



Fishes and Waterfalls

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The Pakaraima Mountains of Guyana are a fantastic area of ancient rocks carved by swift waters that run clear or tea-colored. Most rivers pour off of the Guiana Shield plateau in spectacular waterfalls like the celebrated Kaieteur Falls. These regions have been a focus of fish exploration since the early 1800's, and there has been a recent resurgence in scientific interest as investigations have revealed that each stream often has distinctive species found nowhere else in the world. In January of 2016, we completed an exploration of the upper Ireng River, located along the Brazilian border, with a team that included ourselves (fish biologists), Tim Colston (reptile and amphibian biologist), Kristof Zyskowski (bird biologist), David Brooks (artist), Ovid Williams (Bureau of Amerindian Affairs), Mark Rahm and Mahendra Doraisami (both UG students), and Lolita Flemming Marcus (cook).

Our goal was set by the 1906 description of a small species of flat, armor-plated, suckermouth catfish by the esteemed British ichthyologist C. Tate Regan. This fish, named *Lithoxus bovallii*, was named in honor of Dr. Carl Bovallius, who was described as being a Swedish gentleman who traveled into the interior of Guyana. Bovallius obtained some of the only fishes ever collected from the upper Ireng. Bovallius went on to found Holmia, a mining camp that was located near present day

Chenapow on the Potaro River. This fish species was essential to our studies of the fishes of the Guiana Shield, and the biodiversity of the upper Ireng River remained virtually unknown to scientists.

Our team flew into Orinduik, one of Guyana's most famous waterfalls. Unlike Kaieteur, Orinduik cascades over several steps. It is surrounded by rolling hills and arid savannah where the few trees that exist are clustered near the Ireng and its tributaries. Once there, we hiked and boated to localities below Orinduik and fished inside of the falls complex as well. The rock that forms Orinduik is jasper, which is incredibly hard but beautifully rose-colored when wet. As for fishes, this is not a prime location for diversity. The water is low in nutrients, and the hard jasper rocks form few of the cobbles and pebbles that fish need to hide. Nonetheless, each of our net hauls usually contained fishes, and a few even included that same fish that Bovallius caught so long ago. Several other species that we collected were new to science. Particularly exciting to us were an armored fish like *Lithoxus* but longer in body called Harttia.

From there, we joined our indigenous Patamona guides from the upstream village of Kaibarupai on a six-hour boat ride up the Ireng river. Slowly, the gallery forest became thicker, and we

Boating to Kaibarupai Village



were soon in thick jungle. The village of Kaibarupai lies in the valley mostly north of Monkey River and south of Mt. Kukuinang. We were helped greatly by the people of Kaibarupai, led by Touschou Kendall Salvatore, who led us further up the Ireng to where it splits into two branches. One of these branches, called Sukwabi Creek, was particularly magnificent. Sukwabi breaks on an even higher plateau and cascades down the plateau in two magnificent waterfalls, Andu and Wotowanda while the Ireng River cascades down in an equally impressive falls named Uluk Tuwuk. A small savannah exists between the two waterfalls of the Sukwabi where there are several petroglyphs that our Patamona guides told us were old even to them. Above those falls, we caught even more species of fishes that were unknown to us. In the rapids just below Sukwabi's waterfalls, one of the most interesting discoveries of our

Maikwak Falls



Orinduik Falls





David Werneke below Wotowanda Falls



Nathan Lujan & David Werneke

trip: another suckermouth armored catfish called *Neblinichthys*. Males of this genus have extremely elongate teeth sticking out of the top of their snouts, earning them the nickname “punk catfish”, but, alas, we only caught females, leaving another small mystery that will have to be solved by another future expedition.

Guyana is a land of waters and waterfalls, and it contains a vast wealth of biodiversity. The Ireng is among the least impacted rivers in the country and the waters run cold and clear except for the tea stain of tannins naturally washed in to it. The fishes in the rivers are wonderful and mostly new to science. The beauty of Guyana’s Pakaraima Mountains is unparalleled in our journeys across the world, but much of the region still needs exploration to document and understand its biodiversity. Waterfalls like Orinduik and Kaieteur act as barriers to fish movements, allowing different species to thrive above the falls than below. As one looks upon the vast landscape of the Pakaraimas, one cannot help but to think of how much of the area has yet to be explored and how many unknown species still lie waiting for intrepid biologists to make their way to find them.

Team at Falls on Ireng River

