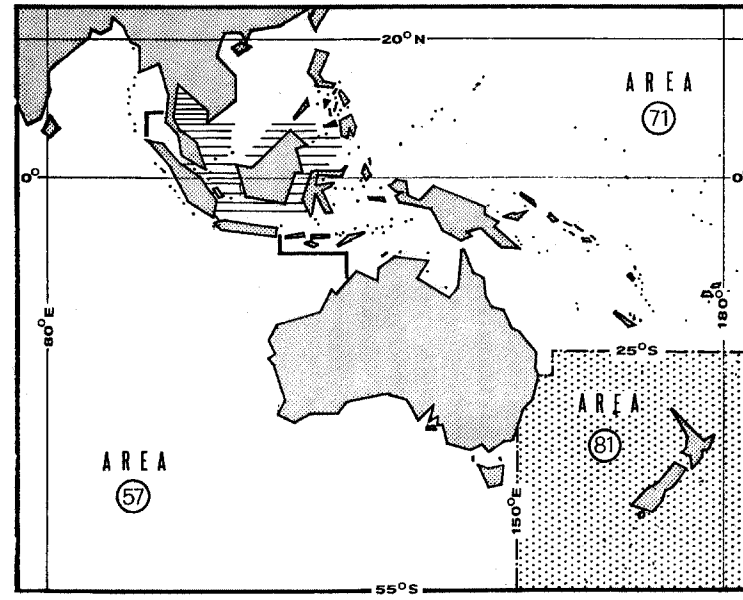
SIZE:

Maximum: 13 cm; common: about 10 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Sumatra, Borneo, Singapore, Thailand.

Inhabits coastal waters, entering rivers.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Johps 1
1974

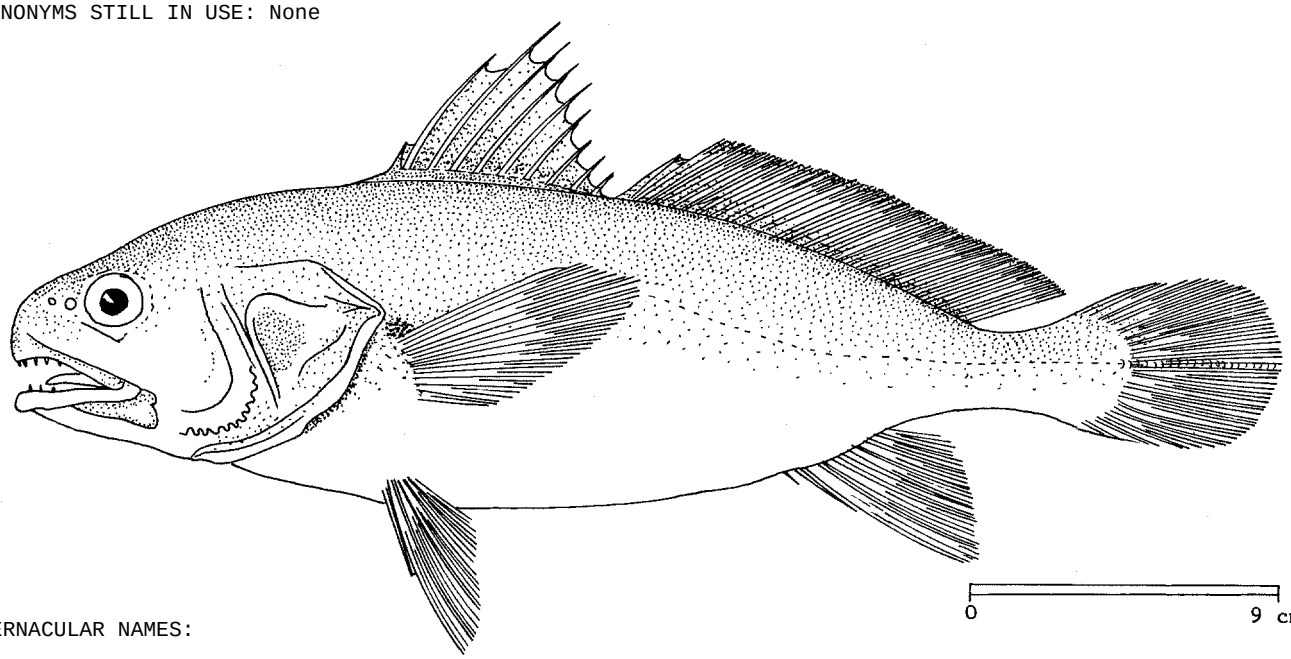
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Johnieops dussumieri (Cuvier, 1830)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

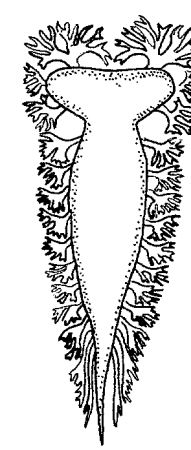
FAO: En - Dussumier's croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A fairly small species, with a blunt snout projecting a little beyond upper jaw; mouth small and a little inferior; upper jaw short, reaching to below eye centre, lower jaw less than 1/2 of head length. Teeth in narrow bands, moderately differentiated into large and small; the large forming outer series in upper jaw, inner series in lower; *no canine teeth.* Lower gill rakers 12 to 16, short, curved and coarsely toothed. *Swimbladder hammer-shaped, with several pairs of arborescent appendages,* the first branching in head and sending a palmate branch to the front of pectoral arch. *Dorsal fin with 9 to 10 spines, followed by a deep notch,* second part of the fin with 1 spine and 28 to 30 soft rays; pectoral fin moderate, about 3/4 of head length; *anal fin with 2 spines and 7 to 8 soft rays,* the 2nd spine moderate; *caudal fin rhomboid.* Scales cycloid (smooth) on lower part of head, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: dusky brown on back, lighter below; outer part of dorsal fin black and a black spot at base of pectoral fin.



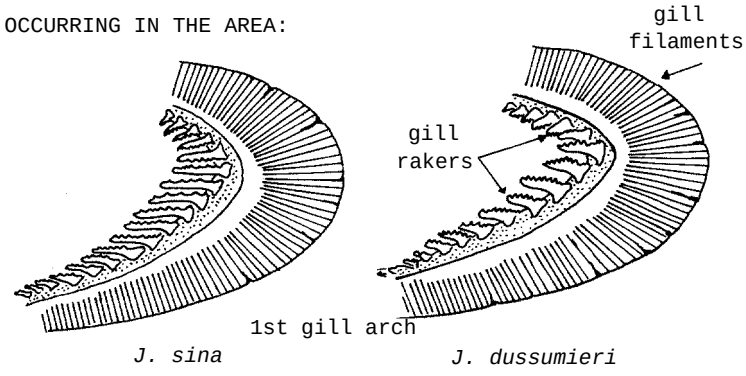
swimbladder
Johnieops dussumieri

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Johnieops sina: gill rakers longer, thinner and straighter; also; teeth rather less enlarged.

Johnieops vogleri: fewer lower gill rakers (9 to 12; 12 to 16 in *J. dussumieri*) and enlarged teeth longer.

Johnius species: lack enlarged teeth in lower jaw.



SIZE:

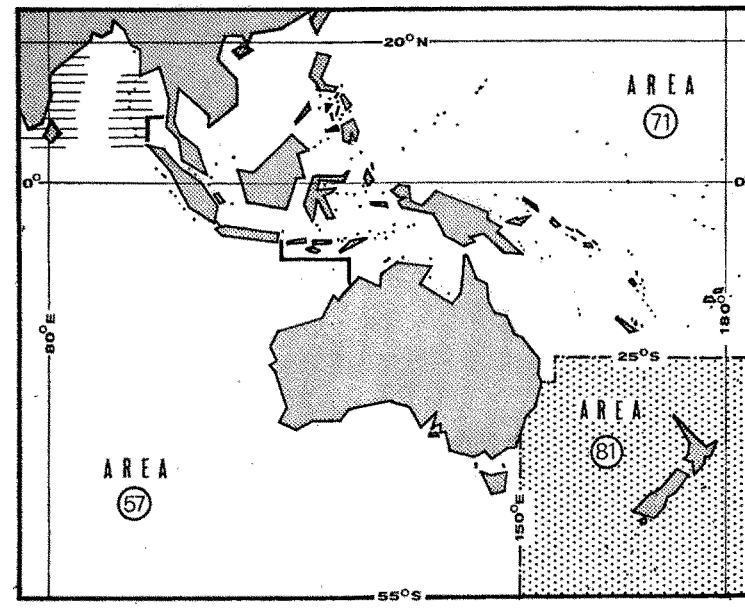
Maximum: 80 cm; common: 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Eastern coast of India and Andaman Sea (other records doubtful).

Found in inshore and coastal waters, down to 40 m.

Feeds on invertebrates and small fishes.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 90b tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Johps 2

1974

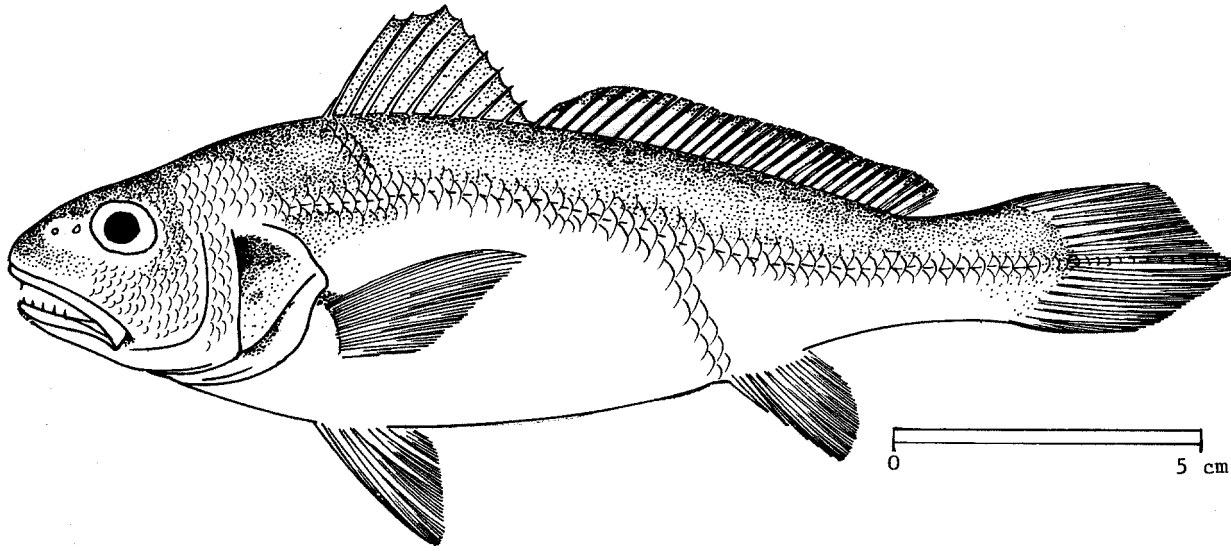
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Johnieops sina (Cuvier, 1830)

SYNONYMS STILL IN USE: *Wak sing:* Chu, Lo & Wu, 1963



VERNACULAR NAMES

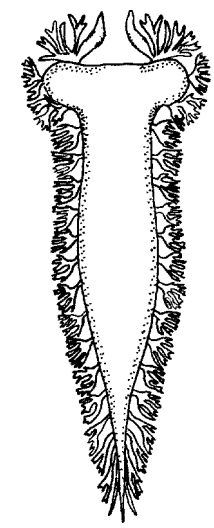
FAO: En - Sin croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A fairly small species with the snout rounded but not projecting, not greatly swollen; *mouth large, a little inferior; upper jaw extending to below hind margin of pupil* and about 2/5 of head length, lower jaw not quite 1/2 of head length. Teeth in very narrow bands moderately differentiated into large and small; the large forming outer series in upper jaw, inner posterior series in lower jaw; *no canine teeth.* Lower gill rakers 13 to 15, slender and finely toothed. *Swimbladder hammer-shaped, with 12 to 17 pairs of arborescent appendages,* the first branching in head and sending a palmate branch to the front of pectoral arch. *Dorsal fin with 9 to 10 spines, followed by a deep notch,* second part of the fin with 1 spine and 27 to 29 soft rays; pectoral fin moderate, about 3/4 of head length; *anal fin with 2 spines and 7 soft rays,* the 2nd spine moderate, about 1/3 of head length; *caudal fin rhomboid.* Scales cycloid (smooth) on head, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: no distinctive colouration.

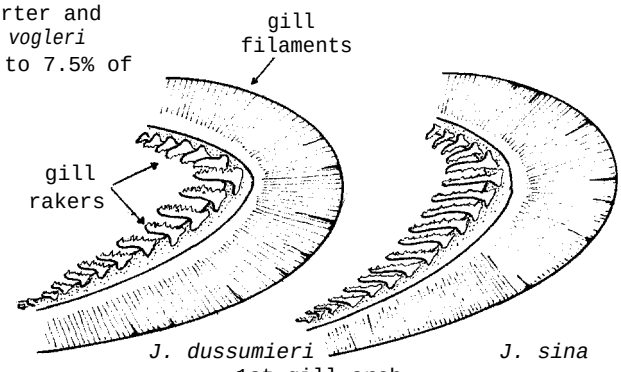


swimbladder
ventral view

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Johnieops dussumieri and *J.vogleri:* gill rakers shorter and stouter; also, teeth more enlarged; gill rakers fewer in *J. vogleri* (9 to 12; 13 in *J. sina*) and 2nd anal spine shorter (6 to 7.5% of standard length; 9.5 to 127 in *J. sina*).

Johnius species: lack enlarged teeth in lower jaw.



SIZE:

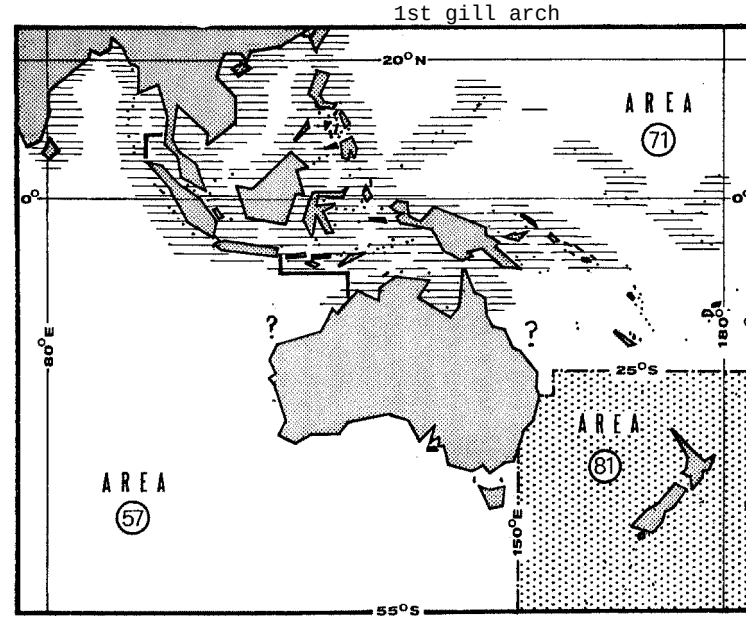
Maximum: 20 cm; common: 15 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area, perhaps to northern coasts of Australia.

Found in inshore waters, down to 40 m; lives off sea-bed.

Feeds on small crustaceans.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, traps and handlines.

Marketed fresh and dried-salted; swimbladder dried.

SCIAEN Johps 3

1974

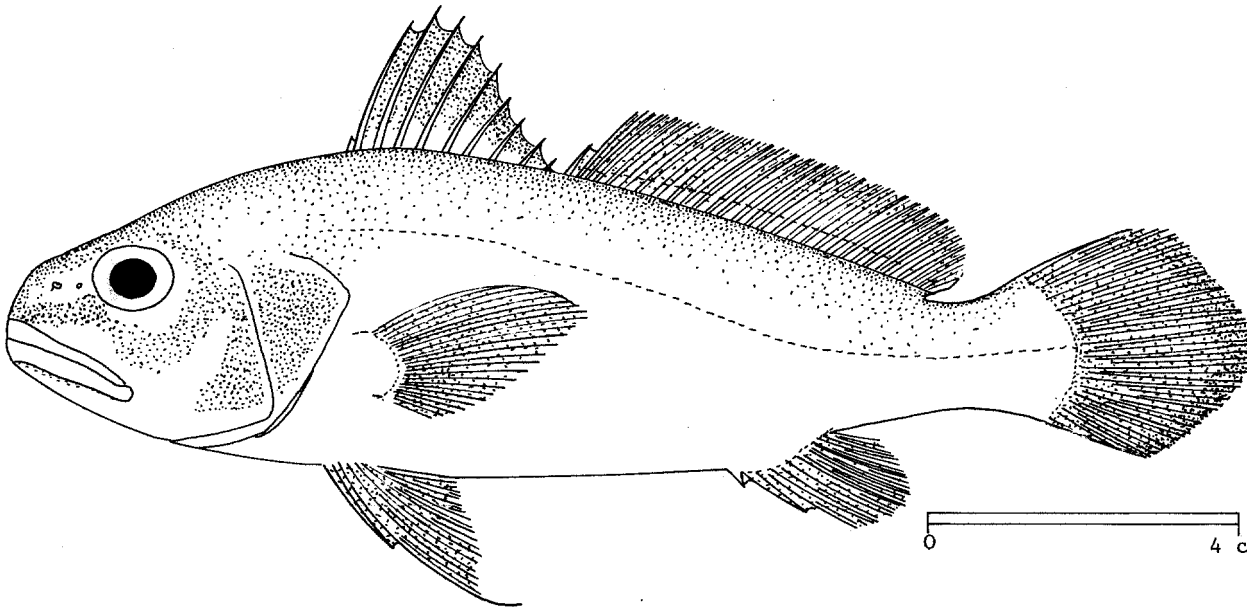
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Johnieops vogteri (Bleeker, 1853)

SYNONYMS STILL IN USE: Sciaena sina: Day, 1876 (in part)
? Sciaena siamensis Hora, 1924
? Wak tingi Tang, 1937



VERNACULAR NAMES:

FAO: En - Sharp-toothed hammer croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A fairly small species with snout rounded but not projecting, not greatly swollen; eye large; *mouth large,* a little inferior, *with upper jaw long, extending to below hind margin of pupil* and almost 1/2 of head length, lower jaw about 1/2 of head length. Teeth in narrow bands, well differentiated into large and small; the large forming outer series in upper jaw, inner series in lower; *no canine teeth.* Lower gill rakers 9 to 12, short, curved and coarsely toothed in adult. Swim-bladder *hammer-shaped, with 14 to 16 pairs of arborescent appendages,* the first entering head and sending a palmate branch to front of pectoral arch. *Dorsal fin with 10 spines, followed by a deep notch,* second part of the fin with 1 spine and 27 to 30 soft rays; pectoral fin moderate, about 3/4 of head length; *anal fin with 2 spines and 7 soft rays,* the 2nd spine short; *caudal fin rhomboid,* scales cycloid (smooth) on head, elsewhere ctenoid (rough to touch); scales covering lower parts of both dorsal and anal fins; *lateral line scales reaching to tip of caudal fin.*

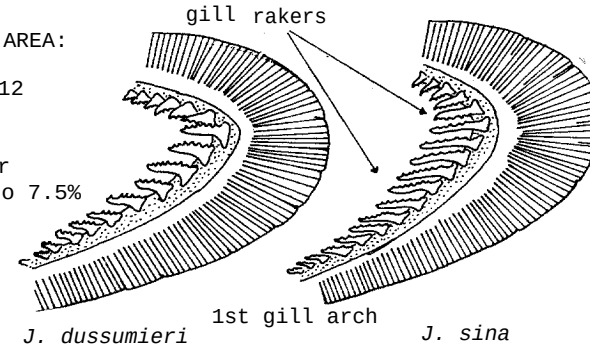
Colour: no distinctive colouration.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Johnieops dussumieri: more gill rakers (12 to 16; 9 to 12 in *J. vogleri*).

Johnieops sina: gill rakers longer, thinner and straighter and 2nd anal spine longer (9.5 to 12% of standard length; 6 to 7.5% in *J. vogleri*); also, jaw teeth less enlarged.

Johnius species: lack enlarged teeth in lower jaw.



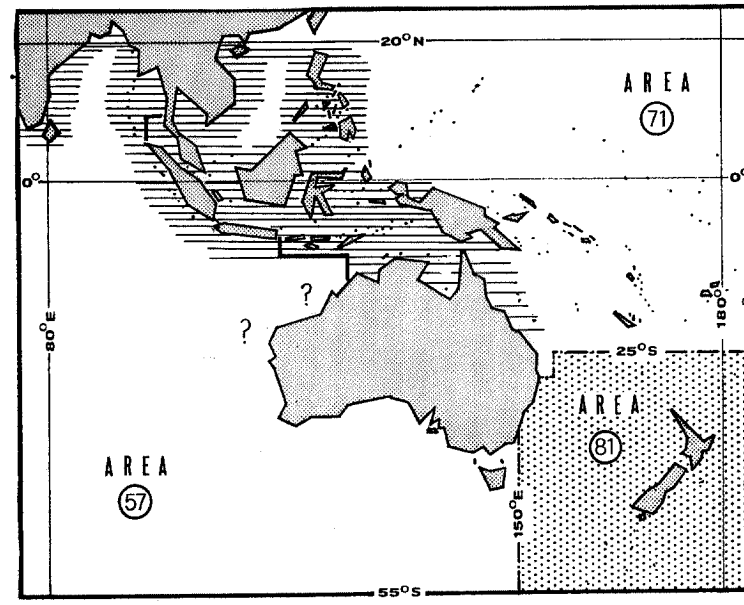
SIZE:

Maximum: 22 cm; common: 15 to 20 cm

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area and perhaps to northern coasts of Australia; replaced in Chinese waters by the very similar *Johnieops tingi*.

Inhabits shallow coastal waters.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons;
Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Kath 1

1974

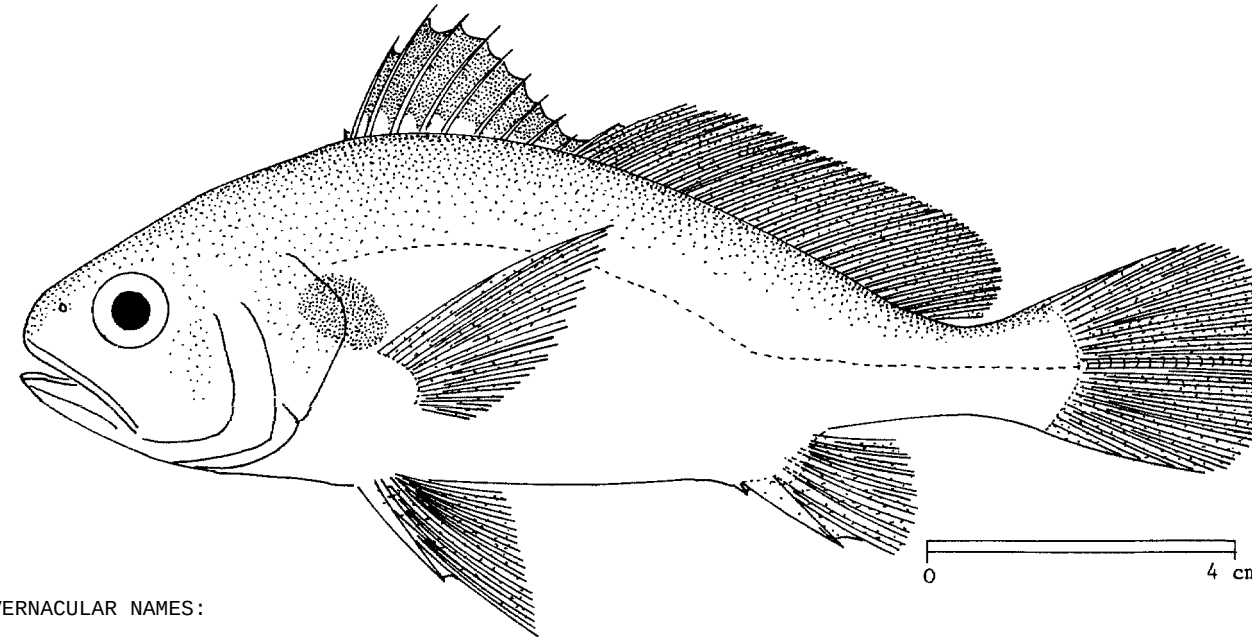
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Kathala axillaris (Cuvier, 1830)

SYNONYMS STILL IN USE: *Corvina axillaris* Cuvier, 1830
Sciaena axillaris: Day, 1876
Pseudosciaena axillaris: Weber & de Beaufort, 1936
Wak axillaris: Chu, Lo & Wu, 1963
Dhoma axillaris: Talwar & Joglekar, 1970



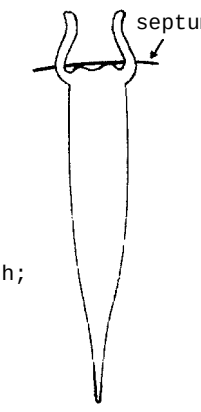
VERNACULAR NAMES:

FAO: En - Kathala croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A medium-sized species with a fairly deep body, its depth about 3 times in standard length; snout rounded, *mouth terminal and oblique.* Teeth differentiated into large and small in both jaws; the large forming outer series in upper jaw, inner series in lower; *no canine teeth. Lower gill rakers 20 to 23, slender and finely denticulate. Swimbladder carrot-shaped, with only one pair of appendages* (simple, short, curved tubes) arising from the broad anterior end and passing through the transverse septum into the head. *Dorsal fin with 9 to 10 spines, followed by a deep notch,* second part of the fin with 1 spine and 26 to 29 soft rays; pectoral fin moderate, about 3/4 of head length; *anal fin with 2 spines and 7 soft rays;* caudal fin bluntly truncate. Scales cycloid (smooth) on head and nape, elsewhere ctenoid (rough to touch); scales present on anterior half of soft part of dorsal fin; *lateral line scales reaching to tip of caudal fin.*



swimbladder

Colour: grey/green on back, flanks yellow/silver; a black mark at pectoral fin axil; spinous part of dorsal fin black.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

All other Indo-Pacific croakers have fewer gill rakers (20 to 23 in K. axillaris) and a dissimilar form of swimbladder; also, many have a rhomboid and not a roundly truncate caudal fin.

SIZE:

Maximum: 27 cm; common: 20 cm.

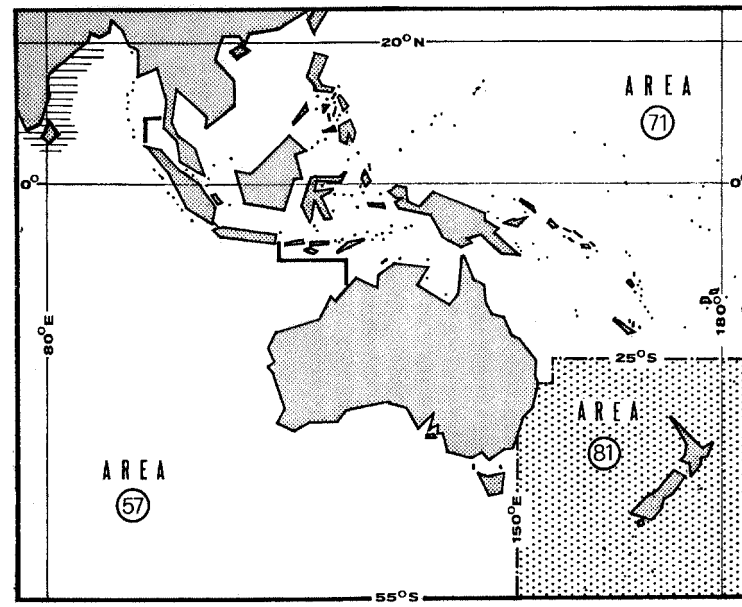
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Coasts of India.

Inhabits shallow coastal waters.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons)
Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Nib 1

1974

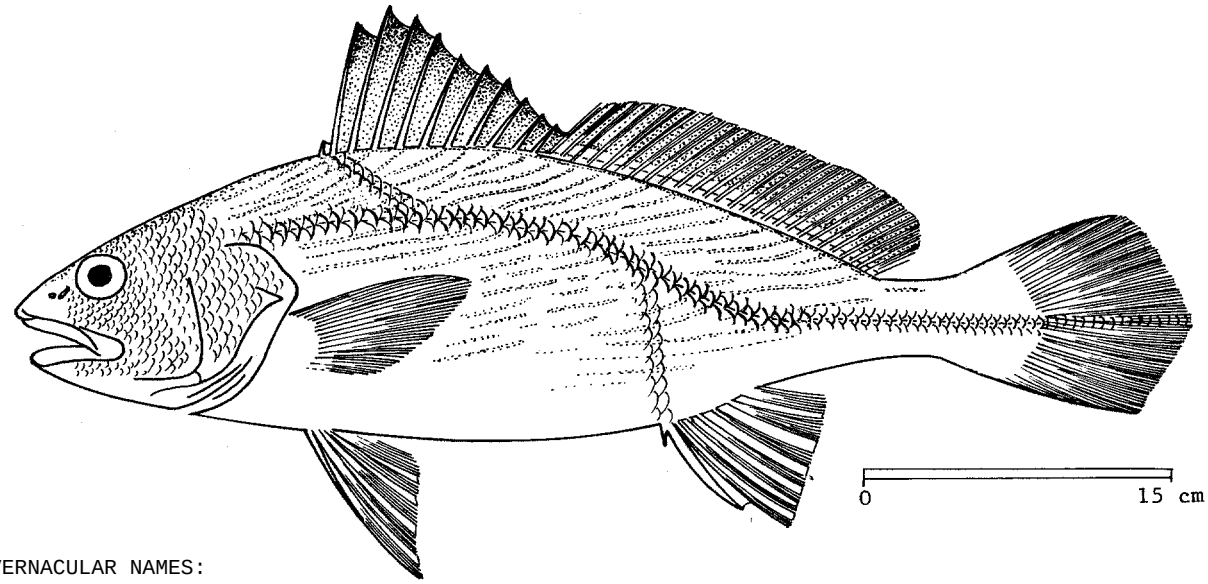
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nibea albiflora (Richardson, 1846)

SYNONYMS STILL IN USE: *Corvina fauvellii* Sauvage, 1881
Corvina semiluctuosa (not of Cuvier): Peters, 1881



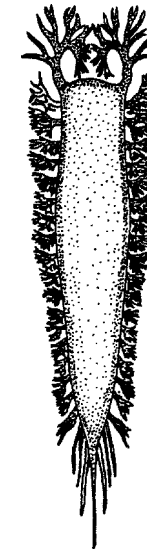
VERNACULAR NAMES:

FAO: En - White flower croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A fairly large species, with an acute snout projecting somewhat beyond the upper jaw; mouth slightly inferior, upper jaw reaching to below hind part of eye. Teeth differentiated into large and small in both jaws; the large forming outer series in upper jaw, intermixed with smaller in lower; a group of teeth but no knob at tip of lower jaw, *no canine teeth. Swimbladder carrot-shaped, with 23 to 26 pairs of appendages,* the first and longest entering head and branching under occipital region, the last 1 to 3 simple tubes parallel to tubular end of main bladder, the rest arborescent with no dorsal limb. *Dorsal fin with 10 to 11 spines, followed by a notch,* second part of the fin with 1 spine and 27 to 31 soft rays; *pectoral fins short,* less than 3/4 of head length; *anal fin with 2 spines and 7 to 8 soft rays, the 2nd spine long and strong,* more than 1/3 of head length; *caudal fin rhomboid.* Scales cycloid (smooth) on snout and under eye, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*



swimbladder
ventral view

Colour: *whole body tinged orange/yellow,* brightest on belly and on pectoral, pelvic, anal and caudal fins; soft part of dorsal fin dusky yellow with a transluscent line along its base, and a series of dark spots at the bases of the rays. *Dark oblique streaks (spots or lines) running upward and backward on flanks.* Spinous part of dorsal fin and lining of gill cover dark.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

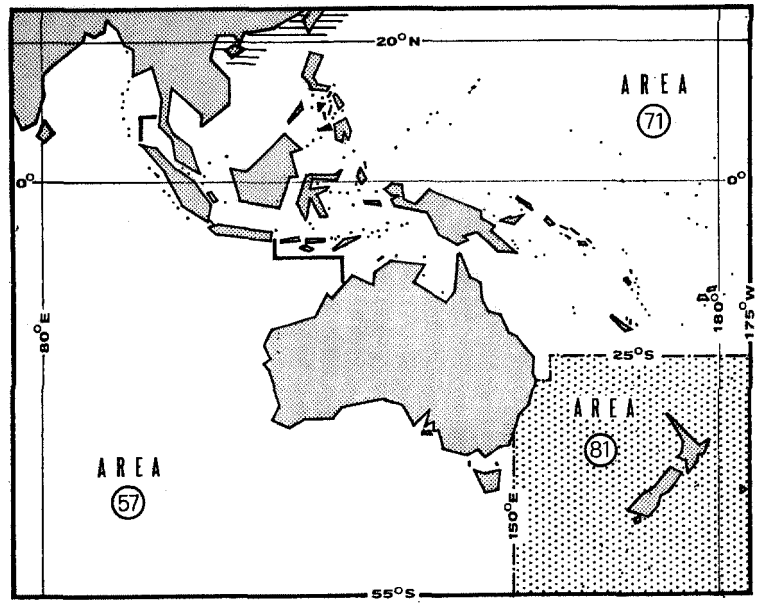
Nibea mitsukurii: more lower gill rakers (12 to 16; 8 to 10 in *N. albiflora*); also, only overlaps *N. albiflora* in north of the latter's range.

Nibea semifasciata: oblique stripes on flanks covering a smaller area and pectoral fin longer (23 to 257 of head; 18 to 227 in *N. albiflora*).

All other *Nibea* species: fewer swimbladder appendages (less than 23).

SIZE:

Maximum: 90 cm; common: 40 to 60 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Chinese, Japanese and Korean coastal waters, down to 40 m.

A seasonal migratory species, spawning in May-June.

Feeds on bottom crustaceans living just above sea-bed.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, handlines, longlines and gill nets.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Nib 2

1974

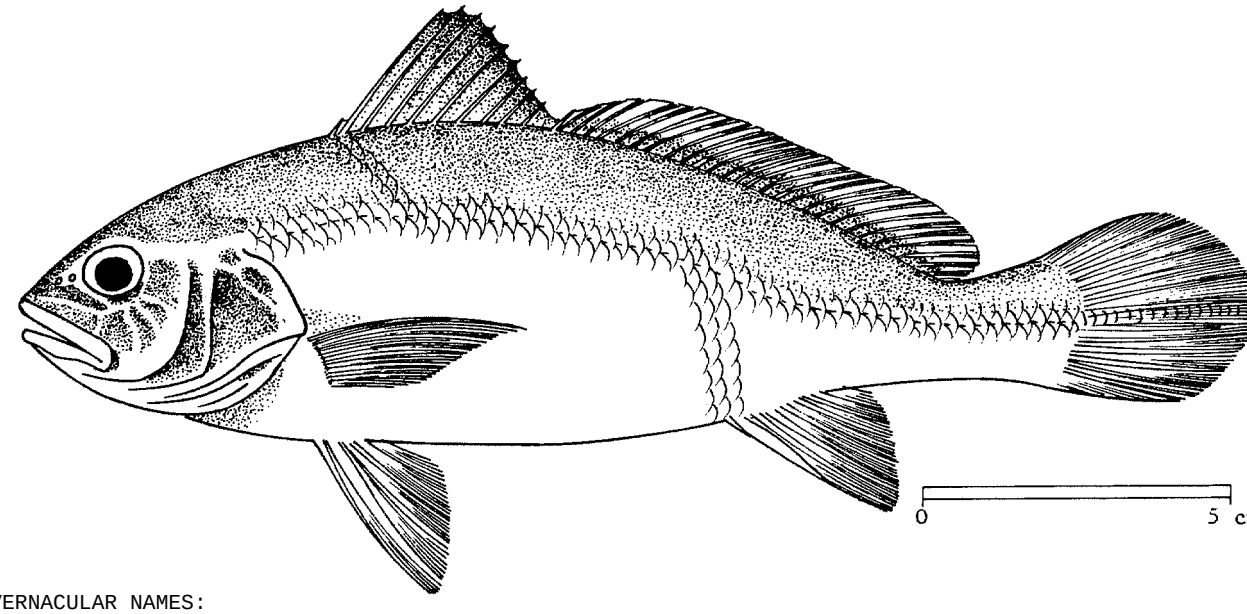
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nibea chui Trewavas, 1971

SYNONYMS STILL IN USE: *Nibea coibor* (not of Ham. Buch.): Chu, Lo & Wu, 1963



VERNACULAR NAMES:

FAO: En - Chu's croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A medium-sized species with an evenly rounded head profile (or slightly concave above the eyes); snout not projecting beyond tip of upper jaw; *mouth terminal,* lower jaw about equal to 1/2 of head length. Teeth well differentiated into large and small in both jaws, surrounded by dense papillae. Lower gill rakers 9 to 10. *Swimbladder carrot-shaped, with 17 to 22 pairs of appendages,* the first long, entering head and branching under the occipital region of the skull, the last simple, parallel to tubular end of bladder, the rest arborescent, without dorsal limbs. *Dorsal fin with 10 spines, followed by a deep notch,* second part of the fin with I spine and 24 to 25 soft rays; pectoral fin moderate, about 3/4 of head length; *anal fin with 2 spines and 7 soft rays, the 2nd spine long and strong,* at least 1/2 of head length; *caudal fin bluntly rhomboid.* Scales cycloid (smooth) on snout and on lower part of head, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: no distinctive colouration.

swimbladder
ventral view

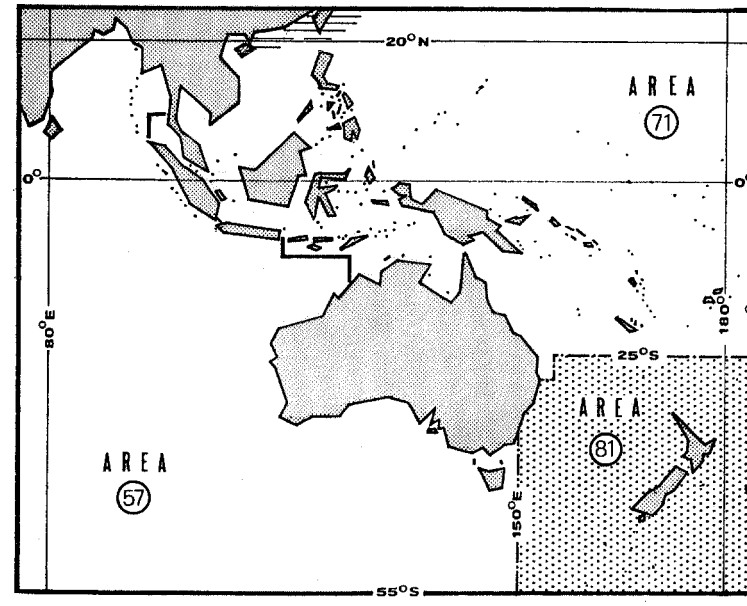
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Nibea macutata: head longer and a distinctive colour pattern of 5 dark oblique bars from back to lower part of flank and a blotch on caudal peduncle.

Most other *Nibea* species: head longer (more than 32% of standard length) and more soft dorsal fin rays (only 24 to 25 in *N. chui).*

SIZE:

Maximum: 40 cm; common: 25 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Confined to Chinese, Korean and Japanese waters.

Found in coastal waters, down to 40 m; a schooling, seasonal, migratory species, living off sea-bed.

Feeds mainly on invertebrates.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines; 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls and longlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Nib 3

1974

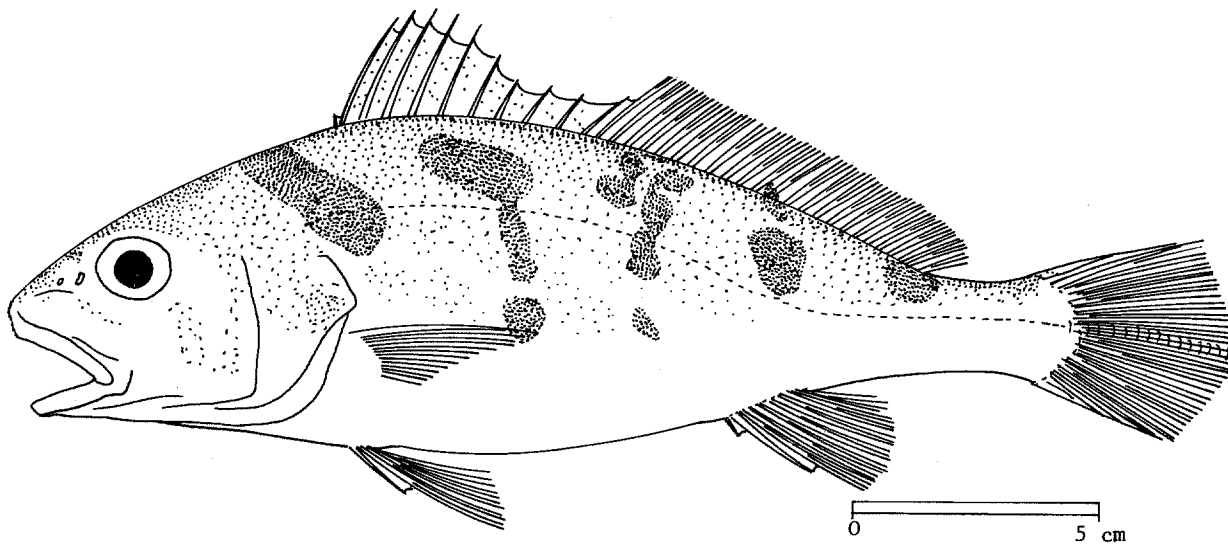
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nibea maculata (Schneider, 1801)

SYNONYMS STILL IN USE: *Johnius maculates:* Fowler, 1933; Weber & de Beaufort, 1936



VERNACULAR NAMES:

FAO: En - Blotched croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A medium-sized species with an acute snout projecting beyond upper jaw; mouth inferior. Teeth differentiated into large and small in upper jaw, the large forming outer series; some large teeth in lower jaw, both in front and in a posterior row; the largest in front; *no canine teeth.* Lower gill rakers 4 to 9, with toothed plates below. *Swimbladder carrot-shaped with about 18 pairs of appendages,* the first longer, extending into head and branching there, the 2 posterior simple, parallel to the tubular end of the bladder, the others arborescent. *Dorsal fin with 10 spines, followed by a notch,* second part of the fin with 1 spine and 24 to 25 soft rays; *anal fin with 2 spines and 7 soft rays,* the 2nd spine strong; caudal fin with slightly convex hind margin, often angular above and rounded below. Scales cycloid (smooth) on snout and below and behind eye, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: a distinctive colour pattern of 5 dark bars extending obliquely from back to lower part of flanks, and a sixth dark blotch on top of caudal peduncle; first bar broadest, from nape obliquely backward, lower parts of bars narrower and often discontinuous. Spinous part of dorsal fin black except along base, soft part of dorsal fin with black margin; lower fins pale.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Protonibea diacanthus: no dark blotch on caudal peduncle and usually smaller black spots on back and on dorsal and caudal fins; lower fins always dark.

All other *Nibea* species: lack this distinctive colour pattern and, except in N. chuff, have more soft dorsal fin rays (only 24 to 25 in *N. maculata).*

SIZE:

Maximum: 28 cm; common: 25 cm.

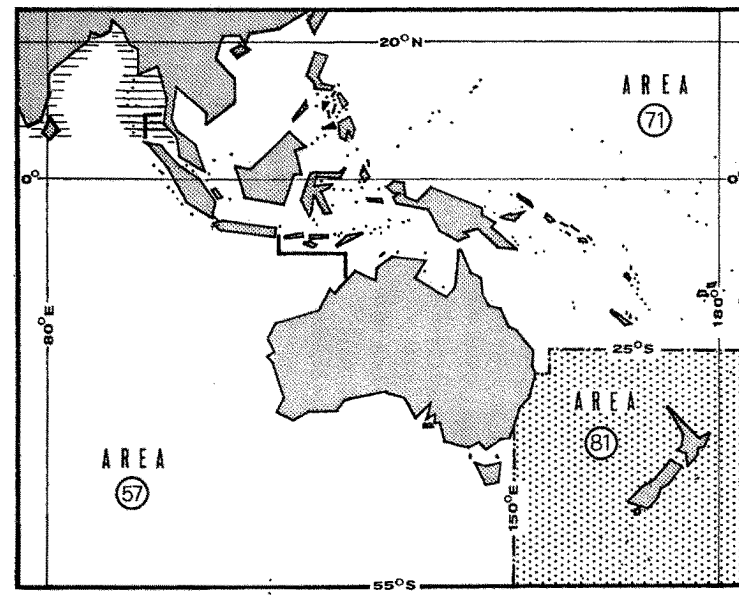
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Indian Ocean; no firm records eastward or southward.

Inhabits coastal waters.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Nib 4

1974

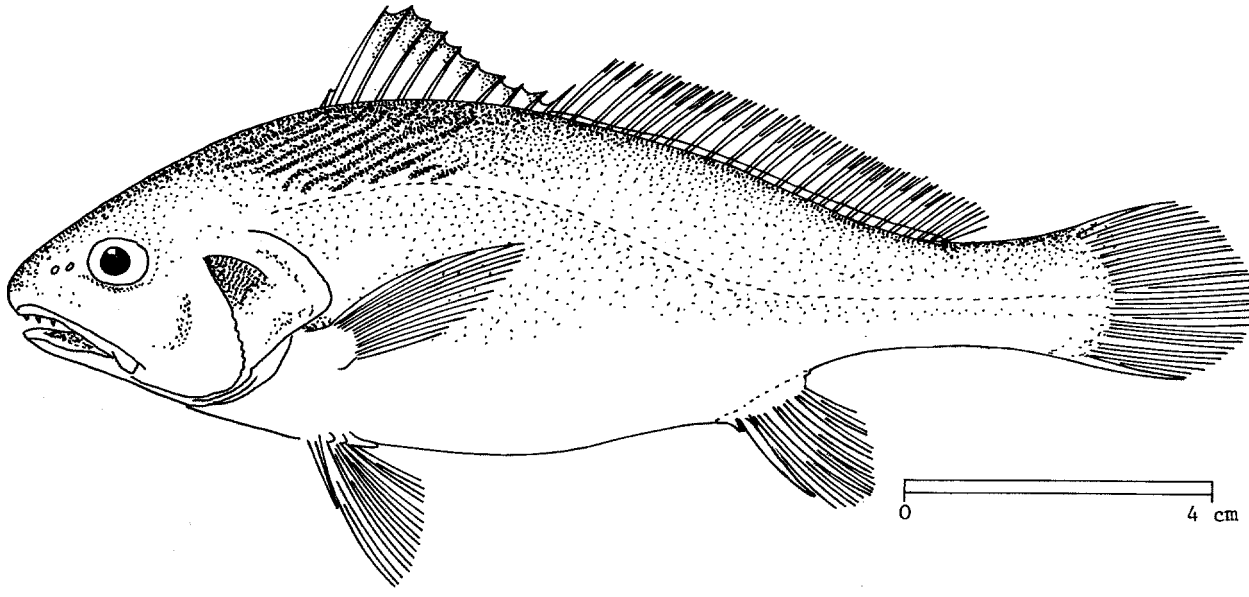
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nibea semifasciata Chu, Lo & Wu, 1963

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

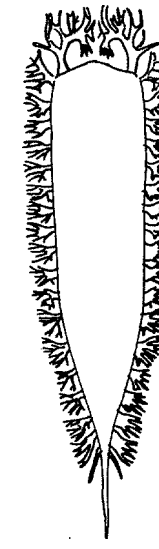
FAO: En - Sharpnose croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A *medium-sized, fairly deep-bodied species with snout slightly projecting; mouth* a *little inferior.* Teeth well differentiated into large and small in both jaws. Lower gill rakers 9 to 10. *Swimbladder carrot-shaped, with 19 to 20 pairs of appendages,* the first longest, entering head and branching under occipital region, the others (except the last) all arborescent, without dorsal limbs. *Dorsal fin with 10 spines, followed by a notch,* second part of the fin with 1 spine and 26 to 29 soft rays; pectoral fin moderate, 2/3 of head length; *anal fin with 2 spines and 7 soft rays, the 2nd spine strong and more than 1/3 of head length; caudal fin rhomboid;* scales cycloid (smooth) on head, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: brownish grey with the tip of the spinous part of dorsal fin darker; *dark wavy oblique lines confined to anterior part of back.*



swimbladder, ventral view

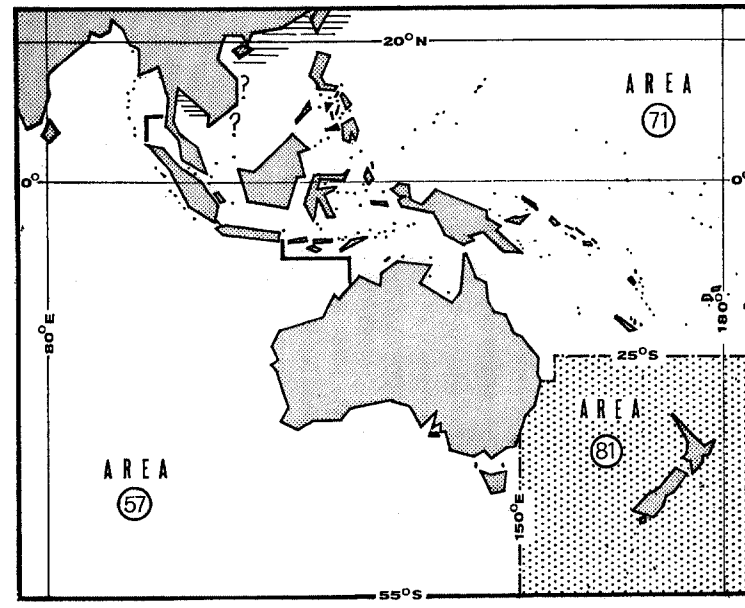
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Nibea albiflora: oblique stripes on flank cover a greater area and the pectoral fin shorter (18 in 257 of standard length; 23 to 267 in *N. semifasciata);* also, more swimbladder appendages (23 to 25; 19 to 20 in *N. semifasciata).*

Nibea maculata, N. chui: soft dorsal fin rays fewer (24 to 25; 27 to 31 in *N. semifasciata).*

SIZE:

Maximum: at least 24 cm;
common: about 20 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Reported from southern coasts of China and from Bangkok; also, northward to Hong Kong and eastern coasts of China.

Inhabits coastal waters of the continental shelf.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons;
Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Nib 5

1974

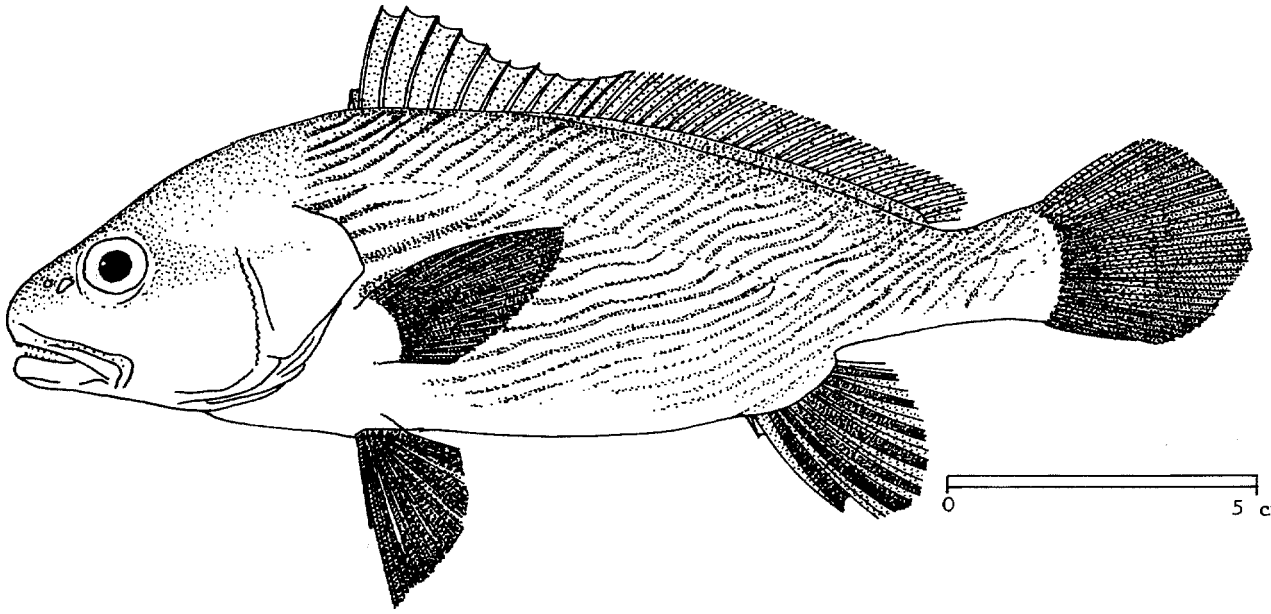
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nibea semiluctuosa (Cuvier, 1830)

SYNONYMS STILL IN USE: *Corvina semiluctuosa* Cuvier, 1830
Johnius semiluctuosus: Weber & de Beaufort, 1936; Chu, Lo & Wu, 1963
Sciaena semiluctuosa: Day, 1876



VERNACULAR NAMES:

FAO: En - Half-mourning croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A fairly small species with an arched back and deep body; mouth slightly inferior and at a low angle to the horizontal. Teeth differentiated into large and small in upper jaw only; the large forming outer series, longest in front; *no canine teeth.* Lower gill rakers 5 to 8, with some toothed plates below. *Swimbladder carrot-shaped, with about 15 pairs of arborescent appendages,* the first rather long, entering the head and branching below the occipital region. *Dorsal fin with 10 to 11 spines, followed by a notch,* second part of the fin with 27 to 31 soft rays; pectoral fin moderate, about 2/3 of head length; *anal fin with 2 spines and 7 soft rays, the second spine long and strong,* up to 1/2 of head length; *caudal fin rounded or bluntly rhomboid.* Scales cycloid (smooth) on snout and below eyes, elsewhere ctenoid (very rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: dark with *numerous oblique wavy black stripes reaching down flanks to belly; pelvic and anal fins very dark.*

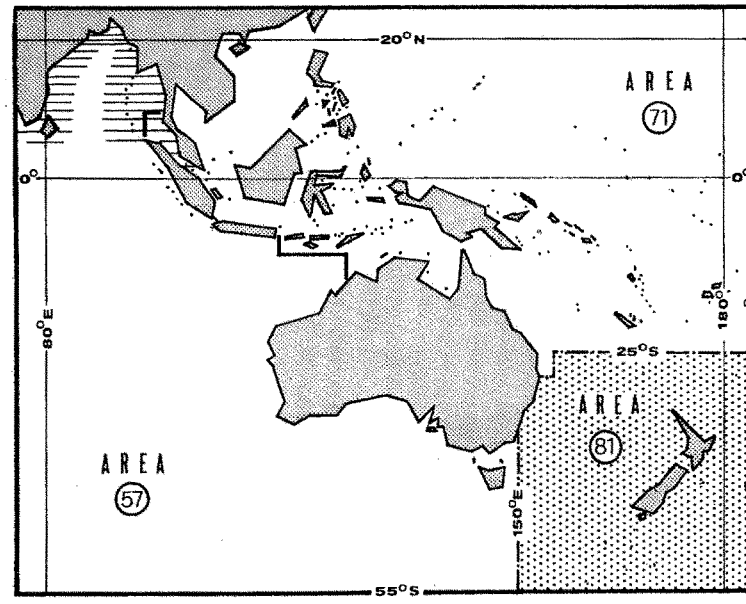
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Nibea maculata, N. chui: soft dorsal fin rays fewer (24 to 25; 27 to 31 in *N. semiluctuosa);* also, big dark blotches on upper flank in *N. maculata* and oblique lines confined to front part of body, faint or even absent in *N. chui.*

Other *Nibea* species: more swimbladder appendages (19 to 25 pairs; about 15 in *N. semiluctuosa*); also, some enlarged teeth in lower jaw and oblique stripes covering less of body.

SIZE:

Maximum: 23 cm; Common: 17 to 20 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Indian Ocean.

Inhabits coastal waters.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons;
Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Nib 6

1974

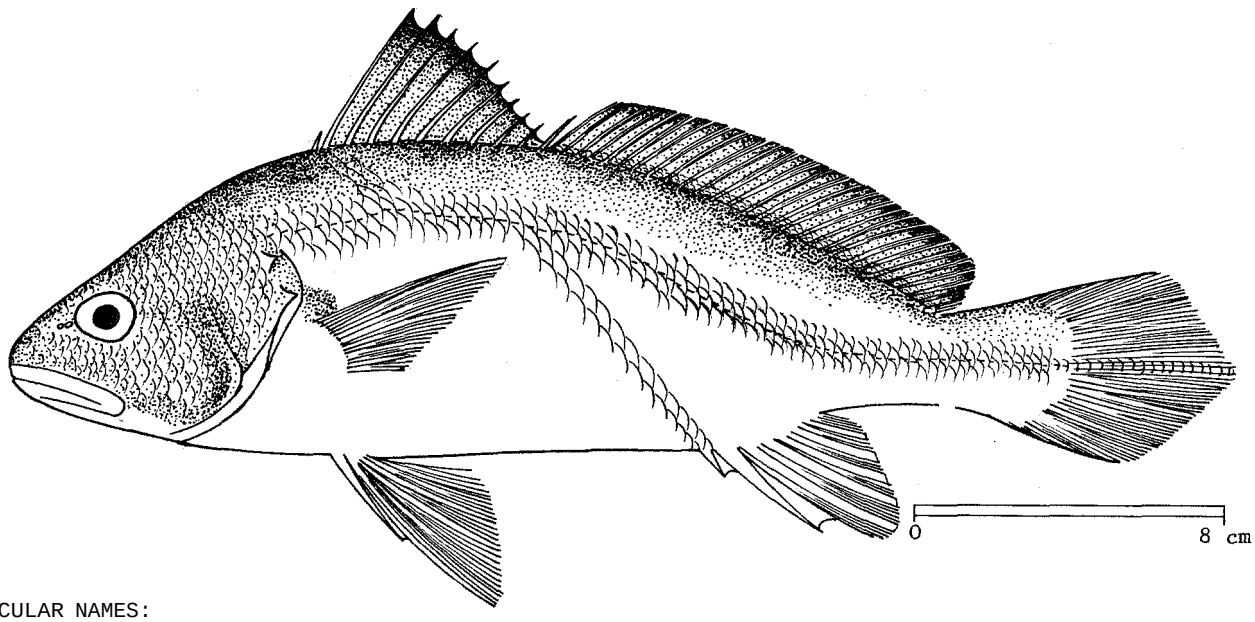
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nibea soldado (Lacepède, 1802)

SYNONYMS STILL IN USE: *Johnius soldado:* Fowler, 1933
Pseudosciaena soldado: Weber & de Beaufort, 1936
Wak soldado: Chu, Lo & Wu, 1963
Corvina miles Cuvier, 1829; Day, 1876



VERNACULAR NAMES:

FAO: En - Soldier croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A fairly large species with an arched back and deep body; mouth terminal and at a low angle to the horizontal. Teeth well differentiated into large and small in both jaws. Lower gill rakers 8 to 9. *Swimbladder carrot-shaped, abruptly constricted posteriorly to its tubular end,* with about 20 pairs of appendages, the first long, entering the head and branching below the occipital region, the two last simple and parallel to tubular end of bladder, the rest arborescent with no dorsal limb. *Dorsal fin with 9 to 10 spines, followed by a deep notch,* second part of the fin with 1 spine and 28 to 31 soft rays; *pectoral fin short,* about 2/3 of head length; *anal fin with 2 spines and 7 soft rays,* the 2nd spine very strong and nearly 1/2 of head length; *caudal fin rhomboid.* Scales cycloid (smooth) on head and chest, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: faint series of oblique stripes along scale rows; border of soft part of dorsal fin dark.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

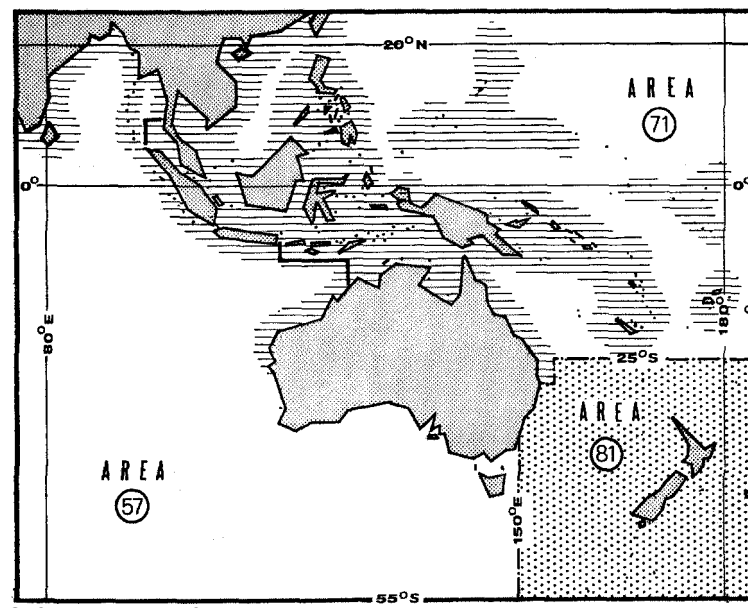
Nibea albiflora, N. semifasciata: upper jaw projects beyond lower and the series of oblique stripes along scale rows more definite; also, soft dorsal fin rays fewer in *N. semifasciata* (26 to 29; 28 to 30 in *N. soldado*).

Nibea maculata, N. chui: soft dorsal fin rays fewer (24 to 25).

Nibea semiluctuosa: lower gill rakers fewer (5 to 8; 8 to 9 in *N. soldado*) and fewer swim-bladder appendages (15 pairs; 20 pairs in *N. soldado).*

SIZE:

Maximum: 60 cm; common: 30 to 40 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to Queensland (Australia). Records from Hong Kong and Hainan doubtful.

Found in coastal waters, down to 40 m.

Feeds on small fishes and invertebrates.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, traps and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Otol 1

1974

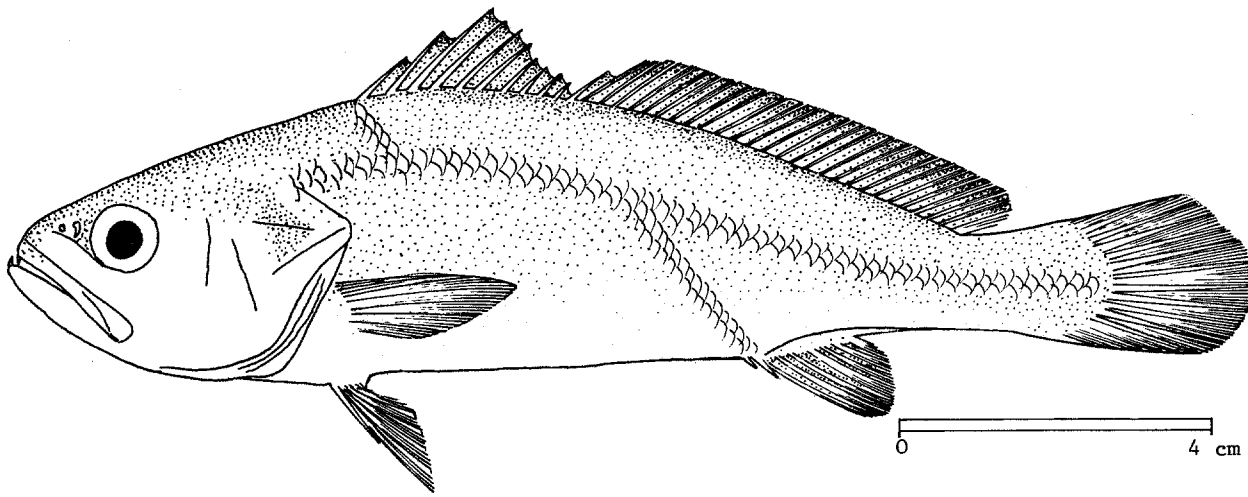
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Otolithes cuvieri
(new name proposed here by E. Trewavas)

SYNONYMS STILL IN USE: *Otolithes ruber* (not of Schneider): Fowler, 1933; Munro, 1955



VERNACULAR NAMES

FAO: En - Lesser tiger-toothed croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A fairly slender species (body depth 3 1/4 to 4 1/2 times in standard length); snout a little longer than eye diameter, its upper profile rising evenly to dorsal fin origin but a little concave over eye; *mouth large, terminal; lower jaw projecting* and more than 1/2 of head length. Teeth in a single series in lower jaw (sometimes part of a second series present); *1 or 2 pairs of strong canines in upper jaw and 1 pair at tip of lower jaw. Lower gill rakers 12 to* 14, with some toothed plates anteriorly. *Swimbladder carrot-shaped, with about 28 pairs of arborescent appendages,* somewhat swollen at their bases; none entering the head. *Dorsal fin with 10 spines, followed by a notch,* second part of the fin with 1 spine and 29 to 31 soft rays; *anal fin with 2 spines and 7 to 8 soft rays, the 2nd spine short and weak, its base beginning behind middle of soft dorsal fin; caudal fin rhomboid,* but with tip pointed. Scales cycloid (smooth) on head, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: brown/pink above, yellow/gold or silver on flanks; spinous part of dorsal fin edged in grey/black, soft part of dorsal fin and anal fin edged in grey; pectoral and pelvic fins yellow.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Ototithes ruber: more swimbladder appendages (32 to 36; about 28 in *O.* cuvieri) and fewer gill rakers (8 to 11; 12 to 14 in *O.* cuvieri); also, body more slender (depth 4 to 5 times in standard length; 3 1/4 to 4 1/2 in *O. cuvieri*).

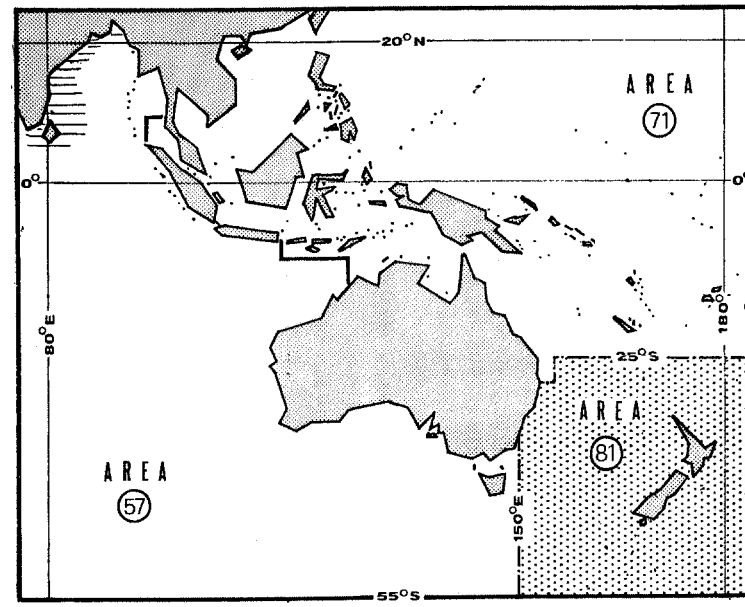
Pterotolithus lateoides: anal fin origin before middle of soft part of dorsal fin (behind middle in O. cuvieri) and spots present on soft dorsal.

Pterotolithus maculatus: upper part of body marked by numerous black patches; also, more soft anal fin rays (10 to 11; 7 to 8 in *O.* cuvieri).

All other Indo-Pacific croakers: lack such strong canine teeth in both jaws.

SIZE:

Maximum: 20 cm; common: 15 to 16



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Eastern coasts of India; other records doubtful.

Inhabits inshore and coastal waters.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Otol 2

1974

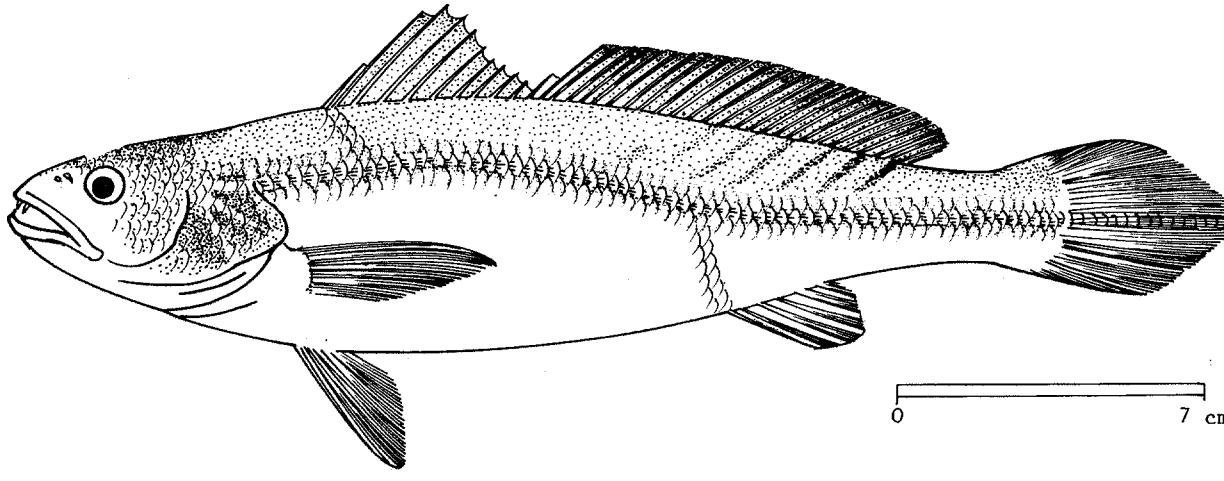
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Otolithes ruber (Schneider, 1801)

SYNONYMS STILL *IN* USE: *Otolithus argenteus:* Day, 1876
Otolithes argenteus: Chu, Lo & Wu, 1963



VERNACULAR NAMES

FAO: En - Tiger-toothed croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A slender species (body depth 4 to 5 times in standard length); snout longer than eye diameter, its upper profile rising evenly to dorsal fin origin or slightly concave before eye; *mouth large, terminal;* lower jaw more than 1/2 of head length. Teeth in 2 series in upper jaw, *with 1 or 2 pairs of strong canines at front; a pair of canine teeth at tip of lower jaw. Lower gill rakers 8 to* 11, long and slender. *Swimbladder with 32 to 36 arborescent appendages* in adults, branching in a very regular pattern; none entering head. *Dorsal fin with 9 to 10 spines, followed by a notch,* second part of the fin with l spine and 27 to 30 soft rays; *anal fin with 2 spines and 7 soft rays, the 2nd spine short and weak, its base behind middle of soft part of dorsal fin; caudal fin rhomboid* (pointed in juveniles). Scales cycloid (smooth), but a few ctenoid (rough to touch) on lower part of hind end of body; *lateral line scales reaching to tip of caudal fin.*

Colour: no distinctive markings.

swimbladder
ventral view

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Otolithes cuvieri: fewer swimbladder appendages (about 28; 32 to 36 in *O. Tuber*) and more gill rakers (12 to 14; 8 to 11 in *O. Tuber);* also, body deeper (depth 3 1/4 to 4 1/2 times in standard length; 4 to 5 in *O. Tuber).*

Pterotolithus lateoides: anal fin origin before middle of soft part of dorsal fin (behind middle in *O. Tuber*) and spots present on soft dorsal.

Pterotolithus maculatus: upper part of body marked by numerous black patches; also, more soft anal fin rays (10 to 11; 7 to 8 in *O. Tuber*).

Chrysochir aureus: snout prominent and canines only in upper jaw.

All other Indo-Pacific croakers: lack such strong teeth in both jaws.

SIZE:

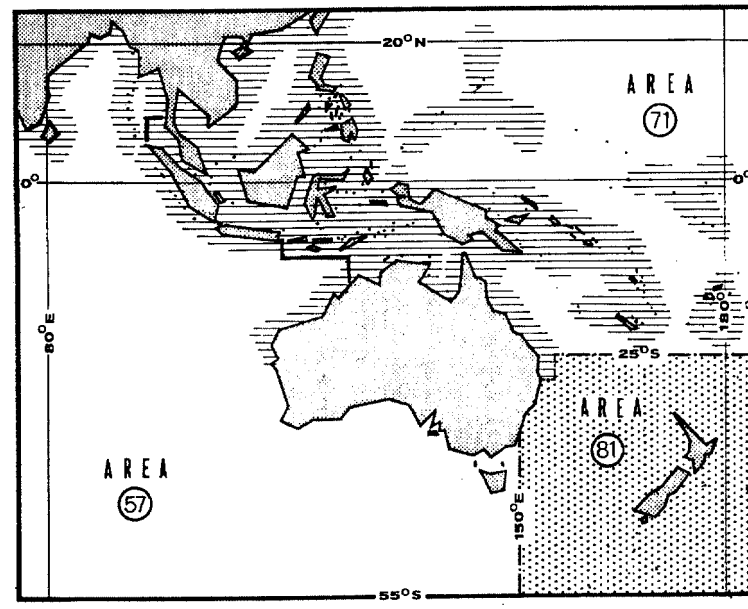
Maximum: 70 cm; common: 30 to 40 cm

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to Queensland (Australia); also, westward to South Africa andmorthward to Japan.

Inhabits coastal waters, down to 40 m.

Feeds on fishes and invertebrates.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, traps and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Otold 1

1974

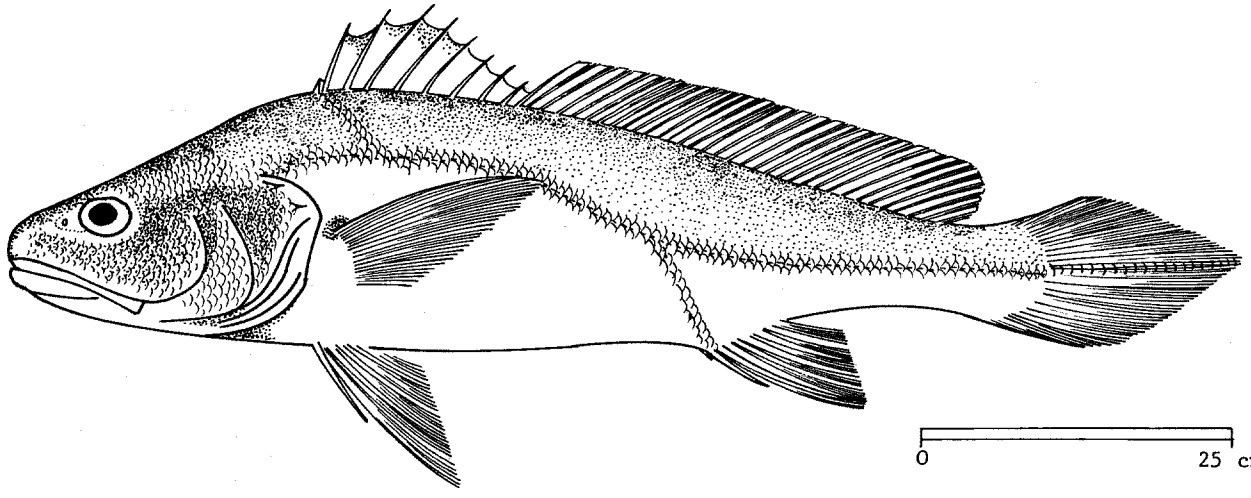
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Otolithoides biauritus (Cantor, 1850)

SYNONYMS STILL IN USE: *Otolithoides biauritus:* Fowler, 1933; Chu, Lo & Wu, 1963
Sciaenoides brunneus: Day, 1876
Otolithoides brunneus: Fowler, 1933; Chu, Lo & Wu, 1963



VERNACULAR NAMES:

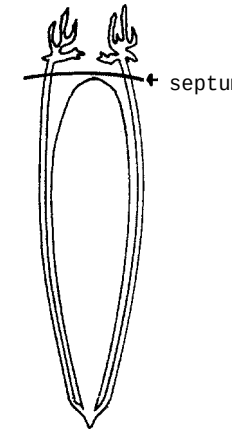
FAO: En - Bronze croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A large species with a fairly acute snout and *large terminal mouth; upper jaw reaching back well beyond eye.* Teeth strong and spaced in both jaws, *no canine teeth;* a few smaller teeth also present. Lower gill rakers 11. *Swimbladder carrot-shaped, with a single pair of appendages, arising from posterior end of bladder* and running forward beside main body of bladder and in front of it into the head, where they branch under the skull. *Dorsal fin with 8 to 9 spines, followed by a low notch*, second part of the fin with 1 spine and 27 to 32 soft rays; *pectoral fin moderate,* about 3/4 of head length; *anal fin with 2 spines and 7 to 8 soft rays*, the 2nd spine weak; *caudal fin pointed.* Scales cycloid (smooth) on head and on upper part of front of body, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: head and back green/grey, flanks gold/orange, paler toward belly, minutely dotted with brown. Lateral line gold. Dorsal, anal and caudal fins brown/yellow to pale orange, pelvic fins pale orange, pectoral fins brown with a black spot at base.



Otolithoides

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

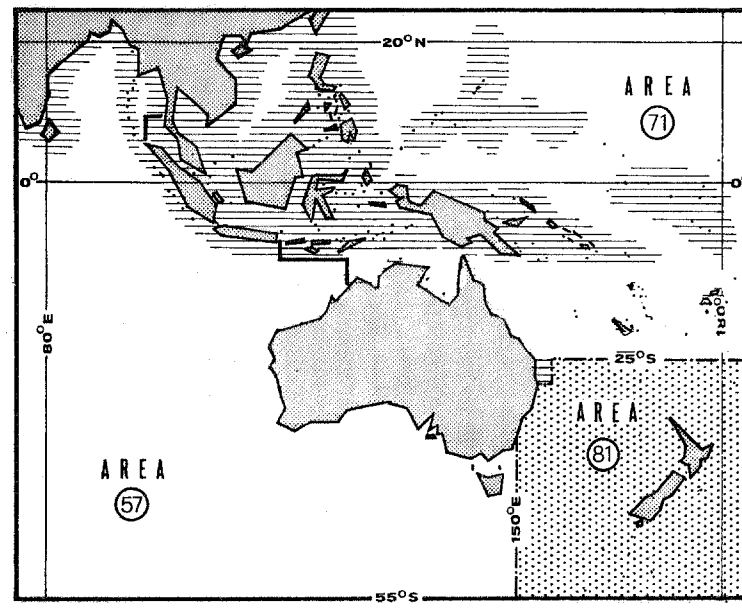
Otolithoides pama: more soft rays in dorsal fin (40 to 45; 27 to 32 in *O. biauritus);* also, pectoral fin as long as head (3 1/4 of head length in *O. biauritus).*

Otolithoides perarmata: fewer dorsal fin spines (7 + 1; 8 to 9 + 1 in *O. biauritus*).

Most other large croakers: caudal fin less pointed; also, swimbladder with many appendages attached to front or sides of bladder, not solely at posterior end.

SIZE:

Maximum: 160 cm; common: 100 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area.

Inhabits coastal and inshore waters.

Feeds on fishes and invertebrates.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines : 16 900 tons;
Malaysia : 4 500 tons)

Caught with bottom trawls, handlines and traps.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Otold 2

1974

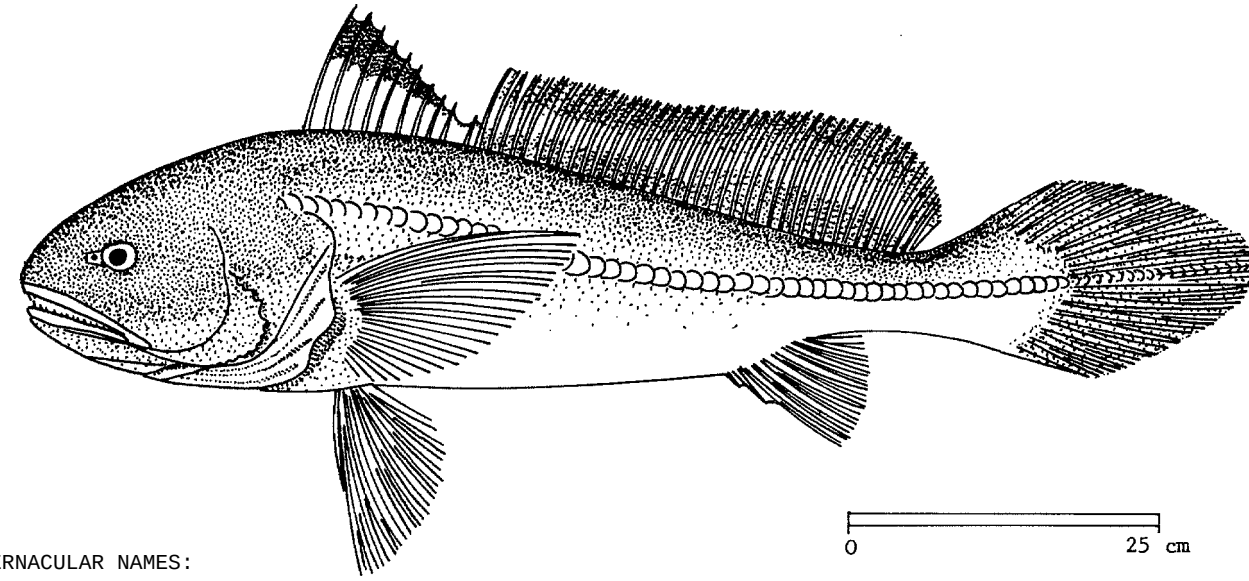
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Otolithoides pama (Ham. Buch., 1822)

SYNONYMS STILL IN USE: *Bola pama* Ham. Buch., 1822
Sciaenoides pama: Day, 1876
Pama pama: Fowler, 1933; Weber & de Beaufort, 1936
Otolithoides pama: Mohan, 1972



VERNACULAR NAMES:

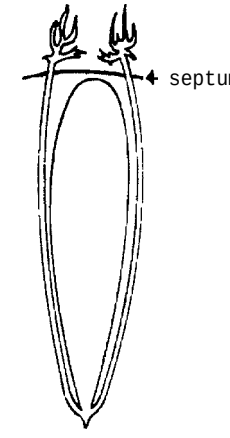
FAO: En - Pama croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A large species with a conical snout and *large terminal mouth; upper jaw reaching back beyond eye.* Teeth enlarged in both jaws, *with 1 or 2 pairs of canines in upper jaw and sometimes a pair of large teeth at tip of lower jaw.* Lower gill rakers 11 to 14, long at joint of arch, shorter in front. *Swimbladder carrot-shaped, with a single pair of appendages, arising from posterior end of bladder* and running forward beside it to enter the head where they branch under the skull. *Dorsal fin with 10 spines, followed by a low notch,* second part of the fin with 1 spine and 40 *to* 45 *soft rays; pectoral fin as long as or longer than head; anal fin with 2 spines and 7 soft rays,* the 2nd spine short and weak; *caudal fin pointed* (very long and tapering in juveniles). Scales cycloid (smooth) on head, elsewhere ctenoid (rough to touch), very small above anterior part of lateral line; *lateral line scales reaching to tip of caudal fin.*

Colour: no distinctive markings.



Otolithoides

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

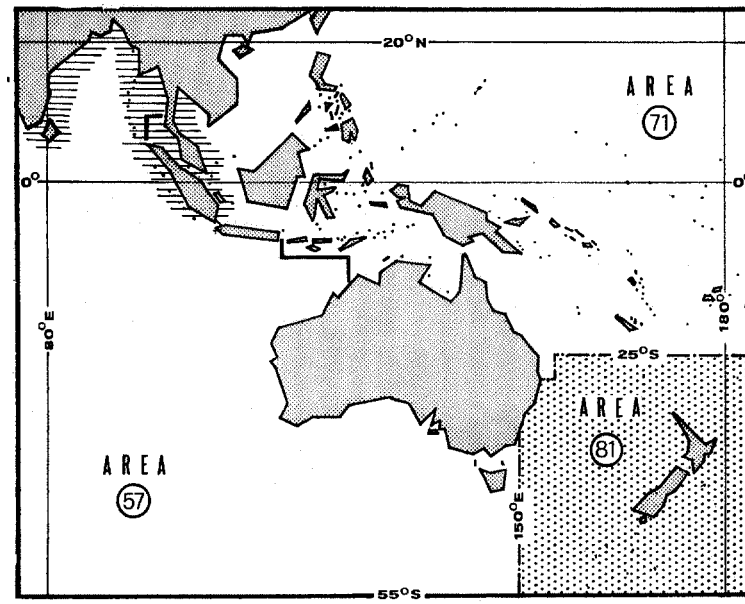
Otolithoides biauritus: fewer soft dorsal fin rays (27 to 32; 40 to 45 in *O. pama*); also, pectoral fin only 3/4 of head length (as long as head, or longer, in *O. pama*).

Otolithoides perarmata: fewer dorsal fin spines (7 + 1; 10 + 1 in *O. pama*) and some dorsal, pelvic and anal spines greatly swollen in older fishes.

Other croakers species: fewer soft dorsal fin rays (40 to 45 in *O. pama*); also, swimbladder usually with many appendages attached to front or sides of bladder, not solely at posterior end.

SIZE:

Maximum: 160 cm; common: about 100 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Bay of Bengal, Burma, Malay Peninsula.

Inhabits coastal waters and enters estuaries. The young have been taken in the Sundarbans, Ganges delta.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Pan 1

1974

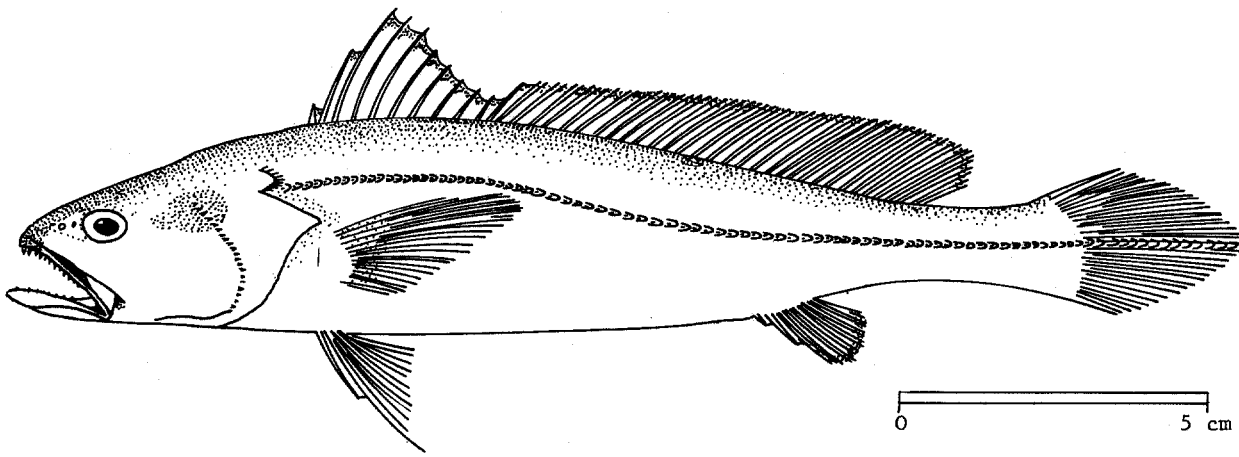
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Panna microdon (Bleeker, 1849)

SYNONYMS STILL IN USE: *Collichthys microdon*: Bleeker, 1872; Chevey, 1932
Sciaenoides microdon: Day, 1876
Otolithoides microdon: Fowler, 1933; Weber & de Beaufort, 1936



VERNACULAR NAMES:

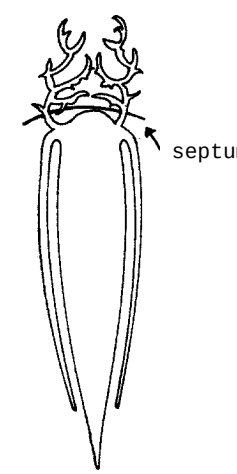
FAO: En - Panna croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A medium-sized species with an acute snout and *large terminal mouth; upper jaw reaching back beyond eye;* large and small teeth present in both jaws, *with 1 or 2 canine teeth in upper jaw. Lower gill rakers 11 to 12,* the anterior three short and club-shaped. *Swimbladder carrot-shaped, with one pair of appendages arising at the anterior end* and immediately dividing into an anterior branch entering the head and ramifying under the skull, and a posterior simple tube lying beside the main bladder to its posterior end. *Dorsal fin with 9 to 10 spines, followed by a notch,* second part of the fin with 31 to 36 soft rays; pectoral fin moderate, about 4 times in standard length; *anal fin with 2 spines and 6 to 8 soft rays,* the 2nd spine short; *caudal fin pointed*. Scales cycloid (smooth) on head and chest, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: brown, becoming lighter on flanks and belly. Fins yellow, dorsal and anal fins with darker border.



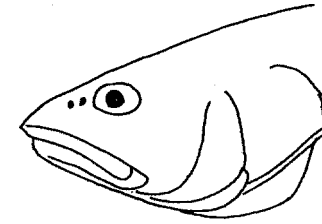
swimbladder
Panna

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Chrysochir aureus: snout projects in front of mouth; also swimbladder with several pairs of arborescent appendages (only 1 pair in *P. microdon*).

Otolithes and *Pterotolithus* species: canines present in both jaws, not only in upper; also, swimbladder with many pairs of arborescent appendages.

Otolithoides species: appendages of swimbladder attached at posterior end.



Chrysochir aureus

SIZE:

Maximum: ?30 cm; common: 18 to 20 cm.

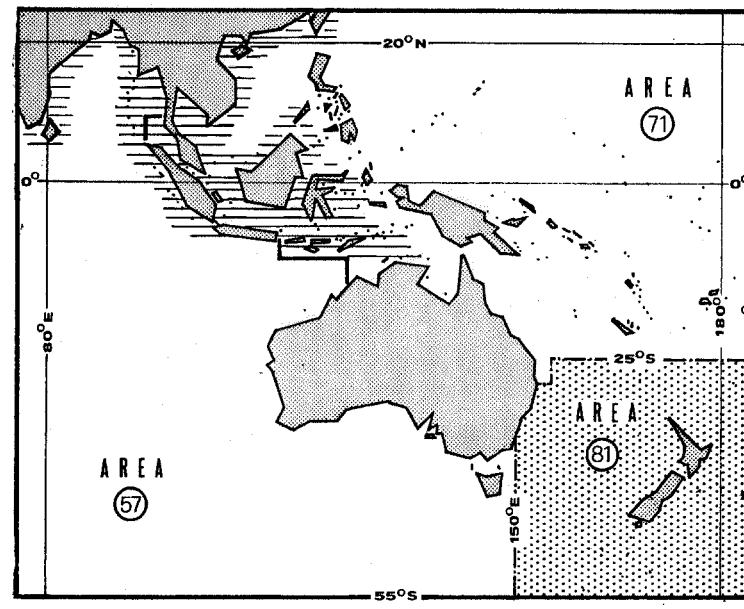
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Northwestern part of area;
also, northward to southern China.

Inhabits coastal waters.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons;
Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted.

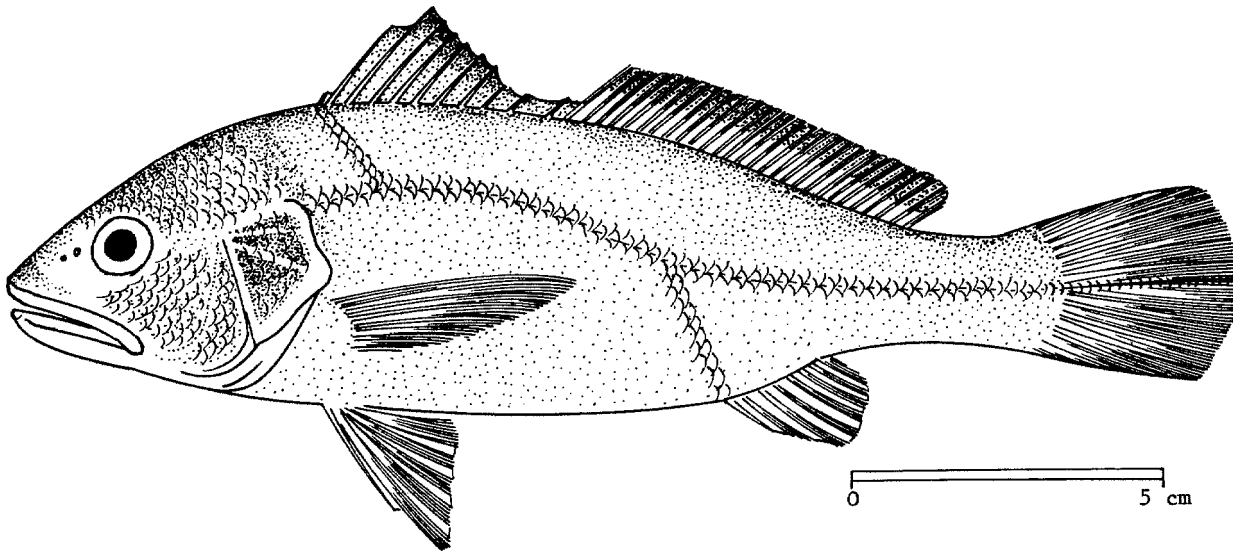
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pennahia argentata (Houttuyn, 1782)

SYNONYMS STILL IN USE: *Johnius argentatus:* Fowler, 1933
Argyrosomus argentatus: Lin, 1938; Chu, Lo & Wu, 1963
Sciaena schlegeli Bleeker, 1879
Nibea iharae Jordan & Metz, 1913; Lin, 1940



VERNACULAR NAMES:

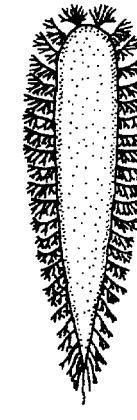
FAO: En - Silver pennah croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

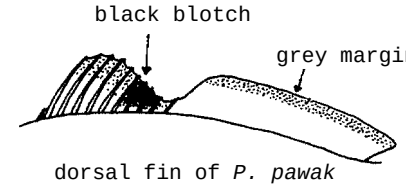
A fairly small, rather deep-bodied species with a large, terminal, oblique mouth; upper jaw reaching to below hind border of eye, lower jaw less than 1/2 of head length. Teeth well differentiated into large and small in both jaws; *no outstanding canine teeth.* Lower gill rakers 8 to 9. *Swimbladder carrot-shaped, with 25 to 27 pairs of arborescent appendages,* branching regularly, without dorsal limb, the first not entering the head, the posterior simple and parallel to the tubular end of the swimbladder. *Dorsal fin with 9 to 10 spines, followed by a low notch,* second part of the fin with 1 spine and 25 to 28 soft rays; pectoral fin rather long, up to 1/4 of standard length; *anal fin with 2 spines and 7 to 8* soft *rays,* the 2nd spine rather weak; *caudal fin bluntly rhomboid.* Scales cycloid (smooth) on snout, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: no distinctive markings.



swimbladder
ventral view

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:



dorsal fin of *P. pawak*

Pennahia parwak: pectoral fin shorter (20 to 23% of standard length; 25 to 26% in *P. argentata)* and fewer soft dorsal fin rays (23 to 25; 15 to 28 in *P. argentata);* also, a black blotch on spinous part of dorsal fin.

Pennahia macrophthalmus, P. macrocephalus: more lower gill rakers (10 to 13; 8 to 9 in *P. argentata).*

SIZE:

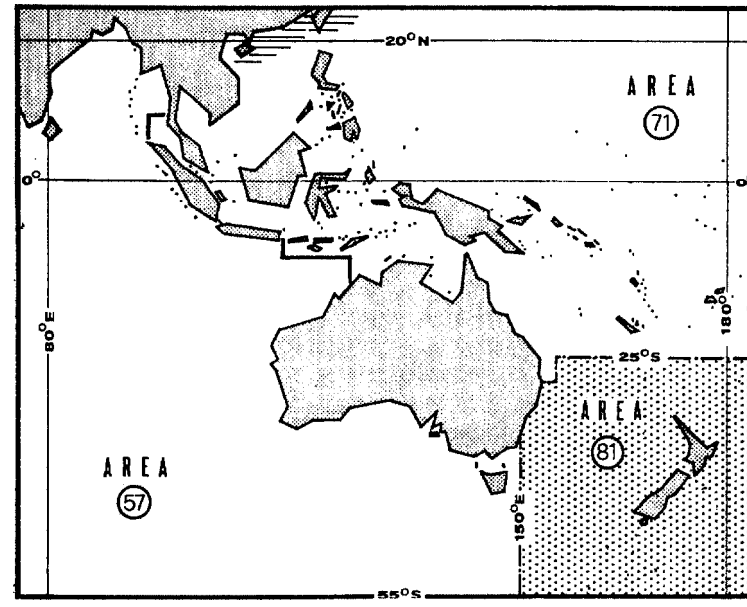
Maximum: 28 cm; common: 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Chinese and Japanese waters.

Found in coastal waters, down to 40 m.

Feeds on small fishes and invertebrates.



PRESENT FISHING,GROUNDS:

Coastal waters, throughout. its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Penn 2

1974

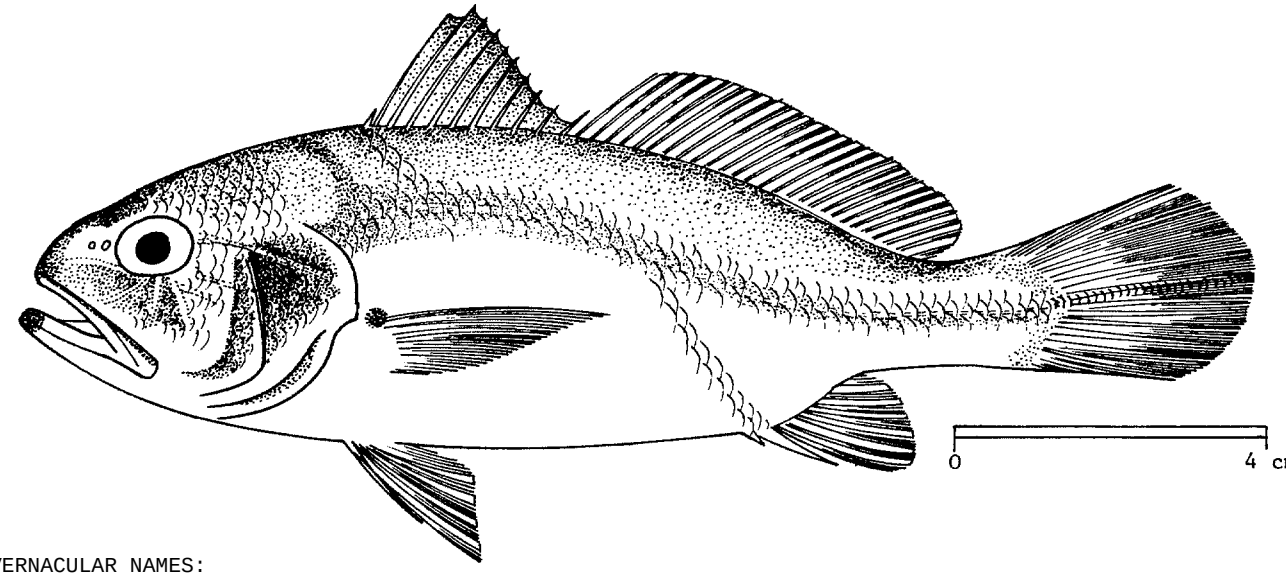
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pennahia macrocephalus (Tang, 1937)

SYNONYMS STILL IN USE: *Argyrosomus macrocephalus:* Chu, Lo & Wu, 1963



VERNACULAR NAMES:

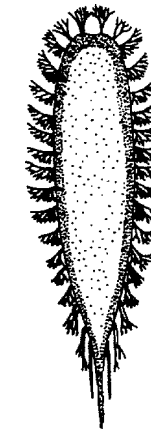
FAO: En - Big-head pennah croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A fairly small, rather deep-bodied species, with a large, terminal, oblique mouth; upper jaw reaching to below hind part of eye, lower jaw at least 1/2 of head length. Teeth well differentiated into large and small in both jaws, the large forming outer series in upper jaw, inner series in lower; *no outstanding canine teeth.* Lower gill rakers 12 to 13. *Swimbladder carrot-shaped, with about 18 pairs of arborescent appendages,* none entering the head, the last a simple tube parallel to the tubular end of the swimbladder. *Dorsal fin with 10 spines, followed by a low notch,* second part of the fin with 1 spine and 27 to 29 soft rays; pectoral fin rather long, up to 1/4 of standard length; *anal fin with 2 spines and 7 soft rays,* the 2nd spine weak; *caudal fin bluntly rhomboid.* Scales cycloid (smooth) on snout, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: counter-shaded from metallic blue above to white below. Lining of mouth and gill cover dark grey. A black spot at tip of lower jaw and one above base of pectoral fin. Pectoral, pelvic and anal fins yellowish.

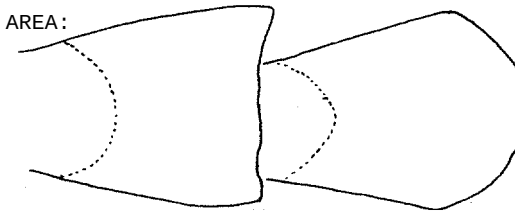


swimbladder
ventral view

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

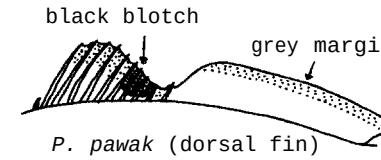
Pennahia macrophthalmus: caudal fin truncate and fewer soft dorsal fin rays (23 to 25; 27 to 29 in *P. macrocephalus).*

Pennahia pawak, P. argentata: fewer lower gill rakers (8 to 9; 12 to 13 in *P. macrocephalus);* also, a black blotch on spinous part of dorsal fin in *P. pawak.*



caudal fin

P. macrophthalmus *P. macrophthalmus*



P. pawak (dorsal fin)

SIZE:

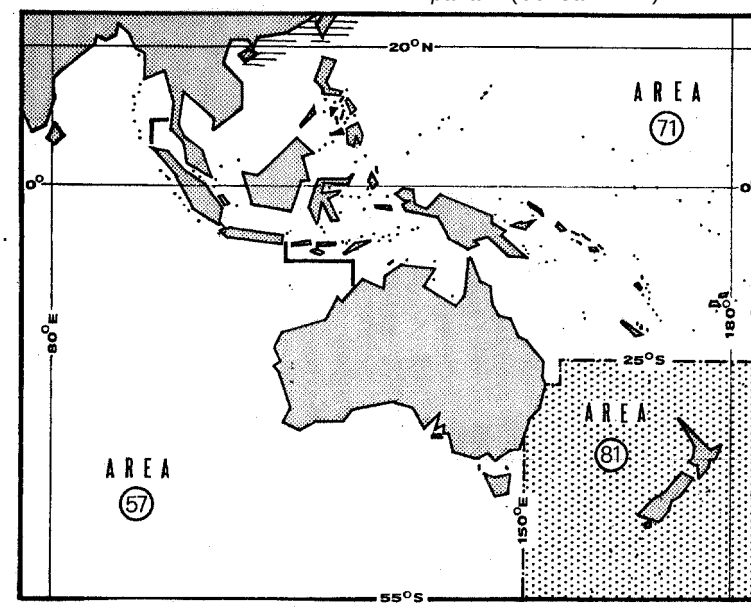
Maximum: 22 cm; common: 15 to 18 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Only known from Chinese waters.

Found in coastal waters, down to 40 m.

Feeds on small invertebrates and fishes.



PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Penn 3

1974

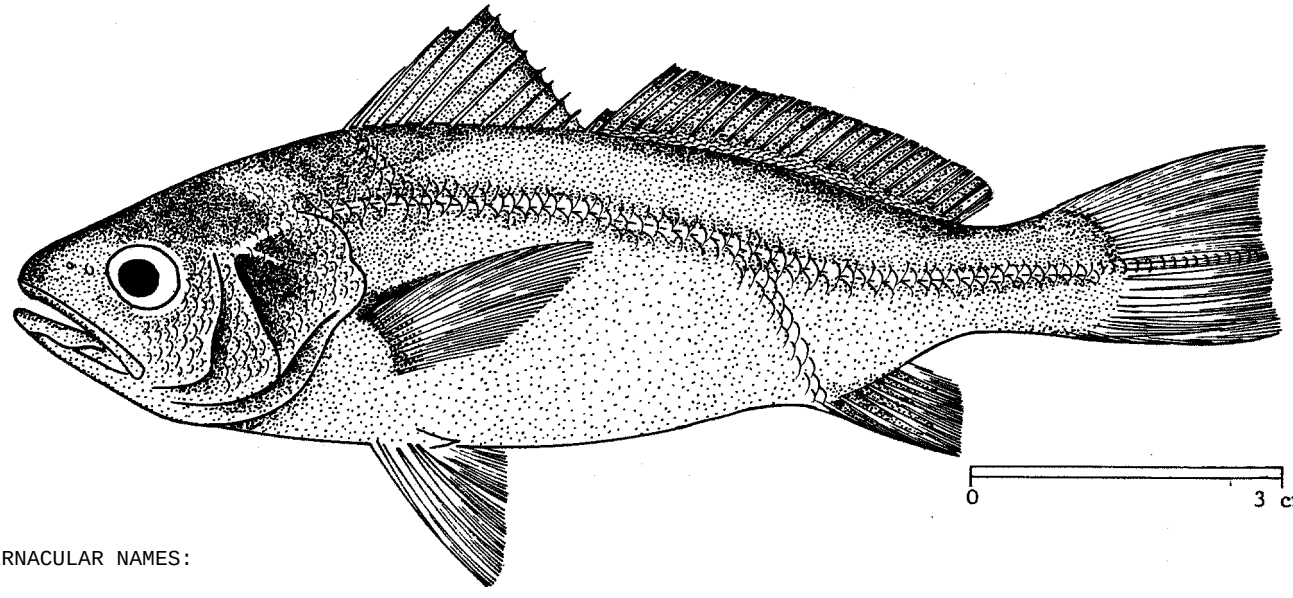
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pennahia macrophthalmus (Bleeker, 1850)

SYNONYMS STILL IN USE: *Otolithus leuciscus* Günther, 1872
Sciaena aneus (not of Bloch): Day, 1876
Pseudosciaena aneus (not of Bloch): Bleeker, 1877;
Weber & de Beaufort, 1936
Argyrosomus (Pennahia) aneus: Fowler, 1926
Argyrosomus aneus: Chu, Lo & Wu, 1963



VERNACULAR NAMES:

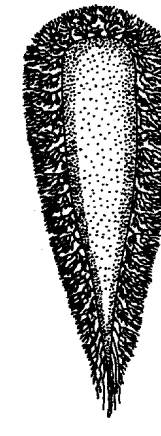
FAO: En - Bigeye croaker
Fr
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A fairly small, rather deep-bodied species, with a large, terminal, oblique mouth; upper jaw reaching to below hind part of eye, lower jaw more than 1/2 of head length. Teeth well differentiated into large and small in both jaws, the large forming outer series in upper jaw, and inner series in the lower; *no outstanding canine teeth.* Lower gill rakers 10 to 12. *Swimbladder carrot-shaped, with 18 to 22 arborescent appendages,* the first not entering head, the last a simple tube parallel to the narrow posterior end of the swimbladder. *Dorsal fin with 9 to 10 spines, followed by a notch, second part of the fin with 23 to 25 soft rays;* pectoral fin rather long, up to 1/4 of standard length; *anal fin with 2 spines and 7 to 8 soft-rays,* the 2nd spine weak; *caudal fin truncate.* Scales cycloid (smooth) on snout, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: no distinctive markings; body silvery white, back blue/grey.



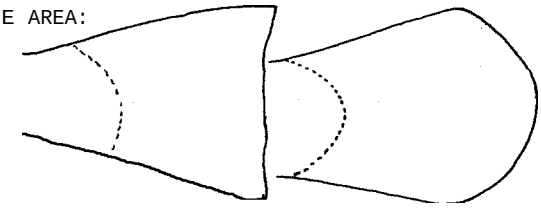
swimbladder
ventral view

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

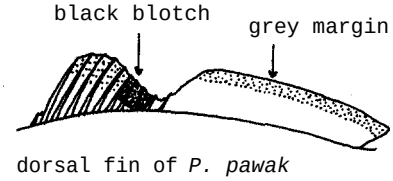
Pennahia macrocephalus: caudal fin bluntly rhomboid and more soft dorsal fin rays (27 to 29; 23 to 25 in *P. macrophthalmus).*

Pennahia pawak and *P. argentatus:* fewer lower gill rakers (S to 9; 10 to 12 in P. *macrophthalmus);* also, a black blotch on spinous part of dorsal fin in *P. pawak*

Kathala axillaris: bears a superficial resemblance to *P. macrophthalmus* but no arborescent appendages on swimbladder, a more oblique mouth and slightly swollen snout.



caudal fin
P. macrophthalmus *P. macrocephalus*



dorsal fin of *P. pawak*

SIZE:

Maximum: 17 cm; common: 13 to 15 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

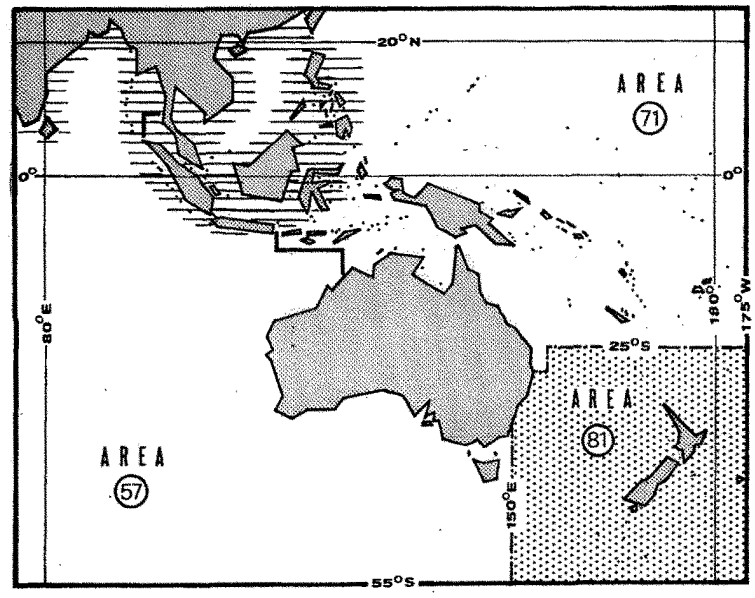
Eastern Indian Ocean and Indonesia; also, northward to China and westward to Persian Gulf.

Inhabits coastal waters, down to 60 m.

Feeds on small invertebrates.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls and lines.

Marketed fresh and dried-salted.

SCIAEN Penn 4

1974

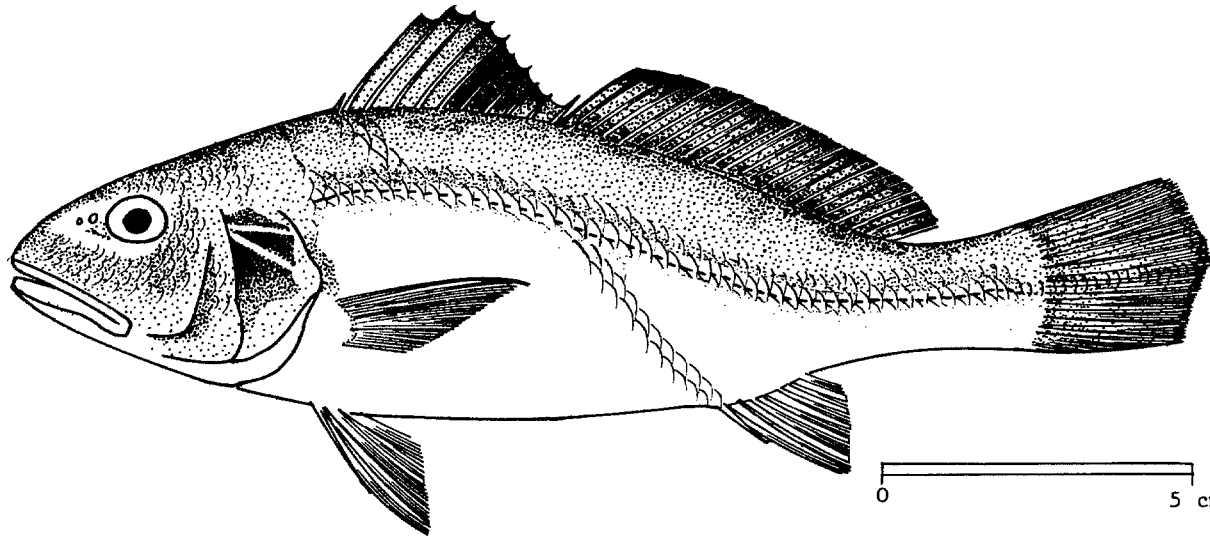
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pennahia pawak (Lin, 1940)

SYNONYMS STILL IN USE: *Argyrosomus pawak* Lin, 1940; Chu, Lo & Wu, 1963



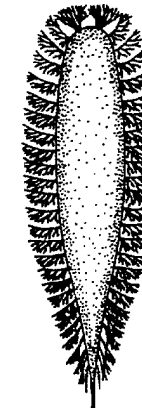
VERNACULAR NAMES:

FAO: En - Pawak croaker
Fr -
Sp -

NATIONAL:

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

A medium-sized, fairly deep-bodied species, with a large, terminal, oblique mouth; upper jaw reaching to about eye centre, lower jaw more than 1/2 of head length. Teeth well differentiated into large and small in both jaws; *no outstanding canine teeth.* Lower gill rakers 9. *Swimbladder carrot-shaped, with 24 to 27 pairs of appendages,* none entering head, the last simple and parallel to the tubular end of the bladder; all the others very regularly branched, with no dorsal limb. *Dorsal fin with 10 spines, followed by a notch,* second part of the fin with 23 to 25 soft rays; pectoral fins moderate, about 5 times in standard length; *anal fin with 2 spines and 7 soft rays,* the 2nd spine weak; *caudal fin bluntly rhomboid or with a point*. Scales on head and a few above pectoral fin base cycloid (smooth), elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*



swimbladder
ventral view

Colour: a characteristic blotch on dorsal fin; the black lining of the gill cover shows through conspicuously; back regularly or irregularly dark and the soft part of dorsal fin with a pale band between basal and distal dark zones. Caudal fin dark at the margin; other fins pale.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Pennahia argentata: pectoral fins longer (25 to 26% of standard length; 20 to 23% in *P. pawak)* and more soft dorsal fin rays (25 to 28; 23 to 25 in *P. pawak).*

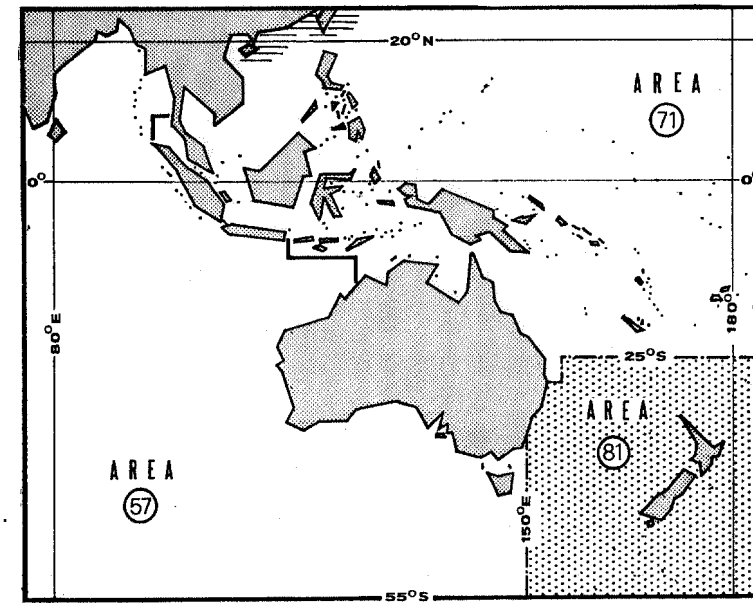
Pennahia macrophthalmus, P. macrocephalus: more lower gill rakers (10 to 13; 9 in *P. pawak).*

Nibea species: longer and stronger anal spines.

All other croaker species in area: black blotch on spinous part of dorsal fin much less distinct.

SIZE:

Maximum: 22 cm; common: 18 to 20 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Southern coasts of China; also, northward to Japan.

Inhabits coastal wagers.

Feeds on small crustaceans.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls and lines.

Marketed fresh; also dried-salted.

SCIAEN Proto 1

1974

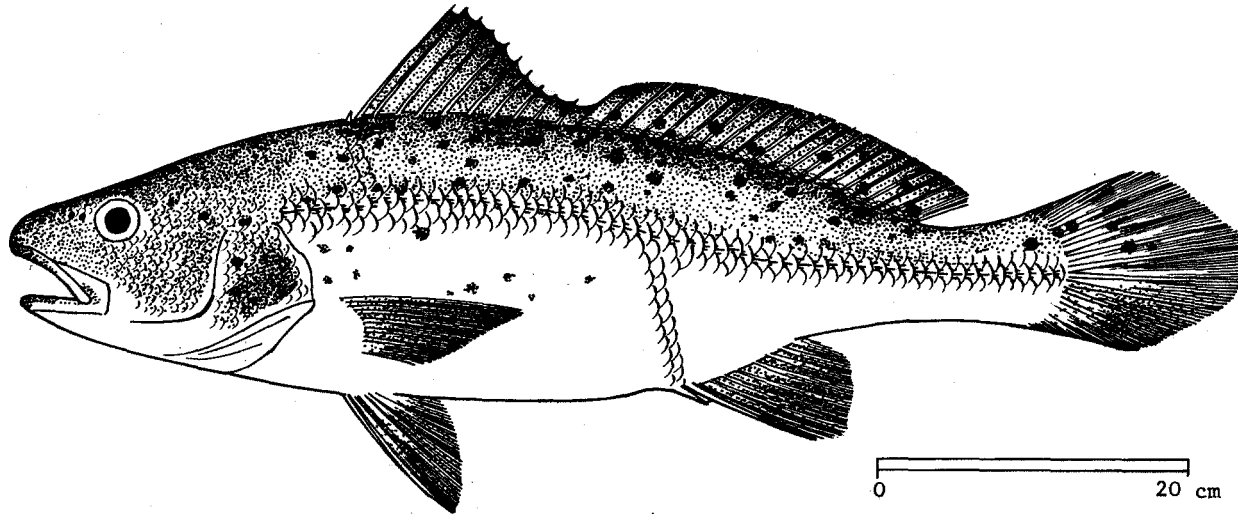
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Potonibea diacanthus (Lacepède, 1802)

SYNONYMS STILL IN USE: *Sciaena diacanthus*: Day, 1876
Pseudosciaena diacanthus: Weber & de Beaufort, 1936
Nibea diacanthus: Lin, 1938; Chu, Lo & Wu, 1963
Protonibea diacanthus: Trewavas, 1971
Sciaena goma Tanaka, 1915; Matsubara, 1937



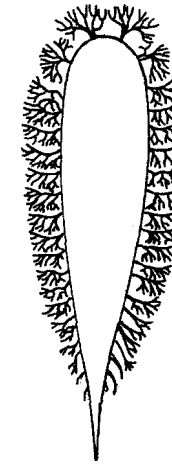
VERNACULAR NAMES:

FAO: En - Spotted croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS;

A large species with a pointed snout and large terminal mouth forming a low angle to the horizontal. Teeth differentiated into large and small in both jaws; *no canine teeth.* Lower gill rakers 7 to 8. *Swimbladder carrot-shaped, with about 20 pairs of arborescent appendages,* the first branching on transverse septum but not entering head, the last two small and simple, the rest branching but without dorsal limbs. *Dorsal fin with 9 to 10 spines, followed by a low notch,* second part of the fin with 22 to 24 soft rays; pectoral fin fairly small, a little more than 1/2 of head length; *anal fin with 2 spines and 7 soft rays,* the 2nd spine rather strong; *caudal fin rhomboid.* Scales cycloid (smooth) on snout and below eyes, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*



swimbladder
ventral view

Colour: 5 *dark blotches along back, many small black spots (about size of pupil of eye) on top of head, upper half of body and dorsal and caudal fins;* pectoral, pelvic, anal and lower part of caudal fins black. Rarely, in larger fishes, either the 5 blotches or the smaller spots may be absent.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

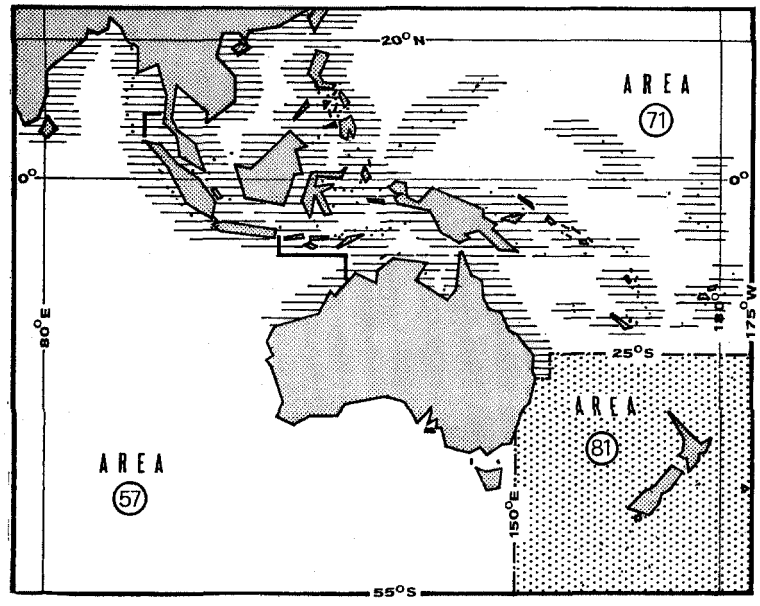
Nibea maculata: lower fins pale; black blotches on body, but numerous black dots never present.

Pterotolithus maculatus: more soft dorsal fin rays (31; 22 to 24 in *P. diacanthus*) and more swimbladder appendages (50 or more; about 20 in *P. diacanthus*); also, canine teeth present.

All other croakers in area: lack the distinctive colour pattern of blotches and spots on body and fins.

SIZE:

Maximum: 120 cm; common: 70 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to Queensland (Australia); also, westward to East Africa and northward to Japan.

Found in coastal waters, down to 60 m; primarily a species of muddy grounds, living off the sea-bed; migratory, spawning from June to August.

Feeds mainly on crustaceans, particularly small crabs.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, bottom longlines and handlines.

Marketed fresh; sometimes dried-salted; swimbladder dried.

SCIAEN Ptero 1

1974

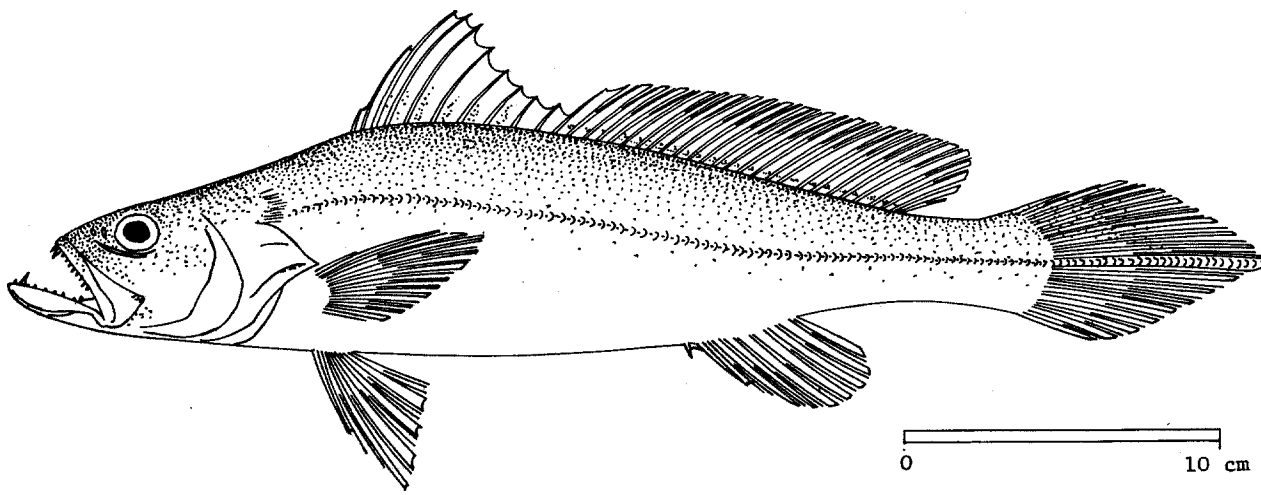
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pterotolithus lateoides (Bleeker, 1850)

SYNONYMS STILL IN USE: *Otolithes lateoides:* Weber & de Beaufort, 1936
? Ototithus dolorosus Seale, 1910



VERNACULAR NAMES:

FAO: En - Bigmouth croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A slender species (body depth 4 to 5 times in standard length); snout longer than eye diameter, its upper profile rising evenly and almost horizontally to dorsal fin origin; *mouth large*, oblique, the lower jaw strongly projecting) a little less than 1/2 of head length. Teeth in a single series in both jaws, *with 1 or 2 pairs of strong canines in upper jaw and 1 pair at tip of lower jaw*. Lower gill rakers about 12, but the anterior 4 short toothed stumps. *Swimbladder carrot-shaped, with about 40 pairs of arborescent appendages,* some of the dorsal branches of which are long and lie on the dorso-lateral surface of the bladder; none entering the head. *Dorsal fin with 10 spines, followed by a notch,* second part of the fin with 1 spine and 24 to 27 soft rays; *anal fin with 2 spines and 7 to 8 soft rays, the 2nd spine rather weak, its base beginning before middle of soft ?art of dorsal fin; caudal fin wedge-shaped, the middle rays prolonged.* Scales cycloid (smooth) an head, elsewhere ctenoid (rough to touch); *lateral line scales reaching to tip of caudal fin.*

Colour: a series of black or brown spots along soft part of dorsal fin.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Otolithes cuvieri, O. ruber: more soft dorsal fin rays (27 to 31; 24 to 27 in *P. lateoides);* also, *O. ruber* has fewer lower gill rakers (8 to 11; 12 in *P. lateoides)* and both have fewer swimbladder appendages (28 and 32 to 36, respectively; about 40 in *P. lateoides*).

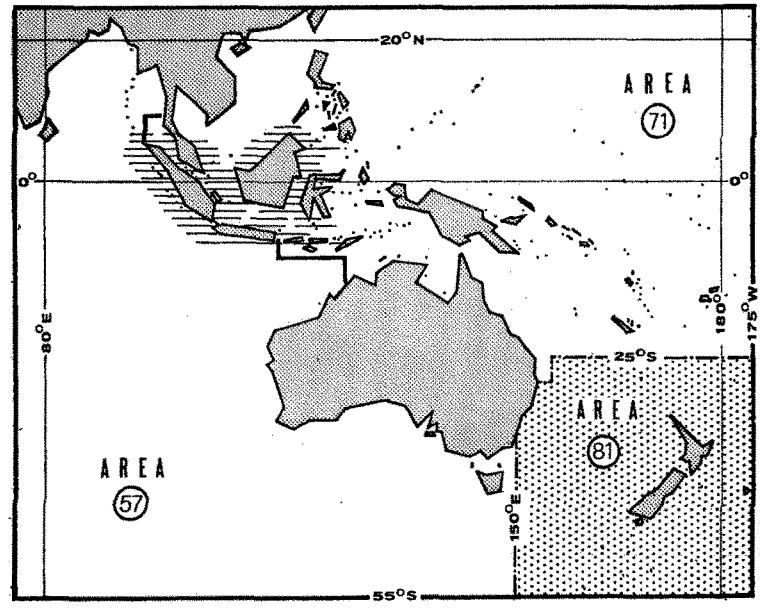
Pterotolithus maculatus: anal fin with 10 to 11 soft rays (7 to 8 in *P. lateoides).*

Other croakers with canine teeth: anal fin origin set under or behind middle of soft part of dorsal fin.

All other Indo-Pacific croakers: lack such strong canine teeth in both jaws.

SIZE:

Maximum: 50 cm; common: 30 to 40 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Borneo, Indonesia and Malaysia.

Inhabits coastal waters and mouths of rivers.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons;
Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

SCIAEN Ptero 2

1974

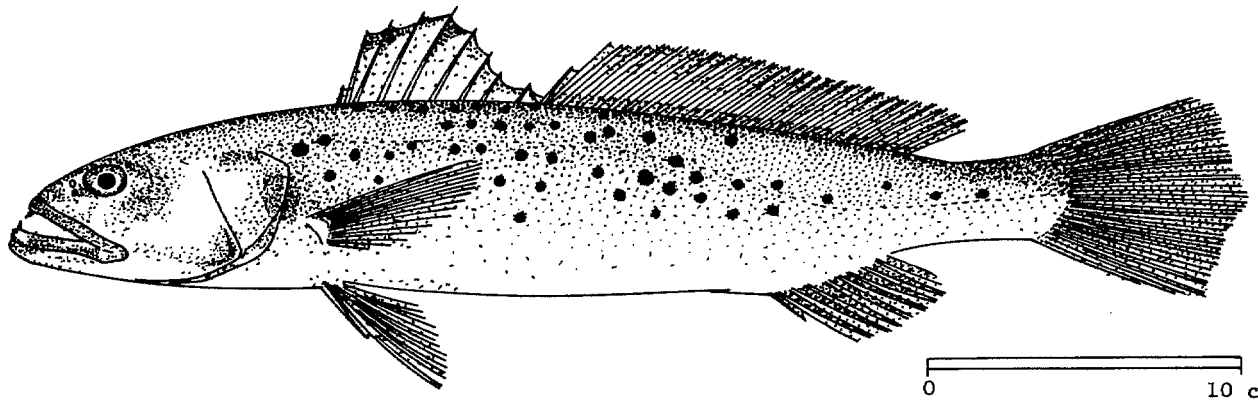
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pterotolithus maculatus (Cuvier, 1836)

SYNONYMS STILL IN USE: *Otolithus maculatus:* Day, 1876
Otolithes maculatus: Weber & de Beaufort, 1936



VERNACULAR NAMES:

FAO: En - Blotched tiger-toothed croaker
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A fairly large and slender species, with head profile low and only slightly curved; mouth large and strongly oblique, lower jaw projecting. Teeth in 2 rows in upper jaw, the inner small, *and a pair of strong canines in front; a similar pair of canines in lower jaw.* Lower gill rakers 8 to 9, with 1 or 2 small knobs in front. *Swimbladder in adult with numerous (50 or more) pairs of branched appendages,* the stems of the lower limbs forming a parallel series of tubes, those of the upper limbs roofing the swimbladder with a filigree of silvery branched tubules. *Dorsal fin with 9 spines, followed by a deep notch,* second part of the fin with 1 spine and 31 soft rays; *anal fin with 2 spines and 10 to 11 soft rays,* the 2nd spine weak; *caudal fin rhomboid.* Scales cycloid (smooth) and in very irregular rows; *lateral line scales reaching to tip of caudal fin.*

Colour: *upper part of body marked with numerous black patches, about half the size of eye or larger.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

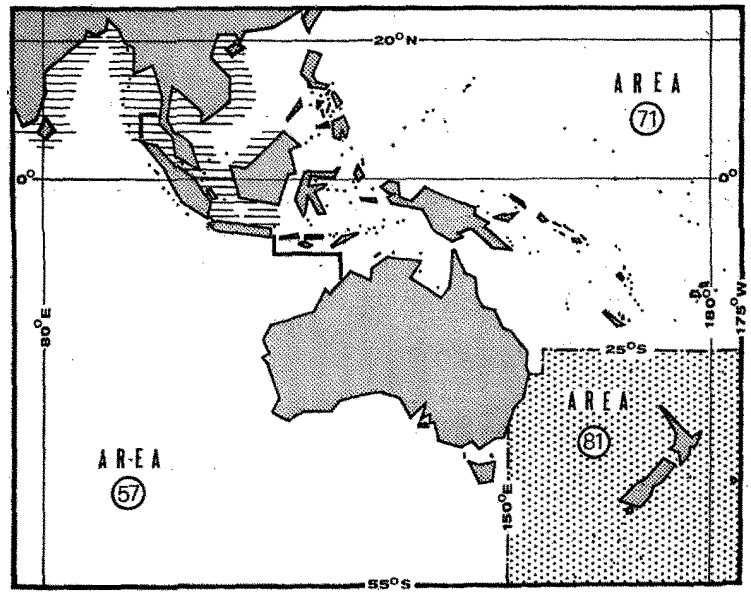
Protonibea diacanthus: fewer soft dorsal fin rays (22 to 24; 31 in *P. maculatus*) and fewer swimbladder appendages (about 20; 50 or more in *P. maculatus);* also, no canine teeth.

Cottichthys species: 7 to 13 soft anal fin rays, but yellow luminous patches along belly.

All other Indo-Pacific croakers: lack the distinctive body markings and usually have fewer soft anal fin rays (6 to 9; 10 to 11 in *P. maculatus*).

SIZE:

Maximum: 45 cm; common: 30 to 40 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Northwestern part of area as far as Borneo; apparently not to the south.

Inhabits coastal waters.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not recorded for this species within the area. The total reported catch of unclassified croakers and drums in 1972 was:

area 57 (Eastern Indian Ocean): 41 900 tons (India only)
area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons; Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

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