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Description of three new species of the genus *Herichthys* (Perciformes: Cichlidae) from eastern Mexico, with redescription of *H. labridens*, *H. steindachneri*, and *H. pantostictus*

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Abstract

Three new species of the genus *Herichthys* are described on the basis of chromatic, morphometric, and meristic characters. *Herichthys pratinus* **sp. nov.** from the Rio Salto in San Luis Potosi is characterized by a steep and shallow predorsal profile, a concavity before the eye, and adult males with a prominent forehead forming a nuchal hump, DXV–XVI, 10–11; and AV, 8–9. *Herichthys pame* **sp. nov.** from the Rio Tamasopo in San Luis Potosi is characterized by a gradual and acute predorsal contour, lack of concavity before the eye, and mouth angled slightly downward. *Herichthys molango* **sp. nov.** from Laguna Azteca, Hidalgo is distinguished by small eyes and a slender (slightly broader than long), well-spaced, and indented lower pharyngeal plate with 2 rows of 8–9 medium-sized, lightly pigmented molars flanking the midline. We also provide redescrptions for three species of *Herichthys*, *H. pantostictus*, *H. labridens*, and *H. steindachneri* and a review of *H. bartoni*.

Key words: taxonomy, cichlids, *Herichthys*, Panuco, Mexico

Resumen

Se describen tres nuevas especies de cíclidos con base en caracteres cromáticos, morfométricos y merísticos. *Herichthys pratinus* **sp. nov.** del río El Salto en San Luis Potosí, se caracteriza por el contorno predorsal inclinado y relativamente romo, con concavidad frente al ojo, así como una frente prominente que desarrolla joroba sobre la nuca de los machos adultos; aleta dorsal XV–XVI, 10–11; aleta anal V, 8–9; *H. pame* **sp. nov.** del río Tamasopo en San Luis Potosí, por un contorno predorsal gradual y agudo, sin concavidad frente al ojo y boca ligeramente angulada hacia abajo; y *H. molango* **sp. nov.** de Laguna Azteca, Hidalgo, México, por ojos pequeños y placa faríngea con dos hileras de 8–9 molares medianos y ligeramente pigmentados en el centro. Se incluye además redescrpciones para tres especies (*H. pantostictus*, *H. labridens* y *H. steindachneri*), y una revisión de *H. bartoni*.

Introduction

Cichlids have had a long and troubled taxonomic and nomenclatural history (Concheiro-Pérez *et al.* 2006). Molecular studies often produce phylogenetic disagreement between mitochondrial gene trees and the inference of phylogenetic relationships based on anatomical characters (Martin & Bermingham 1998). These discrepancies have been observed between morphological phylogenetic analyses by Chakrabarty (2007) and mitochondrial gene trees by Hulsey *et al.* (2004), Concheiro-Pérez *et al.* (2006), and López-Fernández *et al.* (2010).

The tribe Heroini forms the 2nd largest monophyletic group of Neotropical cichlids, with distributions ranging from South America to the Rio Grande system in North America. This tribe includes the Herichthyines, which are represented by the genera *Herichthys*, *Thorichthys*, and *Vieja*, as reviewed by McMahan *et al.* (2010), as well as *Paratheraps*, *Theraps*, *Tomocichla*, and possibly others as *Herotilapia*, which require review.

References

- Álvarez del Villar, J. (1970) *Peces mexicanos (Claves)*. Instituto Nacional de Investigaciones Biológicas y Pesqueras, México, D.F., 166 pp.
- Artigas-Azas, J.M. (1993) *Herichthys tamasopoensis* n. sp., a new cichlid from México (Pisces, Cichlidae). In: Konings, A. (Ed.), *Cichlids Yearbook 3*, Cichlid Press, El Paso, Texas, pp. 65–70.
- Artigas-Azas, J.M. (1996) *Herichthys labridens*, La mojarra caracolera. The Cichlid Room Companion. Available from <http://www.cichlidae.com/article.php?id=64&lang=es> (Accessed 25 September 2012)
- Artigas Azas, J.M. (1996) La Mojarra de dos Colores, *Cichlasoma bartoni* Bean 1892. The Cichlid Room Companion. Available from: <http://www.cichlidae.com/article.php?id=1&lang=es> (Accessed 17 August 2013)
- Artigas-Azas, J.M. (2006) *Herichthys steindachneri*. *Cichlid News*, 15, 15–22.
- Bean, T.H. (1892) *Notes on fishes collected in Mexico by Prof. Alfredo Dugès, with descriptions of new species*. Proceeding of the U.S. National Museum, pp. 283–287.
- Chakrabarty, P. (2007) *A morphological phylogenetic analysis of Middle American cichlids with special emphasis on the section 'Nandopsis' sensu Regan*. Miscellaneous Publications, Museum of Zoology, University of Michigan, 198, pp. 1–31.
- Concheiro-Pérez, G.A., Ričan, O., Ortí, G., Bermingham, E., Doadrio, I. & Zardoya, R. (2006) Phylogeny and biogeography of 91 species of heroine cichlids (Teleostei: Cichlidae) based on sequences of the cytochrome b gene. *Molecular Phylogenetics and Evolution*, 43, 91–110.
<http://dx.doi.org/10.1016/j.ympev.2006.08.012>
- Díaz-Pardo, E., Pineda-López, R. & Gutierrez-Hernández, A. (2002) Historia natural de *Cichlasoma labridens* (Teleostei: Cichlidae), una especie mexicana en peligro de extinción. In: Lozano-Vilano, M.L. (Ed), *Libro Jubilar en Honor al Dr. Salvador Contreras Balderas*. Universidad Autónoma de Nuevo León, pp. 223–240.
- Hulsey, C.D., García-de-León, F.J., Sánchez-Johnson, Y., Hendrickson, D.A. & Near, T.J. (2004) Temporal diversification of Mesoamerican cichlid fishes across a major biogeographic boundary. *Molecular Phylogenetics and Evolution*, 31, 754–764.
<http://dx.doi.org/10.1016/j.ympev.2003.08.024>
- IUCN (2010) IUCN Red List of Threatened Species. Version 2010.3. <<http://www.iucnredlist.org>> (accessed 2 September 2010)
- Jordan, D.S. & Snyder, J.O. (1899) *Notes on a collection of fishes from the rivers of Mexico, with description of twenty new species*. Bulletin of the U.S. Fish Commission, pp. 115–147.
- Kullander, S.O. (1983) *A revision of the South American Cichlid Genus Cichlasoma (Teleostei: Cichlidae)*. Swedish Museum of Natural History, Stockholm, 296 pp.
- Kullander, S.O. (1996) *Heroína inonycterina*, a new genus and species of cichlid fish from Western Amazonia, with comments on Cichlasomine systematics. *Ichthyological exploration of freshwaters*, 7, 149–172.
- Kullander, S.O. (1998) A phylogeny and classification of the South American Cichlidae (Teleostei: Perciformes). In: Malabarba, L.R., Reis, R.E., Vari, R.P., Lucena, Z.M.S. & Lucena, C.A.S. (Eds.), *Phylogeny and classification of neotropical fishes*. Edipucrs, Porto Alegre, pp. 461–498.
- López-Fernández, H., Winemiller, K.O. & Honeycutt, R.L. (2010) Multilocus phylogeny and rapid radiations in Neotropical cichlid fishes (Perciformes: Cichlidae: Cichlinae). *Molecular Phylogenetics and Evolution*, 55, 1070–1086.
<http://dx.doi.org/10.1016/j.ympev.2010.02.020>
- Meek, S.E. (1904) The freshwater fishes of Mexico north of the isthmus of Tehuantepec. *Zoological Series, Field Columbian Museum, Chicago*, 5, 210–212.
- Martin, A.P. & Bermingham, E. (1998) Systematics and evolution of lower Central American cichlids inferred from analysis of cytochrome b gene sequences. *Molecular Phylogenetics and Evolution*, 9, 192–203.
<http://dx.doi.org/10.1006/mpev.1997.0461>
- Miller, R.R., Minckley, W.L. & Norris, S.M. (2005) *Freshwater fishes of Mexico*. Museum of Zoology, University of Michigan, & University of Chicago Press, Chicago and London, 490 pp.
- McMahan, C.D., Geheber, A.D. & Piller, K.R. (2010) Molecular systematics of the enigmatic Middle American genus *Vieja* (Teleostei: Cichlidae). *Molecular Phylogenetics and Evolution*, 57, 293–300.
<http://dx.doi.org/10.1016/j.ympev.2010.09.005>
- Pellegrin, J. (1903) *Description de Cichlidés nouveaux de la collection du Muséum*. Bulletin du Musée National d'Histoire Naturelle, pp. 120–125.
- Regan, C.T. (1906–08) *Pisces. Biologia Centrali Americana*, R.H. Porter, Londond, 203 pp.
- Salazar-Gonzalez, M. (2007) A *pantostictus* of a different color; a journey through the Huasteca Potosina. The Cichlid Room Companion. Available from <http://www.cichlidae.com/article.php?id=402> (Accessed 10 September 2008)
- Schmitter-Soto, J.J. (2007) Phylogeny of species formerly assigned to the genus *Archocentrus* (Perciformes: Cichlidae). *Zootaxa*, 1618, 1–50.
- Snoeks, J. (1994) The Haplochromines (Teleostei, Cichlidae) of Lake Kivu (East Africa). *Annales-Musée Royale de l'Afrique Centrale., Sciences Zoologiques*, 270, 1–221.
- Semarnat (2010) *Norma Oficial Mexicana NOM-059-ECOL-2010, Protección ambiental-Especies nativas de México de flora y fauna silvestres-Categorías de riesgo y especificaciones para su inclusión, exclusión o cambio-Lista de especies en riesgo*. Diario Oficial de la Federación. 30 de diciembre de 2010. Diario Oficial de la Federación, Mexico City, 85 pp.
- Stawikowski, R. & Werner, U. (1998) *Die Buntbarsche Amerikas. Band 1*. Verlag Eugen Ulmer, Stuttgart, Germany, 540 pp.
- Taylor, J.N. & Miller, R.R. (1983) *Cichlid fishes (Genus Cichlasoma) of the Rio Panuco Basin, Eastern Mexico, with description of a new species*. Museum of Natural History, University of Kansas, Kansas, 104, pp. 1–24.