

ECONOMIC  
VALUE 



INDIGENOUS TERRITORIAL MANAGEMENT



T A C A N A INDIGENOUS PEOPLE

# THE ECONOMIC VALUE OF FISHING



# Self-monitoring of fisheries and environmental sustainability indicators

The Tacana communities have preserved their fishing methods, including the use of the bow and arrow or the hook and trap, which are still used along with other methods such as nets and line fishing. The Tacana experience and affinity with their natural environment has enabled the development of knowledge of the natural history of fish species, their reproductive behavior, and migration seasons.

In 2001 the Tacana Indigenous People's Council (CIPTA), with the technical support of the WCS and the National Natural History Museum (La Paz), started an initiative to analyze the state of fishing resources in the Tacana indigenous territory (TCO Tacana I) and evaluate the abundance of harvested fish species. The communities started a fishing registration system for each fisherman, using forms to obtain information that would subsequently guide fishing management. This activity was considered a priority to guide natural resource management decisions, as part of the Tacana communities' sustainable development strategy.

Over a period of six years, 2001 to 2007, the fishermen of the Cachichira, San Antonio del Tequeje, San Miguel, Carmen del Emero, Copacabana, and Altamarani communities carried out fishing self-monitoring activities through the registration of information about fishing sites, fish numbers, capture size, seasons, areas of reproduction -as well as fishing volumes, methods, and the economic benefits for the communities. This information was incorporated into a database with information on the biology and ecology of the species.

It was found that the communities harvest around 54 fish species at 44 locations in the lower river basin of the Beni River. The species with most individuals captured were the granulated catfish (*Pterodoras granulosus*), the sorubim catfish (*Pseudoplatystoma* spp.), the pacú (*Piaractus brachypomus*), the sábalo (*Prochilodus nigricans*) and the gilded catfish (*Zungaro zungaro*), which are also the largest fish and thus the most consumed and commercialized.

The analysis of the self-monitoring results has shown that fishing is environmentally sustainable. The constant capture rates (fishing volume and number of fishermen) are an indicator of the abundance of fish. Another indicator is the size of the fish, which in general were found to be of constant size over the sampling period. The analysis carried out in the San Antonio del Tequeje community shows that fishing remains relatively stable, with an average of 1.78 species caught each fishing trip. Fishing continues to be focused on larger species and quantity by weight, although between 2001 and 2007 there was a slight non-significant tendency for decline in capture effort.

## Some fish identified in monitoring



Tachacá (*Pterodoras granulosus*)



Pintado (*Pseudoplatystoma* spp.)



Pacú (*Piaractus brachypomus*)



Sábalo (*Prochilodus nigricans*)



Bagre (*Zungaro zungaro*)

Illustrations authorized by J. Myrria and K. Mokros (2006)

Pamela Carvajal/WCS



Andrés Ramírez/WCS



Eleanor Briggs/WCS





WCS

## The economic value of fishing in the Tacana indigenous territory

Fishing is an important source of protein in the diet of the Tacana communities of the Beni River. The economic value of fish and their contribution to food security were calculated using the fishing data collected in six communities – Cachichira, San Antonio del Tequeje, San Miguel, Carmen del Emero, Copacabana and Altamarani – over the period 2001 to 2007. The economic importance of fishing was calculated based on fishing records and the current prices per kilogram of fish in the Rurrenabaque market, where an important part of the Tacana indigenous territory fishing production is commercialized.

Over six years it is estimated that the participating fishermen caught 42.5 tons of fish. Of the 43 species harvested the principal fish species were the granulated catfish (*Pterodoras granulosus*), the sorubim catfish (*Pseudoplatystoma* spp.), the pacú (*Piaractus brachipomus*), the sábalo (*Prochilodus nigricans*) and the gilded catfish (*Zungaro zungaro*). Each of the communities caught a monthly average of 240 kg, of which part was destined to be commercialized (65%) and the other part for family consumption (35%).

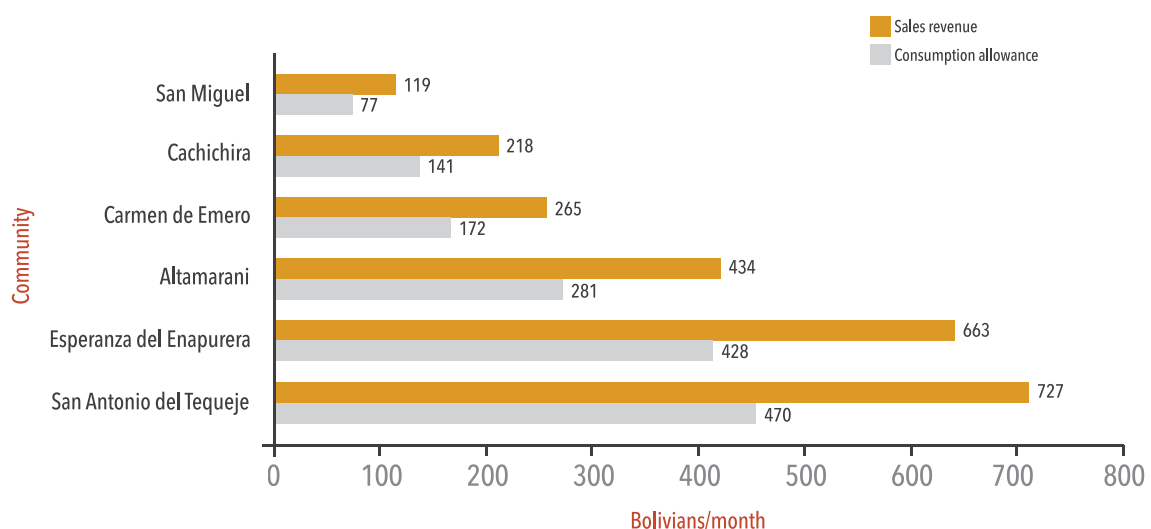
The economic value of fishing was derived from the monetary income resulting from the direct sale of fish and the contribution of fish to household food (expressed in monetary terms). Each family caught about 25 kg of fish per month. Of this amount, 16 kg were traded in the

Tacana communities and other local markets, representing an average monthly income of US\$58. Fish consumed by families represented an average subsidy of US\$38. Adding the income generated from the direct sale of fish and the subsidy from the consumption of fish, the economic value of fishing amounted to more than US\$95.7 per month. In some communities, such as San Antonio del Tequeje, the income and subsidy total reached almost US\$172, equivalent to 65% of the 2016 national minimum wage in Bolivia.

This data shows that fishing is an economically sustainable activity, and as such is essential for the development of the Tacana communities. It also demonstrates the contribution of fishing to the food security of Tacana families, and consequently to the integral management of their territory.

Information on the reproductive sites and seasons, sexually mature fish size, and fishing volumes have been used to confirm that fishing in the Tacana territory is sustainable. However, to ensure the long-term management of fishing resources, the communities have defined some resource management strategies such as the control of water bodies, the protection of reproduction sites, and closed seasons.

### Monthly income from fishing sales and subsidies in Tacana communities





# FISHING

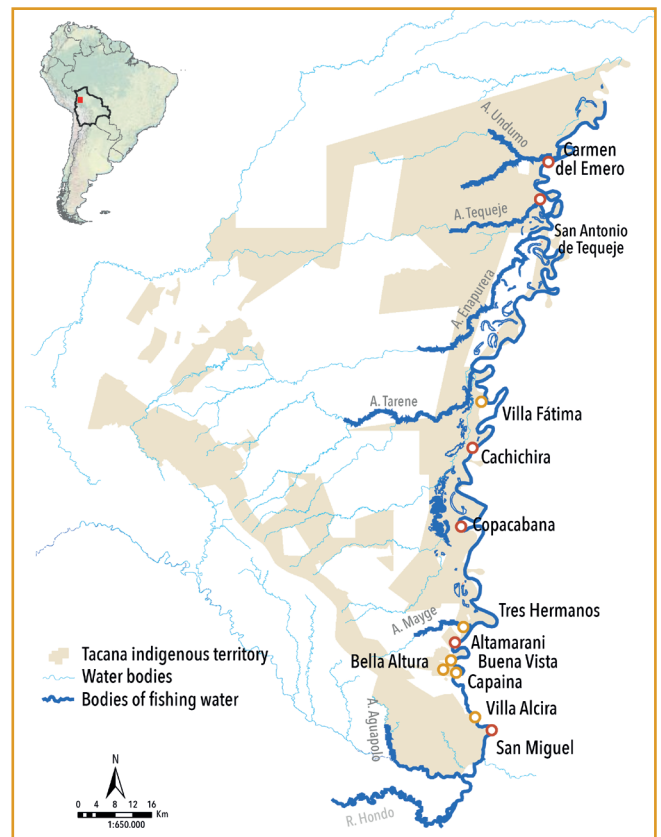
The Tacana people, along with many other Amazonia communities, have a long tradition of fishing a diversity of species. Subsistence fishing and hunting are an integral part of their indigenous identity. Fishing is one of the pillars of the Tacana people's cultural and economic life, as well as being an environmentally sustainable activity that contributes to local food security. Fishing generates a wealth of knowledge that is kept alive through species management.

**FISHING IS A STRATEGIC RESOURCE FOR THE TACANA COMMUNITIES THAT ARE RESPONSIBLE FOR ENSURING ITS SUSTAINABILITY**

## The importance of fishing for the Tacana People

- Harvest and management of 54 fish species, highlighting the diversity of fishing resources and abundance of water bodies within the indigenous territory.
- Preservation of ancestral knowledge of the natural history and management of local fish species in the Tacana territory.
- Important and traditional source of protein in the diet of local families.
- A pillar of the Tacana economy, especially for riverside communities where it provides an income that is the equivalent of 65% of the Bolivian monthly national minimum salary.
- An activity that over time has been shown to be environmentally, economically, and socially sustainable through the maintenance of healthy fish stocks, income and food security contributions.
- Evaluation of abundance and conservation of fish species through self-monitoring.
- Cultural preservation of traditional activities including fishing, along with hunting and the recollection and extraction of forest resources.

## Fishing areas of the Tacana indigenous territory



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