

# ONE YEAR ON... COMMUNITY-BASED AQUARIUM FISHERIES, GUYANA

by

Bicknell, J., Patterson, M., Tiwari, T.

Continued from OFI Journal 44, 22-24

It is now one year later and the **El Dorado Aquarium Traders** move swiftly on. El Dorado Aquarium Traders is a local, community-run aquarium fish business in Guyana, South America. The group is now delivering fish to international markets through exporters in Guyana's capital, Georgetown, and is looking to develop and strengthen business partnerships to ensure its long-term sustainability. After 20 months operating under the auspices of the **Iwokrama International Centre** (Iwokrama), the North Rupununi District Development Board (NRDDB) and the Netherlands Committee for the IUCN (NC-IUCN), the Traders have begun shifting the project towards its new, business-oriented phase. The phase represents a transition from a donor-funded project to a self-sustaining community-based enterprise. Since the project began in early 2003, it has demonstrated that it is possible to generate income for local community members



from natural resources, with minimal environmental impact.

### Background

The Iwokrama International Centre ([www.iwokrama.org](http://www.iwokrama.org)) was established by Guyana and the Commonwealth to show how tropical forests can be conserved and sustainably managed, through a partnership of traditional knowledge, science and business. It builds

partnerships with local communities and the private sector to develop environmentally and socially responsible, sustainable forest products and services. Iwokrama initiated the aquarium business in the North Rupununi and worked to gain funding obtained from the NC-IUCN for the period 2003-2005. Iwokrama is committed to the development of sustainable livelihoods for the people of the North Rupununi through collaborative partnerships between local communities and the private sector.

The NRDDB is an indigenous community-run NGO, headed by community members mostly of the Makushi Amerindian tribe. It represents the 14 communities of the North Rupununi and acts as an administrative body and a voice for the people of the North Rupununi.

The project focuses on the sustainable utilisation of wild-caught aquarium fishes, harvested with minimal ecological and environmental impact. To achieve this, harvesting is monitored using the Catch Per Unit Effort (CPUE) method. Outputs of this monitoring are projected to show population fluctuations for individual species and across fish stocks. Harvesting intensity is slackened for any species showing negative population growth rates.

### Location

El Dorado Aquarium Traders is located in the Rupununi Wetlands in central Guyana. These extraordinary wetlands cover approximately 8,000 square kilometres and include the Rewa, Rupununi, Takatu and Essequibo Rivers and their tributaries. These large white and black water rivers seasonally flood the surrounding forest and savannah, forming an extensive feeding and breeding ground for fishes (Watkins et al, In Press). The area has an extremely high fish species richness, with 400 species already recorded. It is likely that this area represents the highest species richness for freshwater fish in the world for an area of its size. This elevated diversity may be due to the





Collecting ornamental fish, to be exported by Guyana Aquarium Traders.  
Photo: Iwakrama

fact that the area contains rivers from two very separate drainages. The Rupununi and the Takatu originate from separate ichthyofaunal regions (Gery, 1969), yet pass within approximately 30 miles of each other. The Rupununi River is part of the Guianan river systems, yet the Takatu is part of the Amazon system via the Rio Branco and Rio Negro. It is possible that the areas species composition represents a mixture of these two neotropical fish faunas (Watkins et al In Press).

### Species

The business focuses mainly on Loricariid catfish to enable low-volume harvesting of high value fishes. Presently, the project primarily targets three species: the Lemon Fin (*Hemiancistrus* spp.), the Bushy Nose (*Ancistrus* spp.) and the Red Tail Pleco (*Pseudacanthicus leopardus*). Other fish groups such as cichlids are also harvested but in smaller quantities. Fish are exported to Germany, the U.S. and the U.K. via Guyana Aquarium Traders.

### Achievements

Funding from the NC-IUCN enabled the set-up of harvesting facilities and equipment. Over the last year, the business has earned profits of over US\$1200, which is not only used for further project development, but also for the essential development of the poverty-stricken people of the North Rupununi.

Seven shipments were sent during the period May 2003 - April 2004 (one harvesting season), yielding a total revenue of US\$8,276. During this period, the project was able to initiate a working business as well as achieve financial sustainability earlier than originally projected.

CPUE calculations for this period have shown that harvesting has not yet exceeded maximum sustained yield and therefore no decreases in population growth rates



Bushy Nose (*Ancistrus* sp.)

Photo: Iwakrama



*Acarichthys heckeli*, a beautiful cichlid from Guyana.

Photo: Iwokrama

have occurred. This indicates that a slight increase in harvesting intensity would not reduce fish populations.

Situated on the north bank of the Rupununi River is the El Dorado Aquarium Traders holding station, approximately 6km from the Amerindian community of Annai. The facility contains workers' quarters, a kitchen, and an area to accommodate approximately 5000 fishes. Harvesting is done at various points along the river, where suitable micro-habitats for particular species occur. The original holding station was built in 2002 and improved in November 2004. The present building still represents a preliminary structure but is the first step towards the development of a more permanent structure.

#### Moving Forward

The transition to a community-based enterprise is a slow process requiring a fundamentally different approach to business management. Presently the major challenge for the El Dorado Aquarium Traders is to modify a funded community development project into a sustainable, community-based enterprise. In this context, the project has trained staff in business skills including financial management and administration. These capacity-building activities will be important in ensuring the efficient management of a business. The Traders are now finalising marketing studies through a UK-based consultant and are preparing a three-year business plan, concentrating on strategic alliances between exporters and importers in the USA and EU. At the end of April 2005, the NC-IUCN funding expires, and the three-year business plan will become active. This business plan will assist the operation of the project from then on, with the intention of attracting private sector partners willing to invest in this community venture.

The establishment of a community-based enterprise is vital to the continuation of the project. After the transition, four communities of the North Rupununi will manage the business under the guidance of the NRDDDB. Presently, the NRDDDB and Iwokrama fully administer the project and act as a channel for administration and business management. However, this responsibility will eventually shift to the harvesters with the appointment of a business manager. The cost of fish shipments is currently sustainable, yet the salary of the business manager is presently paid by NC-IUCN funding. For this reason a shift in business management and an overall expansion is required to cover all of the costs involved in running a sustainable, community enterprise.

In order to market ornamental fishes from Guyana and the Rupununi, close collaboration with exporters is required. The most viable option for improving links to markets currently lies with those markets that import directly from Guyana, and where fishes can be identified as exclusively Guyanese in origin. To deliver the fish to their ultimate market it is essential for the supply chain to be as short as possible. However, this is possible only in a limited number of markets where direct flights are available (U.S. and U.K.) or where shipments can be sent without transshipment via a third party (e.g. Germany via Miami). With the shortest supply chains, the price is reduced and the quality enhanced.

#### Reflections

This unique project represents a model to show how wild-caught ornamental fishes can be sustainably harvested with minimal environmental impact, whilst providing income for indigenous communities. The forthcoming change in business management will continue to show how communities can collaborate with the private sector to sustainably gain income from their natural surroundings. However, the presence of a scientific body such as Iwokrama is initially quite essential in ensuring appropriate methods in the consideration of the environment.

For further information please contact: Michael Patterson (mpatterson@iwokrama.org), or visit [www.iwokrama.org/business/aquariumfish.htm](http://www.iwokrama.org/business/aquariumfish.htm)

#### References

- Bicknell, J.** 2004. *Sustainable community-based aquarium fishes in the North Rupununi, Guyana*. OFI Journal. 44, 22-24.
- Gery, J.** 1969. *The Freshwater Fishes of South America*. 828-848. In Fittkau, E.J., Illies, J., Klinge, H., Schwabe, G.H., Sioli, H. (ed.) 1969. *Biogeography and Ecology in South America*. Dr. W. Junk N.V. Publishers, The Hague.
- Watkins, G.G., Saul, W., Holm, E., Watson, C., Arjoon, D., Bicknell, J. and North Rupununi District Development Board.** (In press). *The fish fauna of the Iwokrama Forest*. Proceedings of the Academy of Natural Sciences of Philadelphia. 154.
- Watson I.** December 2004. *Report to the Iwokrama International Centre on the Market for Ornamental Fishes from Guyana in the European Union and the United States*.

#### Acknowledgments

The authors would like to thank Dr. Graham Watkins and Timothy Silcott for their highly appreciated comments.