



A new livebearing fish, *Heterandria tuxtlaensis*, from Lake Catemaco, Veracruz, Mexico (Cyprinodontiformes: Poeciliidae)

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Abstract

A new species of poeciliid fish, *Heterandria tuxtlaensis* **sp. n.**, is described from Lake Catemaco in southern Veracruz, Mexico. Based on traditional and geometric morphometrics, *H. tuxtlaensis* differs most substantially from its likely sister species *H. bimaculata* in possessing short dorsal and caudal fins, a short dorsal fin base composed of fewer fin rays, a more shallow body, and a relatively small basicaudal spot restricted to the area above the mid lateral line. Description of this new species brings the number of known endemics in Lake Catemaco to six. This high level of endemism complements genetic and geological findings suggesting the lake is ancient and well separated from surrounding fish populations.

Key words: *Heterandria tuxtlaensis*, Poeciliidae, Lake Catemaco, Lago de Catemaco, Veracruz

Introduction

Endemism is particularly common in freshwater lakes of ancient origin, and especially for lakes with strong vicariant separation from ancestral populations (Martens *et al.* 1994; McKinnon 2002). Lake Catemaco, which appears to be such a lake, is located in southern Veracruz within the Tuxtlas Mountains. The lake occupies a caldera and was formed up to two million years ago during the Tuxtlas volcanic orogeny that took place in the Pliocene-Pleistocene (West 1964). Lake Catemaco is about 340 m above sea level, resembles an irregular rectangle approximately 9 by 14 km, and has a maximum depth of 22 m (Torres-Orozco *et al.*, 1996; Miller and Conner 1997). Streams to the south and west drain into the lake, and there is only one outlet river, Río Grande de Catemaco, located on the northwest corner of the lake (John Van Conner unpubl. ms.). About 13 kilometers downstream from the lake, at the village of Salto de Eyipantla, the Río Grande flows over a large waterfall. Below the waterfall the Río Grande joins the Río Tuxtla and shortly thereafter the rivers join the San Juan arm of the Río Papaloapan drainage system. The waterfall at Eyipantla isolates the biota of the Lake Catemaco system, the inflowing streams, and the upper section of the Río Grande from that of the remainder of the Papaloapan drainage.

According to Miller and Conner (1997) there are 14 species of fishes in Lake Catemaco. Two species, *Micropterus salmoides* Lacepède and *Oreochromis aureus* Steindachner have been introduced into the lake, and another two species, *Vieja fenestrata* Günther and *Ophisternon aenigmaticum* Rosen & Greenwood, are widespread throughout eastern Mexico and Central America. Of the remaining 10 species, five are endemic to the lake and five may represent undescribed species endemic to the lake (Miller and Conner 1997, Meyer and Scharl 2003). The high rate of endemism suggests that Lake Catemaco has been biogeographically isolated for some time, possibly since its origin up to 2 million years ago. In this paper we describe a new species from