proceedings

Abstract

Comparative Osteology of Species of Genus *Thorichthys* Meek 1904 (Cichliformes: Cichlidae) †

Eduardo López-Segovia [1,2,*,‡], Juan J. Schmitter-Soto [3], Jesús Alvarado-Ortega [4] and Luis Fernando Del Moral-Flores [2]

[1] Posgrado en Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México, Mexico City 04510, Mexico
[2] Laboratorio de Zoología, Facultad de Estudios Superiores Iztacala, Universidad Nacional Autónoma de México, Tlalnepantla 54090, Mexico
[3] Departamento de Sistemática y Ecología Acuática, El Colegio de la Frontera Sur, Av. Centenario km 5.5, Chetumal 77014, Mexico; jschmitt@ecosur.mx
[4] Instituto de Geología, Universidad Nacional Autónoma de México, Mexico City 04510, Mexico
* Correspondence: eduardosegovia@comunidad.unam.mx
† Presented at the XI Iberian Congress of Ichthyology, Vila Real, Portugal, 23–27 June 2026.
‡ Presenting author (Oral Presentation).

Abstract

Introduction: The genus *Thorichthys* comprises nine species of Central American freshwater cichlids, which are distributed along the eastern slopes of Mexico and Honduras. These species are grouped into two subgroups: "helleri" and "meeki". While some analyses of the group's ecomorphology and character evolution have been conducted, the skeletal structures of this genus remain to be described. **Objective:** This study provides an osteological description of the species in the genus *Thorichthys*. **Methodology:** The specimens were sectioned and stained with alizarin red, and the bone structures were analyzed and described. **Results**: The genus *Thorichthys* possesses 12 abdominal vertebrae and 12–13 caudal vertebrae. Species of "*helleri*" group are characterized by the following points: (1) there is a urohyal bone with a sharply concave dorsal margin and a spiniform, inclined process; (2) typically, there are a total of 14–15 gill rakers in the first gill arch; (3) the opercular bone bears a dorsally displaced, posterior protuberance; (4) a total of 12–13 anal pterygiophores; and (5) a slightly recurved cephalic profile. Meanwhile species of the "*meeki*" group exhibit the following characteristics: (1) a urohyal with a broad, unsharpened dorsal concavity and a small, blunt, nearly straight process; (2) a total of 15–21 gill spines; (3) a dorsally positioned protuberance in the middle of the opercular bone; (4) a total of 14–16 proximal anal pterygiophores; and (5) a straight cephalic profile. **Conclusions:** These bony elements are proposed as a complement to the taxonomic differentiation of the species in *Thorichthys*, and to contribute new morphological characteristics to the study of other cichlid genera.

Keywords: gill rakers; operculum; Central American freshwater fish; pterygiophores; urohyal

Check for updates

Academic Editor: Alberto Teodorico Correia

Published: 22 June 2026

Copyright: © 2026 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license.

Author Contributions: Conceptualization, E.L.-S., J.J.S.-S., L.F.D.M.-F. and J.A.-O.; methodology, E.L.-S.; software, E.L.-S.; validation, E.L.-S., J.J.S.-S., L.F.D.M.-F. and J.A.-O.; formal analysis, E.L.-S., J.J.S.-S., L.F.D.M.-F. and J.A.-O.; investigation, E.L.-S., J.J.S.-S. and J.A.-O.; resources, E.L.-S. and L.F.D.M.-F.; data curation, J.J.S.-S. and L.F.D.M.-F.; writing—original draft preparation, E.L.-S.; writing—review and editing, J.J.S.-S., L.F.D.M.-F. and J.A.-O.; visualization, E.L.-S., J.J.S.-S. and J.A.-O.; supervision, L.F.D.M.-F.; project administration, E.L.-S., J.J.S.-S., L.F.D.M.-F. and J.A.-O.; funding acquisition, E.L.-S. and L.F.D.M.-F. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by CONAHCYT-SECIHTI Scholarship, grant number 932500 and The APC was funded by CONAHCYT-SECIHTI.

Institutional Review Board Statement: Ethical review and approval were waived for this study due the material examined originates from and is preserved in ichthyological collections.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflicts of interest.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.