



## Amazon Voyages to and from the Academy: An Exhibit and a Research Program

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Ray Troll's 7' x 15' mural, *Freshwater Riches of the Amazon*, depicts 120 species of aquatic animals. Additional information on the mural and Amazon fish life can be found at [www.trollart.com/amazart.html](http://www.trollart.com/amazart.html) and in an article by John Lundberg and Ray Troll, September 2001, *Natural History Magazine*, available online at [www.nhmag.com](http://www.nhmag.com). Amazon Fishes is at the Academy of Natural Sciences now through December.

*Amazon Voyage: Vicious Fishes and Other Riches*, the exhibit celebrating the world's largest and biotically richest river, is astonishing visitors daily in the Academy's public museum. Meanwhile, and beyond the public's view, the Academy's ichthyologists continue their exploration and discovery of novel fishes of the Amazon and other waterways that wind across South America.

The Amazon is huge. Its basin dominates the tropical American continent with an area exceeding

2.7 million square miles, equal to about three-fourths that of the contiguous United States. From its mouth in the Atlantic Ocean just below the Equator, the Amazon discharges about 46 million gallons per second, roughly 20% of freshwater input to the world's oceans. In the rainy season when the Amazon mainstem can rise 30 feet above its low-water level, a flood spreads into about 135,000 square miles of riparian forests and lush savannahs.

The Amazon rain forest is Earth's hotbed of biodiversity, holding an estimated one-third of all species, including some 1,300 birds, 30,000 plants and 2.5 million insects. Its rivers teem with a fish fauna coarsely estimated at 2000 to perhaps 4000 species (5 to 10 times that of the Mississippi and its tributaries). No matter what the exact fish count, this is the richest of all riverine fish faunas.

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*Amazon Voyage*, the exhibit, is filled with the vibrant paintings of Ray Troll, recipient of the Academy's 2007 Gold Medal for Distinction in Natural History Art. Troll's magnificent 7 by 15 ft mural, *Freshwater Riches of the Amazon*, welcomes visitors to the exhibit with its portrayal of 120 fishes and other aquatic vertebrates as they hide, threaten, lurk, chase, flee, leap, creep, writhe and bite against a tropical waterscape. As in life, the Amazon fish in the mural and exhibit are ever hungry. One or another



Sabre sharp fangs on the lower jaw equip the pirandirá (*Hydrolycus scomberoides*) with a formidable weapon for dispatching smaller prey fishes.



Mark Sabaj Pérez (far right) and John Lundberg (third from right) lead expedition to explore the River Litani in Suriname, April 2007.

practices herbivory, frugivory, granivory, planktivory, algivory or detritivory, omnivory, insectivory or vermivory, while being pursued by carnivores, piscivores, caudivores, squamivores and even thin and thorny sanguivores. Tropical fish hobbyists find their favorite jewels: angel and discus cichlids, cardinal tetras and headstanders, banjo cats and armored "plecos". Trophy-sized peacock bass, red-tailed catfish and fang-toothed pirandirá catch the angler's eye. Whopping pirarucú and tambaqui, the prime food fishes of Amazonia, tempt gourmands. And, the exhibit conjures the legends of the Amazon's seven perilous vicious "fishes": electric eels, river stingrays, black caimans, anacondas, piranhas, giant piraíba and "parasitic" candirú catfishes. Caramba!

With their research strongly focused on South American fishes Academy ichthyologists are visibly linked to *Amazon Voyage* and Troll's mural. New species of Amazon fishes published by Curator John Lundberg and his collaborators are highlighted: miniature eyeless and pigmentless catfishes, tail-eating electric knife fishes and a big commercially fished goliath catfish. The work of Research Associate Wasila Dahdul is on display in

paintings and specimens of the large, snaggle-toothed fossil "megapiranha". Much of the current work in the Department of Ichthyology is supported by the "All Catfish Species Inventory" a 5-year project funded by The National Science Foundation that involves over 400 ichthyologists in 53 countries. "ACSI" seeks to discover and document all species of catfishes and has enabled Collection Manager Mark Sabaj Pérez to run major expeditions to explore and collect specimens in little-known waters in Peru, Brazil, Venezuela, Argentina, Colombia, Guyana and Suriname. Kyle Luckenbill, Research Assistant and artist, works to digitally image and illustrate important research specimens for publication in scientific journals and on the Department's web sites: <http://silurus.acnatsci.org/> and <http://catfishbone.acnatsci.org/index.html>. Postdoctoral Fellow John Sullivan leads the ichthyology team's effort to reconstruct the catfish family tree using molecular (DNA) sequences of species from all over the world. The Ichthyology Department's rich assortment of human, specimen and Academy Library resources have attracted and collaboratively engaged many students and researchers from the US and abroad, making the Academy an international crossroads for the science of ichthyology.



Ray Troll's colorful reconstruction of the fossil piranha dubbed "megapiranha" by Academy ichthyologists.