Abstract

Biodiversity in Neotropical Fishes †

Claudio Oliveira †‡

Instituto de Biociências, Universidade Estadual Paulista Julio de Mesquita Filho (UNESP), Botucatu 18618-689, Brazil; claudio.oliveira@unesp.br
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Abstract: With more than 6200 fresh species, the Neotropical Water Fish Fauna (NFF) constitutes the most diverse continental vertebrate fauna on Earth. This diversity is quite impressive when we realize that it is concentrated in less than 0.5% of the total area of the Earth’s surface. The diversity of this ichthyofauna has been extensively explored through extensive morphological work by renowned ichthyologists who produced the basic knowledge available today. The use of tools for generating and interpreting morphological data has progressed considerably in recent decades, as has the number of researchers working in this field. Thus, only considering the families of the three main orders of NFF (Siluriformes, Gymnotiformes and Characiformes), 853 new species were described in the last 10 years. With the advancement of DNA sequencing techniques, a new class of data began to be incorporated into NFF biodiversity studies, allowing for a new and more complete view of the group. New phylogenies, such as the proposal for Charciformes, ordered the groups into monophyletic families, and, thus, we advanced in the description of species in these families. Furthermore, the development of data analysis methods for species identification, associated with large DNA barcode generation programs, allowed an unprecedented expansion in our knowledge of NFF. As an example, we can mention the genus Tetragonopterus, which just over 15 years ago contained only 2 species and today has 14 species, and the genus Neoplecostomus, which had only 3 species and now has 16 species. In both cases the combination of morphological and molecular data was fundamental for a better definition of species in these groups. Currently, with new generation sequencing techniques, our knowledge of fish groups is improving so that large monophyletic or polyphyletic groups are being redescribed as smaller units in order to make possible taxonomic revisions that can effectively better evaluate the diversity of these groups. Our results and experiences will be presented at this congress.

Keywords: neotropical freshwater fishes; systematics; taxonomy; phylogenomics; species richness

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