

# Wildlife conservation in the Amazon of Loreto, Peru



Dr Richard Bodmer

## Background

The forests of the Samiria and Yavari River basins in Peru are situated in the western Amazon basin and support some of the greatest mammalian, avian, floral and fish diversity on Earth. This ecosystem has been degraded in the past through overhunting, deforestation and overfishing, but local people are starting to take action in the Pacaya-Samiria National Reserve in the Samiria River basin, and the Lago Preto Conservation Concession (LPCC) in Yavari River basin. The Pacaya-Samiria is a 20,000 km<sup>2</sup> National Reserve and Lago Preto is a

10,000 ha conservation concession (figure 1). These areas are examples of how things are changing - how conservation can work in collaboration with local people, governments and NGOs.

Successful implementation of conservation programs will require fair consideration of the needs of both indigenous people and wildlife for the remaining forest in the Amazon to be sustainably managed. The current project is helping to conserve the biodiversity of the Amazon, but also working with local people to collectively better manage the rich resources from this region.

It is also monitoring key wildlife species in the two areas of LPCC and the Samiria River basin, to evaluate the conservation success of public-private partnerships and collaborations with local people. Flagship species for the area include the red uakari monkey (*Cacajao calvus*), which is locally abundant at LPCC but globally classified as Vulnerable (IUCN Red List), giant river otter (*Pteronura brasiliensis*), which is Endangered (IUCN Red List), and black caiman (*Melanosuchus niger*) Low Risk/ Conservation Dependent (IUCN Red List). Each of these species is studied as an indicator of species recovery. Other key indicator species being studied are macaws, which reflect the general health

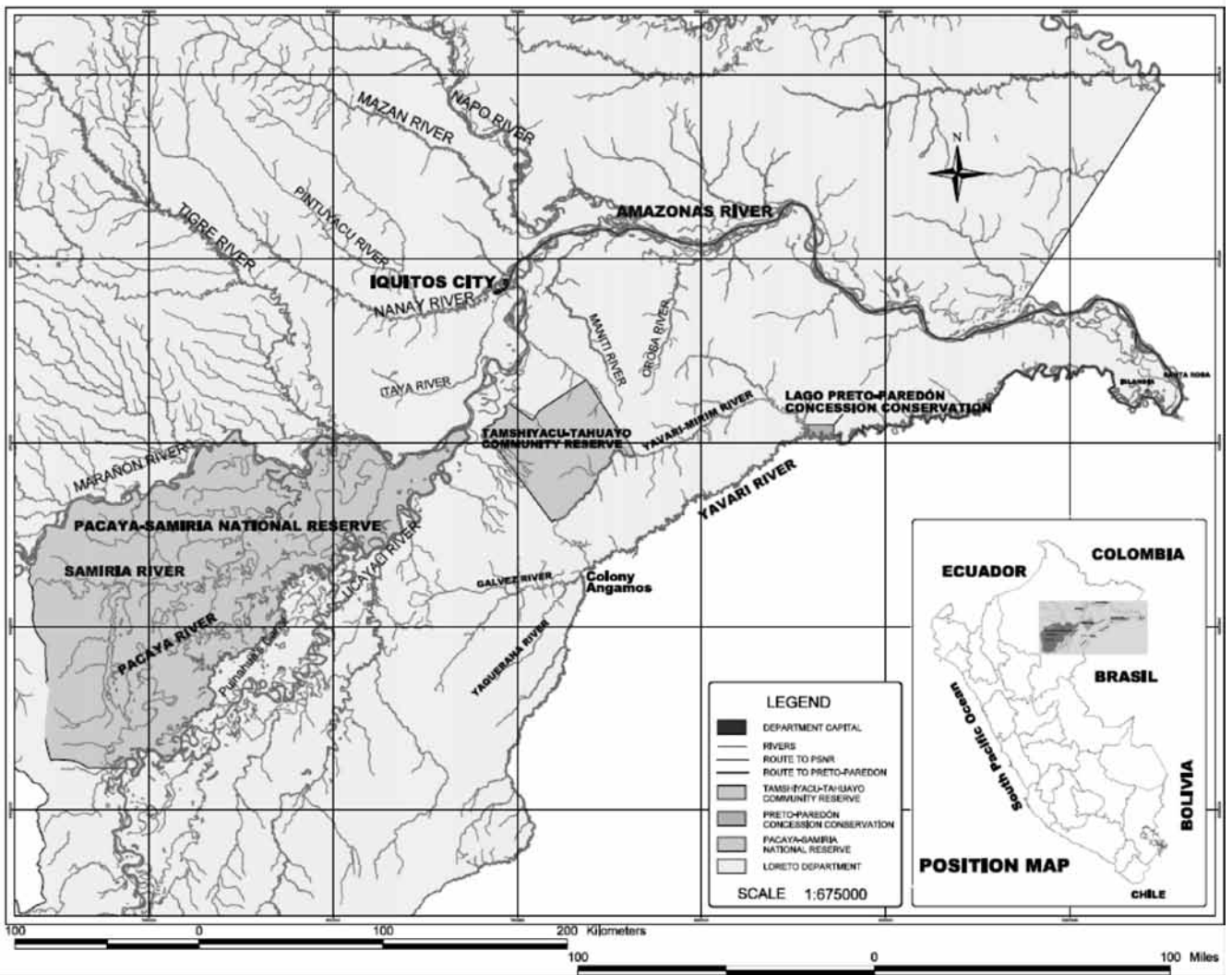


Figure 1. The rainforests of Loreto, Peru, situated in the western Amazon basin.



of the forest ecosystem, and pink and grey river dolphins (*Inia geoffrensis* and *Sotalia fluviatilis*), which are indicators of aquatic ecosystem health and protected area success.

## Project overview

The long-term vision for the Samiria and Yavari landscape is to use a combination of community-based activities and protected areas to ensure viable populations of the diverse wildlife but also viable and desirable livelihoods for the indigenous people living there.

The set of key wildlife species being used to evaluate conservation success includes all the major taxa of large-bodied animals. Ungulates, large-bodied primates, large cats, river turtle, game birds and fish are being studied. The red uakari population has been chosen to evaluate the success of LPCC. Fish populations are being evaluated to enhance sustainability of fisheries, and “game” animals are being surveyed to determine the impact of bush meat hunting. Results are helping determine whether public-private conservation plans are viable strategies that can increase the diversity in protected area river systems.

Dr Richard Bodmer has been working with Earthwatch since 2006. Under his direction, research teams live aboard the *Ayapua*, a refurbished vintage

boat from the Amazon’s rubber boom, for the duration of each of the two-week expeditions where they collect information to support the project.

Volunteers are given a range of research tasks and responsibilities. These include carrying out censuses along transects for terrestrial mammals and game birds, point counts for macaws, and the setting and checking of camera traps to record large mammals, particularly carnivores. Aquatic transects have been developed to survey for caiman and dolphin. Fish are netted, identified, measured and weighed, in order to assess their populations in the lakes and rivers. Volunteers also assist with a turtle conservation program.

Increasing knowledge on status, threats and effectiveness of management interventions for protected areas is part of Earthwatch’s Ecosystem Services Research Area.

## Outcomes and actions

Adaptive management activities at both sites in the Samiria and Yavari River basins, are being incorporated as a result of the insights gained through Earthwatch research. In 2008, a review of change occurring over the previous three years found significant improvements at both sites for the wildlife, environment, and local people. Populations of key wildlife species have increased at both sites. In Pacaya-Samiria, woolly monkeys, black caiman, manatees, and turtle populations have all increased. At LPCC, the red uakari monkey, giant river otter, and paiche fish have likewise shown significant increases in numbers. Dolphins, macaws, and terrestrial wildlife have increased in both river systems.

In the Pacaya-Samiria National Reserve, areas are now managed for low, moderate and high levels of hunting, which has caused better management of wildlife and reduced hunting for bush meat overall. At one low level hunting site, the study has found a substantial increase in sightings of one of the most important bush meat species, white-lipped peccary, from 2006-2008. Lowland tapir and coati populations had relatively small historic populations in the Samiria River basin due to overhunting

but are now increasing at those sites managed for low level hunting, especially during 2008. Conversely, game birds have not recovered to the same extent and are still at relatively low numbers. This demonstrates the positive impact that managing hunting activities can have, but that this effect is species specific.

Staff at the Pacaya-Samiria National Reserve also run a turtle conservation program, where eggs of yellow-spotted river turtle (*Podocnemis unifilis*) and giant South American turtle (*Podocnemis expansa*) are removed from natural nests and relocated to artificial nests where they hatch, before being released. Set up to overcome intensive poaching of turtle eggs, this conservation strategy has seen numbers recover in the Samiria River basin, with sightings substantially higher since 2006. Another success story is the giant otter, endemic to South America and hunted to near extinction for its pelt from the 1940s to 1970s, making long-term conservation efforts critical. Today, the population is showing a slow recovery in many areas of its former Amazon range, evidenced at both research sites where sightings have increased, particularly in 2008.

The pink and grey river dolphins have both varied in density in the Samiria River since 2004, but 2008 has shown an apparent influx, believed to be due to increased petroleum exploitation and fishing activities outside the Reserve. Greater resource extraction outside the Reserve and the existence of conservation management inside may have led to a comparatively healthier hydroscape within the Reserve that has attracted the dolphins to the area. Dolphin densities have also shown an upward trend at LPCC since 2005, correlated with an increase in the commercial fish population since a fisheries management plan was implemented.

Another outcome has been a clear reminder that conservation actions are more complex than originally thought, as success in conserving key species can have remarkable impacts on other species. For example, increases in black caiman result in decreases in common caiman; increases in red uakari monkey

result in decreases in woolly and howler monkey (figure 2); and increases in all primates result in decreases in macaws. These interactions need to be considered in protected area management, since it is now clear that not all species can be at maximum population size at the same time. While this is not a new concept for ecology, it has rarely been recognised when managing protected areas in the Amazon and other tropical forests.

Camera trapping has given insight into the abundance of certain species of conservation concern that are rarely recorded using transect methods, and in 2008 resulted in 57 photographs of 12 mammal and three bird species. Results constituted the first evidence of puma (*Puma concolor*), jaguar (*Panthera onca*), bush dog (*Speothos venaticus*) and short-eared dog (*Atelocynus microtis*) as sympatric species occurring together in LPCC, where their monitoring and ecological study is highly important. For management strategies, it is vital to account for the status of predators which rely on game that are under high hunting pressure from local communities. On the other hand, top predators such as the jaguar can be used as flagship species to attract funding for conservation.

A fundamental part of management has been community engagement and participation in decision making. Questionnaire studies conducted

in five communities compiled information relating to wildlife status and the implementation of wildlife management and guidelines produced for local communities. All respondents acknowledged that their community had established wildlife agreements, but not all were able to name aspects of the guidelines. Knowledge existed that species with low annual reproductive rate and population size are vulnerable to overhunting, and there was recognition that species such as the giant river otter and some primates were showing increased population size since not being hunted. The majority agreed that lists of species vulnerable or less vulnerable to overharvesting should be included in the wildlife agreements, as well as quotas for hunted species and designated hunting and non-hunting areas. As many as 80% agreed that habitat conservation should also be included, mentioning measures such as palm reforestation, a ban on felling trees and use of a climbing device to allow harvesting from trees without causing harm. Several suggestions to improve implementation of the guidelines were made, including requests for more information, and the majority predicted that wildlife would increase as a result of management. They expected to gain increased income from meat sales as result of wildlife management and wished to use this to buy food and clothes.

Earthwatch scientists will continue to work closely with Reserve administrations, local people, students and fellow researchers to advance the conservation of the Amazon forests, using Samiria and Yavari as case study sites.

## Lead scientist profile

**Dr Richard Bodmer** is a Reader in Conservation Ecology at the Durrell Institute of Conservation and Ecology (DICE), UK. He has a BSc in Ecology, Ethology and Evolution and an MSc in Biology, both from the University of Illinois, USA. He completed his PhD in Zoology at the University of Cambridge, UK, and has an Honorary Doctorate of Science from the National University of the Peruvian Amazon. He has worked in the Ituri forests of the Congo in Africa, the rainforests of central Borneo in Indonesia, and in many Neotropical regions. His long-term research has been on the ecology, population dynamics and conservation of Amazonian wildlife in Peru and Brazil.

## Additional key scientists

**Tula Fang** – DICE, UK

**Pablo Puertas** – WCS scientist and President of the Management Committee of Pacaya-Samiria National Reserve, Peru

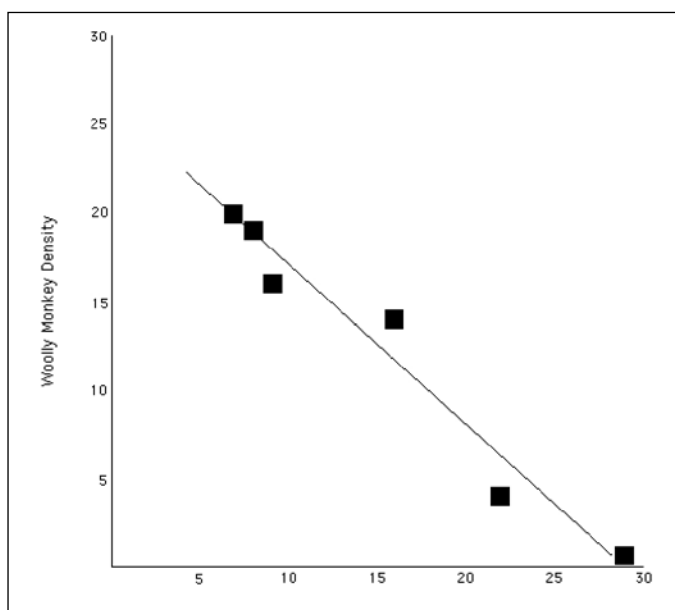


Figure 2. Negative correlation between woolly monkey and howler monkey in the Samiria River basin. In LPCC, the rate of increase of red uakari is close to maximum, which appears to have impacted other large bodied primates.

## Collaborative organisations

- Wildlife Conservation Society ,
- National University of the Peruvian Amazon
- World Wildlife Fund (WWF), USA
- University of Florida, USA

## Project website

[www.earthwatch.org/exped/bodmer\\_research.html](http://www.earthwatch.org/exped/bodmer_research.html)

## Key publications

Bodmer, R.E., Puertas, P. & Fang, T. (2008) Co-managing Wildlife in the Amazon and the Salvation of the Pacaya-Samiria National Reserve in Peru. In: Manfredo, M.J., Vaske, J.J., Brown, P.J., Decker, D.J. & Duke, E.A. (Eds.) *Wildlife and Society: The Science of Human*. Island Press, Washington, USA

Halme, K.J., and Bodmer, R.E.E. (2007) Correspondence between scientific and traditional ecological knowledge: rain forest classification by the non-indigenous ribero's in Peruvian Amazonia. *Biodiversity and Conservation*, **16**: 1785-1801