

**Studies on Fishes of the Family Characidae.—No. 8.
The Description of a New *Hemigrammus* from the
Rio Negro of Brazil.**

JAMES BÖHLKE¹

Systematic Zoologist, U. S. Fish and Wildlife Service, 450-B, Jordan Hall,
Stanford University

The new *Hemigrammus* here described was discovered incidental to a search for additional material of the two new species of *Microschemobrycon* described in number six of this series (Böhlke 1953). The two type specimens resemble strongly the Rio Negro species of *Microschemobrycon*, having the shape of *M. callops* and the coloration of *M. casiquiare*. They were first mistaken for them. However, when examined more closely, their biserial premaxillary dentition immediately showed them to be tetragonopterine characins and referable to either *Hemigrammus* or *Hyphessobrycon*. Their generic placement is discussed under the section on relationships toward the end of this paper.

Hemigrammus mimus, new species

Holotype.—SU 47759, 28.0 mm. in standard length, collected by Dr. Carl Ternetz from the rapids at Camanáos on the Rio Negro, Brazil; January 22, 1925. Camanáos is down river from Sao Gabriel, at approximately 0° 10' South Latitude², 66° 55' West Longitude. See figure 1 for locality. Rice (1918) presents some interesting "Notes on the Rio Negro (Amazonas)", among which are a number of references to the rapids at Camanáos, including these: "At Camanáos, . . . the worst part of the whole river begins, . . ." (p. 206) ; "At . . . Camanáos are long and dangerous rapids (caxoeiras), the spume of whose cross-currents, violent whirlpools, and dangerous waves is seen for a long distance below the broad reefs of granite over which the river rushes." (p. 212) ; "The São Gabriel rapids extend from Camanáos to the mouth of the Caiari-Uaupés, a distance of more than 30 miles, passing at places between high walls of rock, zigzagging swiftly, . . ." (p. 212).

Paratype.—One specimen, SU 47760, 28.3 mm. standard length, with the same data as the holotype.

Description.—*Body* nearly subcylindrical, only slightly more compressed. Greatest depth of body at origin of dorsal. Dorsal and ventral

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²In an earlier paper (Böhlke 1953, p. 846), this latitude was mistakenly given as ^ 10' North for the holotype of *Microschemobrycon callops*.

outlines of body nearly similar before a vertical with the dorsal fin, but posterior to this point (along the base of the anal fin) the ventral outline curves more abruptly. The general features of this fish are well illustrated by the photograph of the holotype, Fig. 2.

Head moderate, its length slightly less than the body is deep; dorsal and ventral outlines similar. Eye large, greater than either the snout or the rather broad interorbital space. Snout bluntly rounded, its shape from above roughly that of a semicircle. Interorbital greater than snout. Great suborbital moderate, leaving a naked area behind, but its anterior ventral edge meeting preopercle. Three postorbitals: uppermost smallest; lowermost next in size, leaving a naked space behind; middle one largest, also leaving a narrow naked space between its posterior margin and the vertical limb of the ~~preopercle~~, but sometimes almost bridging the gap with its lower posterior portion. Mouth rather small, sub-terminal, the snout projecting beyond tip of lower jaw. Maxillary small, rounded posteriorly, widest through the middle, reaching just to anterior margin of eye when mouth is closed, bearing three or four very slender tricuspid teeth crowded at its upper end. Premaxillaries transverse, each bearing ten or eleven (eleven evidently the usual number) long, narrow, tricuspid teeth in the inner series, which diminish gradually in size from the midline outward. Outer series of premaxillary teeth represented by a single tricuspid tooth (the outer cusps not distinct, appearing as shoulders) on either side, between the second and third teeth of the inner series. Mandibular teeth similar in size and shape to those of inner premaxillary row, grading down in size from the larger median anterior teeth to very small lateral ones posteriorly. The exact number of mandibular teeth is difficult to discern without dissecting out the mandible, but there evidently are about sixteen to eighteen teeth on either side. Although the mandibular teeth decrease gradually in size from front to back, there is a slightly greater decrease in size between teeth five and six, or six and seven, than between any of the others. This causes the anterior five or six teeth on either side to stand out slightly from the remainder of the series. Cusps of teeth a reddish-brown, the color strongest and most widespread on the larger, anterior teeth. Frontal fontanel a short triangular wedge, about one-third the length of the parietal fontanel. Gill rakers moderate, the longest about one-half diameter of pupil; $6 \pm 1 \pm 10$ or 11 on the first gill arch. Pseudotympanum present but very faint, its margins fuzzy, and the body of the fish too broad for light to be seen through this region.

Scales cycloid, smooth, adherent, their shape as in Fig. 3. Sheath of scales along anterior portion of anal fin a single scale in width, continued

back to about the sixth branched anal ray. Predorsal region entirely scaled, a complete median series present. Prevential region normally scaled, with a nearly regular median row of scales which are similar in size to the other scales of the body. Scallation of caudal fin irregular. There are several large scales at the base of the caudal, with smaller scales extending a short distance on the fin beyond them. This type of caudal scalation is apparently intermediate between what Dr. Eigenmann referred to as "caudal scaled" and "caudal naked except at its base". It appears

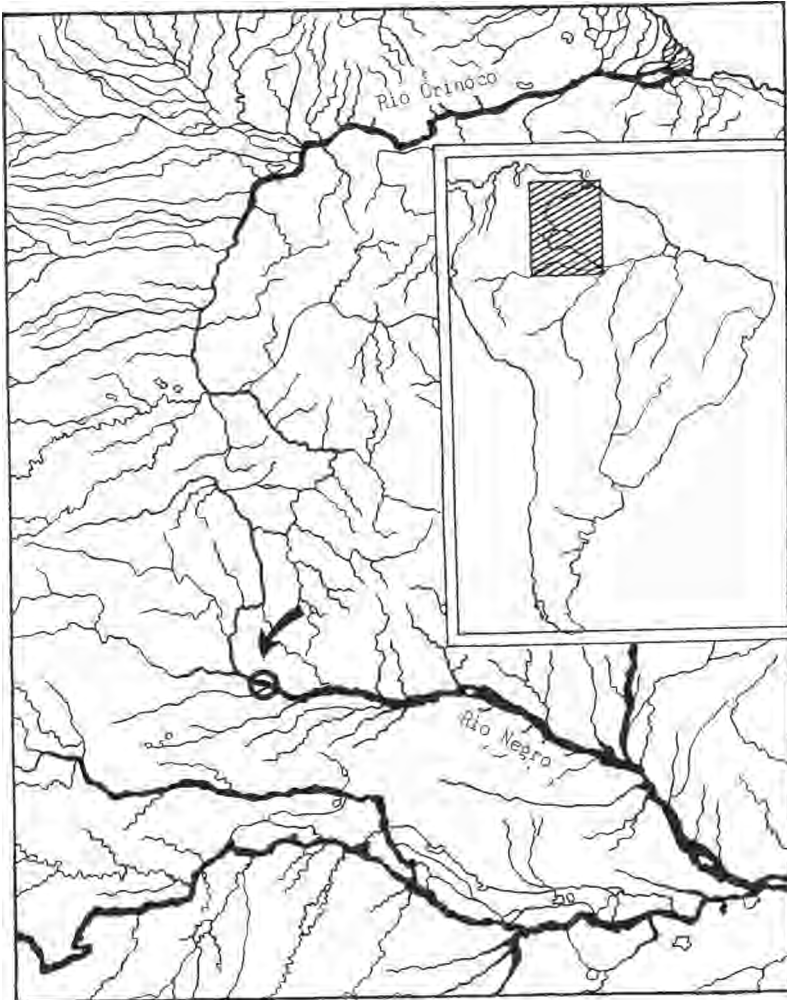


Fig. 1. Map showing type-locality of *Hemigrammus mimus* in the upper Rio Negro, Brazil. The locality lies within the circle indicated by the arrow.

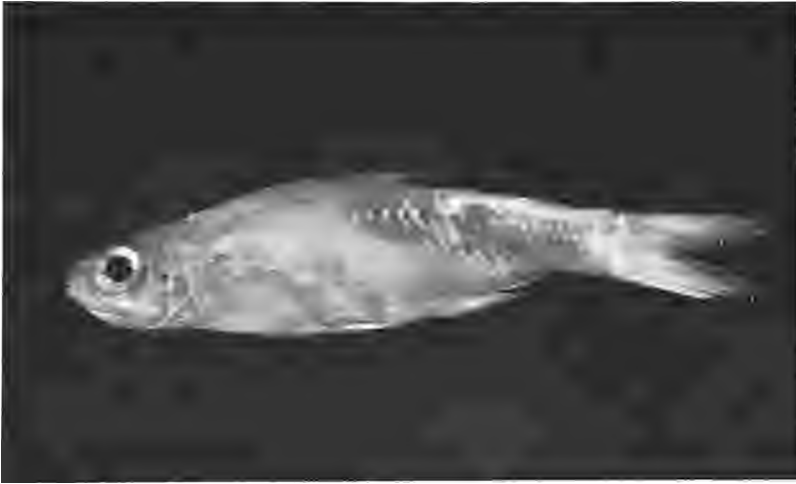


Fig. 2. Holotype of *Hemigrammus mimus*; SU 47759; 28.0 mm. in standard length. Photograph by Stanley Weitzman.

that by "caudal scaled", Dr. Eigenmann had a definite pattern of scalation in mind, the type found on *Thayeria obliquua* (Eigenmann 1917, pl. 3, Fig. 5) and *Moenkbausia ceros* (Eigenmann 1918, pl. 9, Fig. 2), among many others. However, the category "caudal naked except at its base" covers a multitude of situations and degrees of scalation. I hope to deal with this problem of caudal scalation in characins in a future paper, and

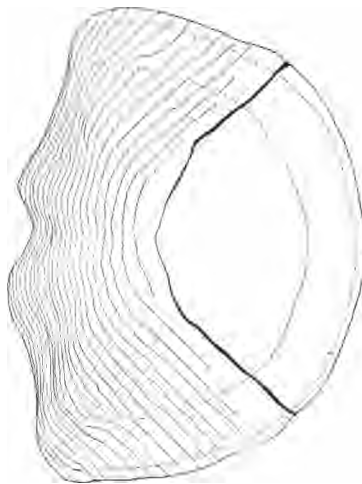


Fig. 3. A scale of *Hemigrammus mimus*, taken from below the dorsal fin and above the lateral line.

to be able to show that a scaled (or unscaled) caudal has been developed several times in characin evolution.

Origin of dorsal in advance of midpoint of standard length, but slightly behind a vertical with bases of ventrals. Height of dorsal fin moderate, the first branched ray longest, reaching the fifth scale in front of the adipose fin when folded back. Pectoral and ventral fins of equal lengths; pectoral failing to reach to ventrals, ventrals failing to reach to anal. Origin of anal on a vertical with a point about two scales distance behind base of last dorsal ray. Anal fin with a distinct anterior lobe, the longest rays (first and second branched) reaching base of last anal ray when folded back. Adipose dorsal fin well developed, its origin above or very slightly behind a vertical with base of last anal ray. Accessory caudal rays rather weak, numbering from ten to thirteen above and below—as determined by reflecting light through that region of the body. Caudal fin deeply forked, the lobes pointed and equal in length.

Color in alcohol.—*Ground* color light tan. No dorsal, anal, or humeral spots. The only conspicuous item of coloration is the small deep-lying dark spot at the base of each caudal lobe. A series of melanophores is present along the bases of the anal fin rays, on either side of the body. Such pigmentation is extremely similar to the condition found on *Microschemobrycon casiquiare* and *M. callops* (Bohlke, 1953); also to that of *Hemigrammus cylindricus* Durbin, with which the new species will be compared.

In addition, there are scattered melanophores on the dorsal body scales, over the top of the skull, on the snout, on the basal portion of the dorsal fin, along the mid-lateral axis of the posterior part of the body, and a slight superficial clustering of pigment cells on the caudal peduncle above the mid-lateral axis (not, however, in any regard dense enough to be termed a definite caudal spot). Iris and opercles silvery.

Relationships.—*Largely* because of the current disordered status of knowledge of the species of *Hemigrammus* and *Hyphessobrycon*, the precise relations of this new species are not too clear. Moreover, the two genera are admittedly unnatural (see Ellis, in: Eigenmann 1918, p. 135), and the new species is probably generically distinct from the genotype of *Hemigrammus* and certainly so from that of *Hyphessobrycon*. In fact, except for the genotype and a few closely allied populations, all the species of *Hyphessobrycon* might be given a new name, were it not for the fact that the remaining species would still be of polyphyletic origin. Only a really critical study of all the species in these two genera, as part of a larger investigation of all the tetragonopterine and cheirodontine genera which might have contributed species to or derived species from them, can

illustrate the various evolutionary lines that have criss-crossed *Hemigrammus* and *Hyphessobrycon*.

Hemigrammus mimus is placed in that genus primarily because it appears somewhat closer to *H. cylindricus* Durbin in its description (though amply distinct), than to any of the species of *Hyphessobrycon*. Durbin (Ellis) distinguished the two genera solely on the basis of the presence or absence of scales on the caudal fin (Ellis, in: Eigenmann 1918, p. 134). However, there were three species that she termed intermediates in regard to this character, and there were others, such as *Hemigrammus nanus*, for which she wrote "Caudal probably scaled" in the species descriptions. In the intermediate situations, Ellis included the species in *Hyphessobrycon* if they possessed the enlarged basal scales on each caudal lobe, regardless of whether or not a few other scales were present; conversely, the species were placed in *Hemigrammus* if they lacked these basal scales, even if other caudal scalation (the "generic character" of *Hemigrammus*) was nearly absent. The new species is clearly an intermediate between the two "genera" in regard to caudal scalation, its particular condition evidently shared by *Hyphessobrycon stictus* Durbin from British Guiana. Thus, by definition, *Hemigrammus mimus* would be placed in *Hyphessobrycon*, in spite of the additional small scales on the caudal lobes. However, in view of the artificiality of the present system of classification, and knowing that a great reshuffling and realigning of species will take place, it was decided to place the new form in the genus containing its closest apparent relative.

Although the similarity may be more apparent than real, the new species appears to be most closely related to *Hemigrammus cylindricus* Durbin (1909, p. 62; in Eigenmann 1918, p. 169). The differences between the two species are, however, very important ones. Some of them are: (1) "Premaxillary with three or four tricuspid teeth in the outer row and six tricuspid teeth in the inner row" (*cylindricus*), vs. premaxillary with a single tricuspid tooth in the outer row and ten or eleven tricuspid teeth in the inner row (*mimus*); (2) anal rays 17-20 (iii, 16-18, 19?) in *cylindricus*, iii, 14 in *mimus*; (3) *mimus* has a smaller mouth, the lower jaw more included, and the maxillary broader and much shorter; (4) a small humeral spot present in *cylindricus*, absent from *mimus*; (5) "Anal sheath short, consisting of the edge of three large scales" (*cylindricus*), vs. sheath of scales along anal fin continued back to about the sixth branched anal ray (*mimus*); and (6), the body is less compressed in *mimus* than in *cylindricus*.

The primary features which the two species have in common are the tricuspid teeth, similar body shape, similar basic coloration (the most

important being the spot at the base of each caudal lobe, which is often present in *cylindricus*, and is one of the major features of *mimus*), large eyes, etc.

The species is named *mimus*, from the Greek $\mu\acute{\iota}\mu\eta\sigma\iota\varsigma$, an imitator, a mimic actor; this is in reference to its great resemblance to the above-mentioned species of *Microschemobrycon* with which it was at first confused.

Counts:

	<i>Holotype</i>	<i>Paratype</i>
Dorsal fin	ii,9	ii,9
Anal fin	iii,14	iii,14
Pectoral fins	i,11-i,11	i,11-i,11
Ventral fins	i,7-i,7	i,7-i,7
Scales in lateral series	32	32
Lateral line pores	9-9	11-10
Transverse scales	8	8
Predorsal scales	8	9
Gill rakers	6+1+11	6+1+10

Measurements:

Proportion in standard length

Standard length	1.0 (28.0)	1.0 (28.3)
Greatest depth of body	3.6 (7.8)	3.5 (8.0)
Tip of snout to origin of dorsal	2.2 (12.8)	2.2 (12.9)
Tip of snout to origin of anal	1.6 (18.0)	1.6 (18.2)
Tip of snout to base of ventrals	2.2 (12.7)	2.2 (12.7)
Least depth of caudal peduncle	8.5 (3.3)	8.3 (3.4)
Length of head	3.7 (7.5)	3.7 (7.5)
Length of pectoral fin	5.3 (5.3)	5.3 (5.3)
Length of ventral fin	5.3 (5.3)	5.4 (5.2)
Length of upper caudal lobe	3.3 (8.6)	
Length of lower caudal lobe	3.3 (8.5)	

Proportion in head length

Diameter of eye	2.9 (2.6)	2.8 (2.7)
Length of snout	3.4 (2.2)	3.5 (2.2)
Tip of snout to end of maxillary	2.8 (2.7)	2.9 (2.6)
Least width of interorbital	3.1 (2.4)	3.0 (2.5)

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The figures in parentheses are the measurements in millimeters.

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