

FAO SPECIES IDENTIFICATION SHEETS

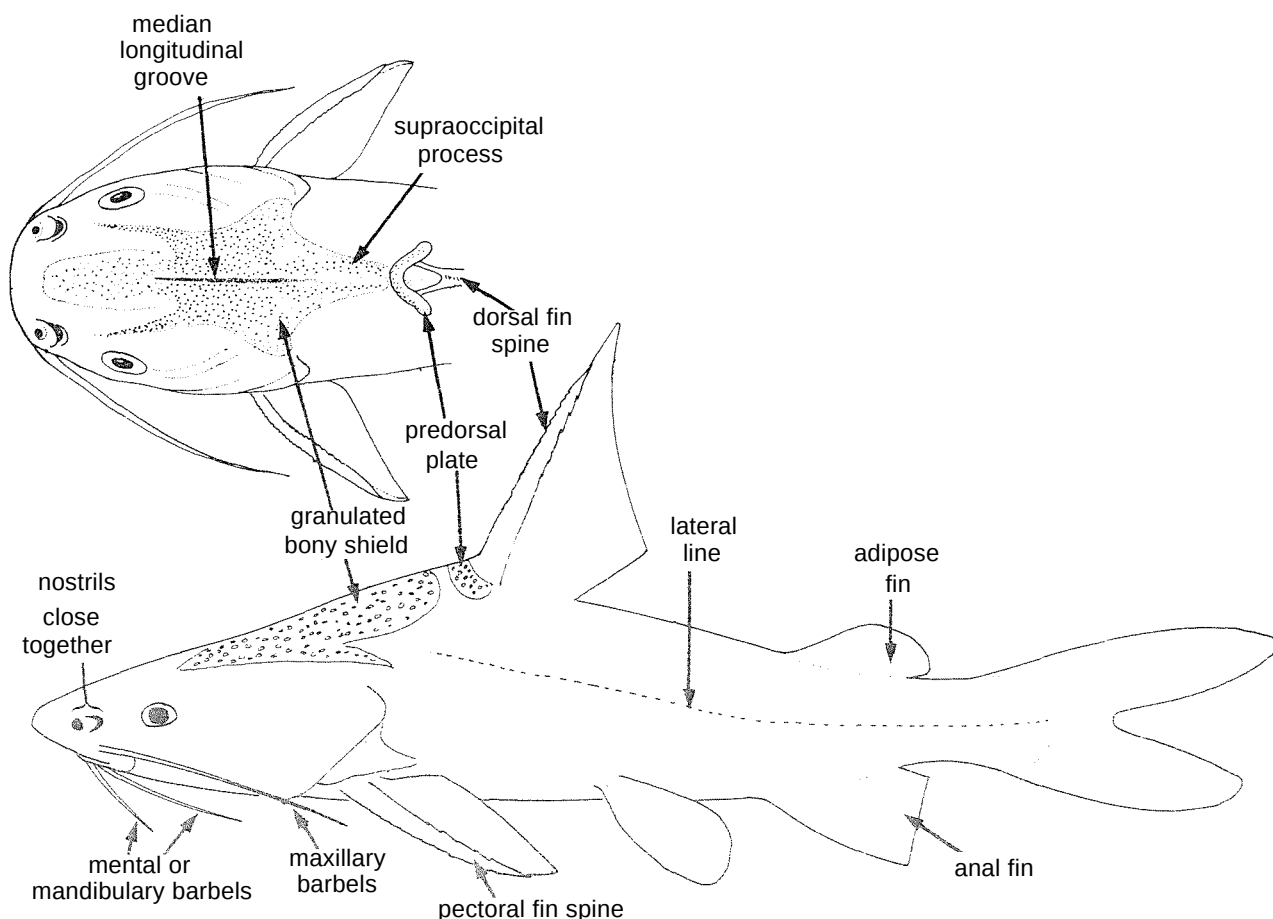
FISHING AREA 51
(W. Indian Ocean)

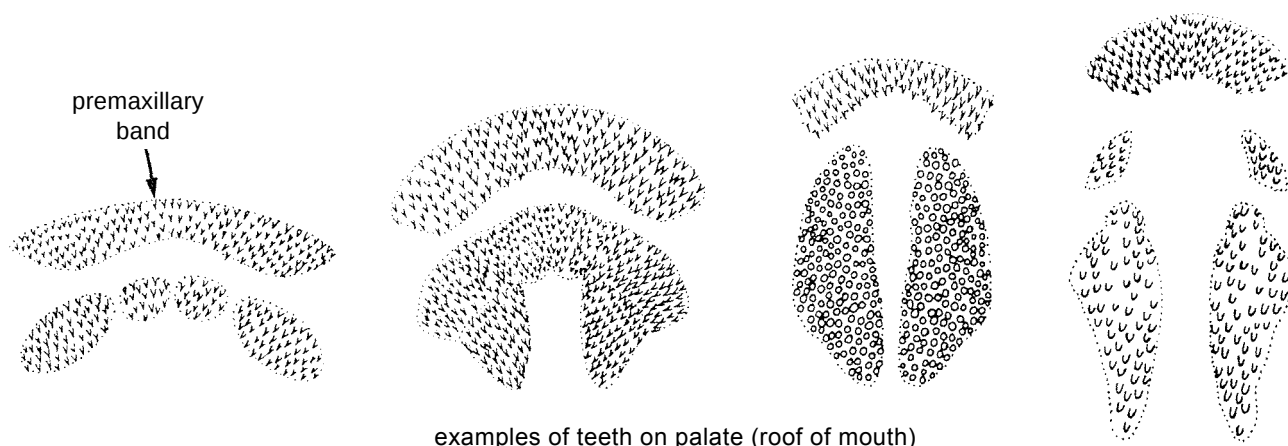
ARIIDAE

(often Tachysuridae and sometimes Bagreidae in the literature)

Sea catfishes

Medium to very large fishes. Snout and head rounded to depressed, mouth terminal to inferior, gill membranes fused with each other and attached to isthmus, with a narrow free posterior flap; teeth in jaws always fine and villiform, in curved bands; teeth on palate villiform or conical granular or molarlike arranged in 1 to 3 patches of varying shapes and sizes on each side of palate (absent in *Ancharius* species); 1 to 3 pairs of barbels, usually a pair of maxillary (but absent in *Batrachcephalus*), usually 2 pairs of mental barbels (rarely a single pair in *Batrachcephalus* and none in *Osteogeneiosus*); head covered with a bony shield comprising frontal, supraoccipital, sphenotic and other bones of otic region, often rugose, granulated, part of which is usually visible beneath the skin (obscured by thick skin and muscle in some species); posterior portion of bony shield (supraoccipital process) extending backward, and medially to meet the predorsal plate (basal bone of first dorsal fin); 2 pairs of adjacent nostrils on each side of snout (spaced in *Ancharius*), the posterior pair partly covered by a flap of skin (no barbels); gillrakers present on anterior faces of all arches, total number 7 to 42 on first arch, rakers either present or completely absent on posterior faces of first and second arches. First dorsal fin short with a long, often rough spine, more or less serrated on inner edge, sometimes also on outer edge, preceded by a very short spine or buckler and followed by 7 rays; a short adipose dorsal fin present, situated above anal fin; pectoral fins low on sides, with a strong, mostly serrated spine and 7 to 13 rays; pelvic fins with 6 rays; anal fin with 14 to 30 rays; caudal fin forked with 13 branched rays (7 in upper and 6 in lower lobe). Scales absent; lateral line complete. Swimbladder with a posterior chamber in some species.





Sexual changes: sea catfishes are oral incubators (at least in all recorded cases), the male carrying the developing eggs and fingerlings in the oral cavity for some time. In mature males, the throat is often expanded. In mature females, the pelvic fins are longer than in males of similar size, and as spawning approaches, the rays of these fins become thickened, the innermost developing large pads or "hooks".

Growth changes: the relative size of various parts of the body such as eye, barbels and fin filaments, change with growth. Patches of palatine teeth also increase in size, may become completely fused with each other, e.g. *Arius thalassinus*, and in some granular-toothed ariids, the teeth may be partially lost (e.g., *Arius polystaphylodon*, *A. maculatus* and *A. tenuispinis*).

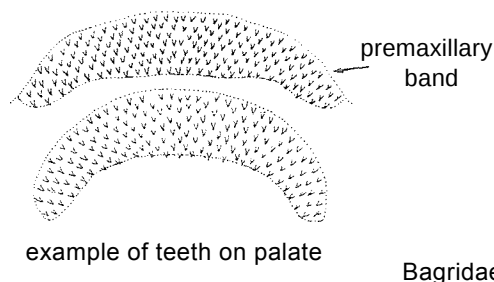
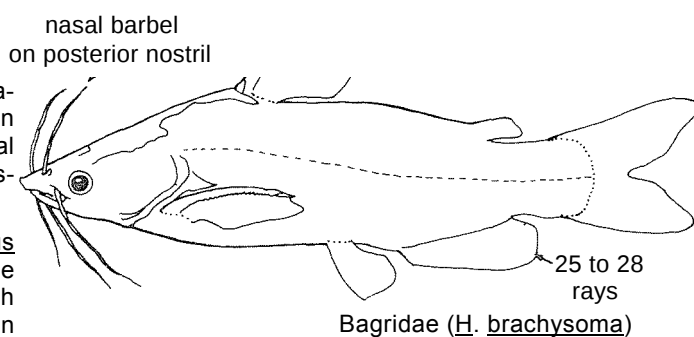
Colour: usually greyish to metallic blue, dark grey or brown on back and sides, sometimes with black patches paler to white below; a silvery lateral stripe present in some species.

Sea catfishes occur mostly in marine, brackish and fresh waters of warm temperate and tropical regions. The marine representatives known from Fishing Area 51 include approximately 23 species, some of which attain large sizes (over 1 m) and are mostly confined to muddy coastal waters down to 50 m depth, although a few species (e.g., *A. dussumieri*, *A. tenuispinis*, *A. thalassinus* and other *Arius* species) are caught at greater depths. Species found in fresh water about 10 inhabit rocky to clay-bedded streams, rarely stagnant waters. Several species of high economic value are included in this family. The sea catfish catches reported in 1981 from Fishing Area 51 totalled 52,744 tons (33,371 of which were taken by India and 10,269 by Pakistan). The flesh is usually of good quality, but the sharp dorsal and pectoral fin spines can inflict painful wounds. Fishermen often break the spines before stacking them for the market.

SIMILAR FAMILIES OCCURRING IN THE AREA*:

All other catfish families either have widely separated nostrils, a barbel on posterior nostril, teeth on palate villiform and in a single transverse band, or dorsal and anal fins continuous with caudal fin. Additional distinguishing characters are the following:

Bagridae (only one marine representative *Mystus gulio*, occasionally taken from near shore waters and one species, *Horabagrus brachysoma*, found in brackish waters): 4 pairs of barbels (usually 3 in Ariidae); anal fin long with 25 to 28 rays in *H. brachysoma* (14 to 30 in Ariidae)



* Brackish water and marine representative only

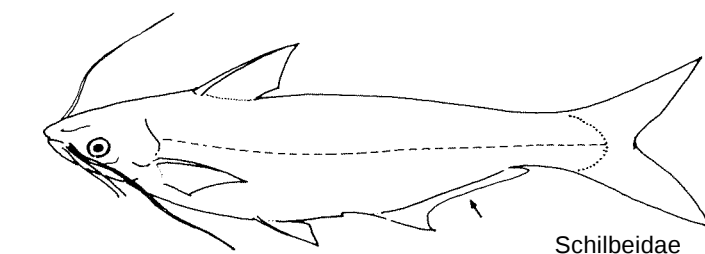
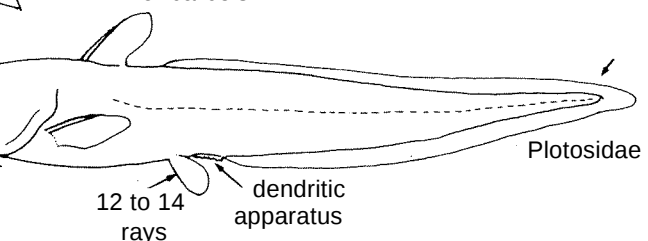
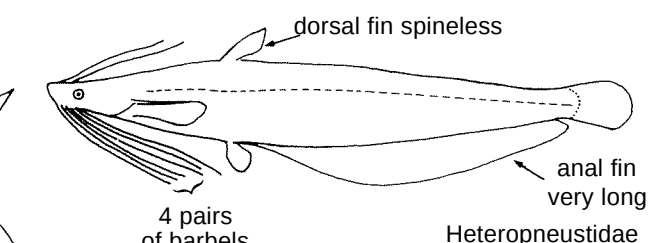
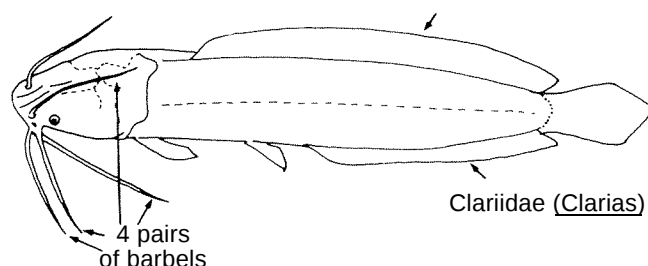
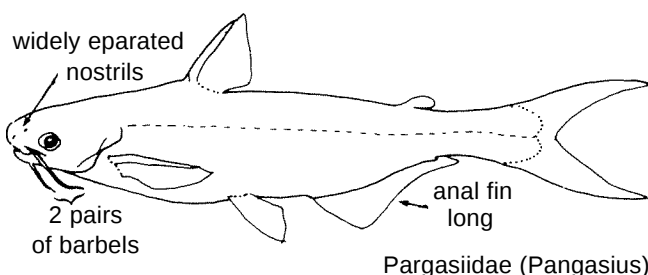
Pangasiidae (Pangasius pangasius, often found in brackish waters and within tidal influence): only one pair of maxillary and one pair of mandibular barbels (usually a total of 3 pairs of barbels in Ariidae, except in Batrachcephalus, which has only one and Osteogeneiosus where they are absent); anal fin long, with 29 to 39 rays.

Clariidae (mostly freshwater species): 4 pairs of barbels; dorsal fin very long, without spines; anal fin long; both dorsal and anal fin free from caudal; adipose fin absent.

Heteropneustidae (mostly freshwater species): 4 pairs of barbels; no spine in dorsal fin; adipose fin absent; anal fin very long.

Schilbeidae (mostly freshwater, but a few species may enter brackish waters): anal fin long.

Plotosidae: pelvic fin with 12 to 14 rays (6 in Ariidae); a dendric preanal apparatus present.



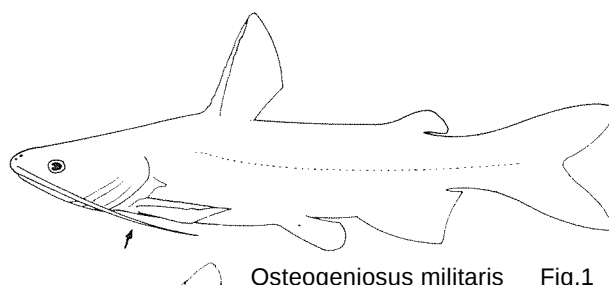
KEY TO GENERA AND SPECIES OCCURRING IN THE AREA:

1a. Only 1 or 2 pairs of barbels

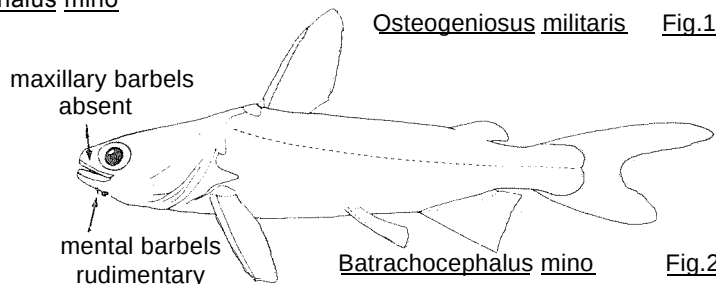
2a. One pair of stiff and semiosseous maxillary barbels (mental barbels absent) (Fig.1) Osteogeneiosus militaris

2b. Only 1 or 2 pairs of soft, minute, rudimentary mental barbels (maxillary barbels absent) (Fig.2) Batrachcephalus mino

1b. Three pairs of slender barbels (1 pair maxillary and 2 pairs mandibular)



Osteogeneiosus militaris Fig.1



Batrachocephalus mino Fig.2

*To be considered as provisional since the taxonomy of this family is still in need of revision

3a. Palate (roof of mouth) toothless; nostrils slightly separated

4a. Maxillary barbel a little longer than head, reaching beyond pectoral fin base; pectoral fin reaching to pelvic fin base (Fig.3). Ancharius

4b. Maxillary barbel half of head length. not reaching to pectoral fin base; pectoral fin not reaching to pelvic fin (Fig.4)Ancharius brevibarbis

3b. Palate (roof of mouth) with teeth; nostrils close together

5a. Teeth on palate as a single patch on each side

5b. (see page 8)

6a. Teeth on palate as a triangular or oval small patch (Figs 6,7,9 to 12)

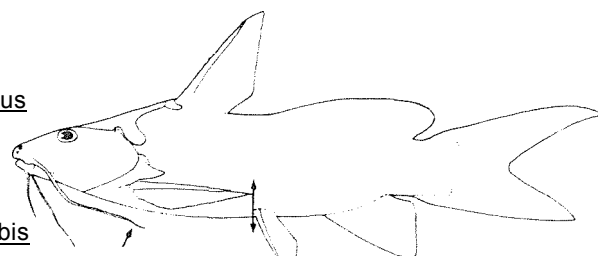
6b. (see page 6)

7a. Maxillary barbels short, not extending beyond orbit; snout long, spatulate (Fig.5) Arius subrostratus

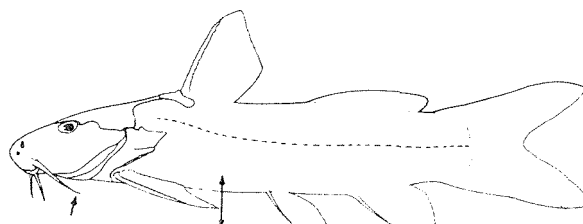
7b. Maxillary barbels long, extending beyond orbit; snout short, obtusely rounded (Fig. 8)

8a. Teeth on palate in an oval patch, with sparsely packed conical teeth (Fig.6) Arius sumatranus

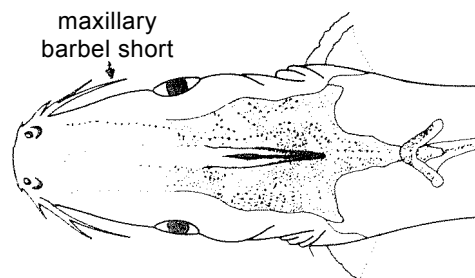
8b. Teeth on palate in a triangular or oval patch, with densely packed teeth (Figs 7,9 to 12)



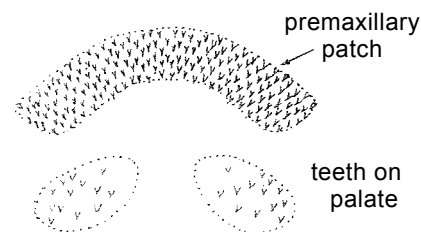
Ancharius fuscus Fig.3



Ancharius brevibarbis Fig.4



dorsal view of head
Arius subrostratus Fig.5



Arius sumatranus Fig.6

9a. Outer edge of palate teeth patch concave, inner edge convex (Fig.7) Arius venosus

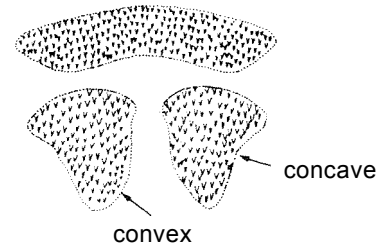
9b. Outer edge of palate teeth convex, inner edge concave (Figs 9 to 12)

10a. Head shield strongly granulated behind orbit, with a conical protuberance above eye, tapering as a wide V toward occiput (Fig. 8)

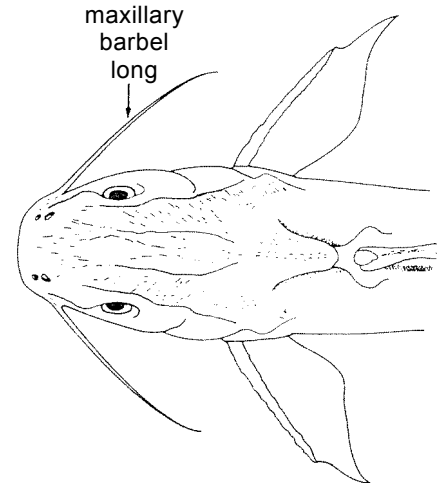
11a. Outer dorsal and pectoral fin rays prolonged; teeth on palate rounded or globular, inner edge with 2 concavities; anal fin rays 16 (Fig.9) Arius madagascariensis
(Madagascar and East Africa)

11b. Outer dorsal fin ray alone prolonged; teeth on palate villiform, roughly triangular, with a single concavity; anal fin rays 19 or 20 (Fig.10)..... Arius caelatus
(India and Pakistan)

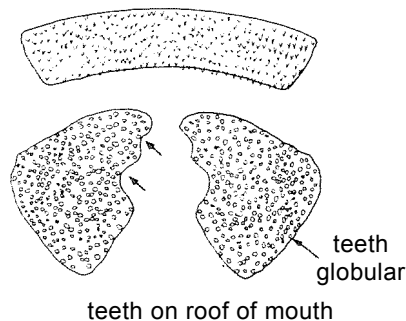
10b. Head shield not very granulated; preorbital conical protuberance not well pronounced (Figs 11,12)



teeth on roof of mouth



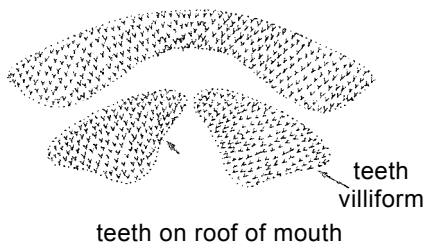
Arius madagascariensis Fig.8



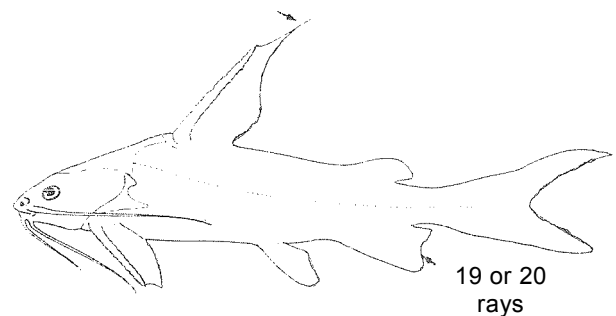
teeth on roof of mouth



Arius madagascariensis Fig.9



teeth on roof of mouth



Arius caelatus Fig.10

- 12a. Barbels fleshy, head depressed, snout duck-bill shaped; teeth on palate as an oval or pyriform patch on each side (Fig.11) Arius platystomus
(India and Sri Lanka)

- 12b. Barbels not fleshy, head not very depressed, snout obtusely rounded; teeth on palate in a triangular patch on each side, diverging behind, with a conical projection at the anterior end (Fig.12)..... Arius africanus
(East Africa, Tanzania)

- 6b. Teeth on palate as an elliptical, large patch (Fig.16)

- 13a. Tooth patch placed far back in buccal cavity; dorsal fin spine slender, equal to or slightly longer than pectoral fin spine (Fig.13); median longitudinal groove long, narrow, running onto supraoccipital process (Fig.15a) Arius tenuispinis

- 13b. Tooth patch placed well forward in buccal cavity; dorsal fin spine strong, equal to or shorter than pectoral fin spine (Fig.14); median longitudinal groove shorter, not running onto supraoccipital process (Fig.15b)

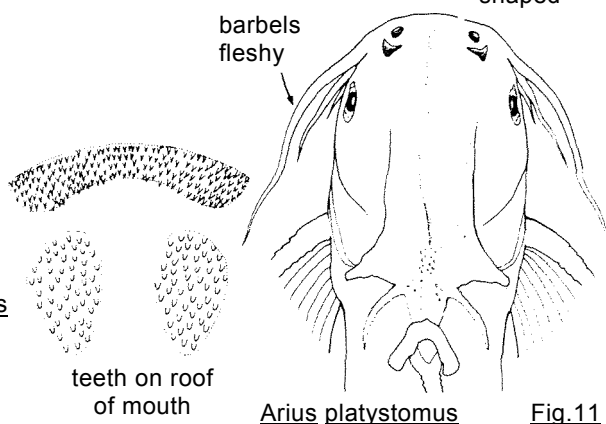


Fig.11

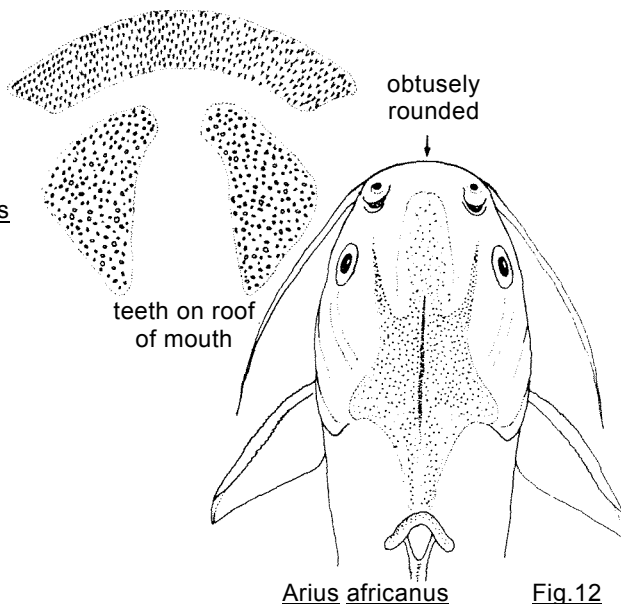


Fig.12

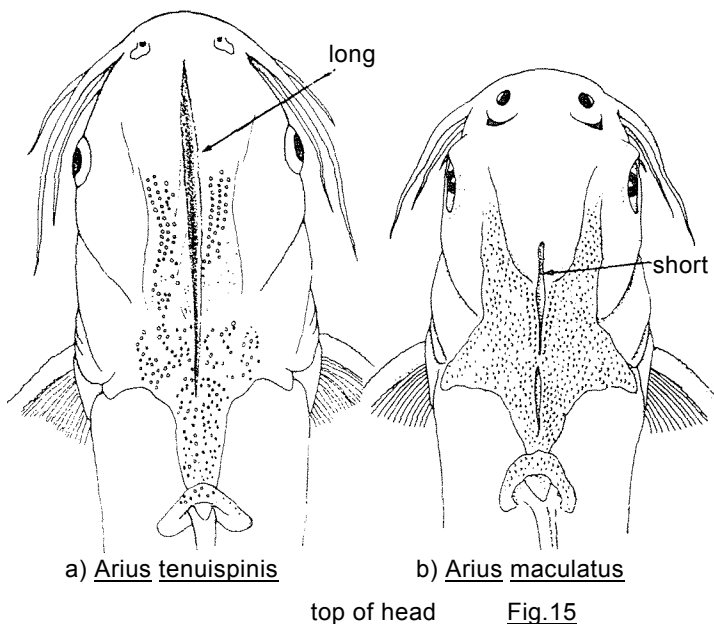


Fig.15

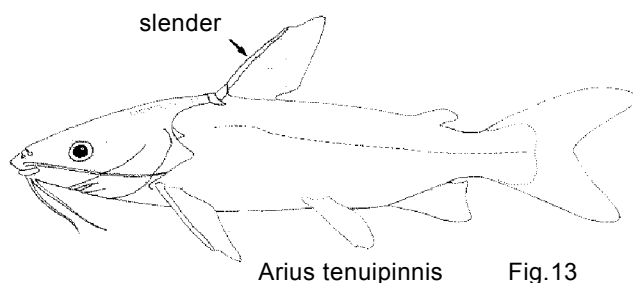


Fig.13

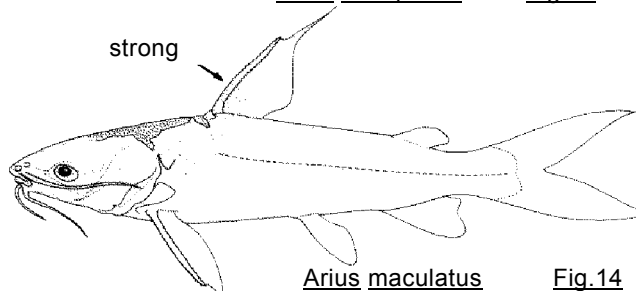


Fig.14

14a. Tooth patches on palate fully elliptical, well formed, with densely packed teeth (Fig.16a) Arius maculatus

14b. Tooth patches on palate irregularly ovate, not fully formed, with loosely packed teeth, inner margins of patches being not straight (Fig. 16b,c)

15a. Anal fin with 14 to 16 rays (12 to 14 branched) (Fig.17) Arius jella

15b. Anal fin with 20 to 22 rays (14 to 16 branched) (Fig.18) Arius arius

5b. Teeth on palate in 2 or 3 patches on each side

16a. Teeth on palate in 3 patches on each side, triangular, villiform, the vomerine patch in middle and the ectopterygoid patch either from the sides of the vomerine patch or below them, not fused in juveniles, but joined in adults (Fig.19) Arius thalassinus

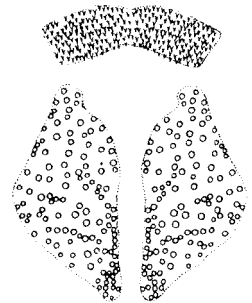
16b. Teeth on palate in 2 patches on each side (Fig.20a,b,c)



a) Arius maculatus

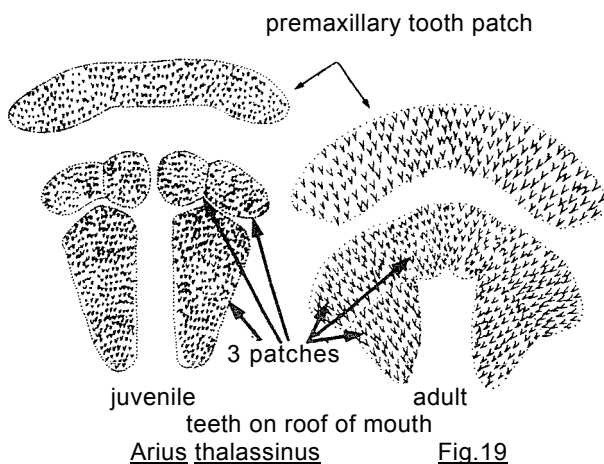


b) Arius jella

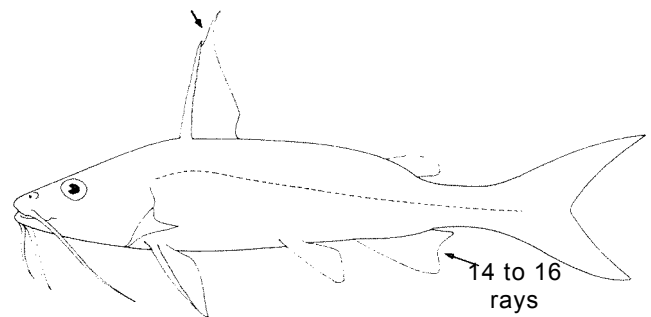


c) Arius arius

tooth patches on roof of mouth Fig. 16

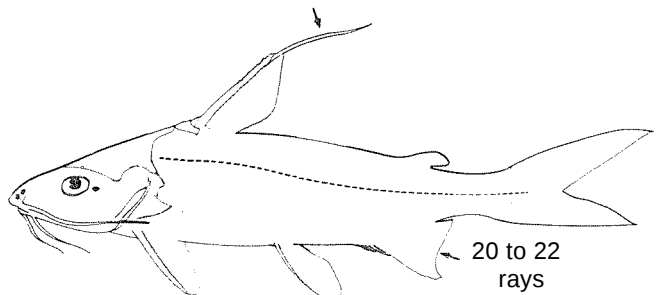


Arius thalassinus Fig.19



Arius jella

Fig.17



Arius arius

Fig.18

17a. Patches of teeth on palate placed 1 below the other, the posterior patch very large, 3 or 4 times larger than the anterior patch (Fig.20a, b,c)

18a. A preorbital oval protuberance of the lateral ethmoid present (Fig.21a) Arius dussumieri

18b. No such preorbital protuberance of the lateral ethmoid present (Fig.21b)

19a. Posterior patch of teeth on palate oval, with large globular teeth of various size, converging posteriorly (Fig.20b)..... Arius crossocheilus
(India and Pakistan)

19b. Posterior patch long, narrow, carrot shaped and with sparsely packed conical teeth (Fig.20c) Arius polystaphylodon
(East Africa)

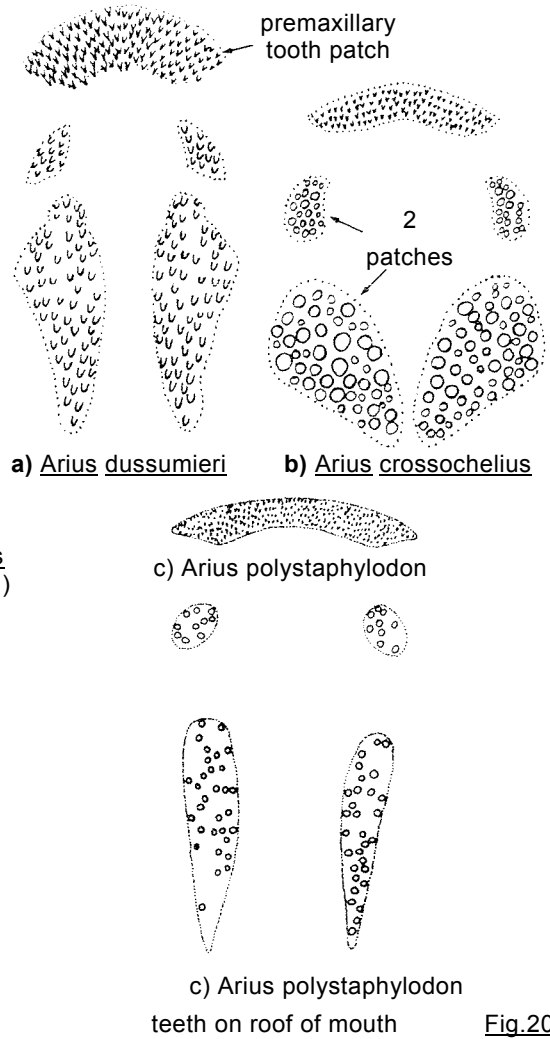


Fig.20

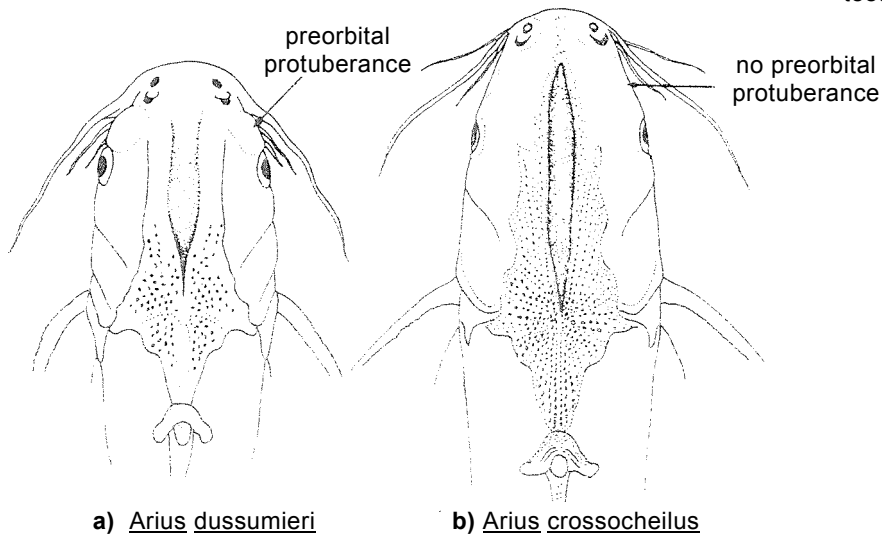


Fig.21

17b. Patches of teeth on palate placed side by side and not one below the other (Fig. 22a,b)

20a. Basal bone of dorsal fin (predorsal plate) very large and butterfly-shaped (Fig.23a) Arius sagor

20b. Basal bone of dorsal fin (predorsal plate) smaller, not butterfly shaped (Fig.23b) Arius sona

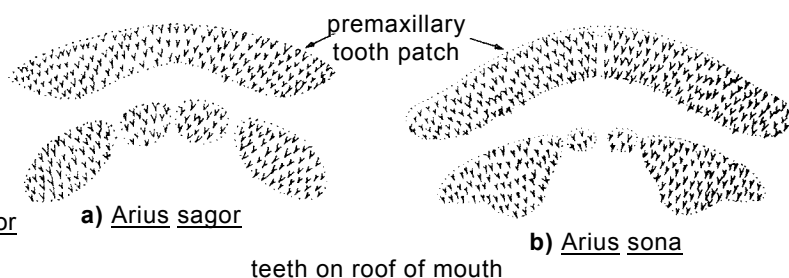


Fig.22

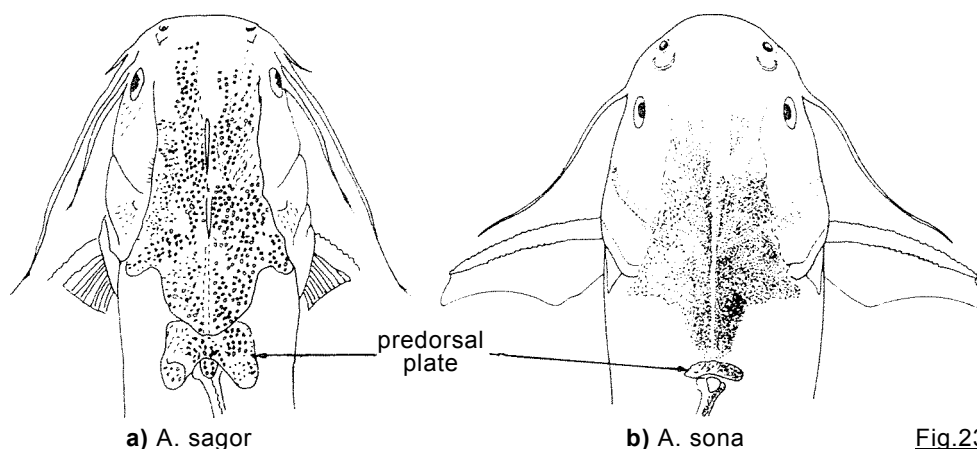


Fig.23

LIST OF SPECIES OCCURRING IN THE AREA:

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

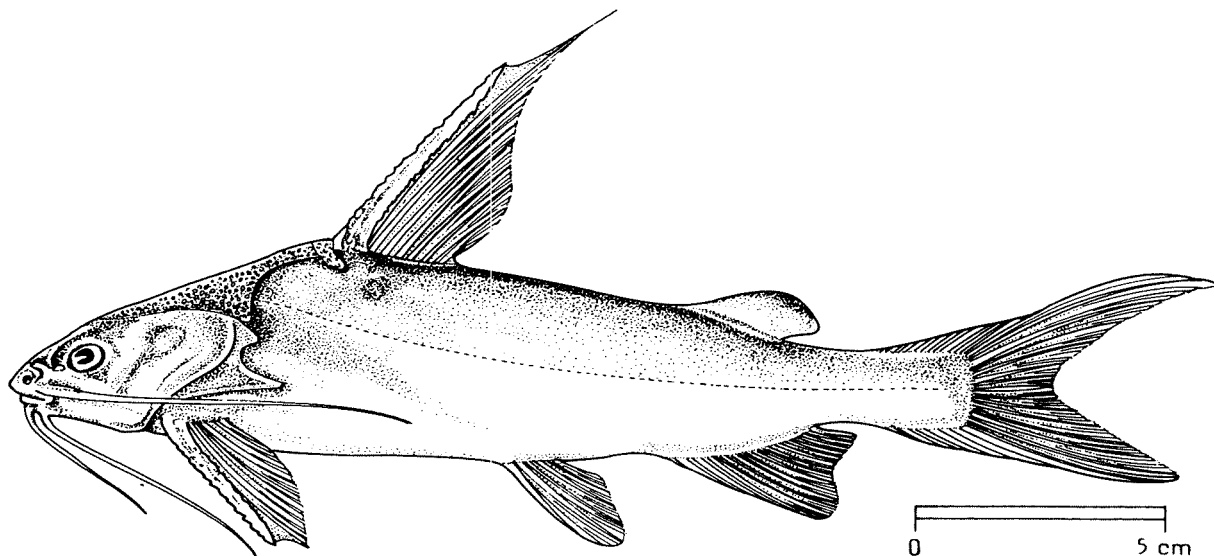
* <u>Ancharius brevibarbis</u> Boulanger, 1910	
* <u>Ancharius fuscus</u> Steindachner, 1880	
<u>Arius africanus</u> Günther & Playfair, 1866	ARIID Ariu 19
<u>Arius arius</u> Hamilton, 1822	ARIID Ariu 20
* <u>Arius baroni</u> (Newton,)	
<u>Arius caelatus</u> Valenciennes, 1840	ARIID Ariu 1 (=ARIID Ari 1, Fishing Areas 57/71)
** <u>Arius capillonis</u> (Steindachner,)	
<u>Arius crossocheilus</u> Bleeker, 1846	ARIID Ariu 21
<u>Arius dussumieri</u> Valenciennes, 1840	ARIID Ariu 22
* <u>Arius granulatus</u> (Peters,)	
<u>Arius jella</u> Day, 1877	ARIID Ariu 23
<u>Arius maculatus</u> (Thunberg, 1792)	ARIID Ariu 2 (=ARIID Ari 2, Fishing Areas 57,41)
<u>Arius madagascariensis</u> Vaillant, 1894	ARIID Ariu 24
<u>Arius platystomus</u> Day 1877	ARIID Ariu 25
<u>Arius polystaphylodon</u> Bleeker, 1846	ARIID Ariu 26
<u>Arius sagor</u> (Hamilton, 1822)	ARIID Ariu 3 (=ARIID Ari 3, Fishing Areas 57/71)
<u>Arius sona</u> (Hamilton, 1822)	ARIID Ariu 27
<u>Arius subrostratus</u> Valenciennes, 1840	ARIID Ariu 28
<u>Arius sumatranus</u> Bennett, 1830	ARIID Ariu 29
<u>Arius tenuispinis</u> Day, 1877	ARIID Ariu 30
<u>Arius thalassinus</u> (Rüppell, 1837)	ARIID Ariu 4 (=ARIID Ari 4, Fishing Areas 57/71)
<u>Arius venosus</u> (Valenciennes, 1840)	ARIID Ariu 5 (=ARIID Ari 5, Fishing Areas 57/71)
<u>Batrachocephalus mino</u> (Hamilton, 1822)	ARIID Bat 1
<u>Osteogeneiosus militaris</u> (Linnaeus, 1758)	ARIID Ost 1

Prepared by K.C. Jayaram, Zoological Survey of India Indian Museum, Calcutta, India; draft material revised by P. Kailola, The University of Adelaide, Adelaide, Australia.

- * Restricted to freshwater of Madagascar
- ** Specific status of nominal marine species uncertain

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: ARIIDAE

FISHING AREA 51
(W. Indian Ocean)*Arius caelatus* Valenciennes, 1840*OTHER SCIENTIFIC NAMES STILL IN USE : *Tachysurus caelatus* (Valenciennes, 1840)

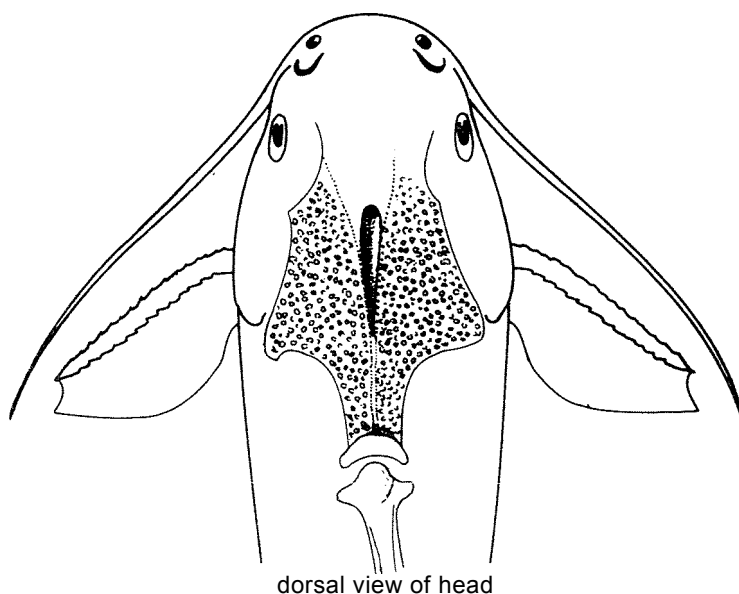
VERNACULAR NAMES:

FAO : En - Engraved catfish
 Fr - Mâchoiron masque
 Sp - Bagre mascarilla

NATIONAL:

DISTINCTIVE CHARACTERS:

Dorsal profile of head concave at nape, 3 pairs of barbels around mouth, the maxillary pair extending to middle of pectoral fin or beyond in young individuals; head shield rugose and granulated posterior to orbit, especially on the supraoccipital region, tapering to a wide V toward occipital region, and with a preorbital conical protuberance; supraoccipital process short, about as long as or longer than broad at base, with a median keel, its hind end nearly straight; median longitudinal groove short, not reaching to supraoccipital process; predorsal plate V-shaped; premaxillary band of teeth in upper jaw 6 times as long as broad, mandibular band of teeth in lower jaw deeply curved, and medially interrupted; palate teeth (on roof of mouth) villiform and densely packed in a single small, roughly triangular patch on each side, its inner edge convex. First dorsal and pectoral fins each with a very strong spine; tip of dorsal fin produced occasionally into a black filament; total anal fin rays 19 or 20.



dorsal view of head

Colour: light brown-bronze on top of head and back, whitish below, whole body with a metallic blue lustre; fin tips black edged; adipose fin and dorsal filament either entirely black or bearing a large black blotch on upper half; all barbels black tipped. When landed fresh, the fins are scarlet red, body and sides gold glossed; eyes shot with golden yellow.

* Often misspelt as *Arius coelatus*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Arius platystomus: head depressed, snout duck-bill shaped; teeth on roof of mouth in an oval patch on each side.

A. subrostratus: snout long and spatulate; maxillary barbels short, not extending beyond orbit; teeth patches on roof of mouth oval.

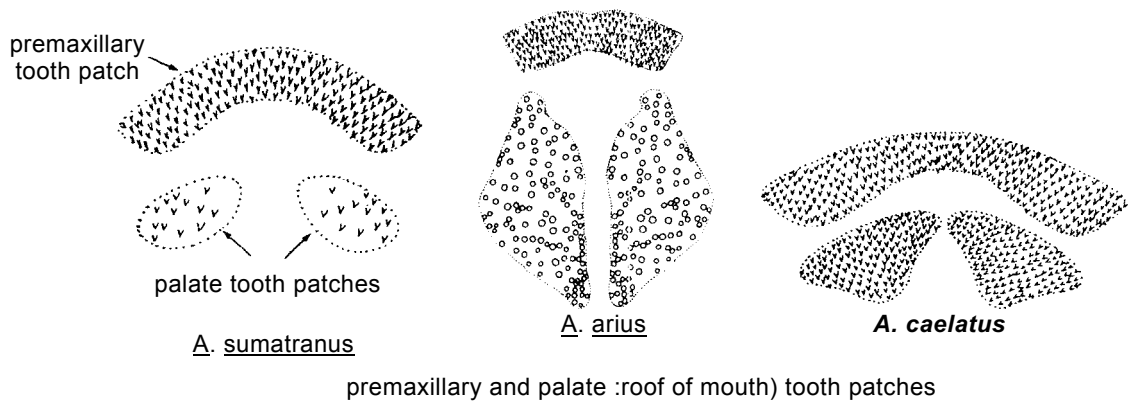
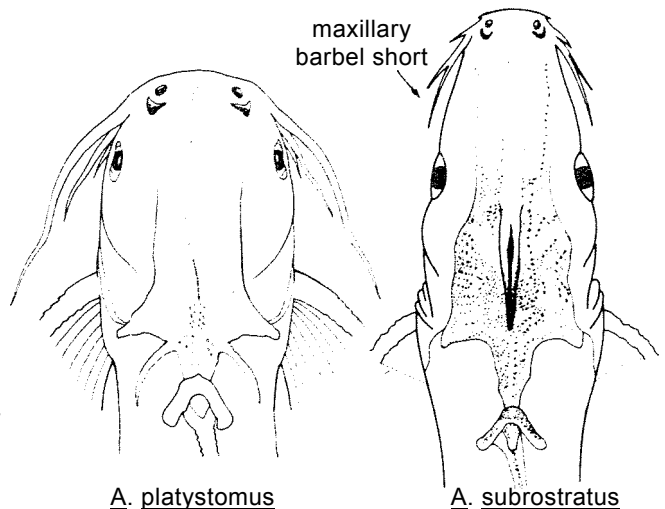
A. sumatranus: teeth on roof of mouth in an oval patch with sparsely packed conical teeth.

A. arius, A. jella, A. maculatus and A. tenuispinis: teeth on palate globular, forming an elliptical large patch. Furthermore, anal fin rays 20 to 22 in A. arius and 17 or 18 in A. jella (19 or 20 anal fin rays in A. caelatus).

Other Arius species known to occur in India and/or Pakistan: have more than one (2 or 3) patches on roof of mouth.

Batrachocephalus mino: maxillary barbels absent.

Osteogeneiosus militaris: only a pair of stiff, semiosseous maxillary barbels present.



SIZE:

Maximum: 45 cm; common between 18 and 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

In the area, found along the west coast of India, Sri Lanka and Pakistan. Elsewhere, along the east coast of India, Bangladesh, Burma, Thailand, the Indo-Australian Archipelago, but not in the Philippines or Australia.

Mostly marine.

Feeds mainly on invertebrates and small fishes.

PRESENT FISHING GROUNDS:

Shore waters subjected to tidal influence around river mouths; most common along the east coast of India.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with stake traps, shore seines and bagnets; also on hook and line.

Mostly marked fresh, but also sun salted.

