dd. 17-20 transverse scale rows between lateral line and ventral fin (77-90 lateral line scales) ... C. citharus, type species of the genus Citharinus (from Senegal to Nile basin)

aa. Specialized, deep-bodied forms with an elongate adipose fin base (longer than its distance from dorsal fin).

f. 10-12 transverse scale rows between lateral line and ventral fin; 53-60 lateral line scales (same scalation as that of C. macrolepis) ... C. gibbosus (Congo basin)

ff. 13-15 transverse scale rows between lateral line and ventral fin; 59-71 lateral line scales ... C. latus (from Senegal to Nile basins)

**GENUS CITHARIDIUM**

The second genus, Citharidium, with the single species ansorgii, from the Niger basin, is exactly like the deep-bodied Citharinus with a long adipose fin, but its scales (46-50 in lateral line and 11 or 12 between lateral line and ventral fin) bear longitudinal (along axis of body), parallel ridges terminating in spines. According to Daget, these scales are different from the typical ctenoid scales of the next subfamily.

**SUBFAMILY DISTICHODINAE**

Distichodins

The Distichodinae is a relatively large group of about 50 or 55 micro-predator and herbivorous species. They are distributed among fewer than 10 genera, as follows:

a. Generalized forms with gill membranes not forming a continuous bridge under throat; body deep, head broad and snout obtuse (two or three rows of teeth on both jaws) ... (1) Xenocharax

aa. More specialized forms with gill membranes forming a continuous bridge under throat; body shape variable (two series of teeth on both jaws).

b. Gill membrane not fused with throat or isthmus; maxillary teeth often present (small rather elongate species with head narrow and snout more or less pointed).

c. 31-48 lateral line (or longitudinal) scales.

d. Lateral line complete; adipose fin present ... (2) Nannaethiops

dd. Lateral line incomplete; adipose fin present or absent.

e. 10-14 dorsal fin rays; maxillary teeth present ... (3) Neolebias

ee. 15-16 dorsal fin rays; maxillary teeth present or absent.

f. A series of pit-lines on head; maxilla toothless; adipose fin present ... (4) Congocharax

ff. No pit-lines on head (?); maxilla toothed; adipose fin absent ... (5) Dundocharax

cc. 59-73 lateral line scales; a genus forming the transition with the Ichthyborinae ... (6) Microstomitchthyoborus

Type of Citharinus gibbosus (after Boulenger, 1899) and type of Citharidium ansorgii (after Boulenger, 1909).
bb. Gill membrane fused with isthmus; maxilla toothless.
g. Two series of bifid teeth on both jaws; dorsal fin long, with 16-27 rays.
h. Large deep bodied species, quite comparable to the Citharininae; adipose and caudal fins scaled
   ... (7) Distichodus
hh. Small, elongate species; adipose fin not scaled
   ... (8) Paradistichodus
gg. A single series of teeth on both jaws; dorsal fin relatively short, with 12-16 rays.
i. Lateral line complete ... (9) Nannocharax
 ii. Lateral line incomplete ... (10) Hemigrammocharax

(1) GENUS XENOCHARAX

Xenocharax spilurus, called lhajo by the Kota fishermen in Gaboon, is a deep bodied citharinid which differs from the other large species (of Citharinus, Citharidium and Distichodus) only by a few details such as the structure of the gill membranes (which are separated in the middle as in most characoids). It reaches 25 cm in size and, chiefly when young, is quite nicely colored with the fins orange or red. It inhabits Cameroon, Gaboon and the Congo.

A second species, Xenocharax crassus, found in the Upper Congo basin, is said to differ from the preceding mostly in some proportions and in the presence of a black spot on the dorsal fin.

(2-5) NANNAETHIOPS AND ALLIED GENERA

This group of 10 or 11 pigmy distichodins comprises the genera Nannaethiops and Neolebias, very popular among aquarists, as well as two other more recent (and much less known) genera from the Congo basin and Angola, Congocharax and Dundocharax. Dundocharax was previously classified near Hemigrammocharax, with which it does not seem to have much affinity.

The first two genera have the following characteristics: small size; maxillary bone always toothed; two rows of teeth on both jaws, the outer ones bifid, the inner ones also bifid (N. unitaeniatus, N. trilineatus, N. trewavasae and maybe others) or conical; 11-15 dorsal rays; 31-36 longitudinal scales. The following key is inspired by the rather recent revision of Poll & Gosse (1963). The subgenera proposed by Daget the following year are not used.

Key to the genera Nannaethiops and Neolebias:

a. Lateral line complete (adipose fin present; inner teeth bifid on both jaws; usually 2 maxillary teeth; a longitudinal dark band extending onto middle caudal fin rays; relatively large size: 62 mm) ... genus Nannaethiops (a single species, N. unitaeniatus, from Niger to the Congo basin)

aa. Lateral line incomplete (adipose fin present or absent; inner teeth bifid or conical on both jaws; 2-7 maxillary teeth) ... genus Neolebias

b. 16 scales around caudal peduncle; a single longitudinal band.
c. About 7 maxillary teeth; a broad dark band along the side and a dark bar at base of caudal fin; adipose fin usually absent ... Neolebias ansorgii (from Cameroon—called N. landgrafi—to lower Congo basin)

c. Always less than 5 maxillary teeth; a rather narrow band along the side and no dark bar at base of caudal fin.
d. A longitudinal black band extending to caudal fin.
e. Longitudinal black band extending along middle of caudal peduncle; usually a caudal spot; maxillary bone not reaching level of eye.
f. 33-35 longitudinal scales; body depth 3.0-3.7 in standard-length; dorsal fin behind mid-body; usually no adipose fin ... Neolebias unifasciatus (type of the genus, Portuguese Guinea to Gaboon)

ff. Usually 36-39 longitudinal scales; body depth 3.9-4.15 in standard length; dorsal fin in front of mid-body; adipose fin present ... Neolebias gracilis (central Congo basin)

ey. Longitudinal black band extending along lower part of caudal peduncle; no caudal spot; maxillary bone almost reaching to level of pupil; (adipose fin present; 33-36 longitudinal scales; body depth 2.5-3.3 in standard length; dorsal fin in front of mid-body) ... Neolebias trewavasae (Nile to lower Congo)

dd. A longitudinal band interrupted above anal fin, not continued on caudal peduncle (no adipose fin; maxillary bone not reaching level of eye; dorsal fin at mid-body; 31-33 longitudinal scales) ... Neolebias axelrodi (a species described from 2 small specimens less than 19 mm in standard length collected near Lagos, Nigeria, by Dr. H. R. Axelrod)

bb. 12 or 13 scales around caudal peduncle; 2 or 3 longitudinal bands.
g. Two longitudinal bands; no caudal spot; no adipose fin ... Neolebias philippei (Central Congo basin)

gg. Three longitudinal bands; a small caudal spot; adipose fin usually present ... Neolebias trewavasae (Congo basin); often called Nannaethiops tritaeniatus
All species are micropredators, living on small animals found on the bottom or among aquatic plants. The following species are easy to acclimate to the aquarium and are often seen. (1) *N. ansorgii* and a paler form called *N. landgrafi*, which probably belong to the same species. The former variety is green-blue (a quite unusual tint among fishes) with red fins; the latter form is pale blue. (2) *N. trilineatus*, which has its median longitudinal band surrounded by a golden metallic stripe like that of *Rasbora pauciperforata* or *Hemigrammus erythrozonus*, as well as reddish finnage. (3) *N. unifasciatus*, which is said to have the same color pattern but without the upper and lower dark bands. (4) *N. trevavasae*, which was often confused with the last, though it is somewhat less elongate and with the fins not strongly colored.

**GENERA (4) CONGOCHARAX AND (5) DUNDOCHARAX**

The genus *Congocharax* was erected for a species previously classified within *Hemigrammocharax* (*olbrechtsi*) as well as for *Neolebias spilotaenia*. The type species has the maxillary bone not toothed, it has slightly more dorsal rays and more scales than the *Neolebias* species, and has some pit-lines on the head. The two species are distinguished as follows:

- a. 40-43 longitudinal scales; a lateral band, which may be broken into a series of spots  
  . . . *Congocharax spilotaenia*  
  (Chiloango basin)
- aa. 44-48 longitudinal scales; a humeral spot and a large caudal spot  
  . . . *Congocharax olbrechtsi*  
  (Central Congo basin)

With regard to *Dundocharax*, the single species *D. bidentatus* (from Angola) differs from the preceding species by having 30–32 longitudinal scales, some maxillary teeth and no adipose fin. Judging from its description, the genus is scarcely separable from *Neolebias*.

**GENUS MICROSTOMATICICHTHYOBORUS**

This long, difficult name designates quite interesting Congolese species somewhat intermediate between the distichodins and the ichthyborins. The body and head are elongate, the teeth much like those of a *Neolebias*, the scales numerous (59–73 in the lateral line, which is complete), and the caudal fin is obliquely marked like that of a scissortail rasbora. The two known species are micropredators like *Neolebias*, and not ichthyophagous or fin-eaters like most ichthyborins. They can be distinguished as follows:

- a. 59–61 lateral line scales  
  . . . *M. katangae*
- aa. 63–73 lateral line scales  
  . . . *M. bashfordeani*

**GENUS DISTICHODUS**

Here we have a series of large (maximum size 70 cm) detritivorous and herbivorous species which differ from a preceding genus, *Citharinus*, mostly in having the scales ctenoid, the teeth biserial and the adipose fin as well as the caudal fin lobes covered with small scales; the caudal lobes are frequently rounded. Boulenger, in his classical *Catalogue of the Freshwater Fishes of Africa*, listed 17 species of *Distichodus*. Later, a few more species were described, and the following key will help to characterize and identify the species:
a. Less than 60 lateral line scales (16-20 dorsal rays; snout broad or feebly compressed).
b. Anal fin with 19-22 rays, at least as long as dorsal fin.
c. 7/37-39/10 scales
   cc. 9/40-42/11-12 scales
bb. Anal fin with 12-17 rays, shorter than dorsal fin.
d. Mouth terminal; dorsal fin with a black blotch or bar; 38-46 lateral line scales.
e. 12 or 13 anal rays; very small size; a series of spots on body (6-7/38-41/6-8 scales)
   dd. Mouth strongly inferior; dorsal fin plain; 53-57 lateral line scales (12 or 13 anal rays; 6 scales from lateral line to base of ventral fin; caudal lobes obtusely pointed) ... D. hypostomatus (Gaboon)
aa. 60-110 lateral line scales.
g. Snout deeper than long.
h. Snout broad or feebly compressed (mouth terminal to strongly inferior).
i. Mouth terminal or only slightly inferior.
j. 60-78 lateral line scales.
k. Snout shorter than interorbital space, 1.33-1.66 in its width (dorsal fin spotted)
l. 9 or 10 scales between lateral line and base of ventral fin; 60-66 lateral line scales; about 14 narrow transverse bars on body ... D. antonii (Congo basin)
ll. 13 or 14 scales between lateral line and base of ventral fin; 68-75 lateral line scales; a humeral spot ... D. petersii (East Africa)
kk. Snout about equal to or slightly shorter than interorbital space (11 or 12 scales between lateral line and base of ventral fin; 67-70 lateral line scales)
   ... D. mossambicus (Zambezi River*)
jj. 80-110 lateral line scales (snout much shorter than interorbital space; mouth sub-inferior; large species from the Nile and Niger, very close to each other, the dorsal fin always more or less spotted, the body spotted in the young, usually plain in adult (except brevipinnis).
m. Body plain (adults).

* The individuals mentioned in the literature as having the mouth inferior may belong to D. langi.

The author does not possess enough data concerning Distichodus albini from East Africa (apparently near D. petersii), D. koller (synonym vexillifer)
from Cameroon (close to *D. notospilus*), and *D. schenga* (close to *mosambicus*) to fit them into the key.

(8) GENUS *PARADISTICHODUS*

*Paradistichodus* differs from *Distichodus* by the more elongate body and the adipose fin not being covered with small scales. The single species, *Paradistichodus dimidiatus*, rather strongly resembles a *Nannocharaxes*. It differs from *Nannocharaxes* by its biserial teeth, as well as by having a longer dorsal fin than in most *Nannocharaxes* species (formula iii or iv, 13-15). It has a complete lateral line, with 51–63 perforated scales, and can at once be recognized due to its characteristic dorsal spot (which may act in nature as a recognition signal). Some ichthyologists acknowledge two subspecies, the nominal one from Casamance to the upper Niger basin, and a second one from Tchad.

![](Paradistichodus_dimidiatus.jpg)

*Paradistichodus dimidiatus*. Photo by Dr. J. Gery.

GENERA (9) *NANNOCHARAX* AND (10) *HEMIGRAMMOCHARAX*

AFRICAN DARTERS

*Nannocharaxes* and *Hemigrammocharaxes* are the exact counterpart in Africa of *Characidium* (and allied genera) of South America. Both strongly convergent groups are bottom fishes with large pectoral fins and sometimes other adaptations to life in fast-running waters, even torrents. A specimen of *Nannocharaxes* is usually impossible to distinguish from *Characidium* with the naked eye (provided that the collecting locality is not given), except for a certain rugosity of the body surface due to the ctenoid scales, which contrasts with the smoothness of the cycloid scales of the *Characidium*.

As contrasted with the other distichodins, *Nannocharaxes* and *Hemigrammocharaxes* have a single series of bifid teeth on both jaws. Like their Neotropical cousins, they are rather poorly known, as far as their taxonomy is concerned, primarily because most of the original descriptions were incomplete. This is why the following key will indicate only the outlines of their classification:

a. Lateral line complete; mouth usually inferior; body usually somewhat compressed

b. Dorsal fin inserted in front of level of ventral fins (usually less than 50 lateral line scales except in *N. haupulae*).

c. 14 branched dorsal rays; body depth 3.5 in standard length

d. Dorsal fin inserted at mid-body (even more posteriorly in young)

dd. Dorsal fin inserted in front of mid-body.

e. Less than 46 lateral line scales; body depth 4.5 in standard length.

f. About 35–38 lateral line scales

ff. About 40-44 lateral line scales

N. pteron (Ubanghi)

N. macropterus (Congo, Angola)

ee. 48-50 lateral line scales; body depth 4.5-6.5 in standard length.

N. gracilis (Congo)

gg. 7 ½ transverse scales below lateral line; about 16 vertically elongate spots along body

N. taenia and *N. haupulae* (Ubanghi to South Katanga)

bb. Dorsal fin inserted at level of ventral fins or behind it, the ventral fins usually being very anterior (37-57 lateral line scales).

h. 37-42 lateral line scales.

i. 6 branched anal rays (broad spots on the dorsum)

N. brevis (upper Congo basin)

ii. 7 or 8 branched anal rays.

j. Depth usually less than 4.33

N. altus and *N. hollyi* (Ubanghi and Gaboon)

jj. Depth 4.25-5.0

N. procatorus and N. schoutedeni (Congo to Angola)

hh. 42-57 lateral line scales.

k. Body depth usually less than 5.5 in standard length; several vertical bars on body.

l. 4 ½ scales above lateral line; 42-49 lateral line scales

N. fasciatus, type of the genus (with a subspecies in the Liberian-Guinean forest and the nominate form from Niger to Gaboon)

N. intermedius (South Cameroon)

11. 5 ½ scales above lateral line; 47-55 lateral line scales

N. intermedius (South Cameroon)

* The author lacks data concerning *N. gobioides* Roman from the Upper Volta.
kk. Body depth usually more than 5.5 in standard length; body marked with roundish spots.

m. 1 unbranched ray at beginning of ventral fin

N. lineomaculatus (Niger and Tchad)

mm. 2 unbranched rays at beginning of ventral fin

N. niloticus (with 4 subspecies from the Nile, nominal form, to the Congo basin)

aa. Lateral line usually incomplete (said to be complete in certain individuals of H. multifasciatus); mouth usually terminal or subinferior; body usually quite cylindriform (an ocellus at root of caudal fin) . . . genus Hemigrammocharax

n. 34-44 longitudinal scales.
o. 12 scales around caudal peduncle.
p. Adipose fin always (?) present.

q. 17 or 18 dorsal rays and 15 or 16 anal rays (35 longitudinal scales)

. . . H. uniocellatus (type species of the dubious subgenus Microdistichodus; Congo basin)

qq. 12-16 dorsal rays and 10-12 anal rays (34-44 longitudinal scales)

r. Dorsal fin inserted in front of level of ventral fins, or just at its level.

s. 21-23 lateral line scales; length of pectoral fin 1.15 in length of head; 7-10 irregular transverse bands

. . . H. angolensis (Angola)

ss. 10 lateral line scales; length of pectoral fin 1.8 in length of head; 14 transverse bars . . . H. monardi (Zambezi River)

rr. Dorsal fin inserted behind level of ventral fins (a longitudinal band, crossed by 9-12 short vertical bars)

. . . H. lineostriatus (Angola)

pp. Adipose fin always (?) absent (13 or 14 dorsal rays and 12 anal rays; dorsal fin behind ventral level; 34-36 longitudinal scales, of which only 6-7 are perforated)

. . . H. machadoi (Angola)

oo. 15-16 scales around caudal peduncle (adipose fin always (?) present; dorsal fin inserted in front of level of ventral fins; 13-15 dorsal rays and 10-12 anal rays; body with 13-20 more or less regular vertical bars).

t. Body depth 3.7-4.7; length of head 3.4-3.8 in standard length; usually 12-32 lateral line scales.

uu. Usually 27-32 lateral line scales

. . . H. stigmatus-complex with H. stigmatus (Zambezi River), H. minutus (South Katanga) and H. polli (upper Volta basin)

tt. Body depth up to 5.5; length of head 4.3 in standard length; lateral line very long or even complete (?) in some individuals

. . . H. multifasciatus (a species from the Zambezi River, which is often synonymized with H. stigmatus)

nn. About 50 longitudinal scales

. . . H. ocellicauda (type of the genus; Cameroon)

Hemigrammocharax wittei (after Poll, 1967) and Nannocharax cf. fasciatus (photo by Dr. J. Gery).
SUBFAMILY ICHTHYBORINAE
Fin-eaters

This small group of highly specialized predators is very interesting from a biological point of view, some of its members having a semi-parasitic life, living, at least in part, by eating the fins of other species. Indeed, with their scissor-like jaws (the upper one movable upwards), their cutting teeth and pike-like body, species of the genera *Eugnathichthys*, *Belonophago*, *Ichthyborus* and *Phago* (and possibly others) are well adapted to this specialized predation, whereas other genera such as *Phagoborus* and *Mesoborus* eat whole fishes, as their mouth, armed with some canine-like teeth, indicates. Finally, the least specialized of all in some respects, *Hemistichodus*, forming a sort of transition with the preceding subfamily (for example with *Microstomatichthyoborus*), can only capture small insects with its bifid lateral teeth. It should be noted that most of the species have an extremely small maxillary bone, in contrast with other predators.

The genera can be distinguished as follows:

<table>
<thead>
<tr>
<th>a. No teeth on the front part of the upper jaw (a single series of teeth on the sides)</th>
<th>... (1) <em>Hemistichodus</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>aa. Front teeth present, lobed, conical or canine-like.</td>
<td>b. A single series of teeth on both jaws.</td>
</tr>
<tr>
<td>cc. 8 or 9 canines above and below; snout more than 2 times longer than postocular part of head</td>
<td>... (3) <em>Gaviajocharax</em></td>
</tr>
<tr>
<td>d. Inner teeth consisting of a pad of brush-like, very small teeth; outer teeth caniniform in front, bifid on sides</td>
<td>... (4) <em>Ichthyborus</em></td>
</tr>
<tr>
<td>dd. Inner teeth in a row, not brush-like.</td>
<td>e. 2 canines above and below</td>
</tr>
<tr>
<td>ee. No canines (fin-eaters for the most part).</td>
<td>f. Snout not longer than postocular part of head.</td>
</tr>
<tr>
<td>gg. Snout narrow, beak-like, outer upper bicuspid teeth larger in front than on sides; cheek almost entirely covered by suborbitals; gill membranes united to isthmus.</td>
<td>... (6) <em>Eugnathichthys</em></td>
</tr>
<tr>
<td>h. 87-90 lateral line scales, 10 between dorsal fin and lateral line</td>
<td>... (7) <em>Paraphago</em></td>
</tr>
<tr>
<td>hh. Less than 50 lateral line scales, 1 or 2 between dorsal fin and lateral line</td>
<td>... (8) <em>Phago</em></td>
</tr>
<tr>
<td>ff. Snout longer than postocular part of head</td>
<td>... (9) <em>Belonophago</em></td>
</tr>
</tbody>
</table>

(1) GENUS *HEMISTICHODUS*

Two or, more probably, three small (50-100 mm) species belong to this genus. *H. vaillanti*, the type species from Gaboon, has a characteristic color pattern: the dorsal and caudal fins are marked with conspicuous black spots surrounded with orange-yellow; the spot on the lower caudal lobe is the largest, extending onto the distal half of the lobe. It is interesting to note that almost all Ichthyborinae have some caudal pattern, usually one or two bands crossing the lobes obliquely. It has been hypothesized that these markings act as a recognition signal, telling the other individuals not to attack their own species.

The species, with two of them sympatric in the central Congo, can be distinguished by means of the following key:

<table>
<thead>
<tr>
<th>a. No marks on caudal lobes; last unbranched dorsal ray longer than head (64-74 longitudinal scales; lateral line interrupted near middle)</th>
<th>... (H. lootensi (Central Congo))</th>
</tr>
</thead>
<tbody>
<tr>
<td>aa. Caudal lobes with a pattern; last unbranched dorsal ray not longer than head</td>
<td>b. About 65 longitudinal scales, lateral line interrupted near middle; two horizontal bars on dorsal fin, two oblique bars on each caudal lobe</td>
</tr>
<tr>
<td>cc. 8 or 9 canines above and below; snout more than 2 times longer than postocular part of head</td>
<td>... (H. vaillanti (Gaboon))</td>
</tr>
<tr>
<td>dd. Inner teeth in a row, not brush-like.</td>
<td>e. 2 canines above and below</td>
</tr>
<tr>
<td>ee. No canines (fin-eaters for the most part).</td>
<td>f. Snout not longer than postocular part of head.</td>
</tr>
<tr>
<td>gg. Snout narrow, beak-like, outer upper bicuspid teeth larger in front than on sides; cheek almost entirely covered by suborbitals; gill membranes united to isthmus.</td>
<td>... (6) <em>Eugnathichthys</em></td>
</tr>
<tr>
<td>h. 87-90 lateral line scales, 10 between dorsal fin and lateral line</td>
<td>... (7) <em>Paraphago</em></td>
</tr>
<tr>
<td>hh. Less than 50 lateral line scales, 1 or 2 between dorsal fin and lateral line</td>
<td>... (8) <em>Phago</em></td>
</tr>
<tr>
<td>ff. Snout longer than postocular part of head</td>
<td>... (9) <em>Belonophago</em></td>
</tr>
</tbody>
</table>
(2) GENUS PHAGOBORUS

The type species, Phagoborus ornatus (formerly Neoborus ornatus), inhabits the Central Congo basin as do most Ichthyborinae. It attains a length of up to 200 mm and is a predator of small fishes. It has three conspicuous black lateral bands on its body, and its orange caudal lobes are barred with three longitudinal bands, more regular on the upper lobe.

A second, smaller (?) species, P. quadrilineatus, with the same caudal pattern, has been described from a very remote river basin, that of the Casamanza in Portuguese Guinea. It has fewer lateral line scales (90 instead of 98-110), fewer anal rays (15 instead of 17-18), and 4 longitudinal bands on the body.

(3) GENUS GAVIALOCHARAX

The single species Gavialocharax monadi has been found in Cameroon. It has the same size and body shape as that of Phagoborus, but it is more elongate with the snout strongly resembling that of an American ctenolucid. It has only 2 longitudinal bands on its body, and a very similar caudal fin pattern.

Ichthyoborus besse; dентition and caudal fin pattern (after Poll 1957).

(4) GENUS ICHTHYBORUS*

The single species, Ichthyoborus besse, is remarkable in having evolved (according to Daget) differently in the Nile, Tchad and Benoué basins on the one hand, and in the Congo basin on the other. In the Tchad basin, for example, it is a fin-eater, at least partly because there is no other fish to occupy this very peculiar ecological niche. In the Congo basin, where the fin-eaters are well established and well adapted, the subspecies I. besse congolensis contents itself with small whole fishes and some crustaceans.

The species reaches 200 mm in size and the two forms can be distinguished by their caudal fin color pattern. In the nominal form (I. besse besse) the yellow caudal fin is spotted. In the form from the Katanga (I. besse congolensis) these spots are united in vermicular, irregular lines and there is an ocellus at the fin base.

(5) GENUS MESOBORUS

The two Mesoborus species are apparently purely ichthyophagous and are not well known, being rare. The type species, Mesoborus crocodilus, from the Upper Congo, is a rather large fish (250 mm long) decorated with 2 series of round spots on the body and plain fins (or perhaps faded). The second species, M. pellegrini, also from the Congo basin but from different rivers (in South Cameroon and Kasai), has more branched dorsal rays (15 or 16 instead of 14) and the dorsal fin and caudal lobes are decorated with 3 oblique dark bands. The body patterns are the same, and in its general shape and coloration a Mesoborus looks much like an Eugnathichthys or a Paraphago.

* Not Ichthyoborus, which is the generic name of certain birds.
(6) GENUS EUGNATHICHTHYS

The two sympatric *Eugnathichthys* species from the Congo basin, both fin-eaters, are the ecological counterparts of the above-described *Mesoborus* species (ichthyophagous), in the same way as are the two subspecies of *Ichthyborus besse* (*I. besse besse* is a fin-eater, *I. besse congoensis* an ichthyophagous). In contrast with *Mesoborus, Eugnathichthys* has no caniniform teeth but has bicuspid, compressed teeth forming a continuous, jaw-like cutting tool adapted to the fin-eating habit, as was shown by Matthes in the English journal *Nature* in 1961. Both species have the dorsal fin and caudal lobes barred with 3 (4?) black bands, and a spotted body.

*Eugnathichthys eetveldii*, the type species, attains a rather large size (30 cm) and has more scales (95-107 lateral line scales) than the smaller *E. macroterelepis* (68-80 lateral line scales), and the spots on the sides are roundish instead of being vertically elongate.

(7) GENUS PARAPHAGO

Technically, the single species *Paraphago rostratus*, from the Congo, differs from *Phago* only in its numerous scales, which is a rather poor generic character. However, a look at its body shape and coloration (the so-called habitus of the species) shows that it is much more like an elongate *Mesoborus* (body depth 5.5-6 in the standard length) that has lost its canine teeth and has become a fin-eater, with the same teeth as those of *Phago*.

(8) GENUS PHAGO

The three or four species of *Phago* are relatively small (110-160 mm), and have the teeth compressed and tricuspidate, very trenchant and set close together (about 17-22 outer teeth on each side of each jaw), which enables them to cut the fins of other, sometimes larger, fishes. The resemblance of their "beak" to scissors is increased by the peculiar upper jaw of the Ichthyborinae, which moves upward when the mandible goes down. Another peculiarity is the scales, which are rugose, with a median spine forming a sort of longitudinal crest, giving somewhat the aspect of the osseous plates of a seahorse.

The species have a fusiform body shape, their fins are barred as in most other genera, and their elongate body is usually spotted.

The following key gives sufficient data for their identification:

a. "Beak" shorter than postocular part of head; 42-45 lateral line scales, 8 around caudal peduncle (body depth 6-7 in standard length)

   \[ \ldots \text{P. boulengeri (Central and upper Congo basin; Tchad ?)} \]
aa. “Beak” longer than postocular part of head; 47-48 lateral line scales, 6 around caudal peduncle.

b. 2 scales between dorsal fin and lateral line; body depth about 6 in standard length

bb. 1 scale between dorsal fin and lateral line; body depth 8-9 in standard length.

c. 19 outer teeth on each side

cc. 22 outer teeth on each side

P. intermedius (Congo basin)

bb. 1 scale between dorsal fin and lateral line; body depth 8-9 in standard length. P. loricatus, type species (Niger)

c. 19 outer teeth on each side ... P. maculatus (a dubious species, also from the Niger)

Belonophago tinanti. Photo by Timmerman.

(9) GENUS BELONOPHAGO

The species of this genus are very unusual in a group where odd forms are numerous. They resemble a needlefish (family Belonidae) as the generic name implies, with their very elongate body (body depth 10-11 times in the standard length) and snout (which is 1.5 to 2 times longer than the postocular part of the head). The scales, with their median spine, are similar to those of Phago, as is the scale formula (30-35 in the lateral line, one between dorsal fin and lateral line, and 6 around the caudal peduncle), and the fish is something like a very elongate Phago, with the same fin-eating habits. As concerns the coloration, the usual black marks on the caudal fin are replaced by red spots (one on each caudal lobe base).

The two species, both from the Congo basin, can be separated as follows:

a. “Beak” twice as long as postocular part of head ... B. hutsebouti (Central Congo basin)

aa. “Beak” only 1.5 to 1.75 times longer than postocular part of head ... B. tinanti (Stanley Pool)