

Sustainable, Community-based Aquarium Fisheries in the North Rupununi, Guyana

Iwokrama International Centre for Rain Forest
Conservation and Development



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Abstract

Iwokrama International Centre in partnership with the North Rupununi District Development Board has been working to develop a sustainable, community-based aquarium fisheries business in the North Rupununi, central Guyana. The project focuses on the sustainable use of aquarium fisheries as a non-timber forest product, and as a means of generating revenue for indigenous communities. Funded by the Netherlands Committee for IUCN Tropical Rainforest Program, the project will enable management protocols to ensure ecological and social sustainability. Iwokrama hopes to influence South America's aquarium trade by working to introduce a certified 'green equity' trade along the entirety of the supply chain; the result, regulating a presently unregulated trade.

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Background

The Iwokrama reserve within the broader Rupununi ecosystem was legally established in 1996 to demonstrate how conservation and development can be effectively integrated (See appendix for Iwokrama's mission statement). Iwokrama is committed to the development of alternative, sustainable livelihoods for the people of the North Rupununi, by collaborative partnerships between local communities and the private sector.

The NRDDDB is an indigenous community-based organisation, headed by village leaders and other community members from the North Rupununi District. It represents 14 communities within and surrounding the Iwokrama Rainforest Reserve. This initiative has played a major role in local conservation and development, and is an institutional model in Guyana's Poverty Reduction Strategy.

This project focuses on the sustainable use of aquarium fisheries as a non-timber forest product (NTFP), and as a means of generating revenue for indigenous communities. Using a sustainable approach, this project has begun to increase the income of community members whilst promoting the conservation of local fishery resources. Fish communities are highly sensitive to forest disturbance and therefore the trade also serves as a direct incentive for forest conservation.

The project was developed as an alternative to the overexploited Arapaima (*Arapaima gigas*) fishery, as well as unregulated timber harvesting. Over the last three decades, illegal harvesting of Arapaima for high profit sale, led to a huge reduction in its numbers. This in turn sparked collaborative efforts within communities to mitigate negative impacts on fisheries resources. Iwokrama acknowledged the troubles with Arapaima, and initiated the Arapaima management plan in 2002. This highlighted the need for another source of income from fisheries, and the Aquarium Trade in the Rupununi was born.

Plate 1: Navigating the Rupununi River



During 2000, an assessment of the trade in Guyana and the North Rupununi by the NRI (Natural Resources Institute), found considerable potential for an aquarium trade in the area (Watson 2000).

The Trade

The annual worldwide trade in aquarium fish is estimated at US\$186 million, with the main South American exporters based in Brazil and Peru. Guyana has a relatively small trade estimated at around US\$285,000 per year.

Plate 2: Searching for Catfish within the Rocks



The aquarium trade is limited by demand, not availability (Chao 2002), and in Guyana fisheries stocks are numerous; however, the aquarium trades full potential has not yet been realized. To add to this, exporters in Guyana have no choice but to deal in fishes which are not commonly exported elsewhere. This is predominantly because of the high taxes placed on live export by the Guyanese government and also by previously established large scale operations elsewhere.

Wild caught fish make-up less than 10% of the global market in tropical freshwater aquarium fish (Chao 2002). Despite this, there remains a demand for wild specimens; not only where certain species are difficult to spawn in captivity, but also to strengthen genetic diversity. This has been emphasized lately with the increasing use of genetically modified organisms, soon to be introduced widely into the international trade.

Location

The Rupununi savannahs in central Guyana cover approximately 8000 square kilometers of Guyana's South Western corner. Running the length of the savannahs is the Rupununi River. At approximately 150 miles long it is a substantial tributary to Guyana's largest river, The Essequibo. The area has a very high

Figure 1: Aquarium Fish Holding Station: North Rupununi, Guyana



diversity of fish; possibly one of the highest on the planet, for an area its size. Over 400 species have so far been identified, exceedingly high seeing as only a small portion of the river has been surveyed. This has led to estimates of up to 600 species for the area; exceedingly high compared with other South American Wetlands such as the Pantanal which contains 260 fish species (Waters & Seitz 2003), at approximately 15 times larger than the Rupununi Wetlands.

In recent years special interest has sparked in the Rupununi's fish diversity. In the 1950's, Lowe (McConnell)'s work highlighted "a very rich and complex fish fauna". Later in 2002 Armbruster and his team found a total of 308 fish species from 21 sites along the Rupununi and its drainages, stating that "Many of these species are new for Guyana." (Armbruster 2002).

The Project

Initial funding for the project came from the DFID Sustainable Human Development Support. This financed the development of the holding station, core equipment, and logistics for the first 2 shipments. Funding for further project development for the period 2003-2005 has been acquired from the Netherlands Committee for IUCN, Tropical Rainforest Programme.

The project concentrates mainly on Loricariid Catfish which are categorized as high value, low volume aquarium species. Presently five main species are targeted as they are found in great numbers in the Rupununi. These are Lemon Fin (*Hemiancistrus sp.*) (**Plate 3**), Red-Tailed Pleco (*Pseudocanthicus leopardus*) (**Plate 4**), Bushy Nose (*Ancistrus spp.*) (**Plate 5**), Cochliodon (*Cochliodon cochliodon*) and the White-Tail Pleco (*Hypostomus sp.*).

Plate 3: *Hemiancistrus sp.* (Lemon Fin): one of the projects most significant fish



Guyana's trade is limited by the large scale operations from other South American countries. This is partly because collectors have a near monopoly on some species, such as the Cardinal Tetra (*Paracheirodon axelrodi*) in Brazil, which makes up some 48 million fish a year from Project Piaba alone (Chao 2002). Although the Cardinal Tetra is not found in Guyana this

eliminates the demand for many other characids from South America. Characids enable large scale operations, spawning in huge numbers. Loricariids on the other hand are thought to reproduce at much slower rates during the rainy season, with much longer life cycles. This means that there is a strictly limited number of fish that can be harvested per season.

Plate 4: *Pseudacanthicus leopardus*
(Red-Tailed Pleco)



All harvesting is monitored using data sheets from which the data is entered into a database. This data is then used to calculate fluctuations in CPUE (Catch per Unit Effort). This creates spatial and temporal data of off-takes, used to estimate the impacts of harvesting on wild populations. This data will eventually be used to develop a management plan for aquarium

fisheries, which will eventually be incorporated into a general fisheries management plan for the area.

Marketing

The trade suffers from inequity across the chain of custody and remains largely unregulated. This is primarily because there are no official pricing standards and separate species are often grouped together under one name. Iwokrama hopes to develop an ecologically and socially sustainable harvest and export system that can serve as a model for wildlife management in Guyana. This will be done by initiating contractual agreements along the supply chain, with the added bonus of partly obliterating competitive exclusion. A consultant from the UK will meet with trading bodies to examine the potential for a 'green equity' trade. This has more recently been initiated in tropical timber, where any produce entering the EU and the USA must be certified along the entirety of the supply chain.

Future

The future of the project is very promising, and looks as though has large potential for further development. Presently a steady flow of profit from aquarium fisheries is expected to greatly contribute to development and alleviation of poverty in the area.

Plate 5: *Ancistrus* sp. (Bushy Nose)



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Appendix

Iwokrama's Mission Statement:

'To promote the conservation and the sustainable and equitable use of tropical rainforests in a manner that will lead to lasting ecological, economical, and social benefits to the people of Guyana and the world in general by undertaking research and training and the development and dissemination of relevant technologies.'

Photo Credits

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