

Expedition Amazon catfish

As a boy in Nashville, **Nathan Lujan '00** loved “creeking”—following streambeds, sharp-eyed for snakes, frogs and especially fish.

“I knew before I went to Calvin that’s what I wanted to do for the rest of my life,” he said.

Lujan has made a career of creeking, though the streambeds are more remote and the fish more exotic. Funded by the National Science Foundation and the National Geographic Society, among other institutions, he’s made 12 expeditions to remote parts of South America, searching waterways for loricariids, aka suckermouth armored catfishes.

Remarkably diverse, all have bony plates covering their bodies, suction cup-like mouths and, Lujan explained, “millions of mostly minute teeth covering the plates that in some cases are quite large and, in males, clustered in brushes erected for combat.”

Of the 840 species known, Lujan has discovered and classified 24 of them, including some that were totally new to science and others that were known to exist but had gone undescribed. Another dozen of his discoveries await description in specimen jars.

Two of his earliest finds, in Venezuela’s Orinoco Basin, he named for Calvin professor-mentors Randy Van Dragt (*Micracanthicus vandragtii*) and Ralph Stearley (*Soromonichthys stearleyi*).

Thanks in part to his studies at Calvin—including a semester in Belize and one at the Au Sable Institute in northern Michigan focused on aquatic ecology—Lujan does more than simply discover and describe these catfishes.

“Rivers in South America are orders of magnitude larger and more diverse than any in North America,” he said, “and we know remarkably little about them. I work to understand how species co-exist in these incredibly diverse ecosystems.”

As an example, he points to his discovery of three catfish species, one of which *National Geographic* editors put among “the weirdest new animals of 2010.” All three eat wood.

“These catfish have specialized, strengthened jaws with rasp-like teeth. You’d think they could digest the wood directly. But they can’t. We found that they rely on microbes in the wood to digest the cellulose for them. And three species can all feed on the same piece of wood because they partition it: one scrapes the surface, another gouges into it and a third, with teeth like carpentry instruments, gouges in more deeply.”

Even weirder catfishes may swim in South America’s remote rivers. Lujan guesses that there are hundreds more species still undiscovered on the continent. But their clock is ticking.

“Development is impending,” he said. “We’re running out of time to understand how these very complex ecosystems function in a natural state.”

For example, Lujan (now a National Science Foundation fellow at the Royal Ontario Museum) and colleagues are studying and

Nathan Lujan



documenting the many diverse catfishes that live in the lower Xingu River of central Brazil before the government builds a large dam that will destroy their only known habitat.

“I feel a tremendous urgency to describe these ecosystems before they’re gone,” he said. “What we do is incredibly important to conservation, because it establishes a baseline for future generations, who may want to restore the natural state.”

Lujan says his urgency may some day move him from scientist to conservation advocate. For now, he said, “I feel incredibly lucky to experience that same naïve thrill of discovery I had as a kid.” **S**