

Diagnostic Features : A riverine gizzard shad; body very deep, its depth at least 40% of standard length (44.6% at 6.8 cm in holotype), strongly compressed, belly with 17 + 10, total 27 scutes. Mouth subterminal, upper jaw expanded at tip, appearing to turn down, second supra-maxilla large (longer than pre-maxilla). Scales moderate, 43 in lateral series. Resembles G. modesta of Burmese rivers, which has an inferior mouth and a small second supra-maxilla (about half length of pre-maxilla); G. manmina of Indian rivers is much more slender (depth 33 to 38% of standard length) and has smaller scales (51 to 71 in lateral series). Anodontostoma species usually have only 19 to 21 anal finrays (27 in G. whiteheadi). Other clupeids in Burmese freshwaters either have terminal mouths (Tenualosa, Gudusia, etc.) or a dorsal filament (Nematalosa).

Geographical Distribution : Burma (Kokariet on Tenasserim River).

Habitat and Biology : Riverine. More specimens and data needed.

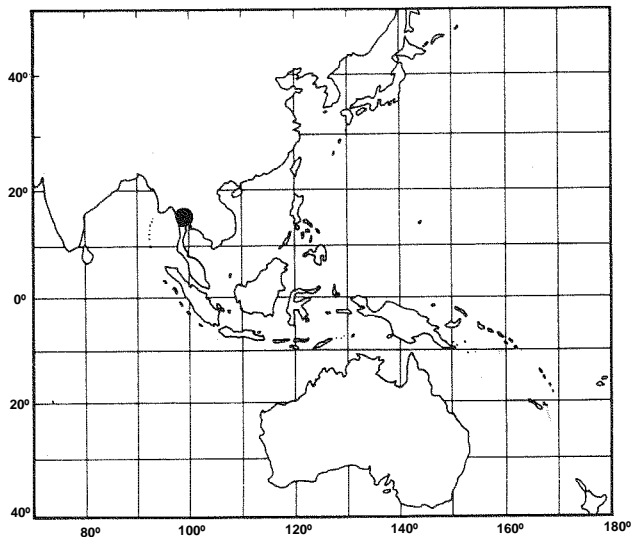
Size : To 6.8 cm standard length, perhaps more.

Interest to Fisheries : Not known.

Local Names :-

Literature : Probably misidentified as G. modesta.

Remarks : Perhaps not uncommon in Burmese rivers, but at present known from a single specimen. It may well have been confused with G. modesta by fishery workers.



2.3 FAMILY PRISTIGASTERIDAE

PRIST

FAO Names : En - Pristigasterids.

Diagnostic Features : Moderate or sometimes quite large clupeoid fishes (usually to about 20 to 25 cm standard length, but some South American Pellona to about 50 cm). Body compressed, very deep in some (Pristigaster), more elongate in others; fully scuted along belly. The mouth is terminal or more often the lower jaw projects; there are 2 supra-maxillae, and the jaw teeth are small or minute (but canines in Chirocentrodon); a toothed hypo-maxillary bone present in some genera, joining the hind tip of the pre-maxilla to the blade of the maxilla. The dorsal fin is short, its origin before the midpoint of the body in very deep forms, but behind in elongate forms (or missing in Raconda); pectoral fins moderate or large in the elongate forms; pelvic fins small, with 6 or 7 finrays, but absent in some genera; anal fin long, with at least 30 finrays (60 or more in some species). The scales may be adherent or easily lost, of moderate size (about 35 to 55 in lateral series).

Until recently, the pristigasterines were considered a subfamily of the Clupeidae. Nelson (1967:392) found unique features in their gill arches (tooth plates fused to second basibranchial and to one or more pairs of hypobranchials, especially the second pair); he raised them to the rank of super-family. Grande (in press) did the same, adding two further distinctive characters: pre-dorsal bones either upright or inclined forward (inclined backward in all clupeids, except upright in Ramnogaster), and no gap between the second and third hypural bones of the tail (upper and lower caudal finrays separated by this gap in clupeids).

Biology, Habitat and Distribution : Pristigasterids are mostly marine coastal and schooling fishes of tropical and some subtropical seas. They are found on both sides of the Pacific and Atlantic Oceans and throughout the Indian ocean, from about 30°N (southern Japan) to about 30°S (South Africa). Some species enter estuaries and a few species in South America appear to be restricted to freshwater (Pellona).

Interest to Fisheries : No special fisheries exist for particular species and the catches for only three species are reported (Ilisha elongata, Ilisha africana and Pellona ditchela - 21 885 tons in 1983). Nevertheless, pristigasterids are common in tropical fish markets and probably make a useful contribution to clupeoid catches.

There are 9 genera (3 worldwide, 5 New World and 1 Indo-Pacific) and 33 species (16 New World, 1 West Africa, 16 Indo-Pacific).

Key to the Genera

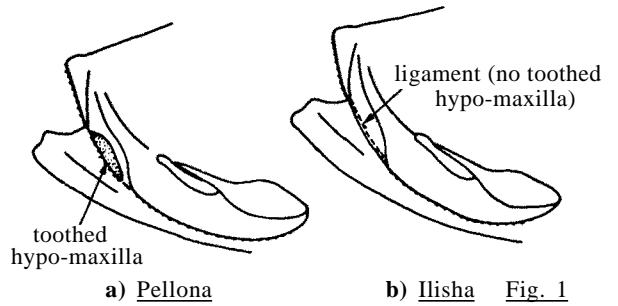
A. WEST AFRICA **Ilisha**

B. NEW WORLD

1a. Toothed hypo-maxilla present (Fig. 1a)

2a. Pelvic fins present; Atlantic coasts and drainage **Pellona**

2b. No pelvic fins; Pacific coasts **Pliosteostoma**

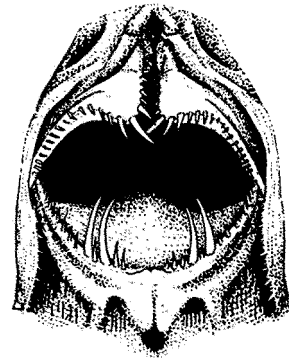


1b. No toothed hypo-maxilla (Fig. 1b)

3a. Pelvic fins present, body elongate (if not, see 5b)

4a. Jaw teeth small or minute, absent at centre of upper jaw **Ilisha**

4b. Canine-like teeth in both jaws, also at centre of upper jaw (Fig. 2) **Chirocentron**



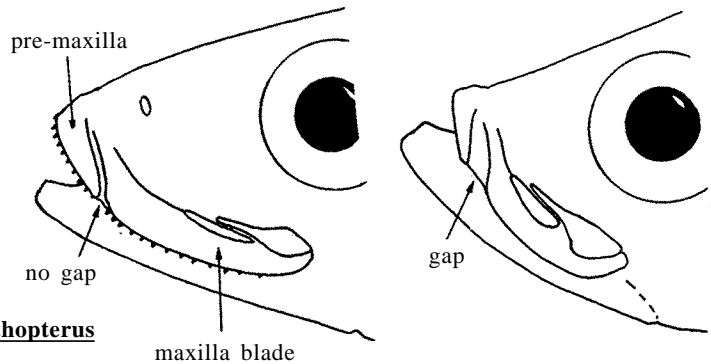
Chirocentron Fig. 2

3b. No pelvic fins (or if present, then body very deep indeed, see 5b)

5a. Body elongate, depth up to 35% of standard length; dorsal fin origin behind midpoint of body

6a. Maxilla short, not reaching back beyond eye

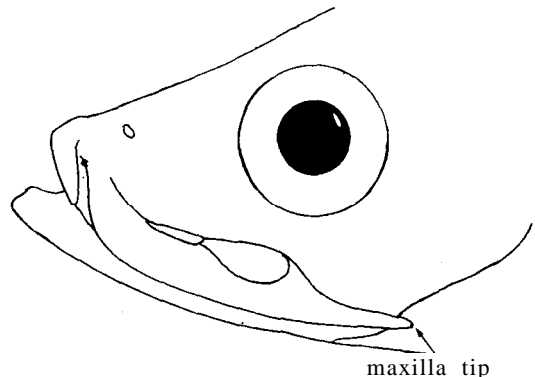
7a. Mouth terminal, jaws equal; hind tip of pre-maxilla meeting maxilla blade (Fig. 3a); anal finrays 50 or less; Atlantic and Pacific coasts **Neopisthopterus**



a. **Neopisthopterus** b. **Opisthopterus** Fig. 3

7b. Lower jaw projecting, a distinct gap between hind tip of pre-maxilla and maxilla blade (Fig. 3b); anal finrays more than 50; Pacific coasts **Opisthopterus**

6b. Maxilla long, reaching to or beyond gill opening (Fig. 4); Atlantic and Pacific coasts **Odontognathus**

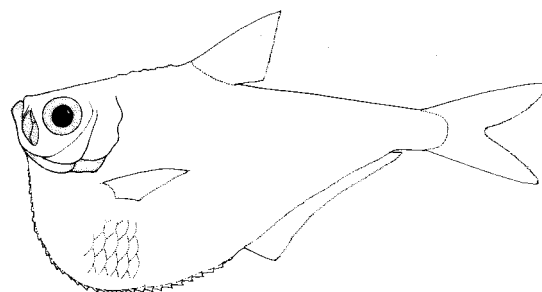


Odontognathus Fig. 4

- 5b. Body very deep, depth about 50% of standard length (Fig. 5); dorsal fin origin before midpoint of body; small pelvic fins sometimes present; freshwater **Pristigaster**

C. INDO-PACIFIC

- 1a. Toothed hypo-maxilla present (Fig. 1a) **Pellona**
- 1b. No toothed hypo-maxilla (Fig. 1b)
- 2a. Dorsal fin present
- 3a. Anal fin moderate, 34 to 53 finrays pelvic fins present **Ilisha**
- 3b. Anal fin long, 51 to 65 finrays; no pelvic fins **Opisthopterus**
- 2b. No dorsal fin; no pelvic fins; anal fin very long, 81 to 92 finrays **Raconda**



Pristigaster **Fig. 5**

Ilisha Richardson , 1846

PRIST Ilish

Formerly CLUP Ilish

Ilisha Richardson, 1846, Ichthyol.Seas China Japan:306 (type: **Ilisha abnormis** Richardson = **Alosa elongata** Benneç). **Platygaster** Swainson, 1838, Nat.Hist.Fishes, 1:278 (type: **Clupea africana** Bloch, 1795) (preoccupied in Hymenoptera). Zunasia Jordan & Metz, 1913, Mem.Carnegie Mys., 6(1):7 (type **Pristigaster chinensis** Basilewski = **Alosa elongata** Bennett). **Pseudochirocentron** Miranda-Ribeiro, 1923, Publcoes Linhas Telegr.estrat. Matto Grosso Amazonas, (58):8 (type: **Pseudochirocentron amazonicum** Miranda-Ribeiro). **Euplatygaster** Fowler, 1934, Proc.Acad.nat.Sci.Philad., 85:246 (type: **Pellona brachysoma** Bleeker = **Clupea melastoma** Schneider).

Diagnostic Features : Moderate-sized marine, estuarine or freshwater clupeoid fishes (to about 40 cm standard length), body moderately deep in some, elongate in others, compressed, with a sharp keel of scutes along belly. Eye usually large; lower jaw projecting, mouth directed obliquely upward; upper jaw reaching at most to eye centre; no toothed hypo-maxilla between hind tip of pre-maxilla and blade of maxilla; jaw teeth small or minute, usually with a distinct gap at centre or upper jaw. Gillrakers fairly short and thick, few, 17 to 28 on lower arch. Dorsal fin before or behind midpoint of body; pelvic fins present, small, with 6 or 7 finrays, a little or well in front of dorsal fin origin; anal fin moderately long, with 34 to 53 finrays, its origin under or a little behind dorsal fin base. Scales moderate, about 38 to 56 in lateral series. No distinctive colour patterns. The lack of a toothed hypo-maxilla distinguishes **Ilisha** from the otherwise similar **Pellona**.

Biology, Habitat and Distribution : Marine, pelagic, inshore, probably schooling, some or most species entering bays and estuaries and presumably able to tolerate at least a slight lowering of salinity, but a few appear to be purely freshwater species. Worldwide in tropical and subtropical waters, occurring throughout the Indo-West Pacific, off West Africa, and off Atlantic and Pacific coasts of central and South America

Interest to Fisheries : Only two species are individually reported: **Ilisha elongata** off coasts of China and Korea (in 1983 the catch was 15 338 tons) and **Ilisha africana** off West African coasts (4005 tons in 1983). Other species contribute to general clupeoid catches, chiefly by artisanal gear.

Species : The 11 Indo-West Pacific species were revised by Wongratana (1980), the literature for the single West African species is reviewed in CLOFETA, but more work is needed on the 2 New World species.

Indo-West Pacific

- I. elongata (Bennett, 1830), Madras to southern Japan
- I. filigera (Valenciennes, 1847), Bombay to Sarawak
- I. kampeni (Weber & de Beaufort, 1913), Bay of Bengal to Indonesia
- I. macrogaster Bleeker, 1866, Indonesia
- I. megaloptera (Swainson, 1839), Bombay to Java Sea
- I. melastoma (Schneider, 1801), India to Indonesia and Taiwan Island
- I. novacula (Valenciennes, 1847), Rivers of Burma
- I. obfuscata Wongratana, 1983, India
- I. pristigastroides (Bleeker, 1852), Indonesia
- I. sirishai Seshagiri Rao, 1975, the "Gulf" to Thailand
- I. striatula Wongratana, 1983, Arabian Sea to northern Australia.

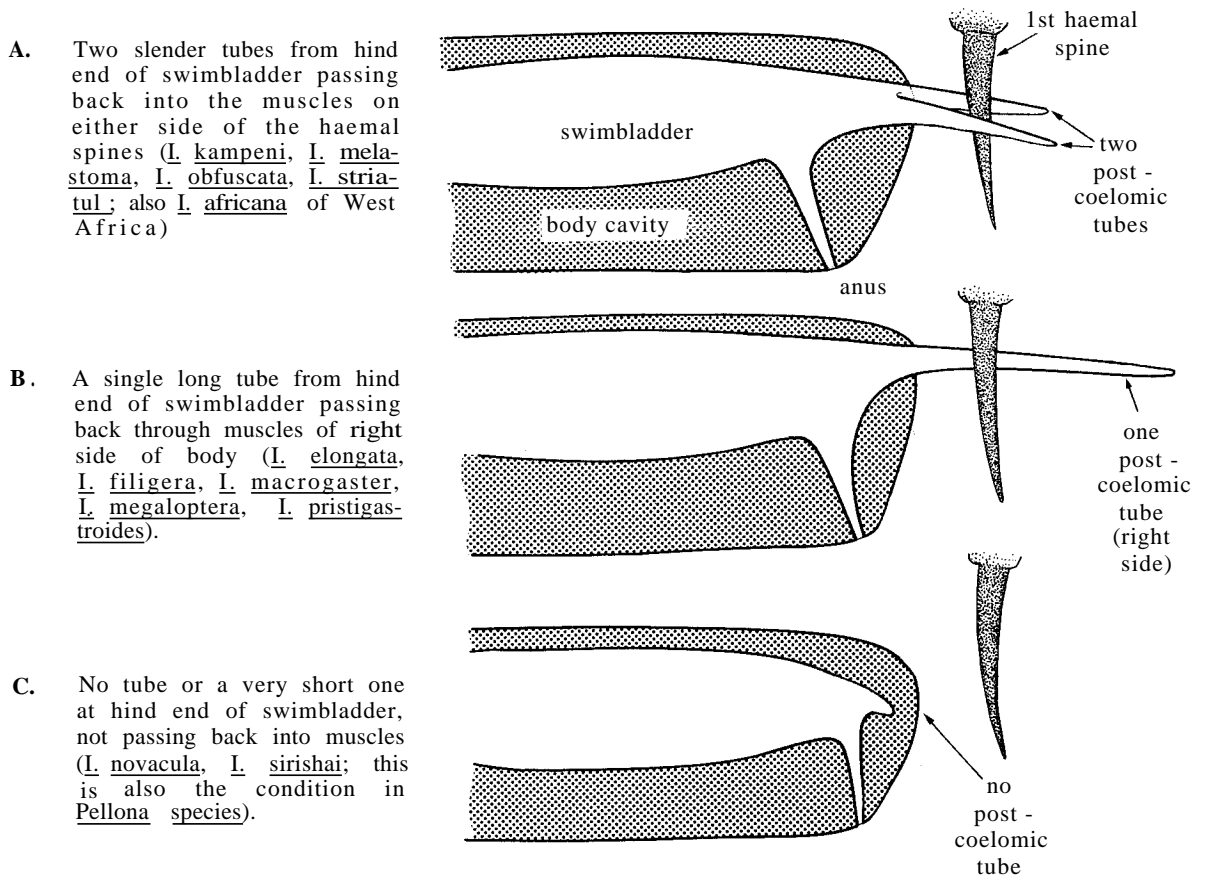
West Africa

- I. africana (Bloch, 1795), Senegal to Angola.

New World

- I. amazonica (Miranda-Ribeiro, 1923), Atlantic drainage (Amazon of Brazil, Peru)
- I. furthii (Steindachner, 1875) Pacific coasts and drainage.

Remarks : Many of the Indo-Pacific species were seriously confused until fundamental differences in the swimbladder were found between superficially very similar species (Seshagiri Rao, 1974, 1976; Ramaiyan & Whitehead, 1975; Ramaiyan & Natarajan, 1979; most completely by Wongratana, 1980). Three types of swimbladder occur:



- A. Two slender tubes from hind end of swimbladder passing back into the muscles on either side of the haemal spines (I. kampeni, I. melastoma, I. obfuscata, I. striatula; also I. africana of West Africa)

- B. A single long tube from hind end of swimbladder passing back through muscles of right side of body (I. elongata, I. filigera, I. macrogaster, I. megaloptera, I. pristigastroides).

- C. No tube or a very short one at hind end of swimbladder, not passing back into muscles (I. novacula, I. sirishai; this is also the condition in Pellona species).

This character is included in the diagnoses, but where possible other diagnostic features are also used to separate the species.

Ilisha africana (Bloch, 1795)

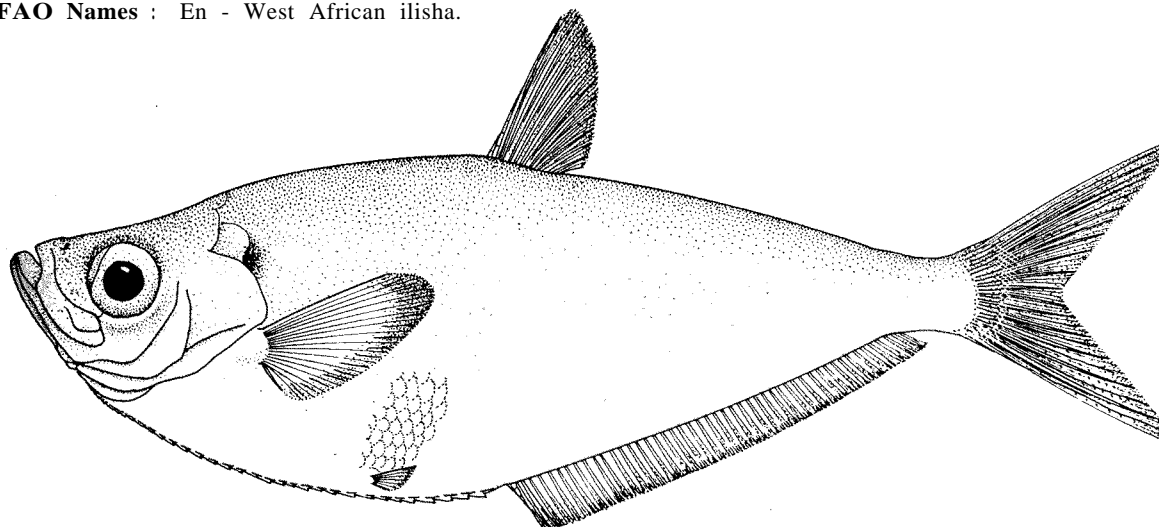
PRIST Ilish 5

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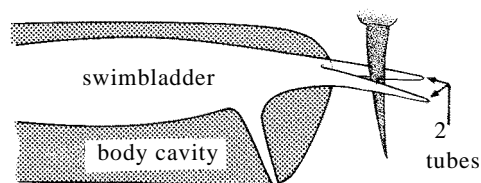
Clupea africana Bloch, 1795, *Naturgesch.Ausl.Fische*, 9:45, pl. 407 (Accra, Ghana).

Synonyms : *Pellona iserti* Valenciennes, 1847:307 (Accra); *Pellona gabonica* Duméril, 1861:259, pl. 23, figs 3, 3a (Gabon); *Pristigaster dolloi* Boulenger, 1902:271, pl. 30, fig.3 (Banana, Congo); *Ilisha melanota* Derscheid, 1924:278 (Congo mouth); Irvine, 1947:111 (Accra); *Ilisha africana* - Fowler, 1936:78, fig.71 (Congo mouth; synon., descr.); Whitehead, 1967:112 (types of *iserti*, *gabonica*, *dolli*, *melanota*); *Idem*, 1969:268 (type of *africana*); CLOFETA in press (complete synon.).

FAO Names : En - West African ilisha.



Diagnostic Features : Body moderately deep, compressed, belly with 25 to 27 + 7 or 8 sharp scutes. Eye large, lower jaw projecting. Dorsal fin at or before midpoint of body; pelvic fins small; anal fin long, with more than 40 finrays, its origin below dorsal fin base. Swimbladder with two short tubes passing back in the muscles on either side of haemal spines. Other clupeoid fishes in the area are more slender. Have a much shorter anal fin and the lower jaw not strongly projecting. See CLUP Ilish 5, Fishing Areas 34, 47 (part).



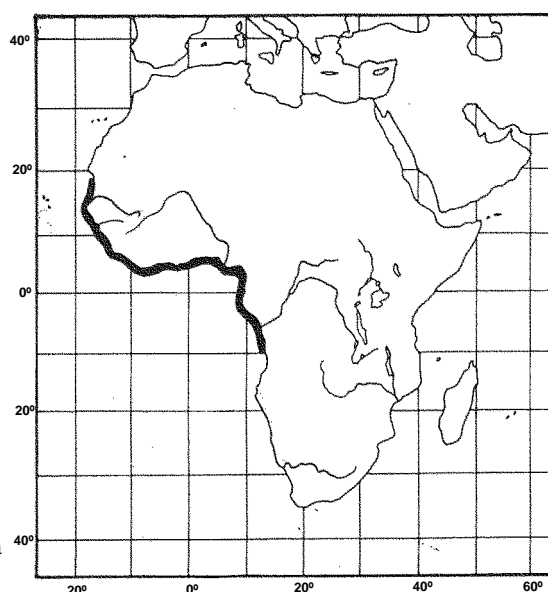
Geographical Distribution : West African coasts and estuaries (northern parts of Senegal south to Baie de Saint-Bras, Angola, at 10°S).

Habitat and Biology : Marine, pelagic, along beaches and just off shore, down to about 25 m, also in lagoons and estuaries, penetrating into almost freshwater. Feeds on small planktonic animals (crustaceans, etc.).

Size : To 20 cm standard length, usually about 12 to 16 cm.

Interest to Fisheries : No special fishery, but contributes to clupeoid fisheries (about 400 tons marketed at Abidjan in some years). Mainly caught by trawl, but also in purse-seine. The total catch in 1983 was 4005 tons.

Local Names : ANGOLA: Fanhico (Portuguese); DAHOMEY: Afléma (Fon), Kaflan (at Grand Popo), Kaflanvi (at Cotonou); GHANA: Kanfla and variants (Fante), also Tamtemire (Fante); GUINEA: Lati (Soussous); IVORY COAST: Lala (Lake Ebrié), Nafran (Appolonien), Péténana juaba (Brignan); SENEGAL: Rimbal (Ovolof), Tialimaro (Mandique).



Literature : Whitehead (i.e. CLOFETA, in press) gave 61 references up to 1981 covering taxonomic, biological and fishery literature.

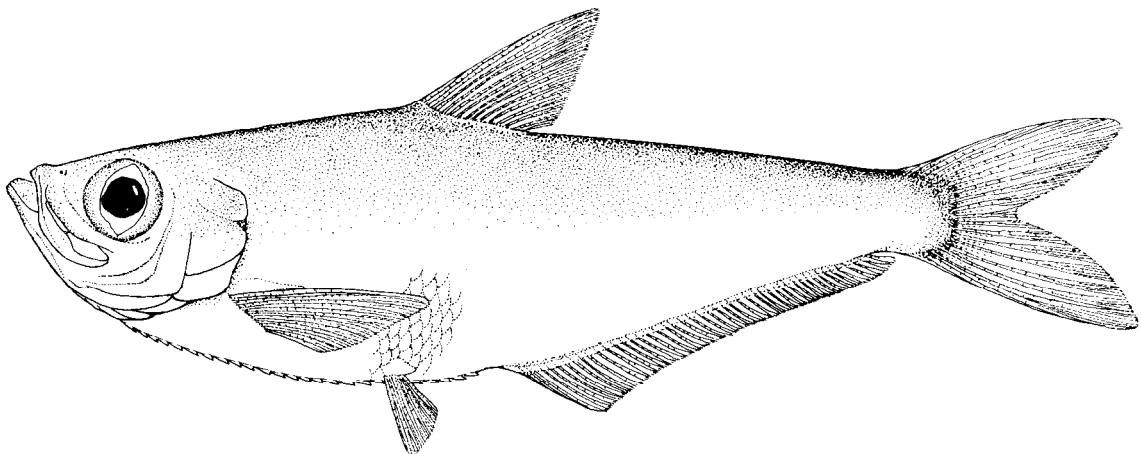
Ilisha amazonica (Miranda-Ribeiro, 1923)

PRIST Ilish 14

Pseudochirocentrodon amazonicum Miranda-Ribeiro, 1923, Publçoes Linhas Telegr.estrat.Matto Grosso Amazonas, (58):8 (Manáos, Amazon).

Synonyms : Ilisha iquitensis Nakashima, 1941:66, fig. (near Iquitos, Peruvian Amazon); Ilisha apapae Hildebrand, 1948:3, fig. 2 (Amazon, between Manáos and Pará); Ilisha amazonica - Myers, 1950:63 (types of amazonicum, apapae, synon.); FWNA, 1964:421, fig. 105 (synopsis); Whitehead, 1970:21 (key only).

FAO Names : En - Amazon ilisha.



Diagnostic Features : Body moderately elongate, compressed, belly with 25 or 26 scutes. Eye large, lower jaw projecting; gap between hind tip of pre-maxilla and blade of maxilla a ligament, not a toothed bone; lower gillrakers 17 to 22. Dorsal fin origin well before midpoint of body; pelvic fins present; anal fin long, with 47 to 52 finrays. Resembles species of Pellona, which have a distinct toothed hypo-maxilla between the hind tip of the pre-maxilla and the blade of the maxilla. Other similar clupeoids are either much deeper-bodied (Pristigaster, depth about 50% of standard length), or lack pelvic fins (Odontognathus, Opisthopterus, Neoopisthopterus) or have canine teeth (Chirocentrodon).

Geographical Distribution : Amazon (from Pará and Manaos up to Iquitos in Peru).

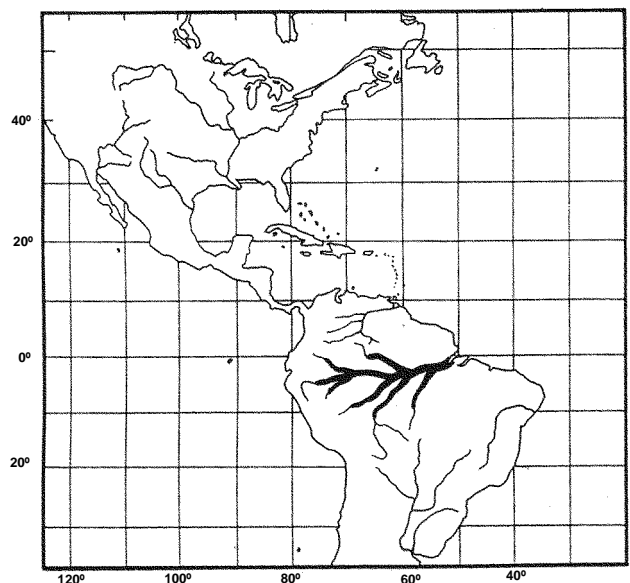
Habitat and Biology : Riverine, apparently not entering sea. More specimens and data needed.

Size : To 17.3 cm standard length.

Interest to Fisheries : No data. The paucity of museum specimens may not reflect an actual rarity of the fish.

Local Names : BRAZIL: Apapa, Asuna nahui.

Literature : Hildebrand (i.e. FWNA, 1964 - descr., range).



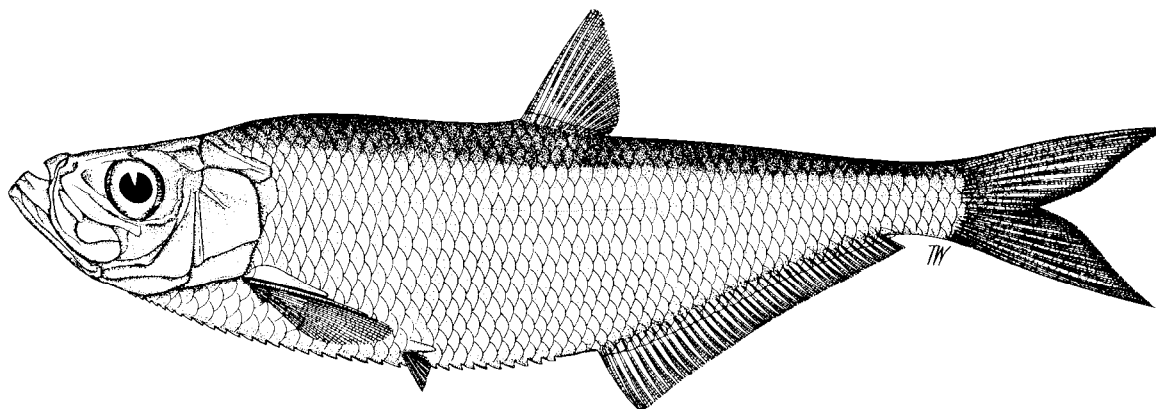
Ilisha elongata (Bennett, 1830)

PRIT Ilish 2

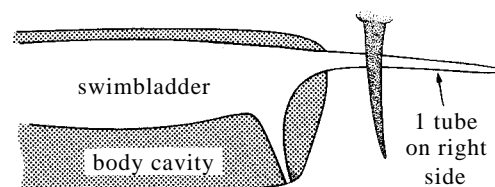
Alosa elongata Bennett, 1830, Mem. Life of Raffles:691 (Sumatra) (exact date not known, presumed before July).

Synonyms : *Clupea affinis* Gray, 1830 (15 July):pl. 96, fig. 2 (India, on Hardwicke drawing; dating by Sawyer, 1953); *Ilisha abnormis* Richardson, 1846:306 (Macao or Canton); *Pellona leschenaulti* Valenciennes, 1847:311 (Pondicherry); *Pellona grayana* Valenciennes, 1847:315 (on *Clupea affinis* Gray); *Pellona vimbella* Valenciennes, 1847:317 (Macao) *Pellona schlegelii* Bleeker, 1854:418 (Nagasaki); *Pristigaster chinensis* Basilewski, 1855:243 (Gulf of Tschiliensi, China); *Pristigaster (Pristigaster) sinensis* Sauvage, 1881:107 (Swatow); *Ilisha elongata* - Fowler, 1941:661 (Bombay ?; Jakarta, Hong Kong, Korea, Japan; large synonym); Svetovidov, 1952:321, pl. 26, fig. 2 (Peter the Great Bay, 1914 to 1938); *Idem*, 1963:361, pl. 26, fig. 2 (same); Chu, Tchang & Chen, 1963:104, fig. 79 (China); Whitehead, 1966:32, pl. 3, fig. 2 (Reeves drawing) (type of *abnormis*); *Idem*, 1967:118, 119, 120, 121 (types of *leschenaulti*, *grayana*, *vimbella*); *Idem*, 1973b:211, fig. 36 (Key, synonym.); Ramaiyan & Whitehead, 1975:195 (key, descr.); Wongratana, 1980:204, pls 165, 166 (revision); Masuda *et al.*, 1984:20, pl. 22D (colour photo) (southern Japan); Whitehead & Bauchot, in press (types of Valenciennes species).

FAO Names : En - Elongate ilisha.



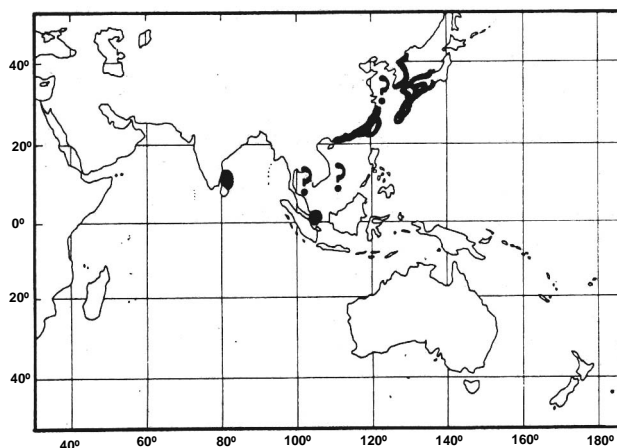
Diagnostic Features : Body slender, its depth 27 to 31% of standard length, belly with usually 24 to 25 + 10 to 15, total 34 to 42 scutes. Eye large, lower jaw projecting; lower gillrakers 19 to 25. Dorsal fin origin at about midpoint of body or a little behind; anal fin with 43 to 53 finrays, its origin a little behind dorsal fin base. Swimbladder with a single long tube passing back down right side of body above anal fin base. Resembles *I. megaloptera*, *I. filigera*, *I. macrogaster* and *I. pristigastroides* in this swimbladder character, but these are either deeper-bodied (depth 31 to 36%) or have only 28 to 35 scutes (*I. megaloptera*). Other *Ilisha* species have either twin tubes from the hind end of the swimbladder (and usually only 25 to 30 scutes) or no posterior tubes (and more or fewer scutes). *Pellona* species are deeper-bodied and have a distinct toothed hypo-maxilla. See CLUP Ilish 2, Fishing Areas 57, 71.



Geographical Distribution : Indian Ocean (Pondicherry, based solely on the type of *Pellona leschenaulti*; no other confirmed Indian records) Java-Sea (Singapore), East China Sea (Canton north to the Korea and southern Japan, as far as Osaka on the Pacific coast and Fukuoka in Sea of Japan, also Peter the Great Bay in Soviet waters).

Habitat and Biology : Marine, pelagic and in-shore, entering estuaries and presumably able to tolerate lowered salinities. A warm-water species that does not reach the northern part of its range in cool years.

Size : To 40.5 cm standard length.



Interest to Fisheries : The only Indo-Pacific species of *Ilisha* for which individual statistics are reported. In 1983 the catch was 15 338 tons from China and the Koreans.

Local Names : -

Literature : See under Synonyms.

Remarks : The westward extension of the range of *I. elongata* to India is based on a single specimen (see above). However, before the differences in swimbladder form were noted and used to separate the species by Ramaiyan & Whitehead (1975), Indian specimens of *Ilisha* may have been reported under other names.

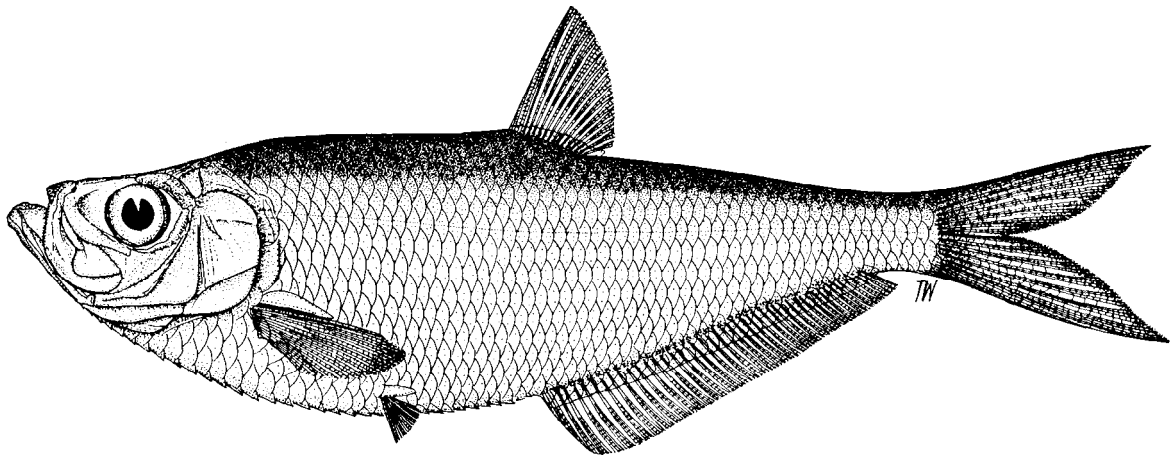
Ilisha filigera (Valenciennes, 1847)

PRIST Ilish 6

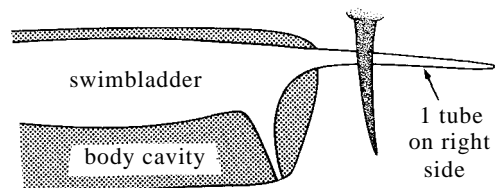
Pellona filigera Valenciennes, 1847, *Hist.nat.pois.*, 20:322 (Bombay, Coromandel coast) (in part, the other specimen being *Ilisha obfusca*).

Synonyms : *Pellona xanthoptera* Bleeker, 1851:439 (Sambas, Kalimantan, Indonesia); Weber & de Beaufort, 1913:94 (Java, Kalimantan); *Ilisha xanthopera*:Fowler, 1941:658 (compiled); Whitehead et al., 1966:96, pl. 12, fig. 1 (Bleeker's fig.) (types of *xanthopera*); *Ilisha filigera* - Fowler, 1941:658 (compiled); Whitehead, 1967:117 (types of *filigera*); *Idem*, 1973b:213 (in synon. of *I. megaloptera*); Wongratana, 1980:206, pls 167, 168 (revision); Bauchot & Whitehead, in press (types of *filigera*).

FAO Names : En - Coromandel ilisha.



Diagnostic Features : Body moderately slender, its depth 31 to 35% of standard length, belly with 23 to 26 + 11 to 13, total 34 to 38 scutes. Eye large, lower jaw projecting; lower gillrakers 19 to 23. Dorsal fin origin at about midpoint of body or a little behind; anal fin with 46 to 52 finrays, its origin below dorsal fin base. Swimbladder with a single long tube passing back down right side of body above anal fin base. Resembles four other Indo Pacific species of *Ilisha* in this swimbladder character, but these have fewer scutes (*I. megaloptera*), fewer gillrakers (*I. pristigastroides*), or more gillrakers (*I. macrogaster*), or are more slender (*I. elongata*). Other *Ilisha* species have either twin tubes from the hind end of the swimbladder (and usually only 25 to 30 scutes) or no posterior tubes (and fewer scutes or a more slender body). *Pellona* species have a distinct toothed hypo-maxilla.



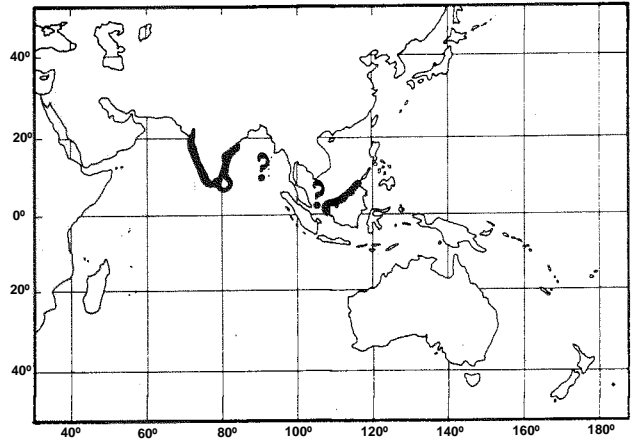
Geographical Distribution : Indian Ocean (Bombay to eastern coasts of India; perhaps east to Andaman Sea coasts, but no certain records), South China Sea (northwestern coasts of Kalimantan, also Sarawak).

Habitat and Biology : Marine, pelagic and coastal, apparently entering estuaries (Weber & de Beaufort, 1913 - as Pellona xanthoptera). More data needed, based on better identifications than in the past.

Size : To 22 cm standard length, perhaps more.

Interest to Fisheries : Contributes to artisanal catches of clupeoids, but no special fishery.

Local Names : INDIA: Phansa (Calcutta, but probably the same name used for other species of Ilisha).



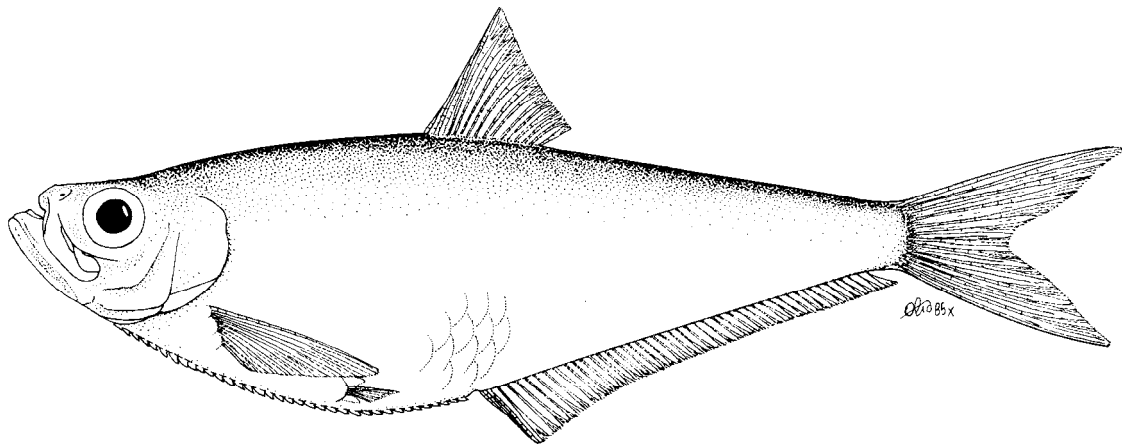
Ilisha furthii (Steindachner, 1875)

PRIST Ilish 7

Pellona furthii Steindachner, 1875, Sber.Akad.Wiss.Wien, 70:388 (Bay of Panama); Idem, 1875: Ichthyol. Beitr.,(1):14 (repeat).

Synonyms : Pellona panamensis Steindachner, 1875:389, (Panama); Idem, 1875:15 (repeat); Meek & Hildebrand, 1923:189 (brackishwater at Corozal and from Panama market); Hildebrand, 1946:91 (off Puerto Pizarro and mouth of Tumbes River, Gulf of Guayaquil, Peru; also Guayaquil, Ecuador); Peterson, 1956:180 (Chira Island and Barranca Bay, Gulf of Nicoya, Costa Rica); Cobo & Massay, 1969:7 (Ecuador - listed).

FAO Names : En - Pacific ilisha.



Diagnostic Features : Body moderately slender, compressed, belly with 23 to 25 + 11 to 14 scutes. Eye large, lower jaw projecting; gap between hind tip of pre-maxilla and blade of maxilla a ligament, not a toothed bone; lower gillrakers 20 to 25. Dorsal fin origin a little before midpoint of body; anal fin long, with 46 to 50 finrays, its origin below about last dorsal finrays. Other similar clupeoids in the area have no pelvic fins (Pliosteostoma, which has a toothed hypo-maxilla between pre-maxilla tip and blade of maxilla; Odontognathus, which has a long maxilla reaching back beyond eye; Neoopisthopterus, which like the others is much more elongate).

Geographical Distribution : Eastern central Pacific (Costa Rica in Gulf of Nicoya to Panama and south to Gulf of Guayaquil).

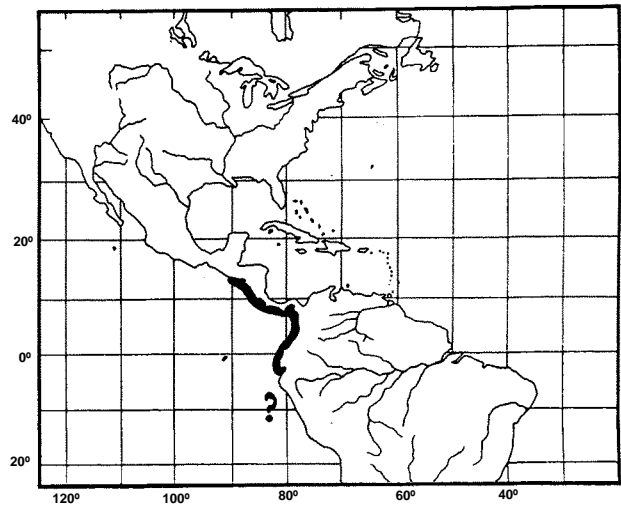
Habitat and Biology : Marine, coastal, but entering estuaries and other brackishwater, perhaps to spawn there.

Size : To 28.5 cm standard length.

Interest to Fisheries : Enters markets (e.g. at Panama) and is apparently a common food fish.

Local Names : ECUADOR, PERU: Machete.

Literature : Peterson (1956 - notes on maturity and ecology).



Ilisha kampeni (Weber & de Beaufort, 1913)

PRIST Ilish 8

Pellona kampeni Weber & de Beaufort, 1913, Fishes Indo-Australian Arch., 2:87 (Jakarta, Java and Balikpapan, Kalimantan).

Synonyms : Ilisha whiteheadi Seshagiri Rao, 1974:861, figs 1-3 (Kakinada, Bay of Bengal); Ilisha kampeni - Fowler, 1941:654 (compiled); Ramaiyan & Whitehead, 1975:196, fig. 2a-e (key, descr., swimbladder; Kakinada, Porto Novo); Wongratana, 1980:208, pls 171, 172 (revision).

FAO Names : En - Kampen's ilisha.

