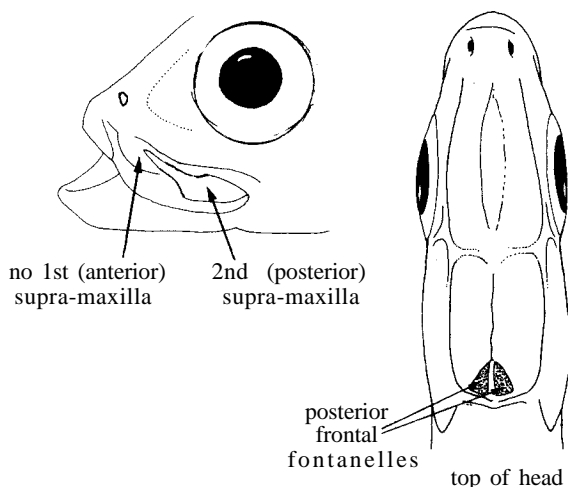


2.2.3 SUBFAMILY PELLONULINAE

FAO Names : En - Freshwater herrings, double-armoured herrings.

Diagnostic Features : Small or very small herring-like fishes (usually about 5 to 10 cm standard length, but some larger species to 20 cm and some pygmy species mature at only 1.8 to 2 cm standard length); pelvic scute normal (i.e. with ascending arms), but pre- and post-pelvic scutes reduced or absent in certain genera; scutes present before dorsal fin in the Australian *Potamothrissa* and *Hyperlophus*. Anterior supra-maxilla absent; posterior supra-maxilla reduced or absent in some genera; mouth terminal, lower jaw projecting in some genera, teeth usually small and conical, but caniniform in both jaws in *Cynothrissa* and *Odaxothrissa*. Posterior frontal fontanelles (on top of head behind level of eyes) remain open in adults. Dorsal fin at about midpoint of body, short (12 to 18 finrays); anal fin short (16 to 27 finrays), its origin well behind last dorsal finray; pelvic finrays usually i 7 (but i 6 in some genera); branchiostegal rays usually 6 or 7 (but 2 to 4 in some genera). Scales present in most, but highly reduced in some genera.



Biology, Habitat and Distribution : The Pellonulinae are mostly freshwater fishes of tropical or subtropical rivers and lakes, but some enter brackishwater or school in the fully saline waters of bays and inlets. Those of West Africa show varying degrees of reduction of scutes, scales, branchiostegal rays, the posterior second supra-maxilla, and also size; species such as *Sierrathrissa leonensis* mature at a size where other species are still larvae or small juveniles, and the term progenetic can be applied to them. Pellonulines occur in western and southern Africa, off Indian coasts, in southeast Asia and in Australia; they are absent from the New World.

Interest to Fisheries : A few species contribute significantly to fisheries (e.g. *Limnothrissa* and *Stolothrissa* in Lake Tanganika).

Remarks : There are 23 genera (13 West Africa, 3 southern Africa, 5 India and the Indo-Australian Archipelago, and 2 Australia) and about 44 species, the biggest concentration of species being in West Africa (about 26). Future work will probably separate the 'double-armoured' Australian genera (*Potamothrissa*, *Hyperlophus*) as yet another subfamily and the West African may be similarly separated from the rest.

Key to the Genera :

- 1a. Africa and Madagascar, freshwater
- 2a. West and central African rivers, lakes
- 3a. Pre-pelvic scutes easily visible and keeled, even if only weakly so anteriorly (Fig. 1)
- 4a. Pre-maxillae with strong canine teeth within or set behind normal series of small teeth; lower jaw teeth enlarged or canine-like; adults to 13 cm standard length or more (Fig. 2)

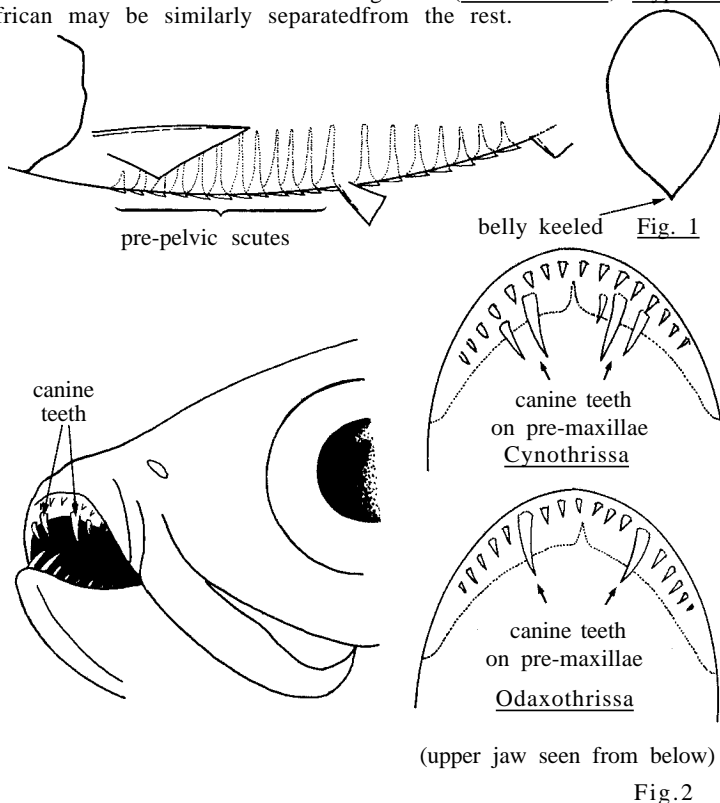
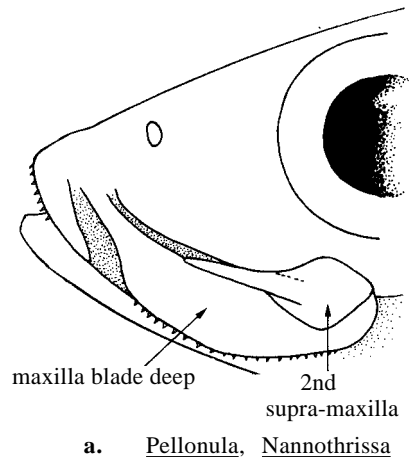


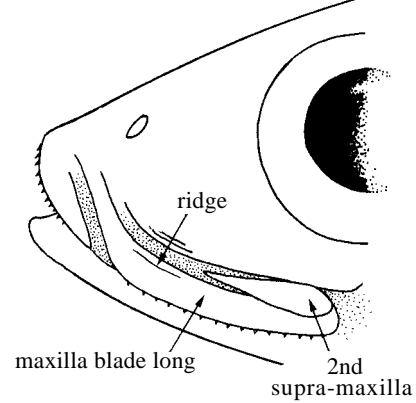
Fig.2

- 5a. Pre-maxillae with 2 to 4 large backward-pointing canines on each side behind normal outer series of smaller teeth; scutes begin before base of first pectoral finray **Cynnothrissa**
- 5b. Pre-maxillae with one (or 2) canines about halfway along normal outer series, curved and pointing back; scutes begin behind base of last pectoral finray **Odaxothrissa**
- 4b. Pre-maxillae without canine teeth (sometimes enlarged, but not fang-like); small fishes, rarely exceed 12 cm standard length, usually 5 to 7 cm



a. **Pellonula, Nannothrissa**

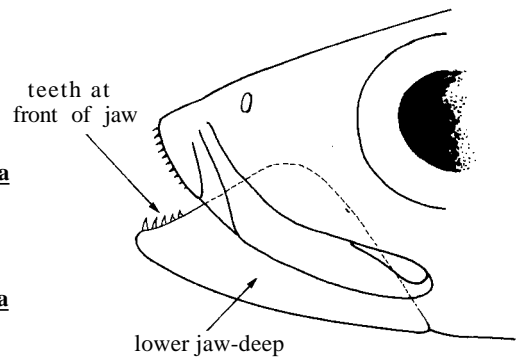
- 6a. Maxilla blade deep (depth 3 or less in length), upper edge of maxilla not flared outward; blade of second supra-maxilla diamond-shaped (Fig. 3a)
- 7a. Pre-maxillae toothed; pelvic with i 7 finrays, its insertion under or behind dorsal fin origin; adults 5 to 12 cm standard length **Pellonula**
- 7b. Pre-maxillae toothless; pelvic with i 6 finrays, its insertion under or before dorsal fin origin; adults to 4 cm standard length **Nannothrissa**



b. **Poecilothrissa, etc.**

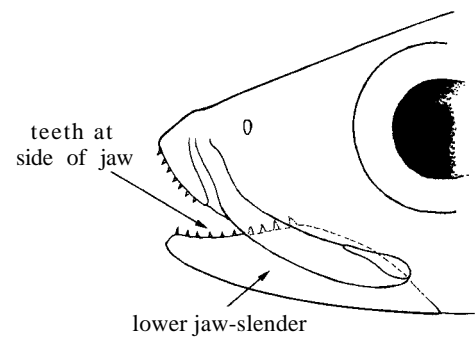
Fig.3

- 6b. Blade of maxilla long and slender (depth 3 or more times in length), upper edge with ridge flared outward; blade of second supra-maxilla often small, spatulate (Fig. 3b)
- 8a. Blade of maxilla normal, only a little longer than its shaft; lower gillrakers 14 to 24; Ghana and Zaire system.
- 9a. Lower jaw normal, rising steeply within mouth, teeth at front only (Fig. 4a)
- 10a. Body slender (depth 20 to 24% of standard length); scales large, 27 to 34 in lateral series **Poecilothrissa**
- 10b. Body deep (depth 22 to 37% of standard length); scales small, 36 to 42 in lateral series **Microthrissa**
- 9b. Lower jaw not rising steeply within mouth, teeth continued at side of jaw(Fig.4b) **Potamothrissa**



a. **Poecilothrissa, Microthrissa**

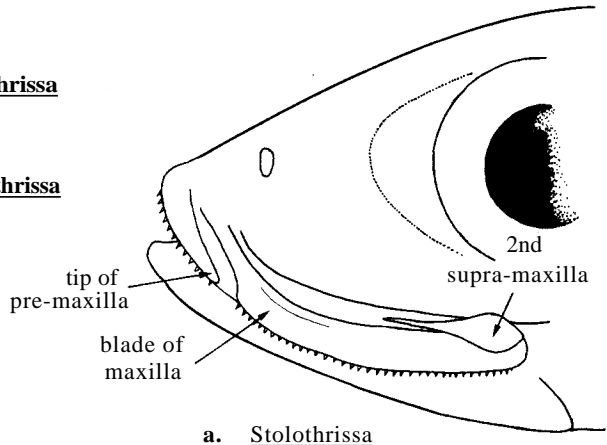
- 8b. Blade of maxilla very long, at least twice the length of its shaft; lower gillrakers 22 to 26 (Lake Mweru) or 31 to 42 (Lake Tanganyika)



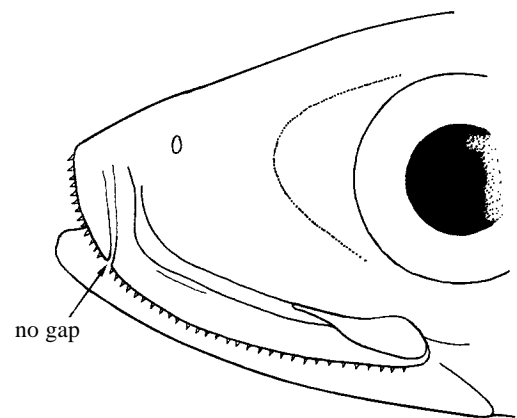
b. **Potamothrissa**

Fig. 4

- 11a. Maxilla blade normal, toothed lower edge not extending forward to tip of pre-maxilla (Fig. 5a) **Stolothrissa**
- 11b. Maxilla blade long, its toothed lower edge reaching to tip of pre-maxilla (Fig. 5b) **Limnothrissa**
- 3b. Pre-pelvic scutes either absent, or without keels, or without lateral arms, and difficult to see; belly rounded (Fig. 6)
 - 12a. Pre-pelvic scutes present (minute or hidden by scales)
 - 13a. Lower gillrakers 10 to 16; anal fin origin below dorsal fin base; dwarf fishes, adult at about 2 cm standard length
 - 14a. Second supra-maxilla present; gillrakers 13 to 16; pre-pelvic scutes without arms..... **Sierrathrissa**
 - 14b. No second supra-maxilla; gillrakers 10 to 11; pre-pelvic scutes with arms.... **Thrattidion**
 - 13b. Lower gillrakers 21 to 26; anal fin origin behind dorsal fin base; adult at about 3 cm standard length **Laeviscutella**
 - 12b. No pre-pelvic or post-pelvic scutes; no second supra-maxilla; lower gillrakers 10 to 12; adult at about 3 cm **Congothrissa**



a. Stolothrissa



b. Limnothrissa Fig.5

- 2b. South Africa, Madagascar
 - 15a. Pre-pelvic scutes 6 to 9 (often obscured by scales); South Africa..... **Gilchristella**
 - 15b. No pre-pelvic scutes; Madagascar
 - 16a. Anal fin entire, last two finrays not separate **Sauvagella**
 - 16b. Last two anal finrays separated from rest of fin (Fig.7)..... **Spratellomorpha**

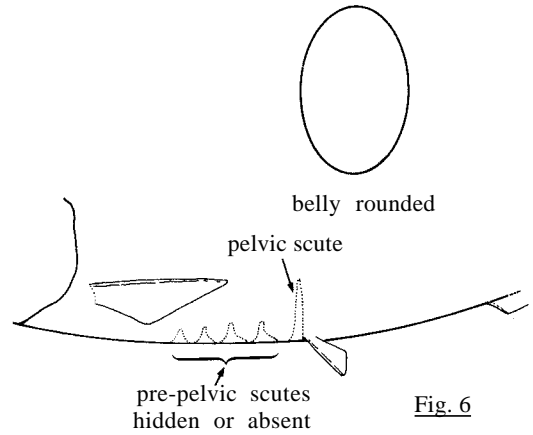
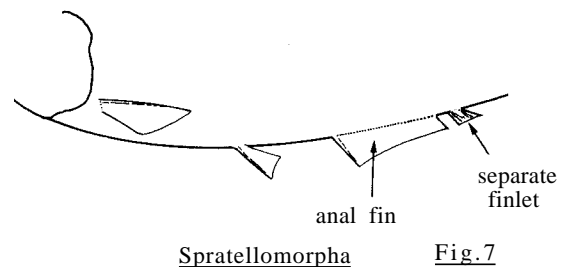


Fig. 6



Spratellomorpha Fig.7

1b. Indo-West Pacific (southern Indian Ocean, southeast Asia, Australia)

17a. No scutes in midline before dorsal fin

18a. Belly rounded, no post-pelvic scutes; lower gillrakers 24 to 30; southern India

19a. Pre-pelvic scutes 5 to 8; pelvic fin base just before dorsal fin origin; second supra-maxilla small, half length of maxilla blade (Fig. 8a) ... **Ehirava**

19b. Pre-pelvic scutes 1 to 4; pelvic fin base just behind dorsal fin origin; second supra-maxilla at least half length of maxilla blade (Fig. 8b) ... **Dayella**

18b. Belly keeled, scutes present before and behind pelvic fin base; lower gillrakers 12 to 27; southeast Asia, northern Australia, Papua New Guinea

20a. Anal fin entire, last two finrays not separate; lower gillrakers 12 to 24 ... **Clupeoides**

20b. Last two anal finrays separated from rest of fin (Fig. 7)

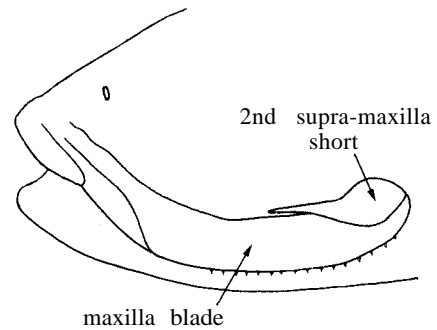
21a. Teeth in jaws small or minute, absent at sides of lower jaw; lower gillrakers 19 to 27 ... **Corica**

21b. Teeth in jaws enlarged, especially in lower jaw and on pre-maxillae; present on sides of lower jaw (Fig. 9); lower gillrakers 13 to 19 ... **Clupeichthys**

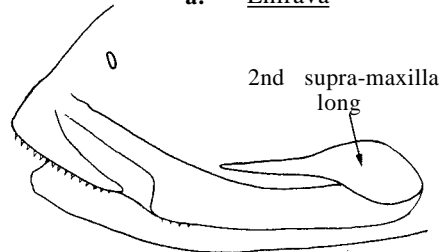
17b. A series of pre-dorsal scutes present (Fig. 10); Australia only

22a. Pelvic finrays i 7; second supra-maxilla not as deep as maxilla blade; 8 branchiostegal rays ... **Potamalosa**

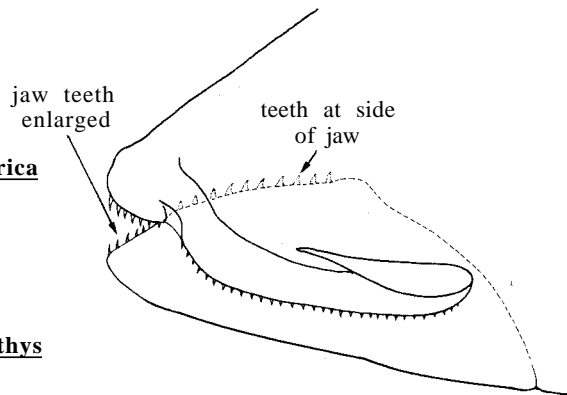
22b. Pelvic finrays i 6; second supra-maxilla deeper than maxilla blade; 4 branchiostegal rays ... **Hyperlophus**



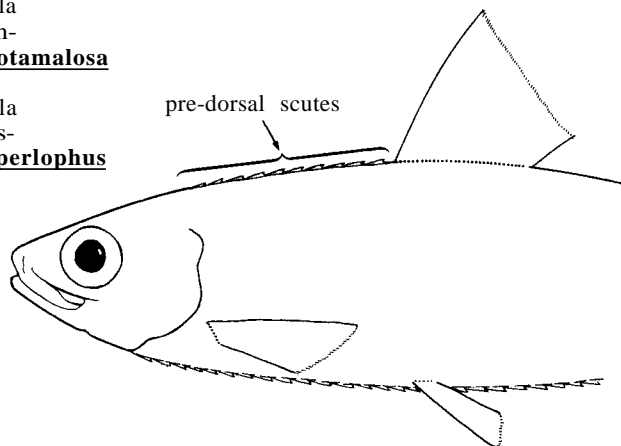
a. **Ehirava**



b. **Dayella** Fig. 8



Clupeichthys Fig. 9



Potamalosa, Hyperlophus Fig. 10

Cynothrissa Regan, 1917

Clup Cyno

Cynothrissa Regan, 1917, Ann.Mag.nat.Hist., (8)19:203 (type: Cynothrissa mento Regan, design. by Jordan, 1920).

Diagnostic Features : Amongst the largest of West African pellonulines, reaching about 14 cm standard length. Belly with strong keel of scutes, the anterior scute beginning before base of first pectoral finray. Lower jaw prominent, with strong canines at symphysis; pre-maxillae with 2 to 4 backward-pointing canines on each side behind normal outer series of teeth. Lower gillrakers 16 to 35, usually shorter than corresponding gill filaments in adults. Closely resembles Odaxothrissa, which has only one large backward-pointing canine in the upper jaw and anterior scutes beginning under or behind base of last pectoral finray; resembles Pellonula vorax, which has gillrakers as long as corresponding gill filaments and enlarged but not canine-like teeth in jaws.

Biology, Habitat and Distribution : Freshwater, in West African rivers from Senegal to Angola. Predatory on smaller fishes, also probably aquatic insects and perhaps crustaceans.

Interest to Fisheries : Enter artisanal fisheries, but catches small.

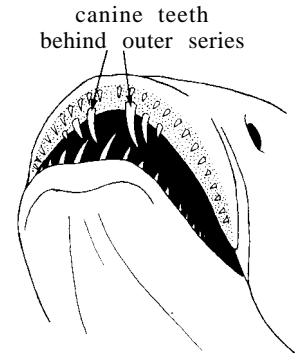
Species : Since the synopsis by Regan (1917), two species have been consistently recognized, but there is now evidence of a third, rather slender species from Ivory Coast:

C. ansorgii (Boulenger, 1910), West African freshwaters

C. mento Regan, 1917, West African freshwaters

Cynothrissa species of Daget & Iltis, 1965, West African freshwaters.

Remarks : The presence of fang-like or canine teeth on the pre-maxillae behind the normal outer series is highly unusual in clupeid fishes. Such teeth are otherwise only found in the southeast Asian genus Clupeichthys.



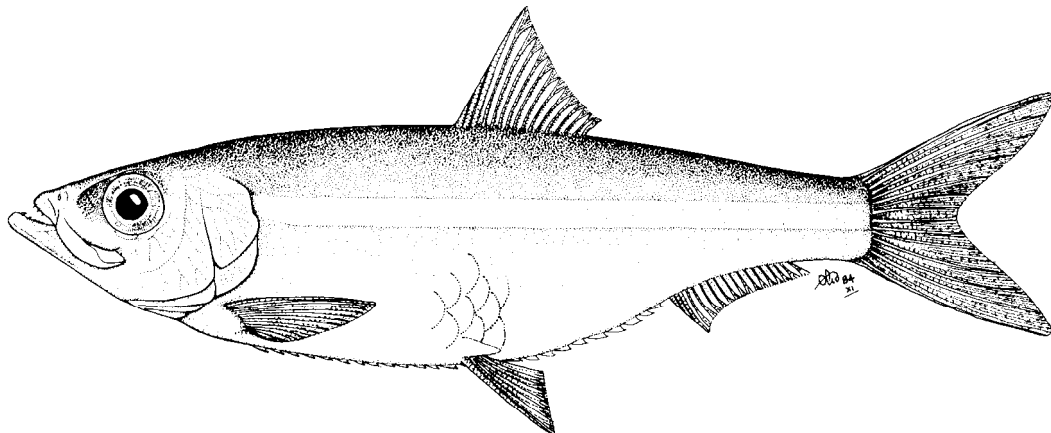
Cynothrissa ansorgii (Boulenger, 1910)

CLUP Cyno 1

Odaxothrissa ansorgii Boulenger, 1910, Ann.Mag.nat.Hist., (8)6:541 (Quanza River at Cambambe, Lucalla River at Kalenge, Bengo River at Cambiri, all Angola).

Synonyms : Odaxothrissa ansorgii:Boulenger, 1916:172, fig. 112 (Angola, excellent figure of a syntype); Cynothrissa ansorgii - Regan, 1917:204 (lower Congo and Angola); Poll, 1974:145 (synopsis); CLOFFA, 1984:42 (complete synonymy).

FAO Names : En - Ansorge's fangtooth pellonuline.



Diagnostic Features : Body moderate, often deep (depth 25% of standard length or more). Pre-pectoral scutes present. Lower jaw strongly projecting, with strong canines at symphysis; 2 to 4 strong backward-pointing canines on each side behind outer row of pre-maxillary teeth. Lower gillrakers 23 to 26, short (less than corresponding gill filaments). Anal finrays ii to iii, 14 to 16. Silver stripe along flank. Resembles C. mento, which has fewer gillrakers (16 to 19); also, Pellonula vorax, which lacks canines in the upper jaw and has longer gillrakers (equal to gill filaments). Species of Odaxothrissa have only one large canine on each side of the upper jaw and the first scute is behind the pectoral fin base.

Geographical Distribution : West African freshwaters (Senegal to Angola).

Habitat and Biology : Rivers and streams. More data needed.

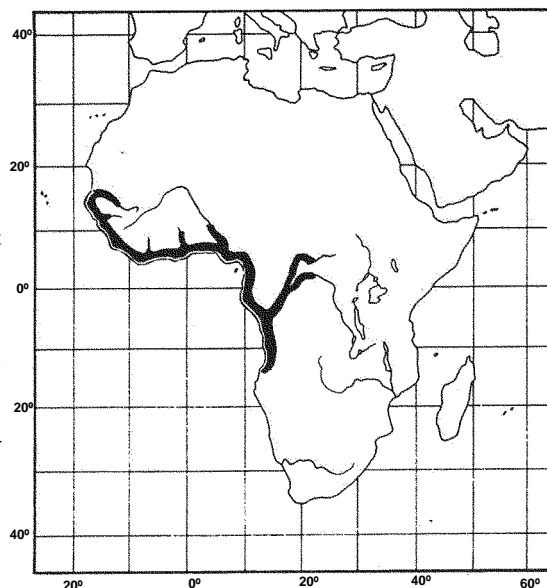
Size : To 13 cm standard length.

Interest to Fisheries : Enters artisanal fisheries, but catches small.

Local Names :-

Literature : Fourteen references to this species are given in CLOFFA (1984:42).

Remarks : Meristic characters probably vary throughout the wide range of this species, but it remains very clearly separated from C. mento on gillraker numbers.



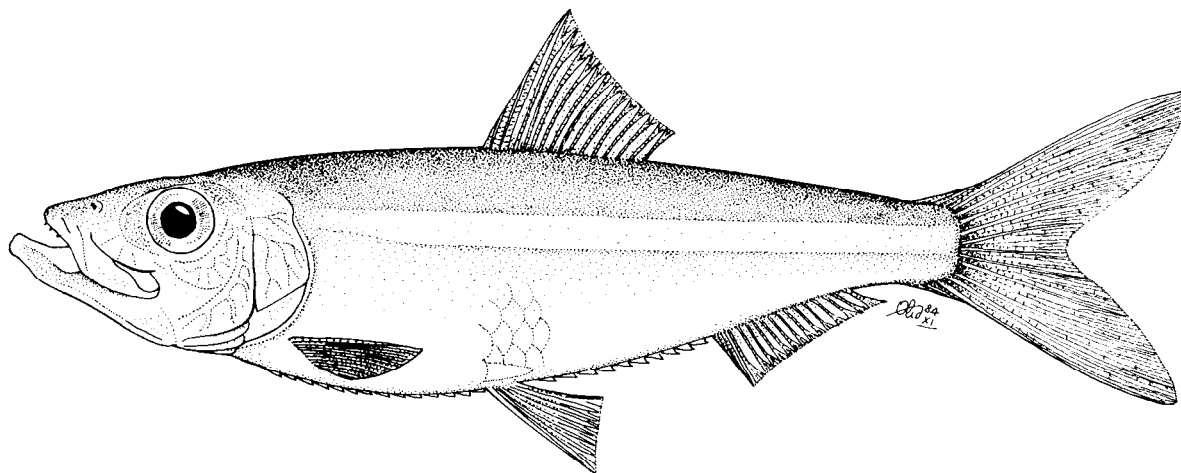
Cynothrissa mento Regan, 1917

CLUP Cyno 2

Cynothrissa mento Regan, 1917, Ann.Mag.nat.Hist., (8)19:204, fig. 1 (head only) (Agberi, southern Nigeria).

Synonyms : Cynothrissa mento - Poll, 1974:146 (synopsis); CLOFFA, 1984:42 (complete synonymy, refs to anatomy, food, breeding, migrations, fisheries).

FAO Names : En - Nigerian fangtooth pellowline.



Diagnostic Features : Body moderate, sometimes deep (depth 25% of standard length or more). Pre-pectoral scutes present. Lower jaw strongly projecting, with strong canines at symphysis; 2 to 4 strong backward-pointing canines on each side behind outer row of pre-maxillary teeth. Lower gillrakers 16 to 19, short (less than corresponding gill filaments). Anal finrays ii to iii, 16 to 19. Silver stripe along flank. Resembles C. ansorgii, which has more gillrakers (23 to 26); also, Pellonula vorax which lacks canines in the upper jaw and has longer gillrakers (equal to gill filaments). Species of Odaxothrissa have only one large canine on each side of the upper jaw and the first scute is behind the pectoral fin base.

Geographical Distribution : West African freshwaters (lower parts of Volta and Niger basins, also lower Benue and rivers of Cameroon; apparently not in Zaire system).

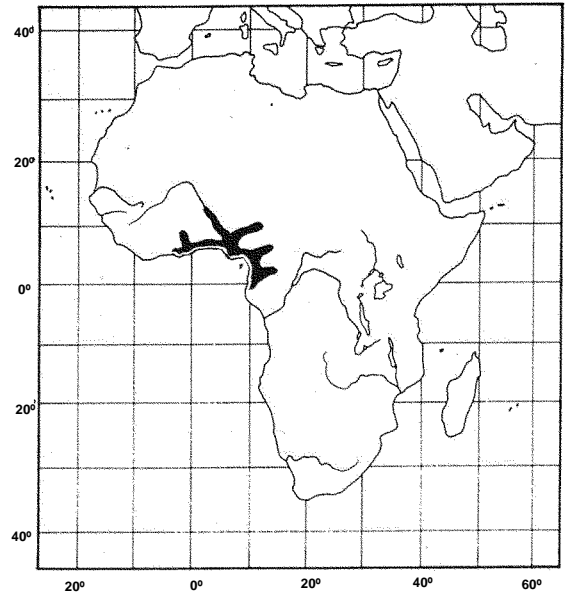
Habitat and Biology : Rivers and streams, also the man-made Lake Volta (but only in the most riverine parts, e.g. Yeji and Kete Krachi). Feeds on small fishes (*Pellonula*, also small cyprinids, cyprinodonts, schilbeids and even bagrid cat-fishes), including its own juveniles, also on aquatic insects. Possibly migrates upstream to breed. Growth in Lake Volta has been estimated at 7.3 mm a month.

Size : To 13 cm standard length.

Interest to Fisheries : Enters artisanal fisheries, but catches are small.

Local Names :-

Literature : Reynolds (1966, 1967, 1969 - fisheries; 1970 - food; 1971 - migration; 1974 - breeding); Petr & Reynolds (1969 - fisheries); 23 references to this species in CLOFFA (1984).



***Cynothrissa* species** Daget & Iltis, 1965

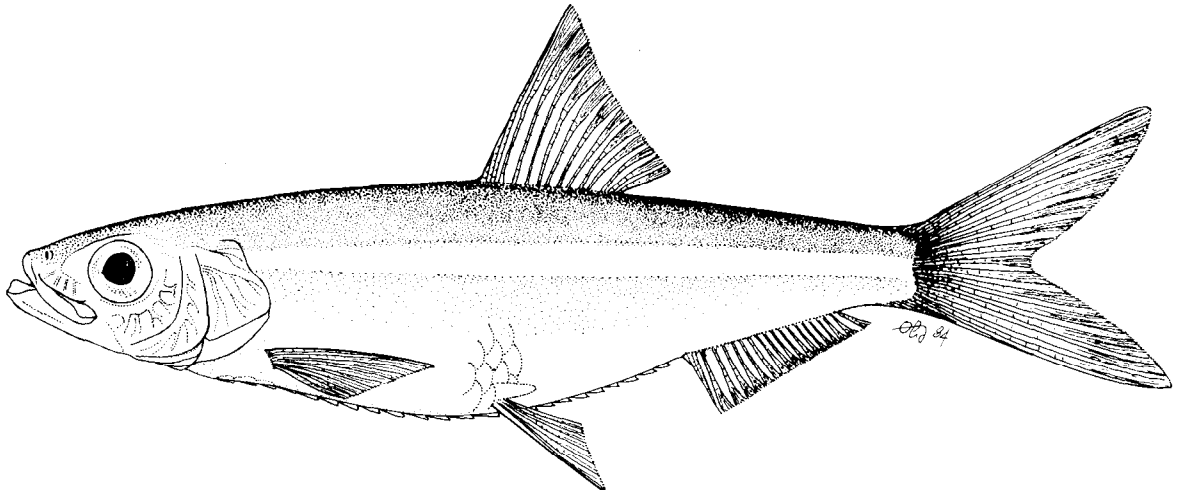
CLUP Cyno sp.

(AWAITING DESCRIPTION AND NAME)

Cynothrissa species Daget & Iltis, 1965, *Mém.Inst.fr.Afr.noire*, (74):50, fig. 27 (Lake Ebrié, Ivory Coast).

Synonyms : *Cynothrissa* species - CLOFFA, 1984:42.

FAO Names : En - Lake Ebrié fangtooth pellonuline.



Diagnostic Features : Body slender (20 to 23% of standard length). Pre-pectoral scutes present. Lower jaw strongly projecting, with strong canines at symphysis; 2 to 4 strong backward-pointing canines on each side behind outer row of pre-maxillary teeth. Lower gillrakers 28 to 33, long (equal to or more than corresponding gill filaments). Silver stripe along flank. Distinguished from *C. mento* and *C. ansorgii* by having more and longer gillrakers (cf. only 16 to 19 and 23 to 26 respectively, shorter than gill filaments). Resembles *Pellonula* until about 70 mm standard length, when canine teeth develop.

Geographical Distribution : West African freshwaters (Ivory Coast, in Lake Ebrié, but perhaps elsewhere also).

Habitat and Biology : Apparently able to tolerate salinity fluctuations of 0.6 to 24.6‰ (Lake Ebrié). More data needed.

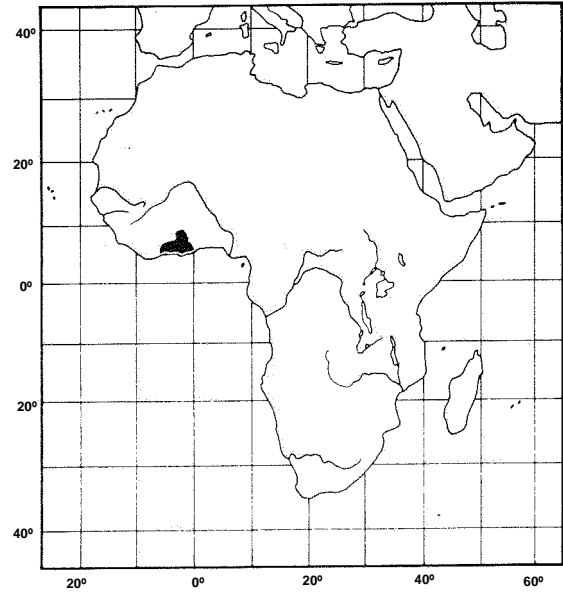
Size : To at least 10.1 cm standard length, usually 6 to 8 cm.

Interest to Fisheries : Presumably enters artisanal fisheries, but catches would be small.

Local Names : -

Literature : See under Synonyms.

Remarks : Daget & Iltis (1965) hesitated to name this species because the small and slender types of *Pellonula leonensis* Boulenger, 1916 might perhaps be its juveniles. However, the latter lack pre-pectoral scutes and if such scutes are consistently present in juvenile *Cynothrissa*, then *P. leonensis* belongs in the rather variable complex that includes *P. afzeliusi* and *P. miri* (see under *P. leonensis*).



Odaxo Boulenger, 1899

CLUP Odaxo

Odaxo Boulenger, 1899, *Ann.Mus.Congo, Zool.*, (1)1:64 (type: *Odaxo losera* Boulenger).

Diagnostic Features : Amongst the largest of the West African pellonulines, reaching about 15 cm standard length. Belly with strong keel of scutes, the anterior scute beginning behind base of last pectoral finray. Lower jaw prominent, with strong canines at symphysis; pre-maxillae with one (rarely 2) canine teeth about halfway along normal outer series, curved and pointing backward. Lower gillrakers 18 to 24, shorter than corresponding gill filaments in adults. Closely resembles *Cynothrissa*, which has 1 to 4 backward-pointing canines behind normal outer pre-maxillary series, also pre-pectoral scutes present. Resembles *Pellonula vorax*, which has gillrakers as long as corresponding gill filaments and enlarged but not canine-like teeth.

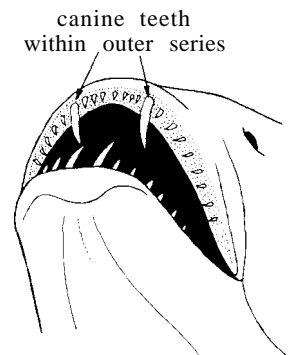
Biology, Habitat and Distribution : Freshwater, in West African rivers (Congo system). Predatory on smaller fishes, also probably aquatic insects and perhaps crustaceans.

Interest to Fisheries : Enter artisanal fisheries, but catches small.

Species : Since the synopsis by Regan (1917), two species have been consistently recognized (but the distinction not very secure - see under *O. losera*):

O. losera Boulenger, 1899, West African freshwaters

O. vittata Regan, 1917, West African freshwaters.



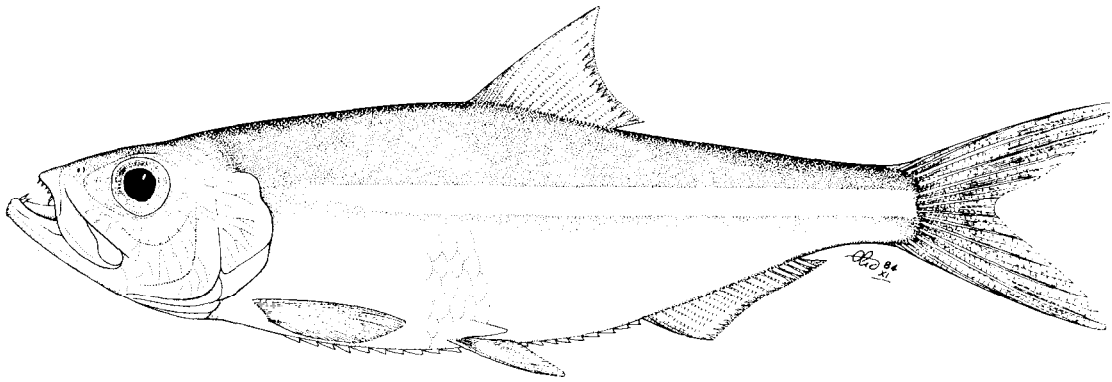
Odaxo losera Boulenger, 1899

CLUP Odaxo 1

Odaxo losera Boulenger, 1899, *Ann.Mus.Congo, Zool.*, (1)1:64, pl. 31, fig. 1 (Coquilhatville = Mbandaka).

Synonyms : *Odaxo losera* - Boulenger, 1909:160, fig. 128 (good figure of a syntype); Regan, 1917, 205 (juvenile syntype, Coquilhatville); poll, 1974:146 (synopsis); CLOFFA, 1984:47 (complete synonymy, refs to habitat, food).

FAO Names : En - Losera fangtooth pellonuline.



Diagnostic Features : Body slender or moderate (depth about 22 to 29% of standard length). Scutes beginning behind base of last pectoral finray. Lower jaw strongly projecting, with strong canines at symphysis; one large canine tooth about halfway along normal pre-maxillary series (rarely a smaller one beside or a little behind it), curved and pointing backward. Lower gillrakers 18 to 21, short, less than corresponding gill filaments and the anterior ones reduced to stumps in large adults (more and longer gillrakers in juveniles). Silver stripe along flank. Resembles *O. vittata*, which has slightly more gillrakers (20 to 23 in adults); also *Pellonula vorax*, which lacks canines in the upper jaw and has one or more pre-pelvic scutes. Species of *Cynothrissa* have 1 to 4 canine teeth behind the normal outer pre-maxillary series.

Geographical Distribution : West African freshwaters (lower parts of Zaire River, from about Mbandaka to Braazaville, also the rivers of Gabon, Congo and perhaps Angola).

Habitat and Biology : Rivers and streams. More data needed (but see notes by Matthes, 1964; also Hulot, 1950 and Marlier, 1958 on food).

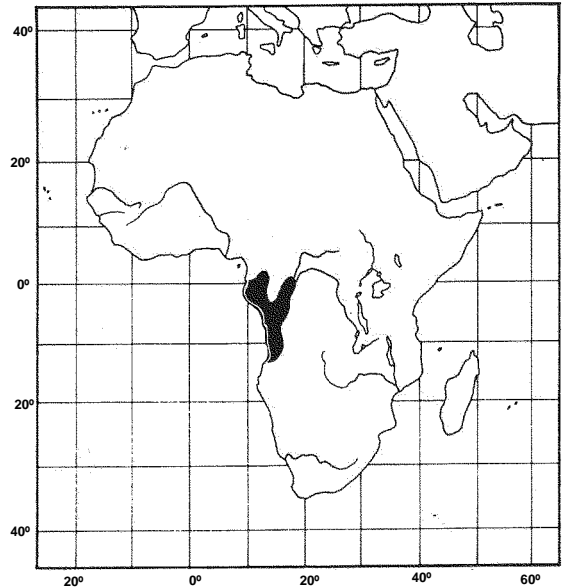
Size : To 13 cm standard length.

Interest to Fisheries : Enters artisanal fisheries, but catches small.

Local Names : CONGO: Losera; Lake Tumba: Luhelele.

Literature : Twenty-three references in CLOFFA (1984:47-48).

Remarks : Only the slightly lower gillraker count distinguishes this species from *O. vittata*, but in both species the gillrakers appear to become fewer and shorter in adults, the anterior rakers degenerating into mere stumps. Possibly *O. vittata* is merely an upper Congo form (subspecies ?) of *O. losera*. Poll (1974:146) gave 26 to 27 gillrakers for *O. losera*; a syntype of 7.7 cm standard length has 27 lower gillrakers, but larger specimens have 18 to 21 only (but 21 and 24 in two fishes of 11 cm standard length from Cameroon).



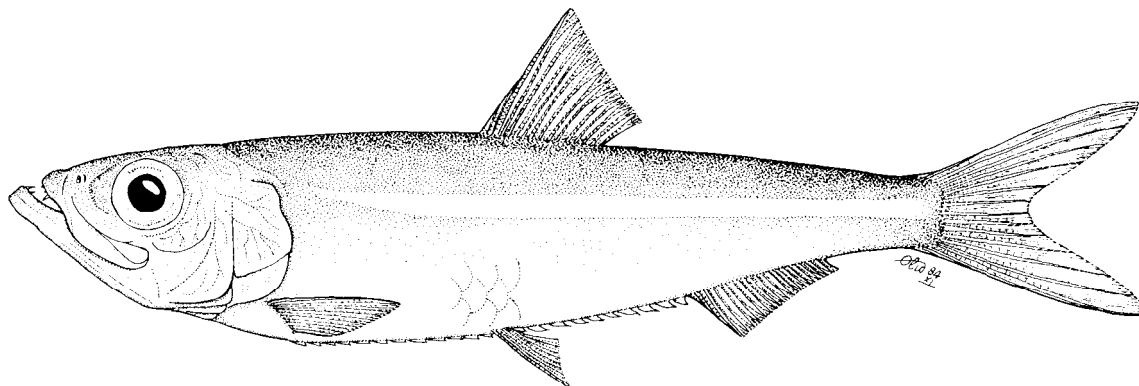
***Odaxothrissa vittata* Regan, 1917**

CLUP Odaxo 2

Odaxothrissa vittata Regan, 1917, *Ann.Mag.nat.Hist.*, (8)19:205 (Banzyville = Yasanyama, Oubangui River).

Synonyms : *Odaxothrissa vittata* - Poll, 1974:146 (synopsis); CLOFFA, 1984:48 (complete synonymy, ref. to ecology).

FAO Names : En - Regan's fangtooth pellonuline.



Diagnostic Features : Body slender or moderate (depth about 22 to 26% of standard length). Scutes beginning behind base of last pectoral finray. Lower jaw strongly projecting, with strong canines at symphysis; one large canine tooth about halfway along normal pre-maxillary series (rarely a smaller one beside or behind it), curved and pointing backward. Lower gillrakers 20 to 24, short, less than corresponding gill filaments and the anterior ones reduced to stumps in large adults (more and longer gillrakers in juveniles). Silver stripe along flank. Resembles *O. losera*, which has slightly fewer gillrakers (18 to 21 in adults); also *Pellonula vorax*, which lacks canines in the upper jaw and has one or more pre-pelvic scutes. Species of *Cynothrissa* have 1 to 4 canine teeth behind the normal outer pre-maxillary series.

Geographical Distribution : West African freshwaters (upper parts of Zaire River and its tributaries, e.g. Ubanqi and Lualaba, also Sangha).

Habitat and Biology : Rivers and streams. More data needed.

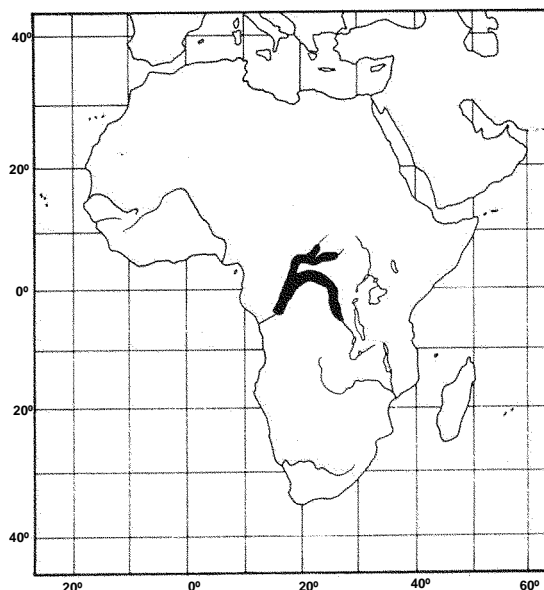
Size : To 13 cm standard length, perhaps more.

Interest to Fisheries : Enters artisanal fisheries, but catches small.

Local Names :-

Literature : Fifteen references in CLOFFA (1984:48).

Remarks : Not certainly distinct from *O. losera* (see under that species).



Pellonula Günther, 1868

CLUP Pellon

Pellonula Günther, 1868, Cat.Fish.Brit.Mus., 7:82, 452 (type: Pellonula vorax Günther).

Diagnostic Features : Small or medium-sized West African pellonulines, reaching about 12 cm (usually 6 to 8 cm). Belly with strong keel of scutes, the anterior scute sometimes beginning before base of first pectoral finray. Lower jaw slightly or rather distinctly projecting, with strong but not canine teeth at symphysis; pre-maxillae with a single (outer) row of teeth, small or well-developed but never canine-like; maxilla blade deep, its depth about 3 times in its length, second supra-maxilla paddle-shaped. Lower gillrakers 20 to 36, longer than corresponding gill filaments. Scales small, in lateral series 38 to 44. Differs from Cynothrissa and Odaxothrissa in the lack of canine teeth in the jaws; differs from Nannothrissa and Sierrathrissa in having i 7 pelvic finrays (cf. i 6) and the pelvic fin insertion below or behind the dorsal fin origin (cf. in front); Poecilothrissa has fewer scales (27 to 34).

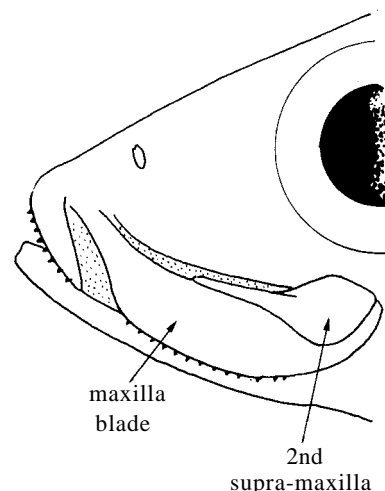
Biology, Habitat and Distribution : Freshwater, in West African rivers from Senegal to Angola, but in some cases enters brackish-water of estuaries and may even appear along beaches.

Interest to Fisheries : Enter artisanal fisheries, but catches small.

Species : Revisional work is urgently needed, but two species (or species complexes) can be clearly distinguished, based on the form of the pre-maxillary teeth and presence or absence of pre-pectoral scutes:

P. leonensis Regan, 1917, West African freshwaters

P. vorax Günther, 1868, West African freshwaters.



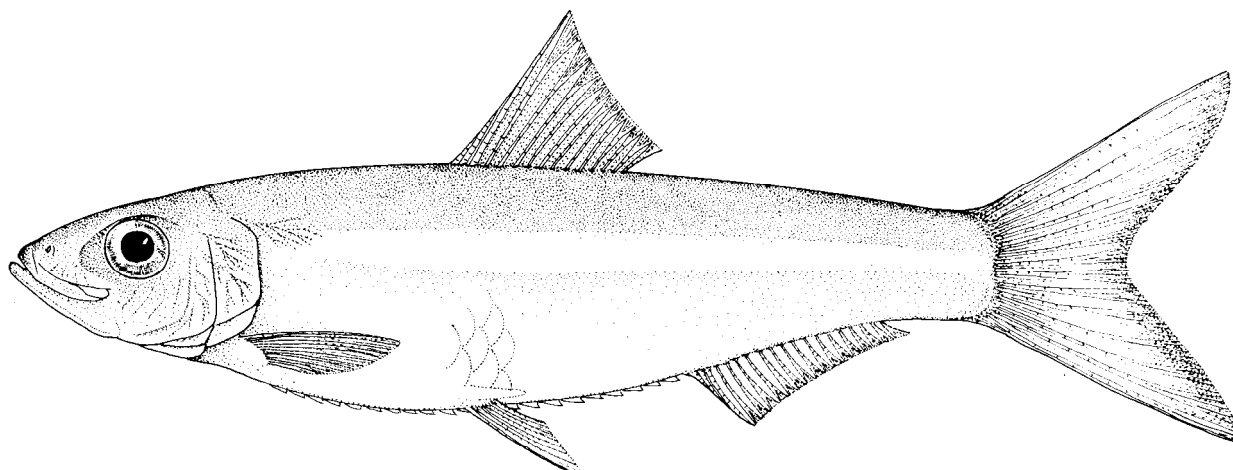
Pellonula leonensis Boulenger, 1916

CLUP Pellon 1

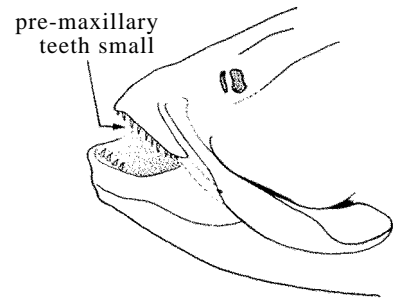
Pellonula leonensis Boulenger, 1916, Cat.f.-w.Fish.Africa, 4:172, fig. 111 (Sherbo District, Sierra Leone).

Synonyms : Pellonula afzeliusi Johnels, 1954:351 (Gambia River); Poll, 1974:146 (Gambia, Lake Ebrié); poll, Teugels & Whitehead, 1984:48 (complete synonymy); Microthrissa miri Daget, 1954:67, fig. 12 (Diagarabe, 14°N, upper Niger, Mali); Pellonula miri: Poll, 1974:146 (synopsis); Poll, Teugels & Whitehead, 1984:49 (complete synonymy); Pellonula leonensis - CLOFFA, 1984:49 (complete synonymy, Sierra Leone only; P. miri and P. afzeliusi recognized as distinct species).

FAO Names : En - Smalltoothed pellonula.



Diagnostic Features : Body slender to moderately deep (depth 17 to 30% of standard length). Scutes beginning behind base of first (usually behind last) pectoral finray, 10 to 13 + 6 to 10 = 17 to 23. Lower jaw very slightly projecting, teeth at symphysis only slightly enlarged; pre-maxillary teeth small, curved inward, only the tips usually apparent, no strongly marked indentation at centre of jaw. Lower gillrakers 20 to 30, long (equal to or longer than corresponding gill filaments). Silver stripe along flank. Resembles *P. vorax*, which has larger and straighter teeth, often pointing forward, and scutes before pectoral fin bases. Absence of large canine teeth in upper jaw (within or behind normal outer pre-maxillary series) distinguishes it from *Odaxothrissa* and also *Cynothrissa* (which has pre-pectoral scutes). *Microthrissa* species are deep-bodied and have a much more slender maxilla. See CLUP Pellon 1, Fishing Area 34.



Geographical Distribution : West African freshwaters (Senegal to Zaire, upper reaches of Niger and lower parts of Benue, but apparently not in upper parts of Congo system).

Habitat and Biology : Chiefly rivers and streams, also man-made and natural lakes and lagoons; apparently able to tolerate moderate or even quite high salinities (reported from the beaches at Hann near Dakar and near Pointe Noire, Congo). Breeds July to September in Lake Volta. According to Daget (1954 - as *Microthrissa miri*) in the upper Niger the fishes do not leave the main river to enter floodwater pools; nevertheless the species appears well-established in Lake Volta and to some extent in Kainji Lake (Nigeria). Feeds on terrestrial and aquatic insects, especially *Povilla nymphs* in Lake Volta, also ostracods and entomostracans; stomachs containing clupeid fish scales may represent cannibalism. Breeds July to September in Lake Volta.

Size : To 8.5 cm standard length.

Interest to Fisheries : Enters artisanal fisheries, but catches small.

Local Names : -

Literature : Teugels & Thys van den Avdenaerde (1979 - anatomy); all references to this species (separately as *afzeliusi*, *leonensis* and *miri*) to about 1981 are given in CLOFFA (1984).

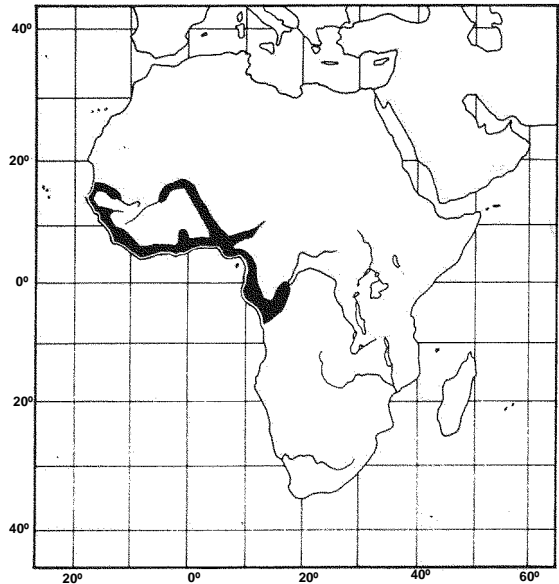
Remarks : Great uncertainty surrounds the name of this species because the two slender syntypes of *P. leonensis* are juveniles. Rather similar slender fishes, again without pre-pectoral scutes but with gillraker counts up to 35 (27 to 28 in the syntypes) occur in Ivory Coast, Cameroon, Gabon and Congo. Unfortunately, these frequently occur with apparently similar fishes that possess pre-pelvic scutes (but not with *P. vorax*-type teeth); among the latter are some with canine teeth beginning to fold inward and also larger adults with complete *Cynothrissa*-type canines. The latter, being slender fishes, are assumed here to be the *Cynothrissa* species of Lake Ebrié; those without canines are assumed to be either *Cynothrissa* in which canines do not always develop, or else another species of *Pellonula* that shares the characters of both *P. leonensis* (pre-maxillary teeth small and curved) and of *P. vorax* (pre-pectoral scutes present).

Until this is resolved it is assumed that there are three subspecies of *P. leonensis* :

P. leonensis leonensis: body slender (depth 17.7 to 18% of standard length); lower gillrakers 27 to 28; syntypes of *P. leonensis* from Sierra Leone, coastal.

P. leonensis afzeliusi: body moderate or deep (depth 21.7 to 30.2% of standard length); lower gillrakers 21 to 2.9; Senegal to Niger River, coastal.

P. leonensis miri: body moderate or deep (depth 23.8 to 28.5% of standard length); lower gillrakers 20 to 23; upper parts of Niger and Benue.



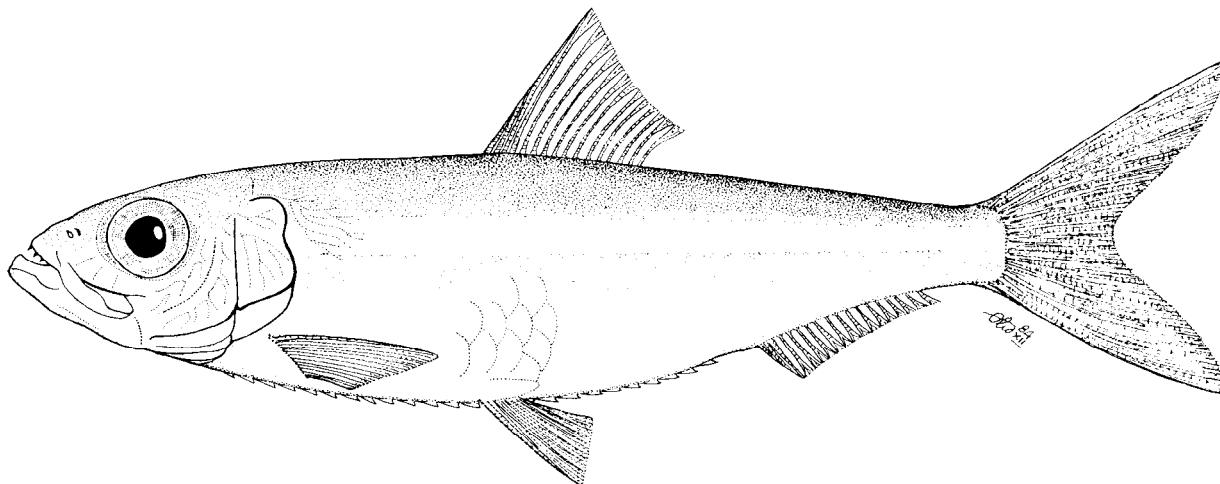
Pellonula vorax Günther, 1868

CLUP Pellon 2

Pellonula vorax Günther, 1868, Cat.Fish.Brit.Mus., 7:452 ("West Africa").

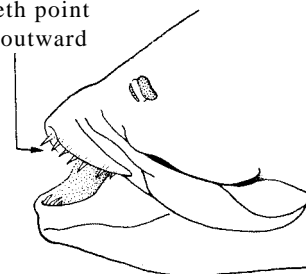
Synonyms : Pellonula stanleyana Regan, 1917:201 (Stanley Falls, but in fact *Cette Cama*); Pellonula vorax:Boulenger, 1909:156, fig. 124 from Steindachner (poor) (Niger to Congo, but some specimens misidentified); Regan, 1917:200 (Boulenger specimens re-identified, but P. leonensis material included); Poll, 1974:146 (synopsis); CLOFFA, 1984:49 (complete synonymy, refs to breeding).

FAO Names : En - Bigtoothed pellonula.



Diagnostic Features : Body moderate or fairly deep (depth 23 to 30% of standard length). Scutes beginning at isthmus, the first usually long, 11 to 15 + 9 to 11 = 20 to 25 total. Lower jaw slightly projecting, teeth at symphysis large in large fishes; pre-maxillary teeth strong, fairly straight, pointing forward in some fishes and an indented toothless gap at centre of jaw. Lower gillrakers 25 to 36, long (usually equal to or longer than corresponding gill filaments). Silver stripe along flank. Resembles P. leonensis, which has small and inward-curving teeth and no pre-pectoral scutes. Absence of large canine teeth in the upper jaw (within or behind normal outer pre-maxillary series) distinguishes it from Cynothrissa and also Odaxothrissa (which lack pre-pectoral scutes).

pre-maxillary
teeth point
outward



Geographical Distribution : West African freshwaters (lower parts of rivers from Ivory Coast to Angola); the Stanley Falls record (P. stanleyana) was an error.

Habitat and Biology : Rivers and streams. More data needed.

Size : To 12 cm standard length, perhaps more; usually to 10 cm.

Interest to Fisheries : Enters artisanal fisheries, but catches small.

Local Names :-

Literature : Numerous references to this species; the literature to 1981 is given in CLOFFA (1984).

Remarks : In all samples the prominent and almost straight pre-maxillary teeth are correlated with the presence of pre-pectoral scutes. The range of the species is now extended to Ivory coast, thus broadly overlapping that of the less easily defined P. leonensis.

