



Research note

Extension of geographic distribution of *Chrysobrycon hesperus* and *C. myersi* (Characiformes, Characidae, Stevardiinae) for several drainages flowing into the Amazon River Basin in Peru and Colombia

Extensión de la distribución geográfica de *Chrysobrycon hesperus* y *C. myersi* (Characiformes, Characidae, Stevardiinae) para varios drenajes fluyendo hacia la cuenca del Amazonas en Perú y Colombia

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Abstract. The geographic distribution of *Chrysobrycon hesperus* (Böhlke) and *C. myersi* Weitzman and Menezes is extended to new localities from the upper Amazon Basin in Peru and Colombia. *Chrysobrycon hesperus* is recorded for the first time for the Putumayo River Basin in Colombia.

Key words: Stevardiinae, first record, Putumayo Basin, Urubamba Basin, Marañón Basin.

Resumen. Se amplía la distribución geográfica de *Chrysobrycon hesperus* (Böhlke) y *C. myersi* Weitzman y Menezes para nuevas localidades de la cuenca alta del Amazonas en Perú y Colombia. *Chrysobrycon hesperus* se registra por primera vez para la cuenca del río Putumayo en Colombia.

Palabras clave: Stevardiinae, primer registro, cuenca del Putumayo, cuenca del Urubamba, cuenca del Marañón.

Species of the genus *Chrysobrycon* Weitzman and Menezes form a small group of characid fishes with 3 valid species that have a modified pouch scale in the lower lobe of the caudal fin in males (Vanegas-Ríos et al., 2011). *Chrysobrycon hesperus* (Böhlke) is originally known from the Napo River system in Ecuador, whereas *C. myersi* Weitzman and Menezes and *C. eliasi* Vanegas-Ríos, Azpelicueta and Ortega occur in the Ucayali and Madeira River Basins, respectively, in Peru (Weitzman, 2003; Eschmeyer and Fricke, 2011). The geographic distributions of *C. hesperus* and *C. myersi* are poorly known; few valid records are available and most of them correspond to the type localities designated in their original descriptions (Böhlke, 1958; Weitzman and Thomerson, 1970; Weitzman and Menezes, 1998). The ecology and conservation status of *C. hesperus* and *C. myersi* are unknown.

The aim of this note is to report new localities where *Chrysobrycon hesperus* and *C. myersi* are occurring along

the todos upper Amazon Basin in Peru and Colombia, extending their geographic distribution. In addition, *C. hesperus* is recorded for the first time from the Putumayo River Basin in Colombia.

The examined specimens are deposited in the ichthyological collections at ANSP and MUSM; acronyms are according to Eschmeyer (1998). We used the following resources for identification of the studied specimens: the original descriptions of *Chrysobrycon* species (Böhlke, 1958; Weitzman and Thomerson, 1970), paratypes of *C. hesperus* and *C. myersi*, and a key included in Vanegas-Ríos et al. (2011). A map is used to plot the new records of *C. hesperus* and *C. myersi* plus the known distribution of *Chrysobrycon* species (Böhlke, 1958; Weitzman and Thomerson, 1970; Vanegas-Ríos et al., 2011). Morphometric and meristic data were taken for the specimen from the Putumayo River Basin in Colombia; measurements are expressed as percentages of SL or HL. These measurements and counts are according to Fink and Weitzman (1974) and Vanegas-Ríos et al. (2011). The standard length in mm is recorded for each specimen examined.

Chrysobrycon hesperus is recorded for several drainages between 153 and 209 m a.s.l. in the Marañón River Basin, upper Amazon system in Peru. One female of 39.38 mm of SL is recorded for the first time for the Putumayo River Basin, Amazon system in Colombia reaching approximately 344 m a.s.l (Table 1, Fig. 1). This female has 40 lateral-line scales, 6 longitudinal scales between the lateral line and dorsal-fin origin, 6 longitudinal scales between lateral line and anal-fin origin, 5 longitudinal scales between lateral line and pelvic-fin origin, 23 predorsal scales, 16 scales around caudal peduncle, ii,8 dorsal-fin rays, iv,32 anal fin-rays, i,7 pelvic-fin rays, i,10 pectoral-fin rays, 3 tetracuspitate teeth in the maxilla, 4 teeth in the inner row of the premaxilla, and a rounded black humeral spot.

Chrysobrycon myersi is recorded for several localities along the Urubamba, Tambo, and Pachitea River basins, flowing into the Ucayali River system in Peru; those localities are positioned between 259 and 585 m a.s.l. (Fig. 1). The original specimens of *C. myersi* were collected in the province of Huanuco (Weitzman and Thomerson, 1970), whereas the new record is located in the province of Pasco, both records from the Pachitea River Basin in Peru.

The geographic findings of *Chrysobrycon* increase its distribution pattern for the Amazon Basin in Colombia. Mojica et al. (2005) reported the genus *Chrysobrycon* from the Amazon Basin in the Leticia region of Colombia. However, the authors did not identify their specimens to species level. For this reason, it is not possible to conclude anything about the geographic implication of that record for the particular distribution of *Chrysobrycon* species. The lots reported by Mojica et al (2005) should be compared with the type specimens of the *Chrysobrycon* species to clarify their identification. Nevertheless, such study goes beyond the scope of the present contribution.

One of most characteristic features of *Chrysobrycon hesperus* is the presence of a rounded and black humeral spot (Böhlke, 1958; Weitzman and Thomerson, 1970; Vanegas-Rivers et al., 2011), which was observed in the specimens examined and allowed us to readily separate it from *C. myersi*. At present, *C. hesperus* seems to constitute a widely distributed species. However, a further study including the known populations of *C. hesperus* may be appropriate to better understand the distribution of this species. *Chrysobrycon hesperus* has not been previously reported in the lists of freshwater fishes from the Putumayo River Basin (Ortega et al. 2006) and Colombia (Maldonado-Ocampo et al., 2008); our record for the Putumayo River Basin indicates that the genus is inadequately studied in Colombia.

Chrysobrycon myersi is easily identified by the large shape of its anal fin in males and the higher number of the

branched anal-fin rays (33-36: Weitzman and Thomerson, 1970; Vanegas-Rivers et al., 2011). This large anal fin in males of *C. myersi* is rarely present in Characidae; Weitzman and Menezes (1998) commented that this anal fin is rather similar to these of the males of *Corynopoma* Gill and *Pterobrycon* Eigenmann.

Material examined. Chrysobrycon hesperus: Colombia: ICNMHN 11002 (1), 39.38 mm SL, Putumayo, Orito,

Table 1. Morphometric data of the specimen of *Chrysobrycon hesperus* from the River Putumayo Basin, Colombia, ICNMHN 11002

Characters	Female
Standard length (mm)	39.38
Percentages of standard length:	
Depth at dorsal-fin origin	31.74
Snout to dorsal-fin origin	64.80
Snout to pectoral-fin origin	26.79
Snout to pelvic-fin origin	47.36
Snout to anal-fin origin	61.15
Dorsal-fin to pectoral-fin length	47.46
Dorsal-fin to adipose-fin length	26.64
Dorsal-fin to hypurals complex length	37.79
Eye to dorsal-fin origin	53.40
Pectoral-fin to pelvic-fin length	21.13
Pelvic-fin to anal-fin length	16.05
Dorsal-fin length	20.57
Dorsal-fin base length	11.50
Pectoral-fin length	26.16
Pelvic-fin length	13.53
Anal-fin length	19.22
Anal-fin base length	35.42
Caudal peduncle depth	9.75
Caudal peduncle length	8.96
Bony head length	23.06
Percentages of head length:	
Snout length	27.53
Horizontal eye length	34.03
Postorbital head length	42.73
Maxillary length	-
Least interorbital width	37.44
Upper jaw length	46.37

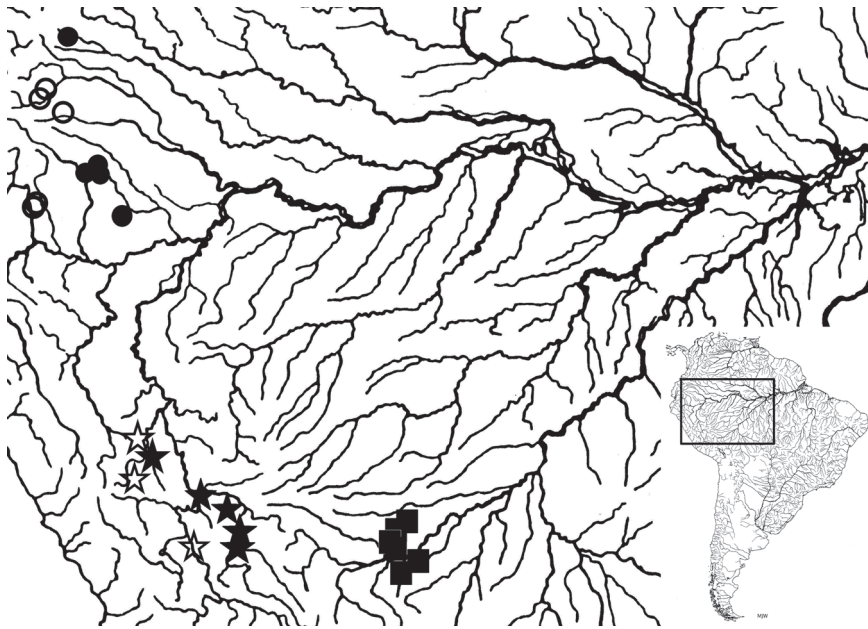


Figure 1. Distribution map of *Chrysobrycon* species showing the new records for the Amazon Basin in Colombia and Peru. *Chrysobrycon eliasi* (literature records= black rectangles); *C. hesperus* (new records= black circles, literature records= white circles); *C. myersi* (new records= black stars, literature records= white stars).

Creek La Guara, Putumayo River Basin (approximately $0^{\circ}36'00''\text{N}$, $76^{\circ}52'15.00''\text{W}$, 344 m a.s.l.). **Peru:** MUSM 26607 (2 of 4), 59.85-66.06 mm SL, Loreto, upper Amazon, Andoas, Corrientes River, Creek Caballo, ($2^{\circ}33'41.17''\text{S}$, $76^{\circ}13'45.32''\text{W}$, 209 m a.s.l.). MUSM 26617 (2 of 3), 29.77-33.08 mm SL, Loreto, upper Amazon, Corrientes River, drainages of the Creek Huayuri ($2^{\circ}35'51.05''\text{S}$, $76^{\circ}13'53.31''\text{W}$, 208 m a.s.l.). MUSM 28682 (3 of 16), 41.61-46.12 mm SL, Loreto, upper Amazonas, Andoas, Creek San Carlos, flowing into Manchari River ($2^{\circ}24'34.59''\text{S}$, $76^{\circ}6'35.69''\text{W}$, 196 m a.s.l.). MUSM 32124 (1), 27.07 mm SL, Loreto, upper Amazon, Andoas, Corrientes River Basin, Platanoyacu River ($3^{\circ}8'26.54''\text{S}$, $75^{\circ}45'8.65''\text{W}$, 153 m a.s.l.). MUSM 33159 (2 of 41), 29.25-43.92 mm SL, Loreto, upper Amazon, Andoas, Pastaza River, Creek Carmen ($2^{\circ}22'43.85''\text{S}$, $76^{\circ}9'44.12''\text{W}$, 216 m a.s.l.). *Chrysobrycon myersi*: **Peru:** MUSM 12040 (1), 29.74 mm SL, Cusco, La Convención, Echarate, Urubamba River Basin, Picha River, Cocha Kamariampiveni, (approximately $11^{\circ}36'00''\text{S}$, $73^{\circ}05'00''\text{W}$, 380 m a.s.l.). MUSM 18908 (2 of 38), 42.44-48.63 mm SL, Pasco, Oxapampa, Puerto Bermudez, River Pachitea Basin, Creek Atas, (approximately $10^{\circ}17'47''\text{S}$, $74^{\circ}56'11.04''\text{W}$, 259 m a.s.l.). MUSM 36084 (3 of 3), 37.09-58.74 mm SL, Cusco, La Convención, Echarate, Urubamba Basin, Parotori River, Poyriari River, ($12^{\circ}10'44.61''\text{S}$, $73^{\circ}5'18.18''\text{W}$, 585 m a.s.l.). MUSM 36109 (2 of 3), 32.81-36.30 mm SL, Cusco, La Convención, Echarate, Urubamba River, Parotori

River, Poyriari River, Creek Piriabindeni, ($12^{\circ}1'13.05''\text{S}$, $73^{\circ}0'23.59''\text{W}$, 585 m a.s.l.). MUSM 36125 (3 of 8), 29.22-38.62 mm SL, Cusco, La Convención, Echarate, Parotori River, Creek Piriabindeni ($12^{\circ}1'19.29''\text{S}$, $73^{\circ}4'14.66''\text{W}$, 545 m a.s.l.). MUSM 37889 (2 of 4), 45.06-51.02 mm SL, Junin, Satipo, Mashira, Tambo River Basin, Creek Capirosankari ($11^{\circ}1'24.80''\text{S}$, $73^{\circ}33'36.08''\text{W}$, 420 m a.s.l.). MUSM 37933 (3 of 10), 57.97-60.84 mm SL, Peru, Cusco, La Convención, Echarate, Kinterani, Creek Nacana, ($11^{\circ}28'9.49''\text{S}$, $73^{\circ}18'1.97''\text{W}$, 420 m a.s.l.).

Comparative material examined. Chrysobrycon hesperus: ANSP 75914 (1 paratype), 59.49 mm SL, Suno River near mouth, tributary upper Napo River. ANSP 79512 (1 paratype), 78.13 mm SL, Pucuno River, a tributary of Suno River, upper Napo River system. *Chrysobrycon myersi:* **Peru:** ANSP 112325 (2 paratypes), 36.23-36.55 mm SL, Huanuco, small tributary to River Pachitea, near airstrip at Tournavista.

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Literature cited

- Böhlke, J. 1958. Studies on Fishes of the family Characidae. N° 14. A report on several extensive recent collections from Ecuador. Proceedings of the Academy of Natural Sciences of Philadelphia 110:1-121.
- Eschmeyer, W. 1998. Catalog of fishes. Volume 1. California Academy of Natural Sciences, KNI Incorporated, Anaheim, California. 958 p.
- Eschmeyer, W. N. and R. Fricke (eds.). 2011. Catalog of fishes, electronic version. Academy of Sciences, California. <http://research.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>; last access: 11.XI.2011.
- Fink, W. L. and S. H. Weitzman. 1974. The so-called cheirodontin fishes of central America with descriptions of two new species (Pisces: Characidae). Smithsonian Contributions to Zoology 172:1-46.
- Maldonado-Ocampo, J., R. P. Vari and J. S. Usma. 2008. Checklist of the freshwater fishes of Colombia. Biota Colombiana 9:143-237.
- Mojica, J. I., G. Galviz, F. Arbeláez, M. Santos, S. Vejarano, E. Prieto-Piraquive, M. Arce, P. Sánchez-Duarte, C. Castellanos, A. Gutiérrez, S. R. Duque, J. Lobón-Cervia and C. Granado-Lorencio. 2005. Peces de la cuenca del río Amazonas en Colombia: región Leticia. Biota Colombiana 6:91-210.
- Ortega, H., J. I. Mojica, J. C. Alonso and M. Hidalgo. 2006. Listado de los peces de la cuenca del río Putumayo en su sector Colombo-peruano. Biota Colombiana 7:95-112.
- Weitzman, S. H. 2003. Subfamily Glandulocaudinae (Characins, tetras). In Check list of the freshwater fishes of South and Central America, R. E. Reis, S. O. Kullander and C. J. Ferraris Jr. (eds.). Edipucrs, Porto Alegre. p. 222-230.
- Weitzman, S. H. and J. E. Thomerson. 1970. A new species of glandulocaudine characid fish, *Hysteronotus myersi*, from Peru. Proceedings of the California Academy of Sciences 38:139-156.
- Weitzman, S. H. and N. A. Menezes. 1998. Relationships of the tribes and genera of the Glandulocaudinae (Ostariophysi: Characiformes: Characidae) with a description of a new genus, *Chrysobrycon*. In Phylogeny and classification of Neotropical Fishes, L. R. Malabarba, R. E. Reis, R. P. Vari, Z. M. S. Lucena and C. A. S. Lucena (eds.). Edipucrs, Porto Alegre. p. 171-192.
- Vanegas-Ríos, J. A., M. M. Azpelicueta and H. Ortega. 2011. *Chrysobrycon eliasi*, new species of stevardiine fish (Characiformes: Characidae) from the río Madre de Dios and upper río Manuripe basins, Peru. Neotropical Ichthyology 9:731-740.