

CHAPTER 27

Taxonomy of Family Sciaenidae



Family Sciaenidae (croakers) is one of the largest family under Order Perciforms are small to moderately sized fishes, widespread in the Atlantic, Indian and Pacific oceans. These fishes are usually reported off beaches, estuaries, sheltered bays and bar mouths. Family Sciaenidae includes many commercially and recreationally important species. A total of 584 nominal species belonging to 289 valid species and 69 genera is reported worldwide. Their common name derives from their ability to produce drumming or croaking sounds through specialized body muscles connected to the swim bladder, which acts as a resonating chamber. The sound production could play a role during spawning season.

The coloration varies from silvery to yellowish or dark brown; dark spots, vertical bars and longitudinal stripes are often present; tip of spinous dorsal fin is dark edged in many species; abdominal and lower fins are yellowish in many instances; a dark blotch is often present at pectoral-fin bases. Drums are oblong to moderately elongate and moderately compressed, with conspicuous pores on snout and chin, and lateral line extending to margin of caudal fin. Snout is rounded to slightly pointed. Eye is small to moderate in size. Mouth is terminal, sub terminal, or slightly superior; small to rather large; and nearly horizontal to moderately oblique. Jaw teeth are usually small, conical, and arranged in bands. Occasionally canine teeth occur at tips of jaws. Snout possesses three to seven rostral pores along anterior margin, and two to five marginal pores along edge of rostral fold. Chin has two to six mental pores, one pore at midline, and remaining pores paired and located along each side. Barbels may be associated with pores on chin and may also occur on sub operculum. Branchiostegal rays number 7. Pectoral fin inserts on lower half of flank, has a nearly vertical base, and has 15 to 25 rays. Dorsal fin is long and single, with a deep notch between spinous and rayed sections in most genera but separated into separate spinous and rayed sections in one genus. Spinous section of dorsal fin has 7 to 13 (usually 10) spines, and rayed section has 1 to 4 spines and 18 to 46 rays. Pelvic fin inserts below or slightly posterior to pectoral fin insertion and consists of 1 spine and 5 rays. Anal fin has 1 or 2 spines and 6 to 20 rays. Caudal fin is slightly emarginated, truncate, rounded, or pointed and consists of 17 principal rays. Ctenoid or cycloid scales cover body and part of head. In some species, scales are ctenoid on body and cycloid on head and breast. Scaly sheaths cover bases of dorsal and anal fins in some species. Gas bladder is present, is highly modified in some species, and is associated with muscles that cause it to vibrate and produce drumming or croaking sounds. Drums occur worldwide in tropical to warm temperate between the shoreline and about 600 m. Most species live in coastal marine habitats, many species are associated seasonally or year-round with estuaries, and some species are limited to freshwater. Many

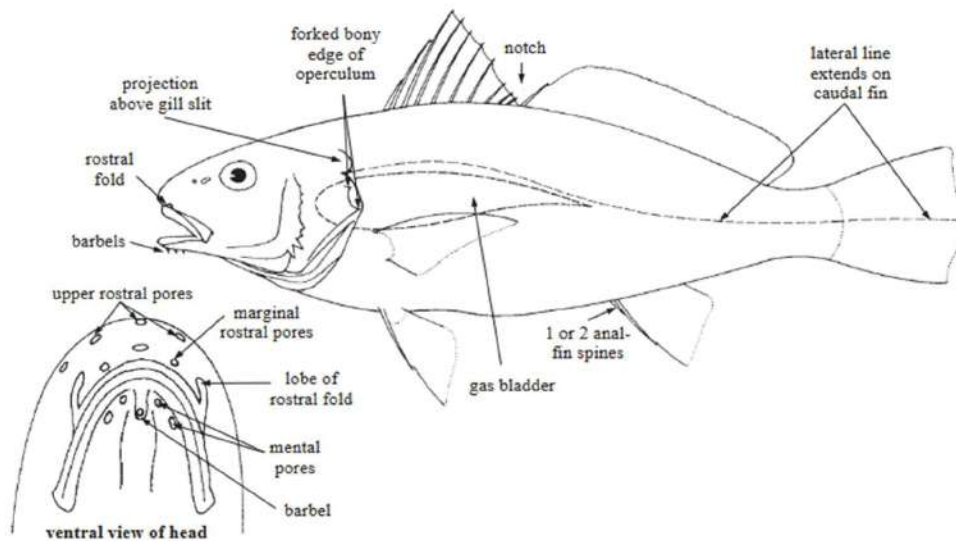
species utilize estuaries as nursery grounds. Most species are associated with sandy and muddy bottoms in the vicinity of river mouths; others are found on coral reefs and in surf zones. Sciaenid mainly feeds on benthic invertebrates and ray-finned fishes.

KINGDOM	- Animalia
PHYLUM	- Chordata
SUBPHYLUM	- Vertebrate
CLASS	- Actinopteri
SUBCLASS	- Teleostei
ORDER	- Perciformes
FAMILY	- Sciaenidae

Family: **Sciaenidae- Croakers**

- sensory pores present at tip of snout
- tip of lower jaw (chin) with 2 to 6 mental pores, some with barbels
- dorsal fin is long and continuous having a deep notch between spinous and soft portions
- anal fin with 2 spines
- caudal fin never forked, usually pointed in juveniles, becoming emarginate, truncate, rounded to rhomboidal, or S-shaped in adults
- a single continuous lateral line extending to hind margin of caudal fin.

Identification note- Correct identification of genera of this family is possible only by the examination of swimbladder and the otoliths.



(Source: FAO,WIO)

Diversity and Distribution of Sciaenids

Lal Mohan (1981) reported 36 species from 17 genera from Indian waters. Talwar (1995) in his book “Fauna of India and the Adjacent Countries” has reported the presence of 40 species of sciaenids in 20 genera. Nelson et al., (2016) in his book “Fishes of the World” listed 283 species in 67 genera. A recent work by Parenti (2020) listed 289 valid species in 69 genera. Trewavas (1977) grouped 65 species into 27 genera in his work The Sciaenid fishes of Indo-West –Pacific. From FishBase 18 species are reported from Arabian sea and 27 species from Bay of Bengal.

Key to the genera

Body elongated; carrot shaped swimbladder with 28-35 pairs of arborescent appendage; two pairs of canine teeth is present in anterior most of lower and upper jaws*Otolithes*

Mental pore a pair separated by symphysis; carrot shaped swimbladder with 17-22 pairs of appendages; "tail" of tadpole-shaped impression of otolith only slightly curve.....*Pennahia*

Mental pore 3 pairs; carrot shaped swimbladder*Nibeia*

Air bladder simple, with a pair of tubules originate from posterior end of air bladder extending to the base of cranium..... *Otolithoides*

First pair of swimbladder not cephalic; upper parts of the body, dorsal and caudal fins usually black spots about size of pupil..... *Protonibeia*

Mental pore 3 pairs; hammer shaped swimbladder; barbel may present or absent; sagitta with the head of the tadpole pattern and the tail expanded and deepened as hollow cone.....*Johnius*

A single, tapering mental barbel; second anal spine very strong; teeth of lower jaw uniform.....*Dendrophysa*

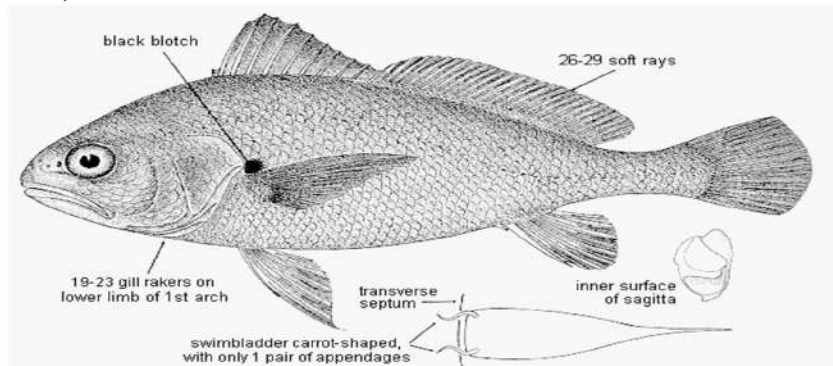
Teeth of the lower jaw are enlarged and spaced; a pair of barbels present; golden yellow color body.....*Daysciaena*

Gas bladder simple, round anteriorly, tapering posteriorly with a pair of short tubules on each side; lateral arborescent tubules absent. Sagitta with posterior depression; mental barbels absent.....*Kathala*

***Details of
Kathala axillaris* (Cuvier, 1830)**

**Common name:
Kathala croaker**

Carrot-shaped swimbladder; black blotch on pectoral fin axil; caudal fin rhomboid; gillraker count 20 to 23 and a dissimilar form of swimbladder.

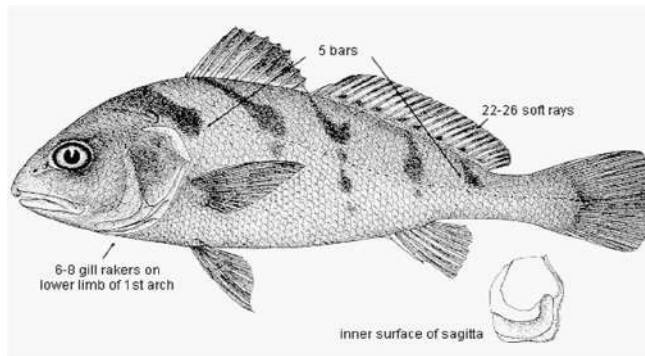


(Source: FAO, WIO)

***Nibea maculata* (Bloch & Schneider, 1801)**

Common name: Blotched croaker

Tadpole shaped impression on sagitta (large earstone); a typical colour pattern of 5 dark bars extending obliquely from the back to the lower part of flanks and a sixth dark blotch on top of caudal peduncle.

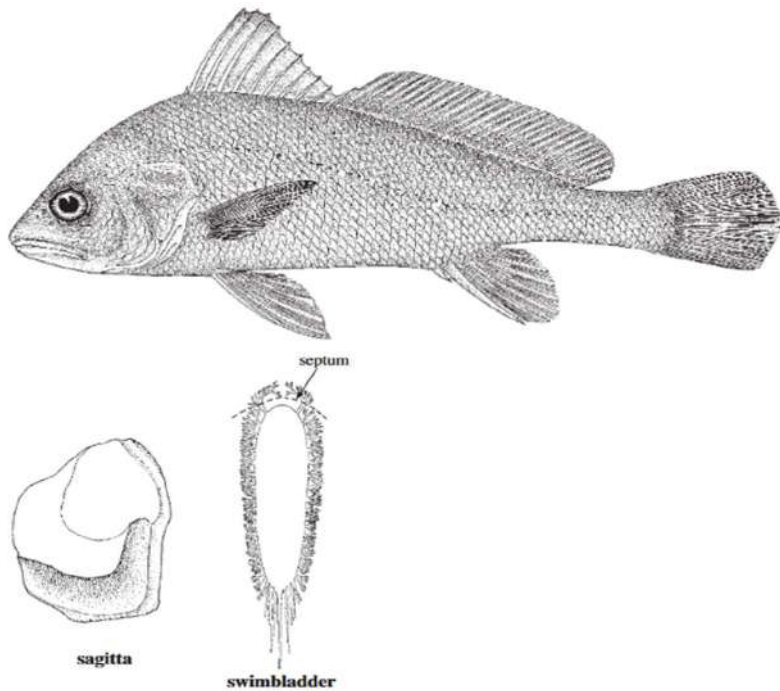


(Source: FAO, WIO)

***Nibea soldado* (Lacepède, 1802)**

Common name: Soldier croaker

Carrot-shaped swim bladder, sharply constricted posteriorly to its tubeshaped end, with about 18 to 22 pairs of appendages; soft dorsal fin rays 28 to 31; no barbels on chin.

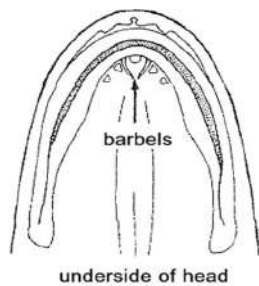
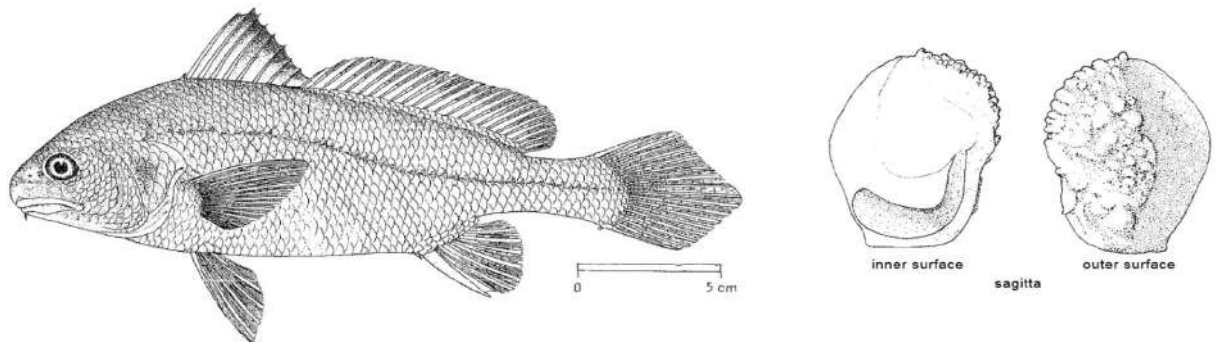


(Source: FAO, WIO)

***Daysciaena albida* (Cuvier, 1830)**

Common name: Two-bearded croaker

A pair of small tapering barbels on chin; 23 to 26 dorsal soft rays; spinous portion of dorsal fin black.

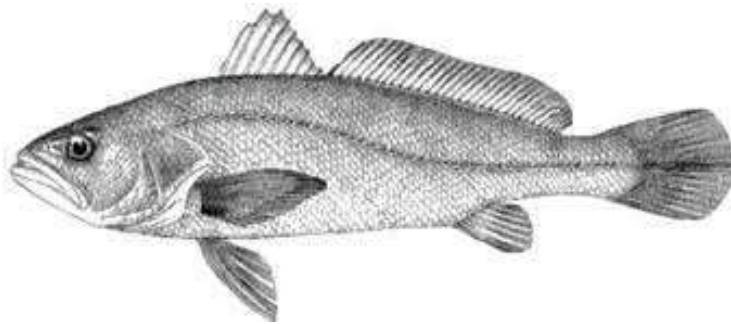


(Source: FAO, WIO)

***Otolithes cuvieri* (Trewavas, 1974)**

Common name: Lesser tigertooth croaker

The body depth $3 \frac{1}{4}$ to $4 \frac{1}{2}$ times in standard length. 1 or 2 pairs of robust canines in upper jaw and 1 pair at tip of lower jaw; gillrakers on lower limb of first arch 12 to 17; Carrot-shaped swimbladder, with about 28 pairs of arborescent appendages.

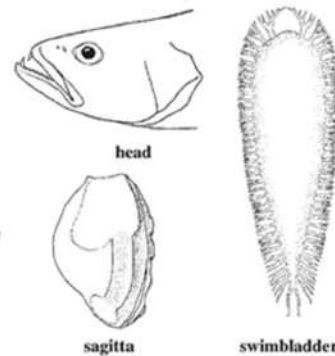
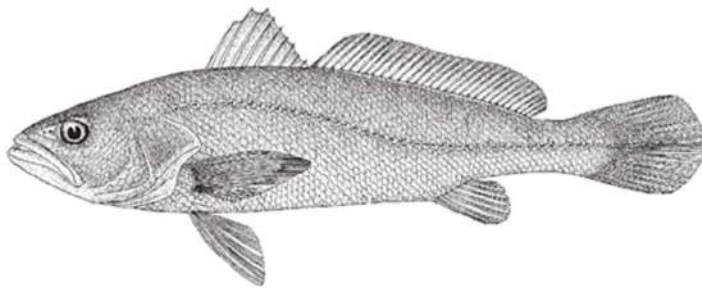


(Source: FAO, WIO)

***Otolithes ruber* (Bloch & Schneider, 1801)**

Common name: Tigertooth croaker

Medium-sized to large species with a slender, cylindrical body. Snout not swollen or projecting; its dorsal profile rising evenly to origin of dorsal fin; ; teeth differentiated into large and small in both jaws; 1 or 2 pairs of strong canines at front of one or both jaws. Swimbladder carrot-shaped with 32 to 36 pairs of fan-like appendages along sides.



(Source: FAO, WIO)

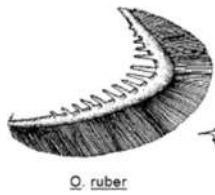
Distinguishing characters of *Otolithes ruber* and *Otolithes cuvieri*



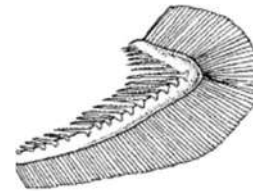
Otolithes ruber



Otolithes cuvieri



1st gill arch



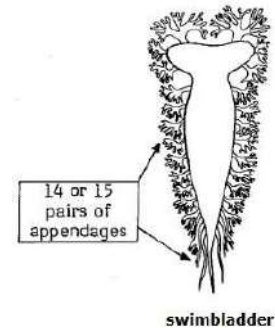
O. cuvieri

(Source: FAO, WIO)

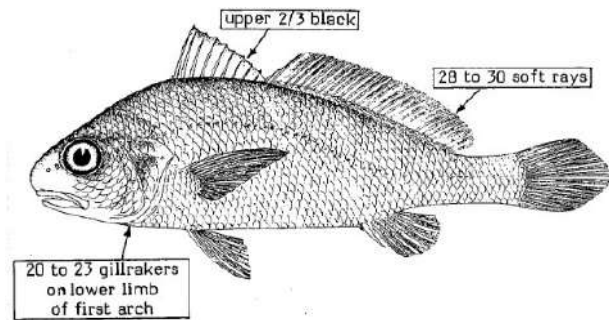
Johnius glaucus (Day, 1876)

Common name: Pale spotfin croaker

Small to medium sized species; large eyes; hammer shaped swimbladder with 14-15 pairs of appendage; snout broadly rounded when seen from above and without strong anterior teeth and scales on spinous dorsal fin; caudal fin rhomboidal.



swimbladder



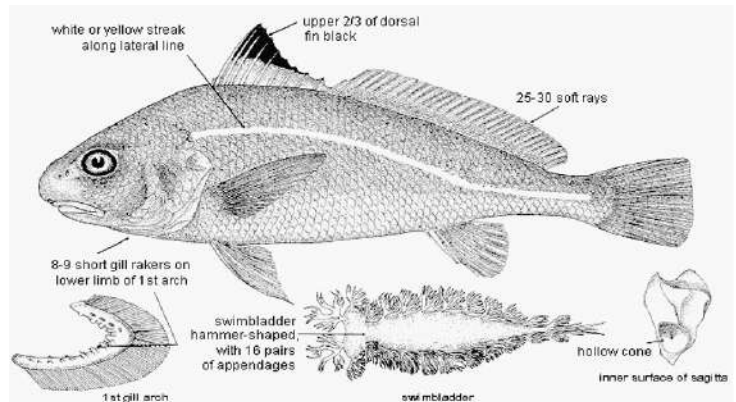
sagitta (inner surface)

(Source: FAO, WIO)

***Johnius carutta* (Bloch, 1793)**

Common name: Karut croaker

Rounded snout; Dorsal fin with 9 to 10 spines, trailed by a deep notch, second part of the fin with 1 spine and 25 to 28 soft rays; Teeth distinguished into large and small in upper jaw only.

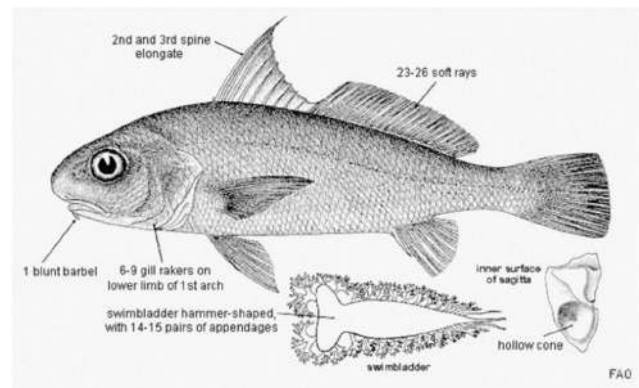


(Source: FAO, WIO)

***Johnius amblycephalus* (Bleeker, 1855)**

Common name: Bearded croaker

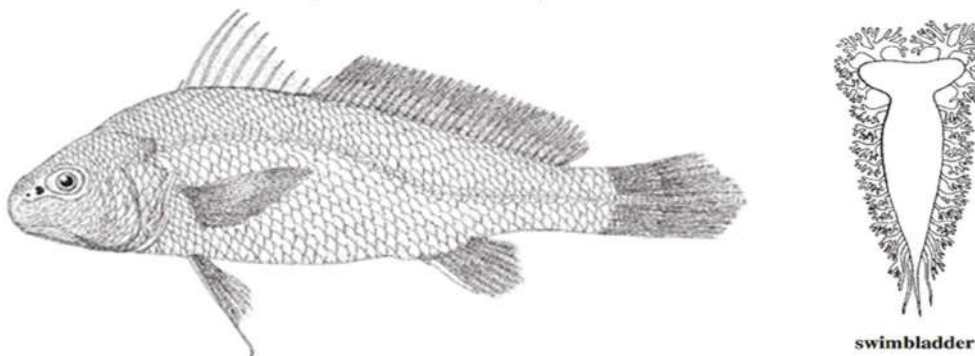
A small to medium-sized species with a moderately deep body; a stiff, blunt barbel on chin; caudal fin slightly rhomboidal, S-shaped or truncate; Swimbladder hammer-shaped, with 14 or 15 pairs of arborescent appendages; back and flanks black or dark brown.



***Johnius carouna* (Cuvier, 1830)**

Common name: Caroun croaker

A small to medium-sized species with a moderately deep body; Snout bluntly rounded, slightly projecting in front of upper jaw; teeth differentiated into large and small in upper jaw only. Swimbladder hammer-shaped, with 14 or 15 pairs of arborescent appendages.

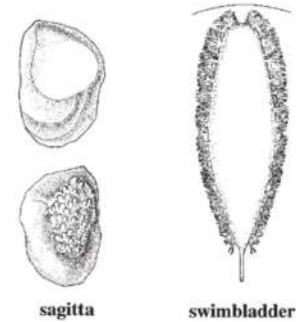
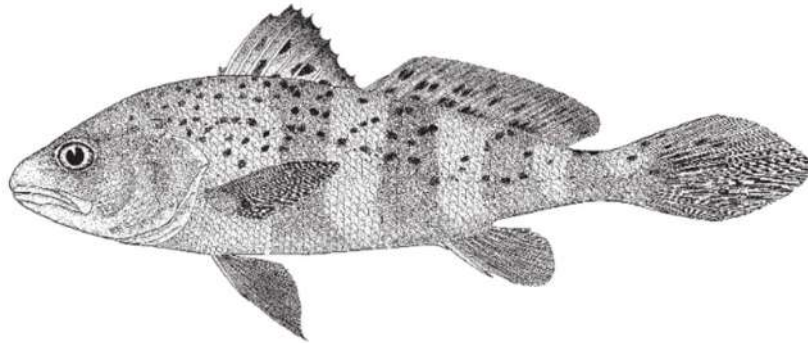


(Source: FAO, WIO)

***Protonibea diacanthus* (Lacepède, 1802)**

Common name: Spotted croaker

A large species with a slender body; Snout acutely pointed; mental pores in 3 pairs, the first small, close together, united by a crescent-shaped groove just behind symphysis; Swimbladder carrot-shaped, with 16 to 20 pairs of arborescent appendages; 3 to 5 dark bars along back and many small black spots (about size of pupil) on top of head, upper half of body and caudal fin; in larger fishes, bars and spots obscure or absent.

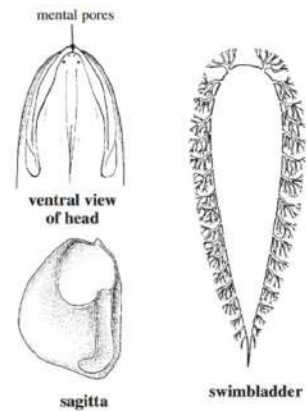
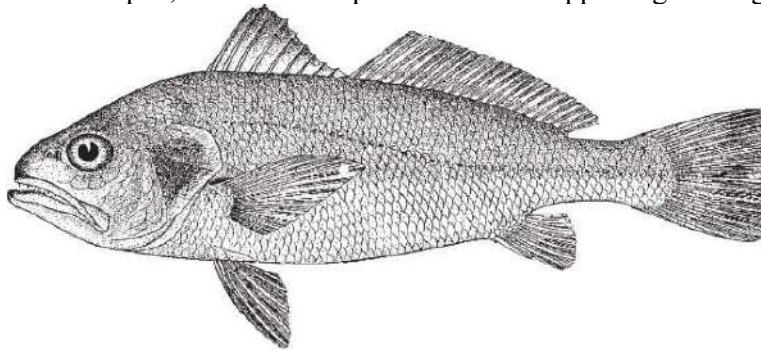


(Source: FAO,WIO)

***Pennahia anea* (Bloch, 1793)**

Common name: Donkey croaker

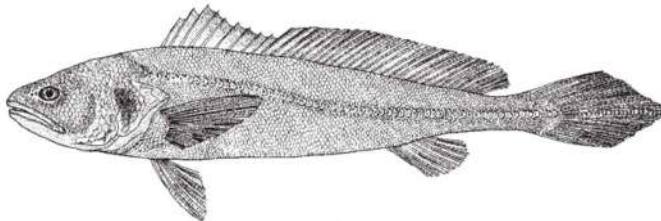
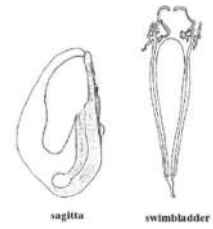
A fairly small, moderately deep-bodied species; Snout pointed; ; mental pores in 2 pairs, both small, the first pair at front of chin, separated by symphysis; caudal fin truncate; swimbladder carrot-shaped, with 17 to 22 pairs of fan-like appendages along its sides



(Source: FAO, WIO)

***Otolithoides biauritus* (Cantor, 1849)**

Common name: Bronze croaker A large species with a slender, cylindrical body; mental pores in 2 pairs, the first small, at front of chin, separated by symphysis; Swimbladder carrot-shaped, with a single pair of tube-like appendages arising from posterior end of bladder and running forward beside main body of bladder and in front of it into head beyond transverse septum, where they branch under skull.

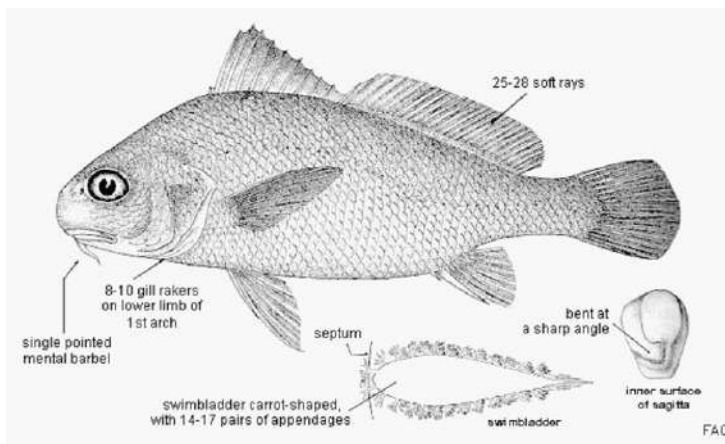


(Source: FAO, WIO)

***Dendrophysa russelii* (Cuvier, 1829)**

Common name: Goatee croaker

Mouth inferior; upper jaw villiform teeth band, outer row slightly enlarged; teeth on lower jaw uniformly small; 5 mental pores; swimbladder carrot shaped with 14-17 pairs of arborescent appendages along sides, none entering the head; sagittal (large earstone) with tadpole-shaped impression of which the “tail” is bent at a sharp angle; caudal fin rhomboid.



(Source: FAO, WIO)

Genus	List of species reported from India (Lal Mohan, 1981)
<i>Bahaba</i> (Herre, 1935)	<i>Bahaba chaptis</i> (Hamilton, 1822)
<i>Macrospinosa</i> (Lal Mohan, 1969)	<i>Macrospinosa cuja</i> (Hamilton, 1822)
<i>Kathala</i> (Lal Mohan, 1969)	<i>Kathala axillaris</i> (Cuvier, 1830)
<i>Otolithoides</i> (Fowler, 1933)	<i>Otolithoides biauritus</i> (Cantor, 1849)
	<i>Otolithoides pama</i> (Hamilton, 1822)
<i>Argyrosomus</i> (De la Pylaie, 1835)	<i>Argyrosomus hololepidotus</i> (Lacepède, 1801)
	<i>Argyrosomus amoyensis</i> (Bleeker, 1863)
<i>Atrobucca</i> (Chu, Lo & Wu 1963)	<i>Atrobucca nibe</i> (Jordan & Thompson, 1911)
	<i>Atrobucca trewavasae</i> Talwar & Sathiarajan, 1975
<i>Chrysochir</i> (Trewavas & Yazdani 1966)	<i>Chrysochir aurea</i> (Richardson, 1846)
<i>Otolithes</i> (Oken, 1817)	<i>Otolithes ruber</i> (Bloch & Schneider, 1801)
	<i>Otolithes cuvieri</i> Trewavas, 1974
<i>Pterotolithus</i> (Fowler, 1933)	<i>Pterotolithus maculatus</i> (Cuvier, 1830)
<i>Protonibea</i> (Trewavas, 1971)	<i>Protonibea diacanthus</i> (Lacepède, 1802)
<i>Dendrophysa</i> (Trewavas, 1964)	<i>Dendrophysa russelii</i> (Cuvier, 1829)
<i>Nibea</i> (Jordan & Thompson 1911)	<i>Nibea semiluctuosa</i> (Cuvier, 1830)
	<i>Nibea maculata</i> (Bloch & Schneider, 1801)
	<i>Nibea chui</i> Trewavas, 1971
	<i>Nibea soldado</i> (Lacepède, 1802)
<i>Johnius</i> (Bloch, 1793)	<i>Johnius carutta</i> Bloch, 1793
	<i>Johnius elongatus</i> Lal Mohan, 1976
	<i>Johnius belangerii</i> (Cuvier, 1830)
	<i>Johnius dussumieri</i> (Cuvier, 1830)
	<i>Johnius mannarensis</i> Lal Mohan, 1971
	<i>Johnius coitor</i> (Hamilton, 1822)
	<i>Johnius glaucus</i> (Day, 1876)
	<i>Johnius macropterus</i> (Bleeker, 1853)
	<i>Johnius macrorhynchus</i> (Lal Mohan, 1976)

Johnius dussumieri (Cuvier, 1830)

Pennahia (Fowler, 1926)

Pennahia anea (Bloch, 1793)

Pennahia macrocephalus (Tang, 1937)

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