

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).

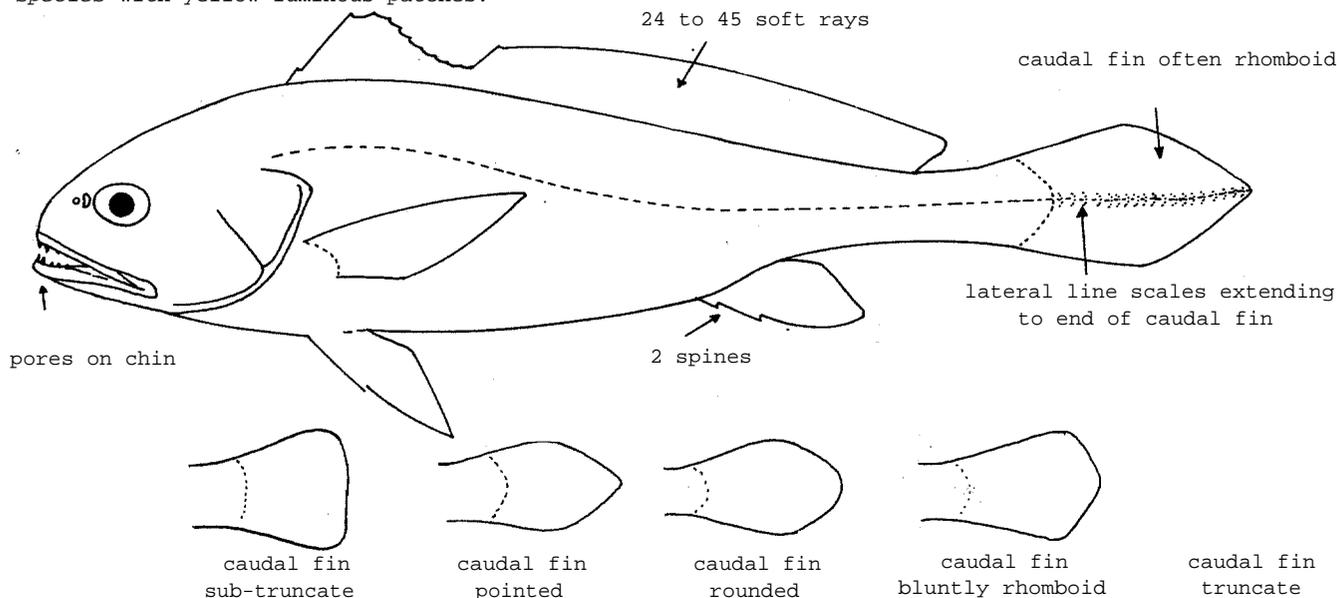
Swimbladder present in all Indo-Pacific species, carrot-shaped (Figs. 1 to 5), hammer-shaped (Fig. 15) or anchor-shaped (Fig. 14) and bearing small tubules (diverticula) which may be simple (Fig. 1) or branched (Figs. 5, 14, 15) and which may project forward to skull, backward along body or reach laterally 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; *anal 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, subequal, 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*

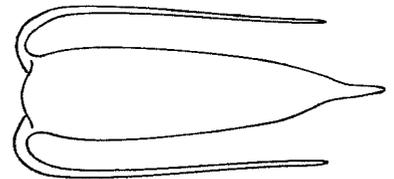
5 b. Second anal spine about 127, of standard length; lower gill rakers 22 to 23 *Kathala*

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

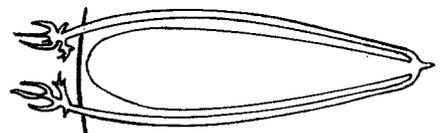
7 a. Swimbladder appendages attached to posterior end of bladder (Fig. 3) *Otolithoides*



Bahaba - swimbladder
Fig. 1



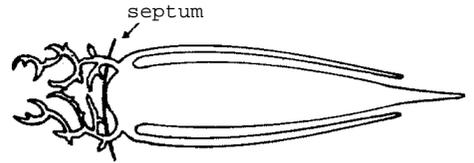
Kathala - swimbladder
Fig. 2



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)



Panna - Swimbladder
Fig. 4

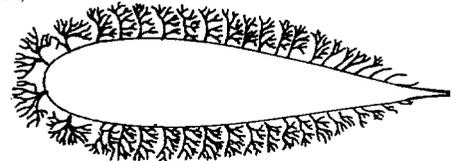
8 a. Swimbladder appendages of each side dividing into one cephalic and one abdominal branch, the former branching only in front of the transvers septum (Fig. 4)

Panna

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

9 a. Swimbladder carrot-shaped (Fig. 5)

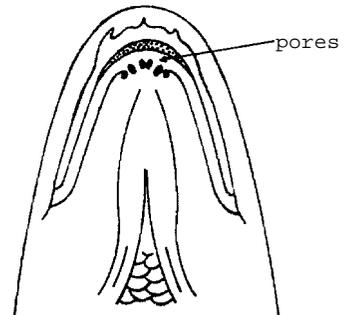


Protonibea - Swimbladder
Fig. 5

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

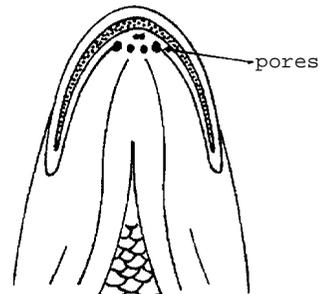
12 a. Pores on chin of the "false five" pattern, those of first pair close together behind tip of jaw and united by a groove (Fig. 6); lower fins dark *Protonibea*



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

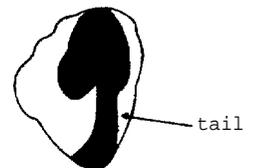
13 a. Swimbladder appendages without a well developed dorsal limb, the posterior ones parallel to wall of bladder; 'tail' of tadpole-shaped impression of otolith (ear-stone)* only slightly curved (Fig. 8) *Pennahia*



underside of head
Fig. 7

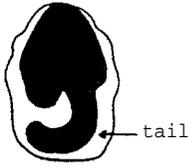
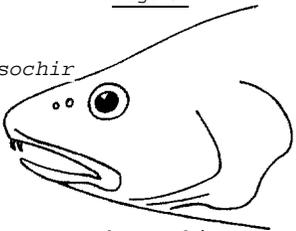
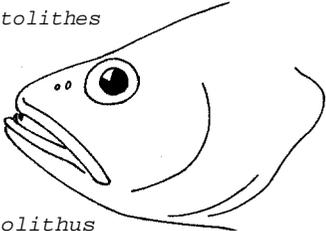
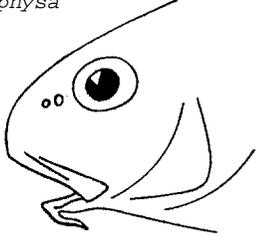
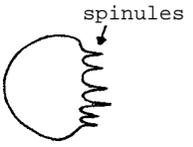
13 b. Swimbladder appendages each with a short or long branched dorsal limb as well as a ventral; posterior appendages simpler, very short, at right angles to wall of bladder

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

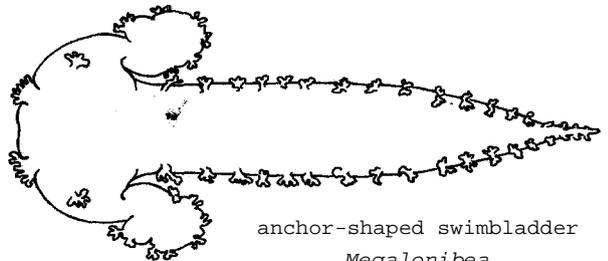
- 14 b. 'Tail' of tadpole-shaped impression of otolith strongly curved, J-shaped (Fig. 9) *Argyrosomus*
- 
- Argyrosomus* - otolith
Fig. 9
- 11 b. One or two pairs of outstanding canine teeth in upper or both jaws
 - 15 a. Canines in upper jaw only; mouth inferior (Fig. 10) *Chrysochir*
 - 15b. Canines in both jaws; mouth terminal or lower jaw projecting (Fig. 11)
 - 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*
- 
- Chrysochir*
Fig. 10
- 
- 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
 - 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*
- 
- Dendrophysa*
Fig. 12
- 
- 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 swimbladder appendages, the last 9 with short dorsal and long ventral limbs; 7 soft anal fin rays (undescribed genus)

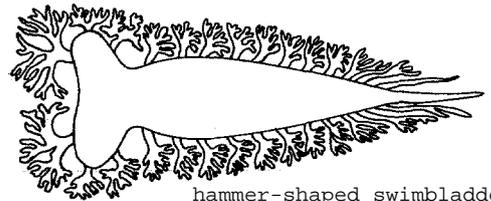
20 b. 21 to 32 pairs of swimbladder appendages with dorsal and ventral limbs well developed; 7 to 12 soft anal fin rays *Collichthys*

9 b. Swimbladder anchor-shaped (Fig. 14); 'head' of tadpole-shaped impression of otolith oval, 'tail' J-shaped (Fig. 16) *Megalonibea*



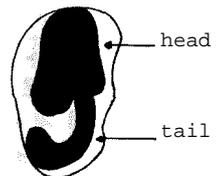
anchor-shaped swimbladder
Megalonibea
Fig. 14

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)



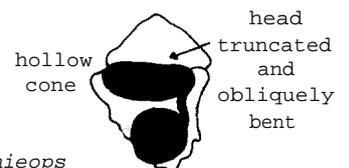
hammer-shaped swimbladder
Johnius
Fig. 15

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)

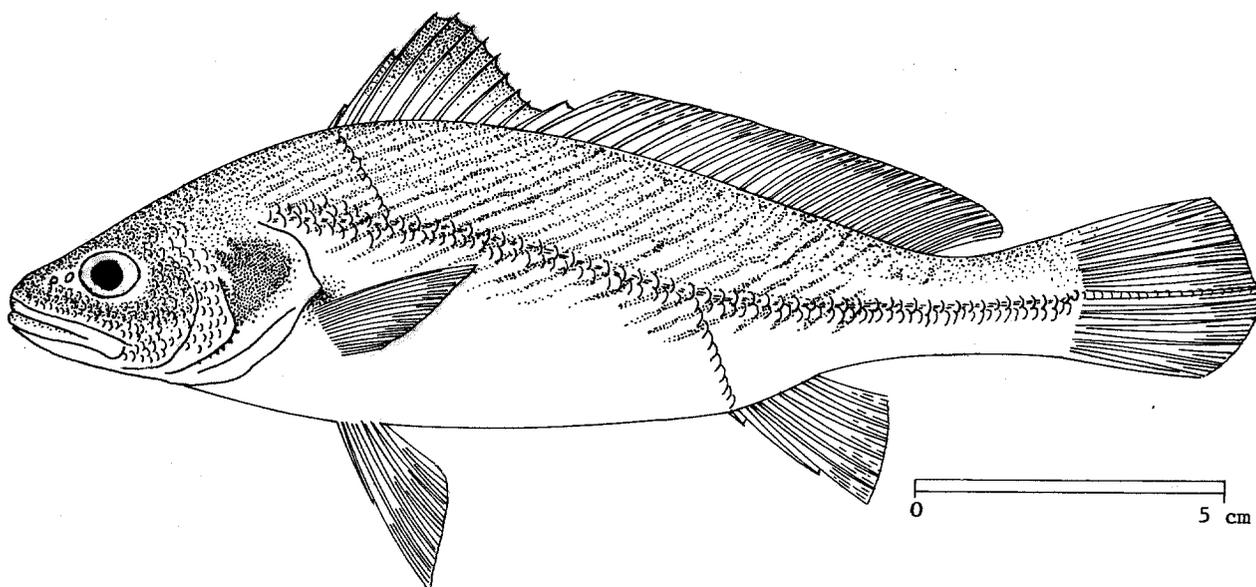
<i>Argyrosomus amoyensis</i>	SCIAEN Argyr 2	<i>Kathala axiltaris</i>	SCIAEN Kath 1
<i>Argyrosomus hololepidotus</i>	SCIAEN Argyr 3		
<i>Argyrosomus japonicus</i>	SCIAEN Argyr 4		
<i>Argyrosomus miiuy</i>	SCIAEN Argyr 5	<i>Macrospinosa cuja</i>	
<i>Aspertcorvina jubata</i>	SCIAEN Asper 1	<i>Megalonibea fusca</i>	
<i>Atrobucca nibe</i>	SCIAEN Atro 1	<i>Nibea albiflora</i>	SCIAEN Nib 1
		<i>Nibea bleekeri</i> (doubtful)	
<i>Bahaba chaptis</i>	SCIAEN Baha 1	<i>Nibea chui</i>	SCIAEN Nib 2
<i>Bahaba polykladiskos</i>		<i>Nibea maculata</i>	SCIAEN Nib 3
<i>Bahaba taipingensis</i>	SCIAEN Baha 2	<i>Nibea mitsukurii</i>	
		<i>Nibea semifasciata</i>	SCIAEN Nib 4
<i>Chrysochir aureus</i>	SCIAEN Chrys 1	<i>Nibea semiluctuosa</i>	SCIAEN Nib 5
		<i>Nibea soldado</i>	SCIAEN Nib 6
<i>Collichthys crocea</i>	SCIAEN Coll 1		
<i>Collichthys lucidus</i>		<i>Otolithes cuvieri</i>	SCIAEN Otol 1
<i>Collichthys niveatus</i>		<i>Otolithes ruber</i>	SCIAEN Otol 2
<i>Collichthys potyactis</i>			
<i>Daysciaena albida</i>	SCIAEN Daysc 1	<i>Ototolithoides biauritus</i>	SCIAEN Otold 1
		<i>Otolithoides pama</i>	SCIAEN Otold 2
<i>Dendrophysa russelli</i>	SCIAEN Dend 1	<i>Otolithoides perarmata</i>	
<i>Johnieops aneus</i>		<i>Panna microdon</i>	SCIAEN Pan 1
<i>Johnieops borneensis</i>			
<i>Johnieops dussumieri</i>	SCIAEN Johps 1	<i>Pennahia argentata</i>	SCIAEN Penn 1
<i>Johnieops novaeguineae</i>		<i>Pennahia macrocephalus</i>	SCIAEN Penn 2
<i>Johnieops pacificus</i> (doubtful)		<i>Pennahia macrophthatmus</i>	SCIAEN Penn 3
<i>Johnieops parvus</i>		<i>Pennahia pawak</i>	SCIAEN Penn 4
<i>Johnieops ptagiostoma</i> (doubtful)			
<i>Johnieops sina</i>	SCIAEN Johps 2		
<i>Johnieops tingi</i>		<i>Protonibea diacanthus</i>	SCIAEN Proto 1
<i>Johnieops vogleri</i>	SCIAEN Johps 3		
<i>Johnieops weberi</i> (doubtful)		<i>Pterotolithus lateoides</i>	SCIAEN Ptero 1
<i>Johnius belangerii</i>	SCIAEN John 1	<i>Pterotolithus maculatus</i>	SCIAEN Ptero 2
<i>Johnius carouna</i>			
<i>Johnius carutta</i>	SCIAEN John 2	<i>Umbrina robinsonii</i>	
<i>Johnius coitor</i>	SCIAEN John 3	<i>Umbrina ronchus</i>	
<i>Johnius dussumieri</i>	SCIAEN John 4	<i>Umbrina sinuata</i>	
<i>Johnius hypostomus</i>			
<i>Johnius macropterus</i>			
<i>Johnius mannarensis</i>			
<i>Johnius novaehollandiae</i>			
<i>Johnius trachycephalus</i>	SCIAEN John 5		

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



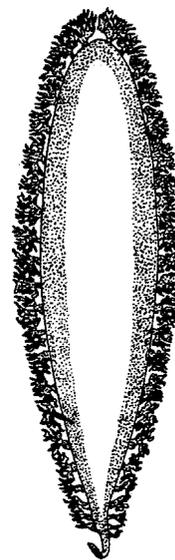
VERNACULAR NAMES:

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 1/2 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.



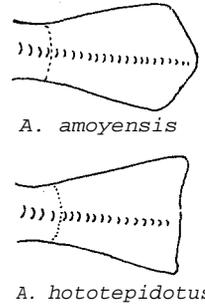
swimbladder, ventral view

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:

Argyrosomus hototepidotus, *A. japonicas* and *A. miiuy*: more swimbladder appendages (25 to 34 pairs; 22 to 29 in *A. amoyensis*); 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.

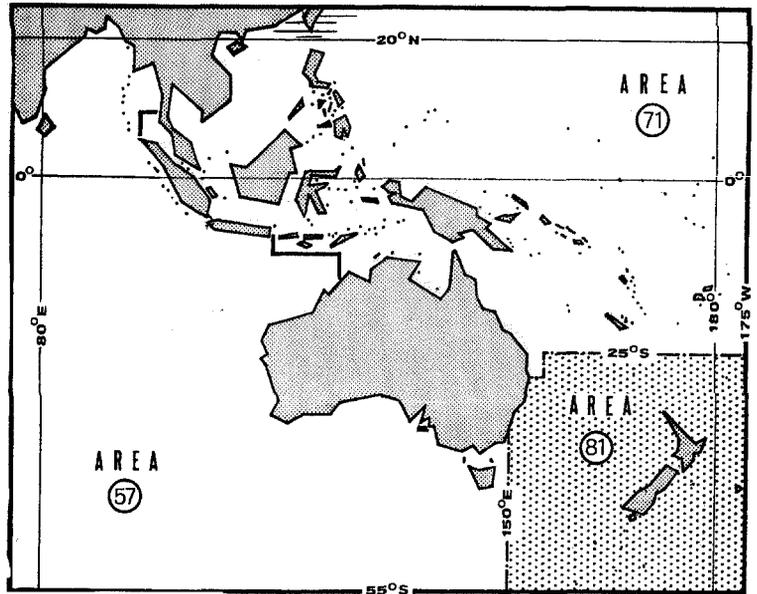
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

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:

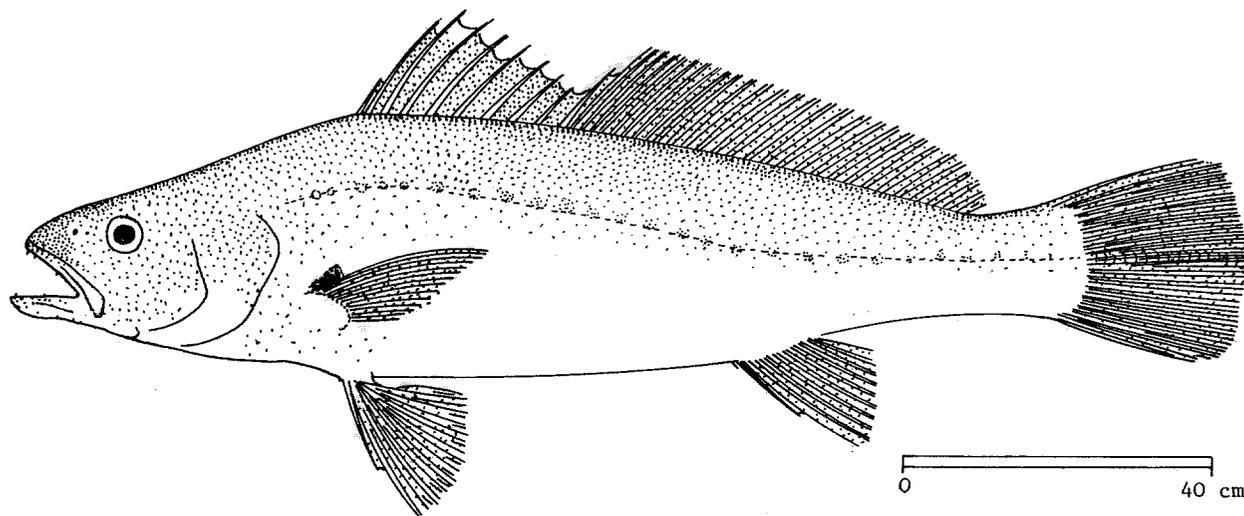
area 57 (Eastern Indian Ocean): 41 900 tons (India only)
 area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons;
 Malaysia: 4 500 tons)

Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

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 21% 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, elsewhere ctenoid (rough to touch); lateral line scales reaching to tip of caudal fin.

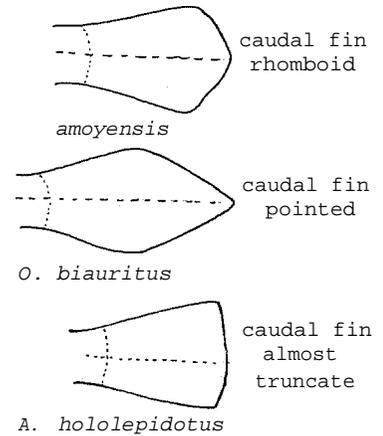
Colour: grey/brown on back shading to silvery grey on flanks and belly; fins reddish; a black dot at pectoral fin base.

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.

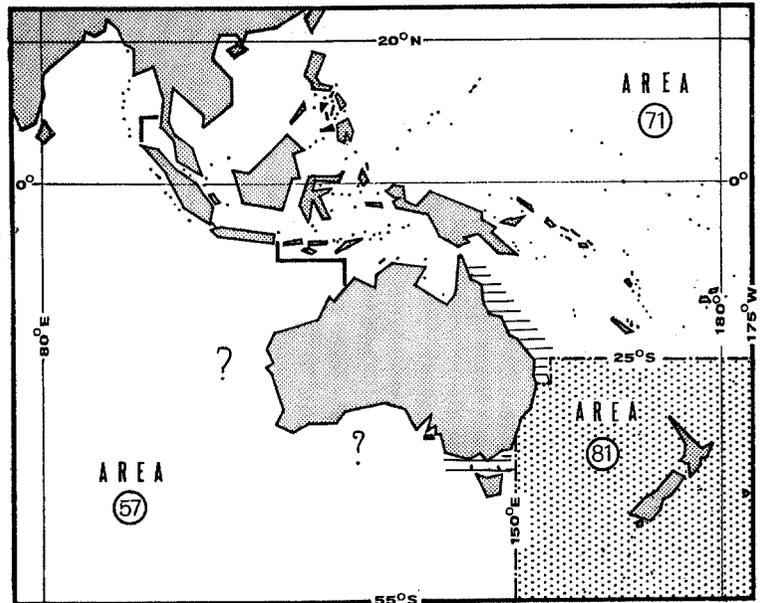
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

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:

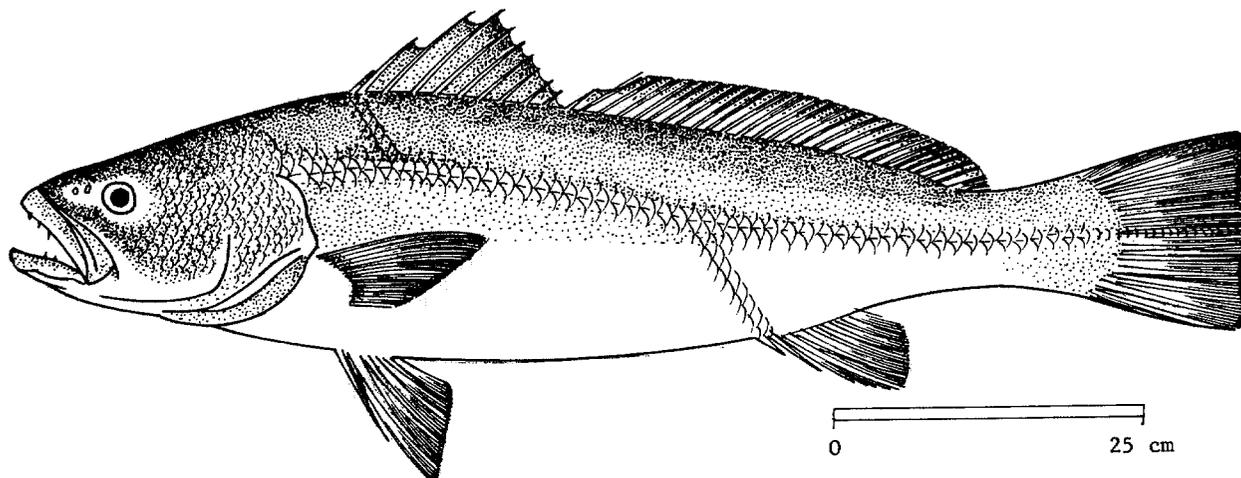
area 57 (Eastern Indian Ocean): 41 900 tons (India only)
 area 71 (Western Central Pacific): 21 400 tons (Philippines: 16 900 tons;
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Caught with bottom trawls, gill nets and handlines.

Marketed fresh; also dried-salted; swimbladder dried.

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FAMILY: SCIAENIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)*Argyrosomus japonicus* (Temminck & Schlegel, 1833)SYNONYMS STILL IN USE: *Nibeia japonica*: Matsubara, 1937; Chu, Lo & Wu, 1963
Argyrosomus japonicus: Lin, 1940; Matsubara, 1955

VERNACULAR NAMES:

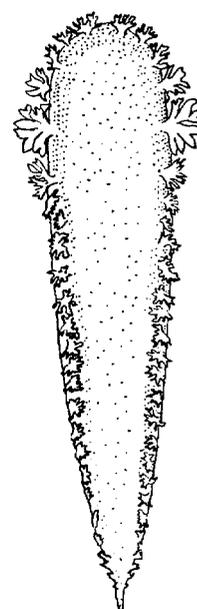
FAO: En - Japanese meagre
Fr -
Sp -

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*).

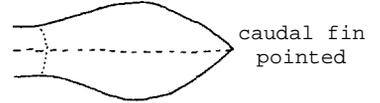
Bahaba taipingensis: caudal fin long and pointed and strong 2nd anal fin spine; also, only one pair of swimbladder appendages.

Nibea species: 2nd anal fin spine very strong.



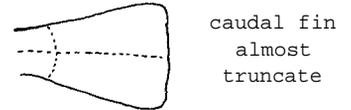
caudal fin
rhomboid

A. amoyensis
A. miiuy



caudal fin
pointed

B. taipingensis



caudal fin
almost
truncate

A. japonicus

SIZE:

Maximum: 180 cm; common: 70 to 120 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

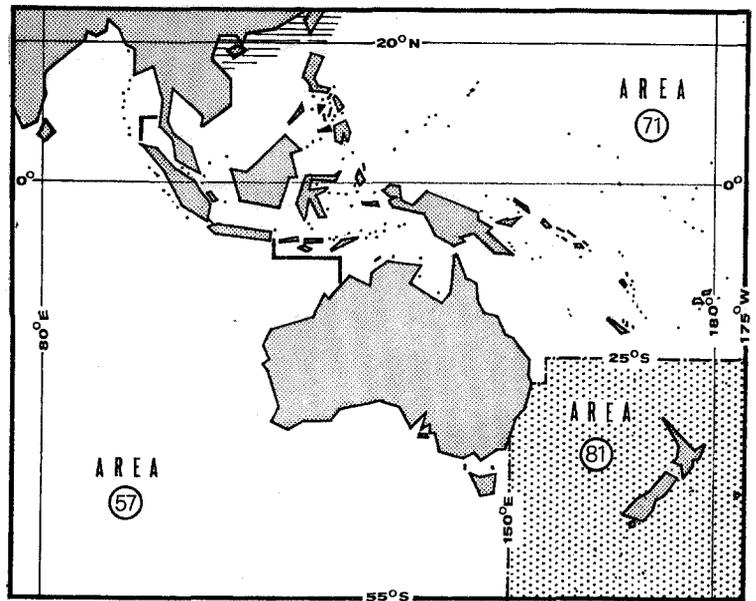
Southern China, northward to southern Japan.

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.

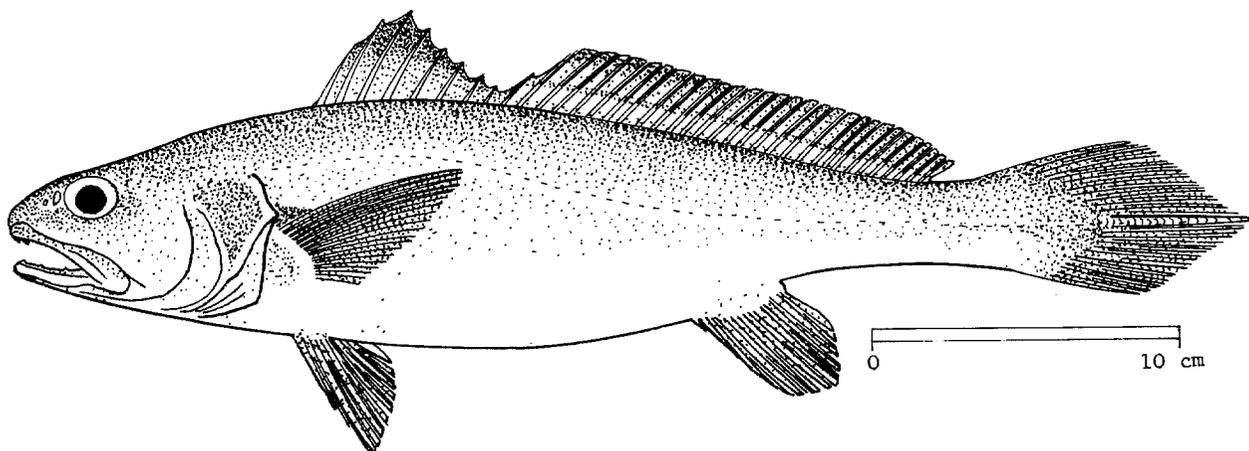
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

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

<i>Argyrosomus miiuy</i> (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:

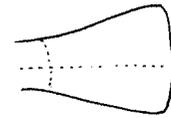
DISTINCTIVE CHARACTERS:

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:

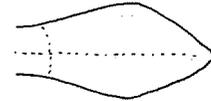
Argyrosomus japonicus: caudal fin truncate or biconcave; shorter and fewer swimbladder appendages (26 pairs; 30 to 34 in *A. miiuy*), of which the 4th to 6th are enlarged; also, the upper jaw does not reach back to behind the eye and the pectoral fins are shorter (15 to 17% of standard length; 20% in *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.

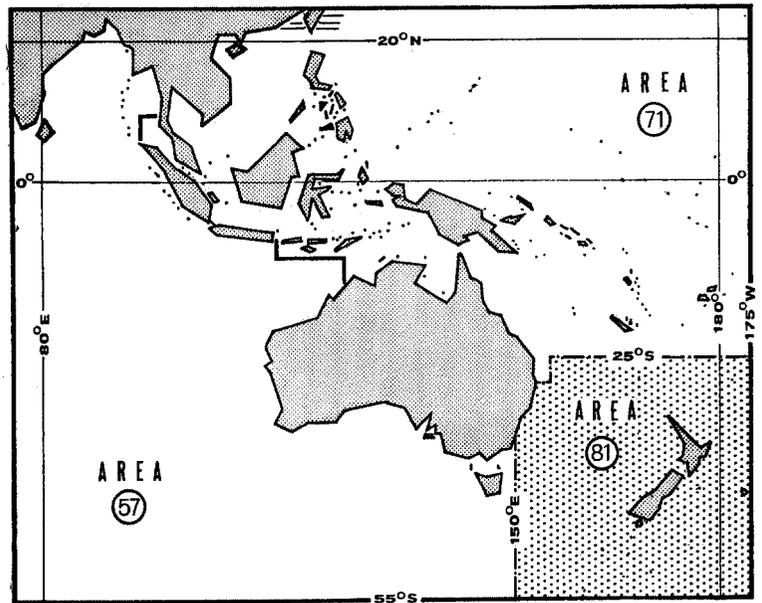
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

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.

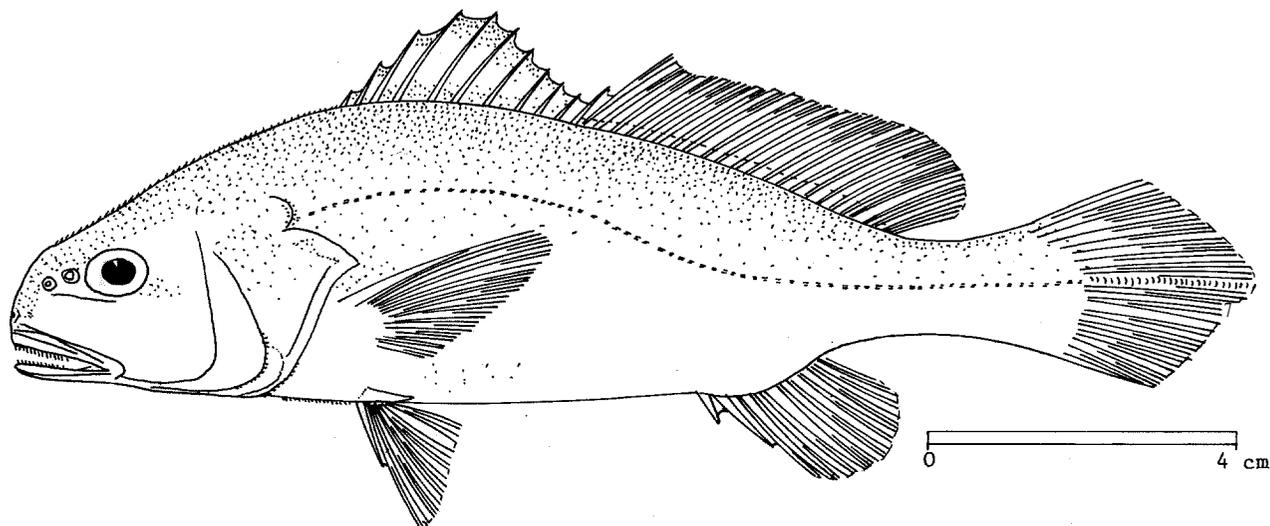
FAO SPECIES IDENTIFICATION SHEETS

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



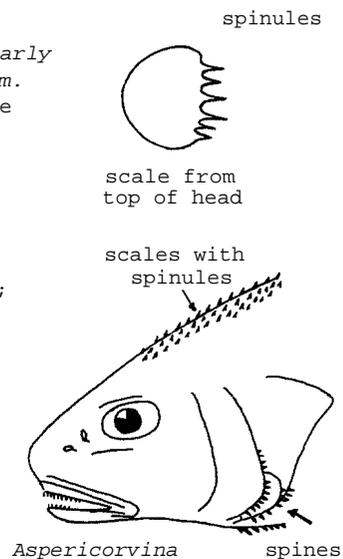
VERNACULAR NAMES:

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-operculum, sub-operculum 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.

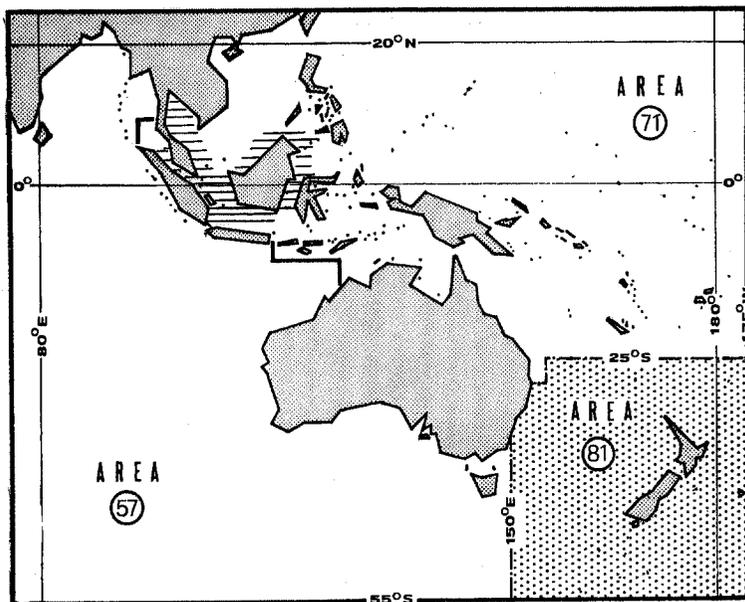
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

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.

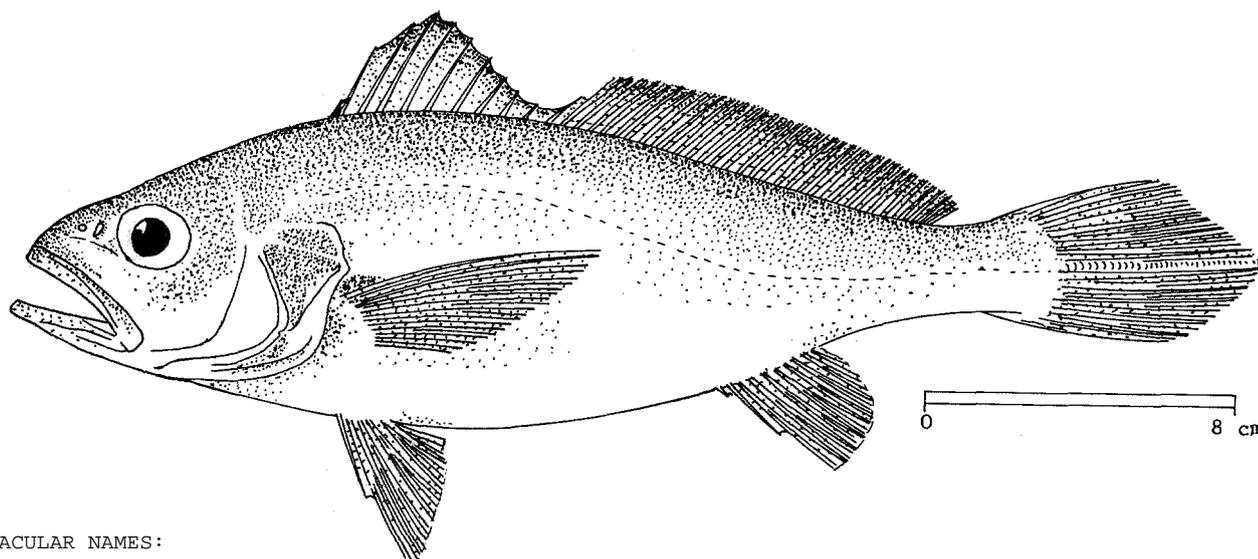
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

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

Atrobucca nibe (Jordan & Thompson, 1911)

SYNONYMS STILL IN USE: *Nibe nibe*: Matsubara, 1935
Argyrosomus nibe: Lin, 1938
Atrobucca nibe: Chu, Lo & Wu, 1963
Nibe pingi Wang, 1935



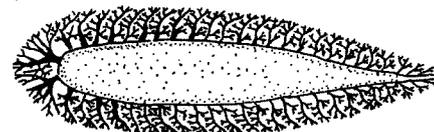
VERNACULAR NAMES:

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 jaw 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



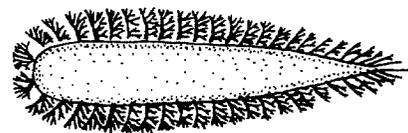
swimbladder
lateral view

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.

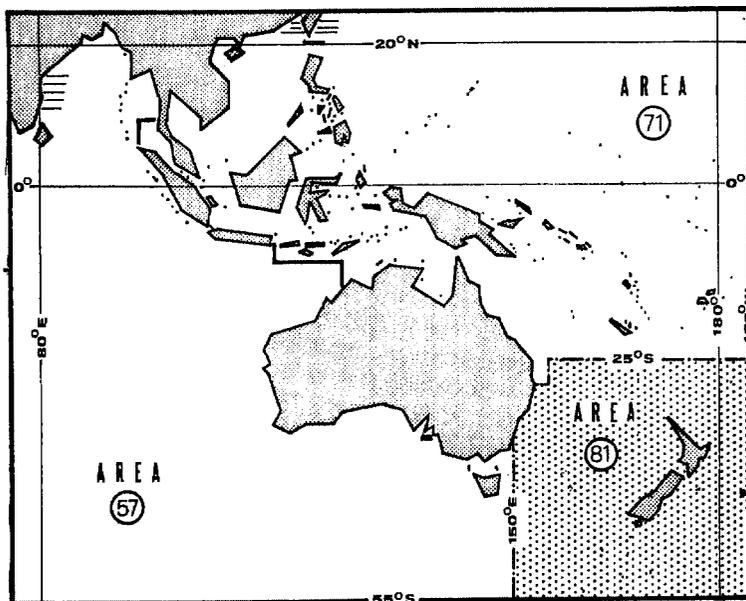
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

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.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCIAENIDAE

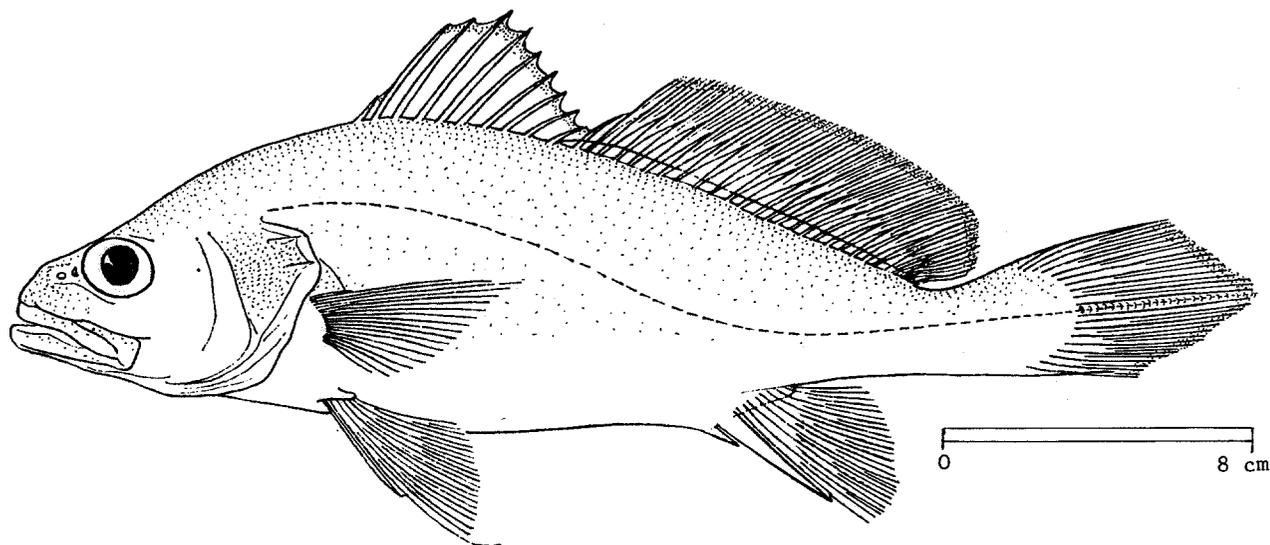
FISHING AREAS 57,71

(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



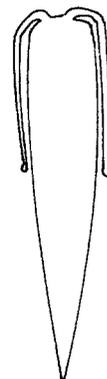
VERNACULAR NAMES

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:

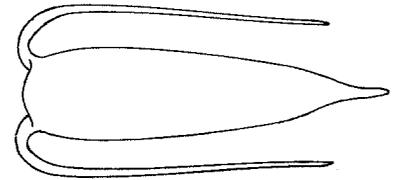
B. polykladiskos: 27 soft dorsal fin rays. (24 to 26 in *B. chaptis*) and a much wider interorbital space (22.6% of head length; 14 to 18% in *B. chaptis*).

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.



swimbladder
B. taipingensis

SIZE:

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

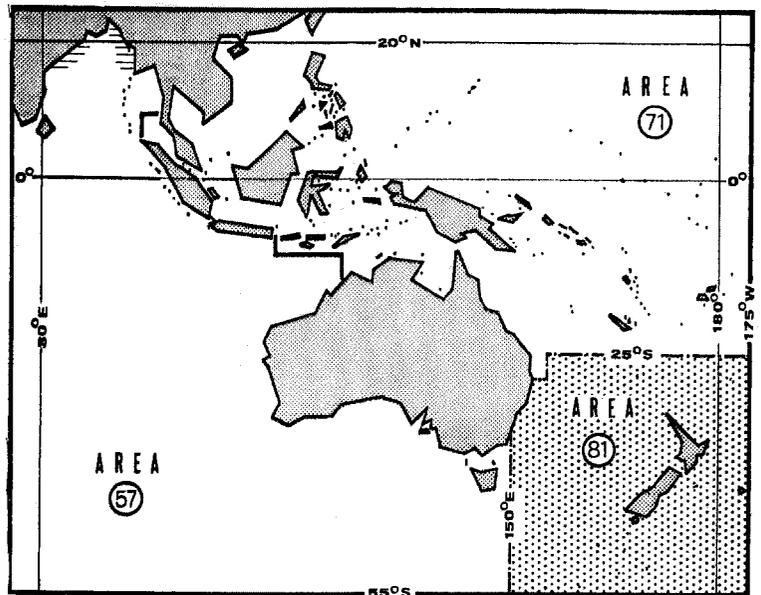
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

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.

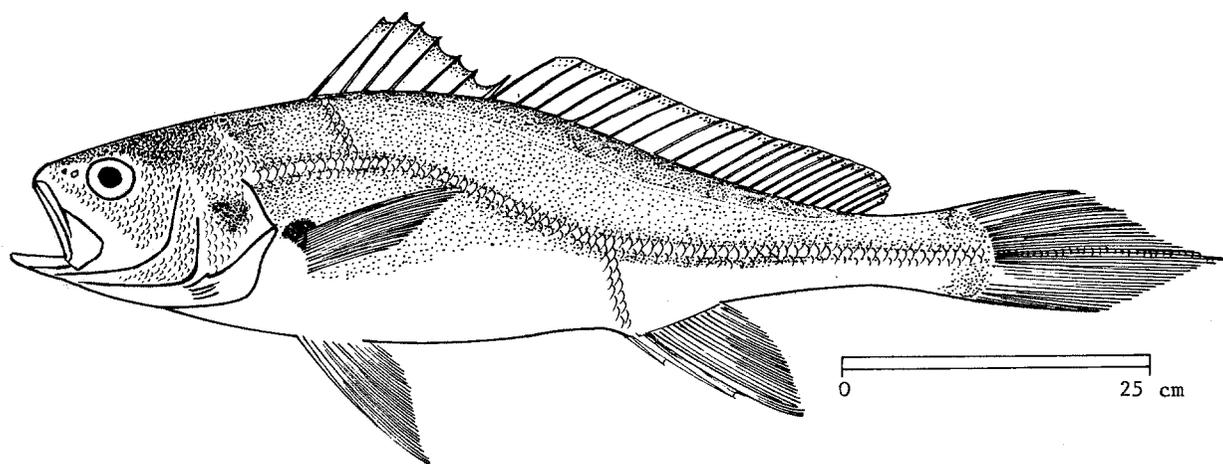
Marketed fresh; also dried-salted; swimbladder dried.

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



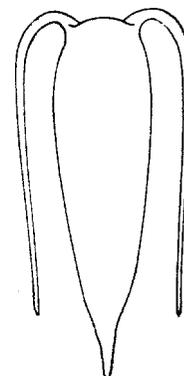
VERNACULAR NAMES:

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:

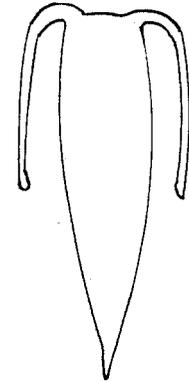
Bahaba chaptis (Indian Ocean) and *B. polyktadiskos* (Borneo to Vietnam): more dorsal fin spines (10; 7 to 8 in *B. taipingensis*), more soft dorsal fin rays (24 to 27; 21 to 25 in *B. taipingensis*) and fewer lower gill rakers (7 to 8; 11 to 12 in *B. taipingensis*); also, swimbladder appendages shorter 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*).

Macropsinosa 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:

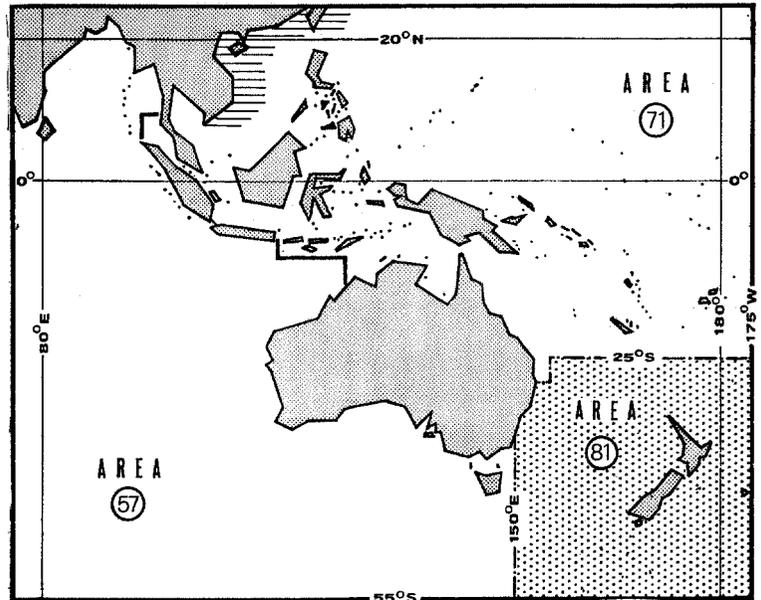
Chinese and Korean waters, especially at the great estuaries.

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.