

AN INVENTORY OF THE CHARACIFORM FISH FAUNA (TELEOSTEI, OSTARIOPHYSI) FROM SOUTH AMERICA

Naércio Aquino Menezes

Museum of Zoology / University of São Paulo (USP)

Co-PI: Osvaldo Takeshi Oyakawa

FAPESP Process 2011/50282-7 | Term: Aug 2011 to Jul 2017



Figure 1. *Hyphessobrycon procyon* Pastana & Ohara, a new characid species from rio Aripuanã, rio Madeira basin (Source: Pastana ML, Ohara WM. 2015. Zootaxa. 4162 (3): 386-398). (Photo by William Ohara).

The project SACI (South American Characiformes Inventory) focus on the taxonomic study of the Characiformes and aims at the production of identification guides, atlases, catalogues and checklists of species, and phylogenetic studies of higher-level relationships among characiforms based on material already available in fish collections of participant institutions as well as representative samples from poorly collected regions to be added to permanent collections. In phylogenetic studies both morphological and molecular data will be used.

A project website and a system of electronic mail was created and will continue after the project end for dissemination of data and products and will enable the continuous communication among the participant taxonomists.

The project made possible and stimulated the continuous inventory of South American freshwater fishes through contact of the participants with other Brazilian and foreign taxonomists.

Master, doctoral and postdoctoral scholarships have provided training for students, a most important issue within the project. Students and researchers engaged in graduate and postdoctoral programs have been working with senior taxonomists in the field and museum laboratories thus largely increasing their knowledge in taxonomy and systematics.

To know the species and higher-level relationships of a large and widely distributed clade as Characiformes, will open research opportunities in evolution, ecology, and organismal biology. The research will encompass studies in systematics, phylogeny, historical biogeography and comparative biology.

Degradation of aquatic ecosystems in South America is enormous and aquatic species are among the most threatened. Conservation biologists and fishery managers depend on accurate taxonomic work and up dated information on specimens deposited in collections for determination of priority areas for protection and establishment of management programs. In addition, the project has provided a considerable progress in taxonomic knowledge of the group and the opportunity to improve museum collection data through the work of characiform experts.

SUMMARY OF RESULTS TO DATE AND PERSPECTIVES

The website of the project has been created (<http://www.usp.br/peixes/>) and is already available. Photographs and all the pertinent information about type specimens have been introduced and will continue until completed. In taxonomic studies type specimens of species contain important data needed for precise definitions and when available provide information for systematists worldwide. Original descriptions of the types are also included.

The first expedition was undertaken to the headwaters of the Xingu river, in the region of Altamira, and surroundings by a team including research members of the project. The expedition was extremely successful since not only specimens of rare species formerly described from the area, but specimens representing new species were collected. Since then 6 more expeditions were undertaken during which almost 10,000 specimens and about 280 species were collected. Nearly 50 new species and 2 new genera were described.

The collecting efforts have been primarily concentrated on headwaters of the rivers especially those of major tributaries of the Amazon basin such as the Xingu, Tapajós, Tocantins and others that are targets for construction of new hydroelectric power plants. Damming of headwater streams and rivers for hydroelectric purposes are among the most severe threats to aquatic ecosystems in South America and knowing the aquatic fauna, especially fishes, at the species level through accurate taxonomic work, is of utmost importance for determination of priority areas for conservation, recovery, and establishment of management programs.



Figure 2. *Moenkhausia uirapuru* Ohara, W.M. and Lima, F.T.C., a new characid species from Rio Guaporé, Chapada dos Parecis, Mato Grosso, Brasil (Source: Ohara WM, Lima FTC. 2015. *Ichthyological exploration of freshwaters*. **26**(2): 150-170). (Photo by Willian Ohara).

MAIN PUBLICATIONS

In order to speed up the process of publication of the results, a special issue of the official journal of the Brazilian Society of Ichthyology (*Neotropical Ichthyology*, volume 12, number 2, 2014) was published including 22 articles exclusively on characiform fishes by members of the project. In addition 244 individual papers have been published to date in indexed journals by participants of the project.

NAÉRCIO AQUINO MENEZES

Museu de Zoologia
Universidade de São Paulo (USP)
Avenida Nazaré, 481
CEP 04263-000 – São Paulo, SP – Brasil

55-11-2065-8144