Buy A Fish Save A Tree?

Safeguarding Sustainability in an Amazonian Ornamental Fishery

By
Scott Norris with
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Jose Bento de Araújo guides his canoe forward through the dark, slow-moving water of a remote rainforest stream in the Rio Negro floodplain. He stops when a flash of metallic blue signals the presence of his quarry: a school of cardinal tetras. "Zé" and his five-man team are collectors of *piabas*, the generic local term for ornamental fish. Holding his paddle in one hand, Zé uses the other to carefully herd a portion of the school into a wide, bathtub-shaped net. After a few scoops, he sorts his catch, transferring the tetras and other saleable species into a plastic-lined basket and releasing others back into the stream. Later in the afternoon, when Zé returns to camp, he transfers the fish into a screened pen set in the river. There they will remain for several days, until Zé and his crew transfer them to tubs in the river boat and return home. And then the inch-long fish will begin their amazing journey downstream: To middlemen in Barcelos. To exporters in Manaus. To suppliers in Miami, Tokyo, and London. To the pet store down the block, and to the aquarium tank in your living room.

The chain extends around the world, and at every link, money changes hands. A little for Zé and his crew, enough to live on. More for those further down the line. It may all sound familiar, a typical story of exploitation and environmental plunder, played out south to north along the well worn economic pathways of global inequality. It may be that kind of story—or it may not.

Project Piaba is a community-based organization headquartered in Barcelos, in the Brazilian state of Amazonas. In the beginning, it was as a biological survey project under the leadership of Professor Ning Labbish Chao, of the University of Amazonas in Manaus, Brazil. It has since evolved into a multidisciplinary and multitasking organization focused on how the international trade in ornamental fish is affected by the ecological, cultural, and economic systems of the middle Rio Negro basin. The project's central objective has become keeping Zé and his fellow *piaba* collectors in business—not at any cost, but in a manner that allows for sustainable long-term use of the fishery resource.

The rallying cry of Project Piaba is, "buy a

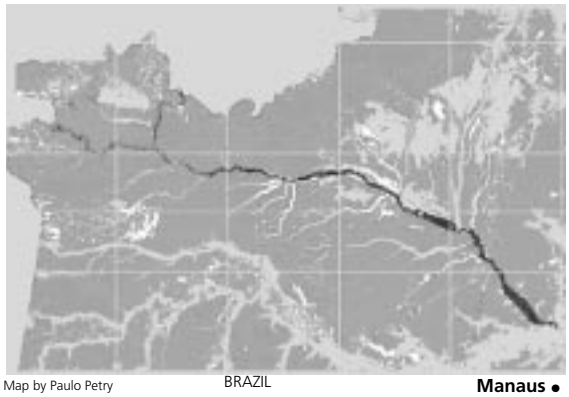
Can an industry based on extractive harvest be the key to conserving biodiversity along the largest tributary of the Amazon River?

fish, save a tree." The assertion behind the slogan is that people with a stable economic livelihood from the fishery don't engage in more ecologically destructive activities. Project organizers and supporters believe that the *piaba* trade has been, and can continue to be, a highly effective means of rainforest and biodiversity conservation. Such a notion may be challenging to those who view all trade in tropical wildlife as harmful. Project Piaba counters by pointing to the forests of Barcelos, which are species-rich and relatively intact. Across this wide region of some 23,000 people, most living in small river communities, the capture and sale of *piabas* accounts for roughly two-thirds of the local economy. And for decades the fishery has proven to be sustainable under high levels of harvest.

All of this is, of course, a simplification. A "living" by local standards is still a life of low income and limited opportunity. If the Rio Negro region had more commercially valuable timber, or better soils, its forests would likely be exploited to a greater degree, cardinal tetra or no. But Project Piaba is probably correct in its assertion that maintaining the fishery offers far more hope for the people and the environment than does any other foreseeable scenario for the region. In Barcelos, Chao says, people understand that their welfare depends on both a healthy ecosystem and a healthy market for *piabas*. Now outsiders are coming to see the *piaba* trade as a powerful means of alleviating rural poverty and protecting tropical forest. Particularly with a few reforms, Chao insists, it may be all of that—if one of about a dozen things doesn't go wrong.

Photo by Ning Labbish Chao

Rio Negro is the largest tributary of the Amazon river and the fifth longest river in the world. The basin covers 750 thousand km2 and the length of the drainage to Columbia is about 1,700 km.



Map by Paulo Petry

Recognizing an Opportunity

The general premise behind Project Piaba is one that is increasingly accepted by ecologists and conservation biologists: long-term preservation of tropical wildlands will require increased commercialization of renewable rainforest resources. What Chao and others recognized was that in the Rio Negro *piaba* trade, the elements of a sustainable system were already in place and that conservation benefits were already being realized.

The history of Zé's occupation predates today's concerns over biodiversity and sustainability. The cardinal tetra's scientific name, *Paracheirodon axelrodi,* comes from Herbert Axelrod, an American researcher and entrepreneur who promoted the commercialization of the species from the Rio Negro basin in the 1950s. Axelrod went on to amass a personal fortune as a fish trader and as founder of T.F.H. Publications, the company whose hundreds of reference and "how to" titles helped launch the modern home aquarium industry. The cardinal tetra proved to be a highly marketable species, demand soared, and with a few timely inventions like the jet airliner and the plastic bag, an international industry was established.

From its origins in 1989, Project Piaba has been gathering the biological information needed to understand the impacts of the fishery on the floodplain ecosystem. Chao's own view, at first, was that the live fishery was probably damaging to the environment, removing fish at an unsustainable rate. But as the biological data began to accumulate, and Chao began examining industry practices and export statistics, he became convinced that his original suspicions were wrong. The fishery probably was sustainable, thanks in part to natural hydrological constraints on overharvest, and to the high fecundity of the principal target fish, the cardinal tetra.

Potential threats to sustainability could probably be alleviated with some degree of management. These realizations slowly led to a new and much larger agenda and to grappling with complex sets of interactions among the river ecosystem, the local culture and economy, and the international ornamental fish trade.

Working across the Commercial Chain

Conservation with a focus on commerce may be unfamiliar ground for many. It requires a new style of outreach and advocacy that stretches across the chain of commercial trade. First and

foremost, Project Piaba needed the support of the collectors to gather information about the fishery. Gaining acceptance in the river communities required a sustained effort aimed at educating and building trust. "Most were suspicious of our intentions initially," Chao says. "Now most of the fishers are grateful for our efforts and are standing behind them. But we often have been treated as outsiders, with hidden agendas, by local elites."

Thanks in part to the project's efforts, collectors and others in the river communities began to exhibit a new kind of self-awareness and pride in the fishery. An important milestone came in 1994 when, with help from Herbert Axelrod and others, Project Piaba established a Center for Aquatic Conservation in Barcelos. A public aquarium at the Center showcases the rich fish diversity of the region for locals and visitors. The Center also houses a laboratory, provides environmental education to local school children and teachers, and has employed local youth in various training programs.

Chao and his coworkers soon realized that their message of sustainability also needed to be heard outside the local region and up the economic stream. "The ornamental fish industry links rural fish collectors in the Amazon to fish hobbyists throughout the world," Chao says. "We have to work with all the stakeholders to understand the system." Across the commercial chain, different groups stand in unequal or adversarial economic relationships to one another. But the project's broadly supportive stance vis-à-vis the industry has enabled it to gain varying degrees of support not only from locals but also from exporters, trade groups, public aquariums, and hobbyists.

Some of the larger fish exporters in Manaus have been key backers of the project. "They understand that Project Piaba is not there to condemn them but to help the sustainability of their business," Chao says. However, alliance building has its dangers as well as its rewards. The project has at times faced unwanted involvement in local politics, and different constituencies naturally try to use their affiliation with the project to advance their own particular interests.

Project Piaba's outreach to aquarists in the U.S. and Europe has helped stimulate outside

The River Ecosystem

of the Rio Negro Basin

Project Piaba's biological research has centered on gathering baseline data of the river ecosystem and its fish communities. Habitat in the Rio Negro basin undergoes extreme annual fluctuations. Water levels rise over four meters in the summer rainy season and fish disperse over large areas of inundated forest floodplain. Fishing occurs largely during the low-water period from October to April, when fish populations are concentrated in the larger stream channels. Surveys have identified over 170 small fish species from the shallow water and floodplain habitats that sustain the *piaba* fishery. Most are short-lived, annually spawning species, highly adapted to the seasonal hydrological cycle. The cardinal tetra is the most abundant, reproducing in sufficient numbers during the rainy season to sustain an annual harvest of over 20 million individuals since 1980. The numbers sometimes swing widely, when climatic events such as El Niño affect the distribution and availability of fish in the river. But Project Piaba monitoring has thus far produced no evidence that the tetra or any other species has declined significantly as a result of harvest.

Photo by Ning Labbish Chao

interest in the fishery. This has been magnified by an increasingly popular annual Ornamental Fish Festival in Barcelos. The January festival, which draws thousands of visitors from the Amazon region, has become the cornerstone upon which a specialized form of ecotourism is now emerging. Scott Dowd, senior aquarist at the New England Aquarium in Boston, Massachusetts, says hundreds of aquarists and fish enthusiasts from around the world take part in the festival. Dowd organizes ecotours in which visitors assist with Project Piaba-sponsored research projects and learn about the need for a sustainable fishery, all while viewing familiar aquarium species in their natural environment.

Support from hobbyists and trade groups is crucial but fickle. Ultimately, sustainability of the fishery at the local level depends on international market demand. Recent changes in the pet industry have not been favorable for the *piaba* trade. Large retail chains generally avoid the extra expense of obtaining and caring for cardinal tetras when an easier-to-keep and less expensive alternative, the neon tetra (*Paracheirodon innesi*) is readily available. Moreover, captive breeding of cardinal tetras closer to the market place is beginning to show signs of success—a development that has Chao worried.

Then there is the concern over potentially severe restrictions on exports. Project Piaba supporters argue that a ban on the export of wild-caught fishes from Brazil could have dire ecological and social consequences. Some environmental and animal rights organizations have urged airlines to refuse to transport all wildlife species without exception. This could effectively end the *piaba* trade overnight and force thousands of rural fishers in Amazonas to seek other means of subsistence.

Project Piaba has made a difference because of its unflinching recognition that local conservation may succeed or fail according to how human needs are being met.

Photo by Ning Labbish Chao

Conservation through Workers' Rights

Project Piaba has made a difference in large part because of its unflinching recognition that local conservation may succeed or fail according to how human needs are being met. In the Amazon, economic viability is a prerequisite for ecosystem protection. Accordingly, the project has employed a variety of means to help improve the overall economic situation of Barcelos

fish collectors and their families. One successful effort focused on providing fishing licenses. "When people have fished for a number of years, and can prove it through licenses, they can apply for retirement benefits," says Gregory Prang, a Wayne State University anthropologist who has been a member of Project Piaba since the mid-1990s. Another step forward came in 2001, when the project succeeded in establishing an Association of Ornamental Fishers in Barcelos. Chao says association status will allow fishers to register in Brazil's federal rural work system and obtain unemployment benefits during the flood season when their fishing income ceases. It may also help them collectively negotiate a higher price for their catch.

The association exemplifies what Project Piaba does best: finding conservation benefits to be gained through the advancement of social issues, such as workers' rights. For the last several years, Project Piaba has organized annual meetings of fish collectors and buyers to discuss industry issues. A sticking point has been the price paid to collectors by intermediaries and transporters, who supply fish to exporters in Manaus. For a tub of 1,000 cardinal tetras, Zé and other collectors may receive US$5. Transporters receive US$10 from exporters, who receive US$100 from importers, who receive US$260 from wholesalers. By the time a single fish is sold for US$2 to a retail customer, its value has increased hundreds of times. (1)

Increasing the price paid to collectors would bring increased stability to the *piaba* trade and reduce pressures to overharvest. Project Piaba has been pursuing this strategy through negotiation within the industry, again with the support of some exporters. Difficult trade issues may only be resolved through some form of industry regulation. In the meantime, the project is pursuing research aimed at increasing value by reducing fish mortality through improved handling and transport techniques.

While the *piaba* fishery remains largely unmanaged and unregulated, some of the pieces necessary for sound management are now in place. Perhaps a key to Project Piaba's success so far is that it entered the game early, at a time when there was no observable decline in the fishery. Thus the project's message to the various stakeholders was not "save the cardinal tetra" but, essentially, let's keep the system working, improving what we can while safeguarding what we already have. However, lack of an acute crisis has probably made the project a lower priority for funding from major conservation organizations. "We don't have a problem, we're trying to prevent a problem," Prang says. "That doesn't get us a lot of attention."

Although the population in Barcelos has doubled since 1990, and harvest levels have increased in recent years, Chao and Prang believe the fishery itself remains healthy for now. The region is vast, high water forces a reduction in fishing during the spawning season, and collection activities remain small-scale and highly dispersed. "They've been fishing the area for 40 years," Prang says. "They have a conservation ethic, they know when to stop fishing certain areas based on diminishing returns. They're very astute about that."

However, with increased population pressure and insufficient regulation, the balance could shift quickly. Project Piaba is pressing forward with a typically ambitious agenda. This includes working to develop scientifically sound recommendations for harvesting a more diverse array of species at sustainable levels. Such diversification would reduce pressure and industry dependence on the cardinal tetra. The project is also working to establish a proposed rotation system governing when and where fish collecting may occur. And efforts are under way to establish a "green certification" process for wild-caught ornamental fish, such as that currently existing for other sustainable extractive industries. ❧

(1) From: Prang, G. 2001. Aviamento and the Ornamental Fishery of the Rio Negro, Brazil: Implications for Sustainable Resource Use. In Chao, N.L., P. Petry, G. Prang, L. Sonneschien and M. Tlusty eds. *Conservation and Management of Ornamental Fish Resources of the Rio Negro Basin, Amazonia, Brazil: Project Piaba.* Universidade do Amazonas, Manaus.

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For more information

www.angelfire.com/pq/piaba/

Chao, N.L. et al. eds. 2001. *Conservation and Management of Ornamental Fish Resources of the Rio Negro Basin, Amazonia, Brazil: Project Piaba.* Universidade do Amazonas, Manaus.