IOCTX 2025 Conference

The 1st International Online Conference on Taxonomy

03–04 December 2025 | Online

MDPI

Taxonomic revision of the species *Hoplias malabaricus* Bloch, 1794 (Characiformes: Erythrinidae) from the Restinga de Jurubatiba National Park, Rio de Janeiro, Brazil

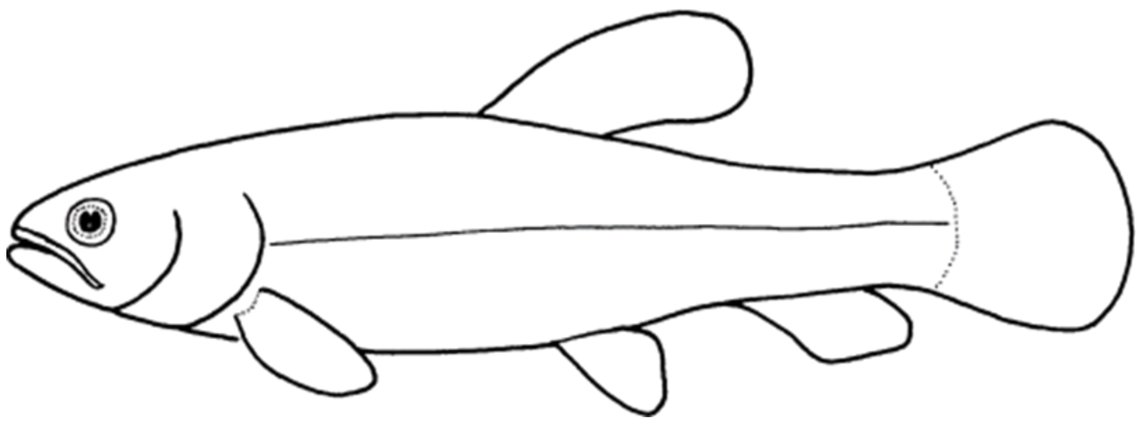
Luísa Mendes[1], Paulo Brito[1], Thiago de Paula[1]; Diogo de Mayrinck[1]

Universidade do Estado do Rio de Janeiro[1]

INTRODUCTION & AIM

- The Restinga de Jurubatiba National Park, located on the northern coast of Rio de Janeiro, contains eighteen coastal lagoons with strong environmental variation, especially in salinity and geographic orientation.

- *Hoplias malabaricus*, widely distributed throughout South America, is considered a taxonomic complex due to the difficulty in delimiting its lineages, representing a major challenge in Neotropical ichthyofauna taxonomy.

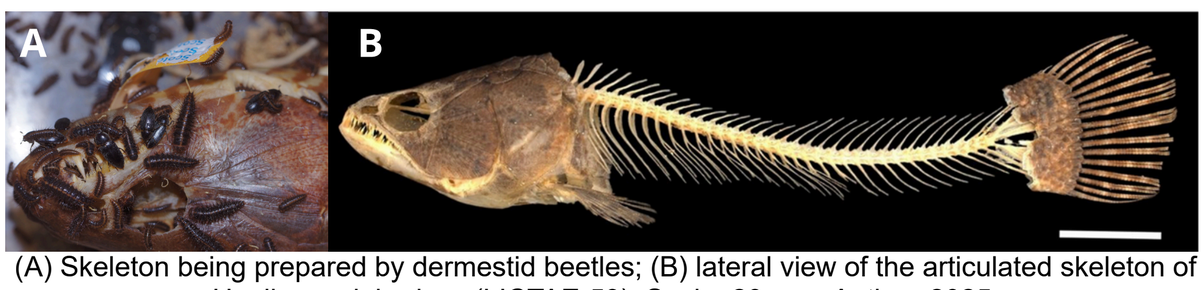


Trahiras. Joseph S. Nelson, 2006

METHOD

Anatomical Analyses:

- Specimens were dissected and dried;
- Skeletons were prepared using dermestid beetles for defleshing;
- Osteological comparisons performed with specimens of the *Hoplias malabaricus* complex from South and Central America.



(A) Skeleton being prepared by dermestid beetles; (B) lateral view of the articulated skeleton of Hoplias malabaricus (LICTAE-53). Scale: 20 mm. Author, 2025.

Molecular Analyses:

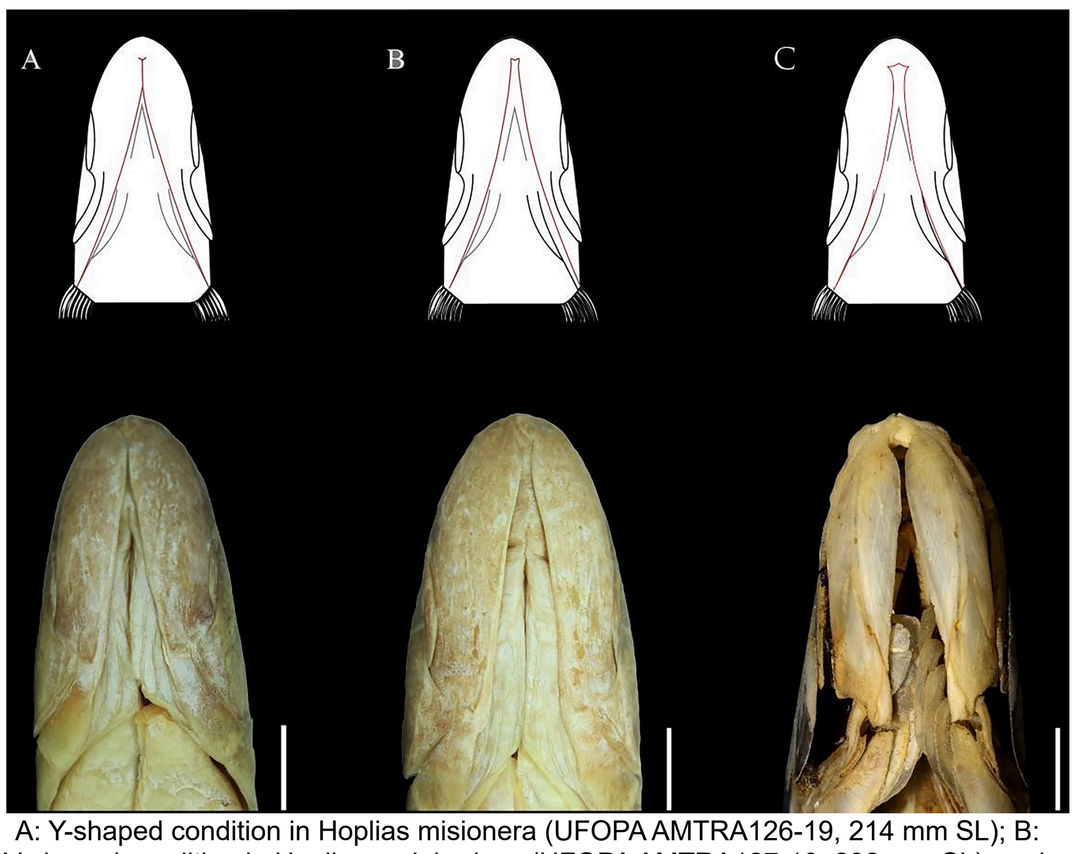
- Extraction and sequencing of the mitochondrial COI gene;
- Comparison of obtained sequences with BOLD and GenBank databases.

RESULTS & DISCUSSION

- Osteological analyses revealed distinct morphological traits, including a “lock-shaped” mandibular symphysis, a slender ventrolateral process on the lateral ethmoid, and an enlarged jugular depression;

- COI sequences showed high genetic divergence (7.7% vs. Rio Doce group; 8.3% vs. *H. malabaricus*);

- The results reinforce that *Hoplias malabaricus* constitutes a highly diverse species complex, highlighting the importance of an integrative taxonomic approach.



A: Y-shaped condition in Hoplias misionera (UFOPA AMTRA126-19, 214 mm SL); B: V-shaped condition in Hoplias malabaricus (UFOPA AMTRA127-19, 232 mm SL); and C: inverted keyhole-shaped condition in Hoplias sp. (LICTAE-21, 235 mm SL; Maria Menina Lagoon). Adapted from Guimarães (2021).

CONCLUSION

- Unrecognized diversity in Hoplias malabaricus from Jurubatiba;
- A combined approach is essential to resolve taxonomy, evolutionary history, and species distribution within the H. malabaricus complex;
- The results highlight the need for a comprehensive taxonomic revision of the group.

FUTURE WORK / REFERENCES

- Guimarães KLA, de Sousa MPA, Ribeiro FRV, Porto JIR, Rodrigues LRR. DNA barcoding of fish fauna from low order streams of Tapajós River basin.
- Weitzman SH. Osteology and relationships of South American characid of the subfamilies Lebiasininae and Erythrininae with special reference to subtribe Nannostomina. Proc U S Nat Mus. 1964; 116:3499.
- Roberts T. Osteology and Relationships of Characoid Fishes, Particularly the Genera Hepsetus, Salminus, Hoplias, Ctenolucius, and Acestrorhynchus. Proceedings of the California Academy of Sciences