

A new direction in Brazil aquarium fish production.

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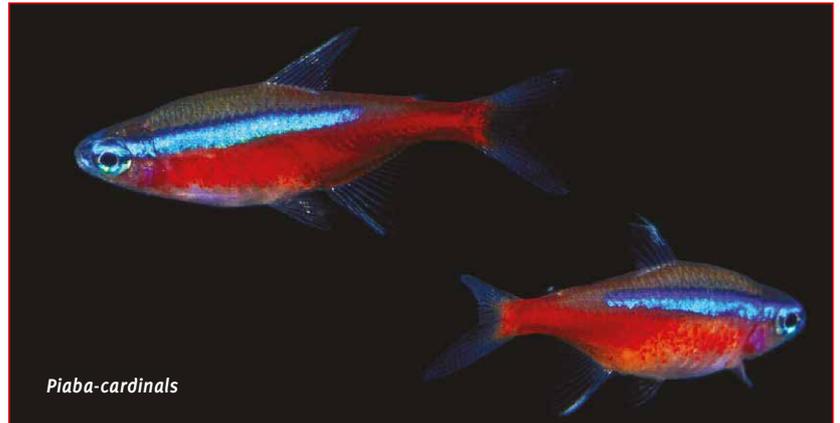
The Brazilian government has published a directive with the aim for the country to achieve a pre-eminent place in the Aquarium industry. The aim is to no longer a country where ornamental fish are primarily collected from the wild but more a country that produces cultivated fish.

Aquaculture has the potential to increase fish production in Brazil. To better understand the advances achieved through the new directives that were published by the Brazilian government, it is necessary to contextualize the fundamental basis for the production of any crop. Many would say, that when it comes to production, the key to starting a farm is the physical structure, but there is certainly there is something much more important than this step: the legal procedures that are at the basis of any lawful production, export, and import.

For many years, aquaculture activity to produce ornamental fish in Brazil was paralyzed by the numerous rules that impeded the development of this activity in the country. Because of this, we based our ornamental fish production in collection, sending abroad all our genetic potential in the form of specimens caught in nature.

The recently published Normative Instruction of the Ministry of Fisheries and Aquaculture - MPA No. 16 of August 11, 2014, establishes the rules of granting authorization for the capture of wild specimens of aquatic organisms for breeding stock in aquaculture ventures.

It is noted that the fish farmer, as required by Law No. 11,959 / 2009 is the one who performs the aquaculture activity for commercial purposes. At the end of a production cycle, it is the same farmer who determines which market suits his purpose. Many farmers for example, on the basis of the Rules of Interministerial MPA and the Ministry of the Environment - MMA n ° 3/2011, produce "piraíba"



Piaba-cardinals

(*Brachyplatystoma filamentosum*) and other species traditionally marketed for food use, but at the end of the production cycle sell their production on the ornamental and aquarium market because the higher market value in this sector. Indeed many species that are currently bred and marketed exclusively for food purposes, may be better suited for ornamental fish trade purely from an economic point of view.

Species	Ornamental value	Value as food-fish
Black arowana (<i>Osteoglossum ferreirai</i>)	\$ 200.00 / Unit	\$ 0.70 / kg
Jaraqui (<i>Semaprochilodus taeniurus</i>)	\$ 30.00 / Unit	\$ 0.08 / kg

Table 1. Comparative market values

Another factor linked to the export of aquatic organisms for ornamental purposes that are directly extracted from nature, is that Brazil actually sends individuals with high genetic variability, which is critical to ensuring the success in aquaculture projects abroad. If we look at the history of exports of Brazilian ornamentals, they are cyclical and after the acquisition of genetic material and, therefore, viable broodstock the export drops to small amounts, just to renew broodstock with wild individuals. This procedure has had a great impact on professional fishermen, mainly in the Amazon region, who often lose their customers due to lack of market demand. A clear example of this collapse occurred in the state of Amazonas, where the export of Cardinal fish (*Paracheirodon axelrodi*) decreased by 400% over the last ten years (the Integrated Data Foreign Trade - SISCOMEX, the Ministry of Development, Industry and Trade).



Early days of Cardinal Tetra fishery

This establishment of breeding protocols of Brazilian endemic species and the high price of international air freight enables other countries to sell Brazilian species that are bred abroad at lower prices than organisms produced from extraction in Brazil.

Another link in the production chain that will certainly be helped by this directive is the professional fisherman who will be able to market his fish as breeding stock for aquaculture. This will enable the development of varieties in Brazil with species that were hitherto not used for ornamental and aquarium purposes, and were not allowed in the trade. By issuing licenses from the MPA, we safeguard the export market for Brazil. It is noteworthy that the fisheries management model for aquarium fish in Brazil is by positive lists, so the export is allowed only for the species listed in the positive lists and those coming from aquaculture. Thus, this measure will significantly increase the availability of endemic species from Brazil to the overseas market. This measure will also impede animal trafficking, which until now was the only way that companies abroad could acquire the disallowed species.

The Brazilian government is determined to develop the aquarium industry in Brazil through public policies that are economical, socially and environmentally sustainable because it recognizes the potential the country has due to its great biodiversity; the Amazon has more than three thousand cataloged fish species. Through simple measures, Brazil aims to curb trafficking through the provision of legalized species and increase exports with the quality that the market needs.

The Brazilian positive lists are published in

- MPA / MMA n ° 01/2012: 725 freshwater species
- IBAMA n ° 202/2008: 136 marine species

Licensing as a fish farmer can be done at

<http://www.mpa.gov.br/monitoramento-e-controle/registro-geral-da-atividade-pesqueira-rgp/registro-e-licenca-de-aquicultor>

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Project Piaba: The Next Generation

Part I

Greetings OFI members. I am very happy to have this opportunity to share an update on Project Piaba.

First though, a bit of history on Project Piaba and our relationship with OFI. Project Piaba was established in the early 1990s by Dr. Labbish Chao, Professor at the Federal University of Amazonas. Dr. Chao's work in the Rio Negro did not begin with the intent of establishing a global initiative to maximize socioeconomic and environmental benefits as outcomes of the fish trade. In truth, the fantastic abundance and diversity of the fish communities of the Rio Negro were to be the focus of studies for University of Amazonas students to receive training in proper scientific methodology. Those studies, however, made it very clear of the critical importance of the aquarium fisheries to the fishing communities. Indeed, the aquarium industry is not only the underpinning of sustainable livelihoods for rural people that have few other opportunities, but also a very effective driver of environmental stewardship.

For centuries, foreigners have been drawn to the Amazon, seeking cities of gold, tribes of women, the fountain of youth, etc. The discovery that Dr. Chao and his young Amazonian students made more than 25 years ago is something perhaps even more valuable than the riches that those earlier explorers sought. Project Piaba elucidated this model, where people living in a region of critical biological importance have their essential needs met by the



Labbish Chou collecting ornamental fish

PHOTO: PROJECTO PIABA

resources of the river. And in turn, the residents protect the forest ecosystem as if their lives depend on it... because they do!

In this case, the aquarium fishery provides many services: it is a source of sustainable livelihoods; alleviates poverty is a documented driver of environmental protection. The fishery helps preserve the forest, which in turn maintains incalculable quantities of carbon sequestered in the trees and provides atmospheric scrubbing processes. Not bad outcomes for the otherwise humble (and frequently maligned) global aquarium trade.

It wasn't long before Ornamental Fish International took interest in Project Piaba. If you review issues of the OFI Journal, going back 20 years you will find articles publishing those early days of discovery and the growing relationship between OFI and Project Piaba. We have been greatly honored by OFI and its members by Dr. Chao's award as the "OFI Person of the Year". In years when the budget allowed, OFI granted much needed funds for field research. These funds were modest, but they were used frugally and enabled much of the work that led to the capture of data on key aspects of the Rio Negro fishery. Perhaps an even more important outcome of this support was a tangible example of the industry's commitment to research and conservation. Through this partnership, the trade went beyond rhetorical support for sustainability; OFI "put its money where its mouth is" and was one of the first entities to financially support scientific research on environmental and socioeconomic impacts of the trade. Bravo OFI!



Group shot of the very first Project Piaba in 1991.

It was 25 years ago now that I first contacted Dr. Chao and proposed a program for fish enthusiasts to join him in the field, where so many of our most prized aquarium fish originate. The group of "Gringos" would cover the expenses for the charter of a boat and the costs for the professor and a handful of his students to get into the field to conduct their studies. The first hobbyist-sponsored expedition took place in the fall of 1991. The mutual benefit for the fish lovers to have the opportunity to see fish in their habitats deep in the Amazon jungle, and for a researcher and his students to receive this type of enablement to get into the field turned out to be a successful and enduring program. Indeed, the expeditions have continued at least once a year for the past 25 years and provided the means for much of Project Piaba's development.

Many OFI members know that Dr. Chao retired a few years ago from his professorship at the Federal University of Amazonas. He is now enjoying his much-deserved streamlined life in Boston, sitting back while watching the seeds that he planted in the Amazon germinate from afar.

Upon Dr. Chao's retirement, I was extremely honored and proud to carry the torch, and take on the role of Executive Director and lead Project Piaba through the transition to the next generation. At that time there were many challenges to overcome, but the commitment to the initiative and the environment and fishing communities of the Rio Negro that had been made more than 20 years prior endured.

Timing for the change in leadership was fortuitous. The work of the first generation in the initial phase of the Project to fully document the critical importance of the aquarium trade was done. The case was well made and the example was used broadly to gain wide recognition in the mainstream scientific and conservation communities where, in the not too distant past, the aquarium industry was predominantly viewed as destructive, especially in cases of wild off-take fisheries. The mere acceptance of the documented benefits of the trade, and the new view of the industry not only not being unsustainable, but, in fact playing a critical role in the protection of fisheries and the environment did not mean the work was done.

New threats and vulnerabilities have arisen that could possibly result in the collapse of the Rio Negro aquarium fishery. If this occurs, the fishing communities that have been subsisting off the resource and stewarding the environment for generations would need to find new ways to support their families. Alternatives for forest residents are poor. In other regions of the Amazon, where the people are not connected to the environment the way that aquarium fishers are, they rely on timber harvest, mineral mining, cattle ranching, or urban living (often slums for people without access to education).

If pressure on the industry to source stock from only captive bred sources persists, this would be very bad news for the Barcelos fishery. If young people, "the millennials" do not find the fishkeeping hobby appealing, what future do we have? If emotion-based, non-scientific derived legislative policy (as is currently being considered in the EU) is embraced, the outcomes are likely to be disastrous on the people and the environment of the Rio Negro.

In part II of this article, we will introduce the next generation of Project Piaba and describe strategic adaptations that can be made to turn each of these concerns from a *threat*, to an *opportunity*. Indeed there is hope, and by harmonizing with OFI and its members, a new facet of the hobby can be fostered. By focusing on the beneficial outcomes of the trade, we will have new and powerful partners to address these issues and in the end, come out with an even more exciting hobby and robust industry. The next generation of Project Piaba has a plan; we need you to be part of it.



Dr. Chao and Scott Dowd (generation one, and generation II) deep in the jungle that they are working to preserve