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STUDIES ON FISHES OF THE FAMILY CHARACIDAE. NO. 16.—A NEW *HYPHESSOBRYCON* FROM COSTA RICA

JAMES E. BÖHLKE [1]

SYNOPSIS: A new tetra of the genus *Hyphessobrycon* is described from the Tortuguero River in Costa Rica. While it is thought to be really close to none of the other known members of the genus, *Hyphessobrycon compressus* (Meek) and *H. milleri* Durbin are probably its closest allies. The species is also compared with the rhoadsiine, *Rhoadsia eigenmanni* (Meek), from near the same geographic locality.

The characid described as new in this paper is part of a collection of fishes recently made under the direction of A. F. Carr in Costa Rica, while Carr, as Principal Investigator, was engaged on National Science Foundation Project G-1684 (The Ecology and Migrations of Sea Turtles). David K. Caldwell is studying the greater portion of the fishes collected, but the characids were sent to me for determination. I wish to thank Caldwell for supplying me with the field data for the collection that included the new species.

Tortuguero, the place where the fish were collected, is located on the northeastern coast of Costa Rica a short distance from the Nicaraguan border.

The following abbreviations are used in the text: UF (University of Florida Collections), ANSP (Academy of Natural Sciences of Philadelphia), CNHM (Chicago Natural History Museum).

Hyphessobrycon tortuguerae new species

HOLOTYPE.—UF 5741, an adult male, 39.0 mm. in standard length, collected by L. H. Ogren from the Tortuguero River (Lagoon) at Tortuguero, 2 miles from ocean inlet, Costa Rica; collected by cast net near a submerged brush pile and on an incoming tide; slight current, but collection from a sheltered area; depth of 3½ feet, but dropping sharply to 20 or 25 feet; bottom of sandy muck; water brackish due to strong outflow of fresh water from river; water of light tea color; vegetation of water hyacinths only; collected 3 September 1956. Original field number 157.

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[1] James Böhlke is Associate Curator of the Department of Ichthyology and Herpetology at the Academy of Natural Sciences of Philadelphia. This study was carried out while the writer was serving as Collaborator on the staff of the Florida State Museum. Manuscript submitted 25 April 1958.—ED.

PARATYPES.—UF 5836, 3, 24.2 to 24.8 mm., ANSP 80986, 2, 26.8 and 27.5 mm., ANSP 80987, 1 stained specimen, 27.5 mm.; all collected with the holotype.

DIAGNOSIS.—Maxillary teeth rather numerous, 9 or 10; lateral scales 35 or 36; two humeral spots, but no dorsal, caudal, or anal blotches; 6 teeth in the inner premaxillary series.

DESCRIPTION.—Because of the great difference in size between the holotype and paratypes, the following description is of the holotype only. A statement of the obvious deviations from this description shown by the paratypes is presented later. Proportions and counts for the holotype and four paratypes are presented in table 1.

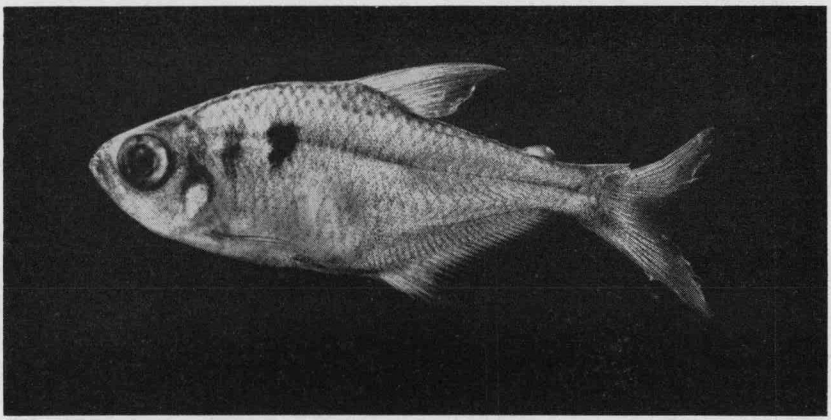

Figure 1.—Holotype of *Hyphessobrycon tortuguerae,* UF 5741, 39.0 mm. Photograph by A. Delwin Warden.

Hyphessobrycon tortuguerae (fig. 1) is one of the deep-bodied, greatly compressed species of the genus. The body is deepest at the origin of the dorsal; the depth at this point goes 2.7 times in the standard length. The caudal peduncle is slender and short, its length little greater than its least depth—least depth goes 9.5 times, and length goes 8.0 times, in the standard length.

Length of head goes 3.4 times into standard length. Eye diameter goes 2.7, snout length 4.1, bony interorbital width 3.9, and length of upper jaw 2.6 times into head length. The eye does not enter the dorsal profile; its diameter is much greater than the length of the snout. The snout is slightly, but constantly, shorter than the interorbital width. The maxillary extends back beyond the front margin of the eye, but not to a vertical with the fore margin of the pupil. The mouth is terminal; the lower jaw protrudes.

Fontanels are moderately developed and completely separate frontal and parietal bones except for a strong bridge between them. The lateral margins of both fontanels are straight lines; their widths taper evenly from the widest point at the base of the occipital process to the anterior ends of the frontal bones. The great suborbital does not nearly cover the cheek and leaves broad free areas both below and behind. Three postorbitals are present; all leave rather broad, naked areas free behind them. Gill rakers are long—the longest about equal to the pupil—slender, close-set; there are 9+17 on the first gill arch.

Teeth are essentially tricuspid on all jaw bones. Some of the smaller ones on the premaxillary and the posterior parts of the maxillaries and mandibles lack lateral shoulders and are conical. Premaxillary teeth on one side (the other side is injured) are in two series, with three in the outer row, six in the inner. There are 9 or 10 teeth along more than half the free edge of the maxillary. On the mandibles there are five large teeth in front, followed by six abruptly smaller teeth along the sides. The maxillary ends posterodorsally in a rounded point.

The origin of the dorsal fin is equidistant from the tip of the snout and the base of the caudal; its distance from the tip of snout goes 1.9 times into standard length. The dorsal origin is distinctly in advance of that of the anal; a vertical with the base of the first anal ray falls slightly behind the mid-point of the dorsal base. The dorsal fin is pointed, its posterior margin nearly a straight line; the height of the fin goes 3.3 times in the standard length. The adipose dorsal fin is well developed, its origin is above the nineteenth or twentieth branched anal ray.

The pectoral and ventral fins are pointed; the former overlaps the latter, the latter overlaps the anal fin. The length of the pectoral goes 5.0, the length of the ventral 5.3, the snout to pectoral distance 3.7, the snout to ventral distance 2.3, and the snout to anal distance 1.7 times into the standard length. The anal fin is lobed anteriorly; the margin of the fin just behind the lobe is concave. The final unbranched and first five branched anal rays have tiny hooks; this is a male secondary sexual characteristic. The caudal fin is deeply forked; the lobes are slender and rounded.

The scales are cycloid, with few concentric ridges, and rather many radii on their exposed portions (4 to 7 radii counted on each of a small sample of scales from below the dorsal fin above midbody). Lateral scales number 36, of which 8 or 9 are perforated. Transverse scales between dorsal and ventral fins number ?14 (the count is uncer-

tain because of missing scales), and scales around the caudal peduncle number 14. The predorsal line is scaled. The caudal fin is scaleless, except at its base.

COLORATION IN ALCOHOL.—The body, head, and fins are everywhere rather heavily sprinkled with melanophores. There is no lateral band save for the usual, fine, deep-lying line of intermuscular melanophores. There is no caudal spot, nor are bands or spots present on dorsal, pectoral, ventral, or caudal fins. A broad dark band is present down the center of the anal fin, the fin being lighter both proximally and distally. The top of the head and upper half of the postorbital part of the head are dark. There are two dark humeral spots with a lighter area between them; the anterior is narrow, vertically elongate, and crosses the second to fifth scales of the lateral line. The posterior humeral spot is more roundish, considerably more intense than the other, and is placed above the seventh to ninth scales of the lateral line.

VARIATION IN THE PARATYPES.—Greatest depth of body goes 3.1 to 3.5, least depth of peduncle 9.8 to 10.7, length of peduncle 7.4 to 7.9, length of head 3.3 to 3.4, tip of snout to origin of dorsal fin 1.9 to 2.0, snout to pectoral 3.4, snout to ventral 2.2 to 2.3, snout to anal 1.7, height of dorsal fin 3.1 to 3.2, length of ventral fin 4.8 to 5.1, and length of pectoral fin 5.0 to 5.6 times into the standard length.

Diameter of eye goes 2.5 to 2.6, length of snout 4.0 to 4.3, least width of bony interorbital 3.5 to 3.7, and length of upper jaw 2.5 to 2.7 times into length of head.

Fin ray and gill raker counts are summarized in table 2. Lateral scales number 35 or 36, of which 7 to 10 are perforated (I count 3 each of 7, 8, and 9 scales, and 1 of 10 scales). Outer premaxillary teeth number 2 to 4 (2 counts of 2 teeth, 5 of 3 teeth, and 1 of 4 teeth). Inner premaxillary teeth number 6 or 7 (one uncertain count of 7). There are 4 or 5 enlarged anterior mandibular teeth in front of the tiny lateral teeth. The stained 27.5 mm. specimen has 10 and 9 maxillary teeth, and three postorbitals on each side.

Coloration of the small paratypes is in general similar to that of the holotype, but the anterior humeral spot is darker so that the two spots are of about equal intensity. The longitudinal dark stripe on the anal fin is variously developed but is always apparent on the paratypes.

RELATIONSHIPS.—The species may be distinguished from all other known members of the genus by the combination of characters given in the diagnosis. It appears to be more closely related to *Hyphes-*

TABLE 1.

Hyphessobrycon tortuguerae: PROPORTIONS (AS THOUSANDTHS OF STANDARD LENGTH) AND FIN RAY COUNTS OF THE HOLOTYPE AND FOUR PARATYPES

	UF 5836 (1 of 3)	ANSP 80986		ANSP 80987 stained	UF 5741 holotype
Standard length (mm.)	24.2	26.8	27.5	27.5	39.0
Greatest depth	310	284	316	320	372
Snout to dorsal	533	511	527	524	526
Snout to pectoral	293	295	291	291	273
Snout to ventral	455	440	444	444	431
Snout to anal	599	580	587	585	585
Depth of peduncle	101	093	102	102	105
Length of peduncle	126	134	129	127	124
Length of pectoral	186	179	193	200	200
Length of ventral	207	198	200	207	190
Height of dorsal	322	——	309	309	299
Length of head	298	300	295	296	291
Diameter of eye	116	119	116	116	108
Length of snout	074	075	073	069	071
Bony interorbital	085	082	082	085	074
Length upper jaw	120	112	120	120	110
Dorsal rays	ii,9	ii,9	ii,9	ii,9	ii,9
Anal rays	v,25	v,25	v,24	v,24	v,26
Pectoral rays (left and right)	i,12	i,13	i,12/i,13	i,13	i,12
Ventral rays (left and right)	i,7	i,8	i,8	i,7	i,8
Caudal rays	i,17,i	i,17,i	i,17,i	i,17,i	i,17,i

TABLE 2

Hyphessobrycon tortuguerae: FIN RAY AND GILL RAKER COUNTS OF THE SEVEN TYPE SPECIMENS

	Rays	Frequency		Rakers	Frequency
Dorsal	ii,9	7	Upper limb	9	2
Anal	v,24	2		10	5
	v,25	3	Lower limb	17	5
	v,26	2		18	2
Pectorals	i,12	7	Total count	26	2
	i,13	7		27	3
Ventrals	i,7	8		28	2
	i,8	6			
Caudal	i,17,i	7			

sobrycon compressus (Meek) of Mexico and *H. milleri* Durbin of Guatemala than to others in spite of its lower lateral scale count, different coloration, and different gill raker counts. *H. tortuguerae* seems to be really close to none of the other species.

Because of the changes in dentition that rhoadsiine characids undergo during ontogeny, the new species was also compared with material of *Rhoadsia eigenmanni* (Meek) from Costa Rica. Loren P. Woods kindly lent me the following material of that species: CNHM 43150, 1, 56.7 mm. in standard length; La Junta, Costa Rica; collected by S. E. Meek; 8 April 1912; CNHM 7861, 3, 47.0 to 54.6 mm., same locality and collector, 17 April 1913. *Rhoadsia eigenmanni* is easily distinguished from the new *Hyphessobrycon* by its multicuspid premaxillary, mandibular, and upper maxillary teeth; the presence of only a single, posterior, humeral spot; the presence of a well-defined, horizontally elongate, caudal blotch; more numerous anal fin rays (iii or iv, 26 to 30 contrasted with v, 24 to 26); and more numerous scales (37 to 41 contrasted with 35 or 36).

Myers (in Eigenmann and Myers, 1929, p. 463) appended a footnote to the discussion of *Rhoadsia eigenmanni*, saying: "This species is very likely generically distinct from Rhoadsia, in which case it would go by the name *Carlia eigenmanni*." Aside from the different color pattern which marks *R. eigenmanni* as a very distinctive form, the Costa Rican rhoadsiine appears not greatly different from those of western Ecuador. It seems that all might well be maintained in the genus *Rhoadsia*.

I wish to thank the following members of the staff of the Florida State Museum for their aid in making this study possible: Arnold Grobman, Director, and J. C. Dickinson, Jr., Curator of Biological Sciences, who financed and helped expedite the work; Daniel M. Cohen, curator of fishes, and John C. Briggs, Associate in ichthyology, who aided me greatly with the collections, library, and various other types of assistance during my stay in Gainesville.

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Eigenmann, Carl H., and George S. Myers
1929. The American Characidae. Mem. Mus. Comp. Zool. Harvard, vol. 43, pt. 5, pp. 429-574, 11 pls.

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