

---

# Participatory management of fisheries in the Brazilian Amazon

Mauro Luis Ruffino

**Principle:** Centralized management of widely spread Amazon fisheries is ineffective.

**Experience:** Project IARA increased local participation in management of middle Amazon fisheries.

**Most important lessons learned:** 1) Cross-sectoral management of floodplain habitat is vital for effective maintenance of both fisheries and biodiversity , 2) government and communities can cooperate at local level.

**Best practice:** Formalization of existing, community-developed “Fishing Agreements”.

South America is home to a great number of fish species, the total of which has yet to be established. The largest diversity has been found in the Amazon Basin, with more than 1,300 species so far described. The ecosystem that sustains Amazon fisheries has three components: the flood plains, the river channels and the estuary. Each one supports hundreds of fish species with diverse habitats, the destruction of which would result in loss of biodiversity. The most immediate concern for Amazonian commercial fish is the loss of floodplain (várzea) forest and herbaceous plants, which supply fruits, seeds, leaves, terrestrial arthropods and other food sources for fish. The trophic chain is extremely complex.

Impacts on Amazon habitat include deforestation, ranching, pollution, mining, urban and agricultural expansion, and hydroelectric development. Territorial extension, complexity of the environment and the diversity of economic activity also present enormous management challenges for the government. The current management system, which is centralized and non-participatory, has proved to be incapable of regulating the use of natural resources in the Amazon.

The fishery for human consumption is considered one of the most productive traditional activities in the Amazon and generates at least \$100 million US per year with no subsidy from either State or Federal Government. The fishery provides the principal source of protein for the Amazon population and supports several related industries. Exports of ornamental fish are also an important source of revenue for the region, and the sport fishery has great potential. Piramutaba (*Brachyplatystoma vaillantii*) has been the main fish, by weight, caught in the Amazon fishery since the 1970s. Other important species include tambaqui, surubim, mapara and pirarucu. Due to the fact that classical methods of stock assessment and catch estimation are difficult to apply in multi-species fisheries of this type, all of the above mentioned species except mapara appear to be over-fished. The species under threat grow to

relatively large sizes and have low growth rates, making them extremely sensitive to heavy exploitation.

Fisheries management in the Brazilian Amazon has until recently been conducted in the conventional centralized manner. The federal government instituted decrees, regulating fishing activities by classic methods such as closures during spawning migrations, limits on mesh size, minimum sizes and gear prohibitions. Such decrees were not always based on scientific evidence, and enforcement was not effective. Commercial fisheries were, therefore, largely developed in a regulatory vacuum, and conflicts between riverine communities and outside commercial fisherfolk proliferated in the last two decades. Many riverine communities began to implement their own management regulations, referred to as “fishing agreements”. These agreements were developed to protect the fishing rights of community members and were not linked to environmental considerations.

## The IARA Project

The IARA Project (Administration of the Middle Amazon Fisheries Resources) began in 1995 to develop strategies for environmental management that would guarantee sustainable exploitation of the fisheries resources. IARA used a participatory approach to integrate fisherfolk and riverine communities into the fisheries administration system and included the gathering of basic information on the fishery and the socio-economic situation of the riverine populations, and monitoring of fish landings at the major ports. It soon became obvious that the sustainable use of várzea resources could only be feasible by treating the ecosystem as a whole, and that management should include all the relevant sectoral administrations in a single system. The basic problems were insufficient socio-political organization of local rural and urban society and large gaps in social communication systems, which limited representation for those seeking sustainable natural resources management. Thus, most action in the project was directed toward institutional strengthening and encouraging a communication network. Participation of users in the management process was recognized as fundamental to its success. The project initiated a program to train community leaders as stimulators, motivators, coordinators and representatives with links to the management process and in the organization and maintenance of community groups. A comprehensive discussion process also began with all sectors involved in the fisheries, which resulted in a series of municipal fisheries forums.

Monitoring showed a progressive maturing of attitudes amongst those involved in the “fishing agreements”, and as a result these agreements began to be formalized by government decrees. Nevertheless, enforcement remained a key element in the implementation of “fishing agreements”. Therefore, as part of the process of co-management, the community’s participation in the enforcement process was formalized by creating “environmental agents.” The success achieved by these voluntary agents has created a huge demand for their use from communities in other regions.

The IARA project, funded under international technical cooperation terms, was completed at the end of 1998. A new project, the Floodplain Natural Resources Management Project (ProVárzea) was initiated in July 2000 to establish scientific, technical and policy basis for the environmentally and socially sustainable conservation of natural resources of the Várzea

floodplains of the central Amazon Basin region, with emphasis on fisheries resources. ProVárzea was designed to consolidate, replicate and expand IARA's experiences over the full length of the Amazon/Solimões, with increased political and social emphasis and to adapt it to regional needs.

## Products of IARA

Some measures adopted by the government and the communities are unintentionally incorporating biodiversity conservation strategies, whether through regulation of the fisheries or conservation of habitats.

IARA carried out various studies, which led to a revision of existing regulations. As far as the fishing accords are concerned, IARA reviewed the management practices of the "fishing agreements" already in place in riverine communities and adapted them for use by the government as a viable form of fisheries regulation.

Field experiences have demonstrated the importance of decentralized, participatory management. However, discussions have tended to concentrate on communities, ignoring large landowners and companies. In some regions, many of the water bodies covered by fishing agreements are situated in large privately owned properties.

Based on the experiences of the project IARA, a new type of democratic and decentralized regulatory system has been introduced by the Brazilian Institute for Environment and Natural Resources (IBAMA). Decree 07/96 delegated responsibilities for regulating the fishery, through coordinated season and area closures, to State representatives of IBAMA. Decree 08/96 set out regulations concerning fishing gears and methods, and set minimum sizes for four species throughout the Amazon basin, correcting various problems. IBAMA also published "Participatory Management, a Challenge for Environmental Management" which outlined strategic directives for the fisheries and established management criteria to regularize the informal practices used for many years by riverine community "fishing agreements". In addition, a decentralized surveillance system was set up with the participation of the voluntary environmental agents.

Since 1996, based on the results of biological studies and conventional single-stock assessment, the legislation regulating fisheries has begun to be simplified and systematized, correcting inconsistencies and eliminating unnecessary measures.

