Overcoming Challenges Faced by the Giant River Otter of Amazonia

Abstract

The giant river otter, endemic to South America, is the largest species of otter in the world. The otter was hunted almost to extinction throughout the twentieth century and now is fighting to stay alive in the turbulent ecosystems of Amazonia. Deforestation and water pollution by humans have severely affected the species environment. In addition, local people often hunt and kill the otters for economic reasons or as a result of lack of education. Local people need to be educated and the waterways need to be kept clean if this endangered species is to survive. Since the hunting ban, in areas relatively untouched by human development, giant river otters have been able to mount a comeback and grow back towards the carrying capacity of their ecosystems.

Background

The giant river otters of the waterways of the Amazon have faced enormous challenges over the course of the last century. Not only has the species been severely overhunted but also their environments have been significantly damaged by human activity. As a result of the tremendous ecological strain on the species the International Union for Conservation of Nature has placed the giant river otter on the endangered list. The organization predicts a fifty percent population drop for the species in the next twenty years (Duplaix 2013).
The Giant River Otter is the largest species of otters in the world. Only found in the waterways of South America these creatures can grow over 6 feet (1.8m) long and weigh 75 pounds (34 kg). They have a short brown coat with white blotches on their neck and chest that often form a “bib.” They also have large webbed paws and a thick flattened tail for swimming (National Geographic 2013).

Photographer- Robert Chun

The Giant River Otter lives exclusively in the streams and rivers of the Amazon, Orinoco, and La Plata river systems. However while their range used to cover the whole of these river systems, the otters are now locally extinct in many locations. River otters live in slow-moving rivers and creeks within rainforests, swamps, and marshes. They prefer black water creeks with sandy or rocky bottoms. They thrive in these waterways with gently sloping banks and dense overhanging vegetation like oxbow lakes with high fish densities. Oxbow lakes are U-shaped
bodies of water formed when a wide meander from the main stem of a river is cut off to create a lake. Giant otters territorial needs vary depending on the season and the availability of food. Their primary area is usually concentrated to about one square kilometer but their home range can extend from five to twelve square kilometers (Duplaix 2013).

Photographer: Tom Troxel

The river otter's diet is primarily comprised of a variety of fish including members of the catfish, perch and characin families. They do supplement their diet with crustaceans, snakes, and other river animals when fish cannot be readily found. Each day they eat up to 6-9 pounds of food. River otters are very social diurnal animals and often hunt in their family groups. These groups are usually made up of a pair of monogamous parents and their offspring from the last several years. They
live in dens that they make under fallen logs or by digging into banks. Once established in an area, they will defend their territory aggressively. They mark their territory by spraying a musky smell at its boundaries to serve as a warning to potential intruders. These otters give birth to litters of one to six pups and can live up to 14 years. They have 9 unique vocalizations that have been identified by researchers as warning calls against predators or contact calls (Duplaix 2013).

Photographer- Tom Troxel

Giant River Otters have very few natural predators, however, jaguars and caiman occasionally prey upon their young. The otters are very impressive adversaries. A BBC documentary clip showcased river otters that perceived a threat to their young from a caiman. After trying to scare it away and failing, the otters launched an all out assault. The resulting hour-long battle resulted in death of the
adult caiman and no serious injuries to any of the otters (Greenwood 2013). The agility and ability to work together in large groups make them dangerous to every other marine animal in Amazonia. Giant river otters are usually killed for their skins or because they are competing for the same resources as local fisherman. Overfishing by humans can also result in a degradation of their prey base. Water pollution from agricultural and mining practices as well as the habitat loss that invariably accompanies it has taken a big toll on giant river otter populations. Mercury from gold mining in their range is particularly harmful to mammals. Some introduced diseases like canine parvovirus have also affected populations in the past (Duplaix 2013).

**Hypotheses**

Conservation efforts such as hunting bans have resulted in substantial localized increases in populations of Giant River Otters. On the other hand, negative interactions and competition for fish with fisherman contribute to Giant River Otter population decline. In addition, biomagnification of mercury in Amazonian ecosystems has affected the survivability of Giant River Otters.

**Findings**

Giant river otters were professionally hunted in South America from around 1920 up until 1973. Their skins were extremely valuable because of their size and quality. This high demand lead to systematic hunting that resulted in local extinction in many areas. Brazil, which contains most of the giant river otter’s range, exported over 40,663 skins (Best 1984) from 1960 to 1967. That is over 5,000 skins a year from a species that some experts estimate only has a few thousand individuals.
remaining in the wild. From 1946 to 1973 the Peruvian Amazon alone, which has a much smaller relative landmass, exported 23,980 giant river otter skins to Western countries. These are the only official reported figures, the actual numbers of otters killed is certainly much higher. The overhunting grew so bad that even professional hunters couldn’t find otters and the number of exported skins plummeted. In 1973 the Department of Agriculture of Peru banned the commercial hunting of all wildlife. This was combined with a strict control of trading skins and pelts with CITES, an international treaty regulating the trade in threatened species. The combination of the hunting ban, the fact that the population was already overhunted in conjunction with the lack of available western markets resulted in an effective halt in giant river otter hunting. Since 1973 there have only been isolated poaching incidents (Uscamaita 2009).

Carter and Rosas compiled a large volume of scientific works on modern populations of giant river otters to ascertain where the animals are currently thriving and where they have been driven to extinction or to unsustainably low populations. The paper is overridden by a powerful theme of detailing rivers where many otter skins were harvested in the 60s but currently have no evidence of giant river otter populations. While all of the rivers of Venezuela and Columbia were once abundant with the creatures there are only a handful of rivers left with otters including the Cano Macanillal, Manapiare, Esmeralda, and Parucito Rivers and the Yutaje and Cerro Yavi areas (Carter and Rosas 1997).

The otters are believed to have been hunted to local extinction in southern Brazil, eastern Brazil, Argentina and Uruguay as well in many rivers throughout the
rest of their former territory. It is very expensive to operate giant river otter
population censuses in very remote regions of South America. As a result a general
knowledge of how many animals remain is relatively unknown. Instead researchers
have focused their efforts on researching small segments of rivers in hopes of
capturing the changes affecting otters all over the Amazon. While official statistics
say that only a few thousand otters remain some researchers estimate that 2 or 3
times that amount might in fact be spread over the vast river system of South
America (Carter and Rosas 1997).

![River Otter in the Amazon](https://via.placeholder.com/150)

**Photographer - Robert Chun**

Fortunately there are some examples of river systems with thriving otter
populations. Emanuela Evangelista and Fernando C.W. Rosas performed a
population study in the Xixuaú Reserve deep in the Brazilian Amazon. All together
they found 80 animals in 15 familial groups. Each group had between 4.6 and 9.7 km of waterfront and on average there was 0.5 km of river per animal. They recorded 26 giant river otter sites in this reserve during the flooded season, either dens or campsites. This study reflected a healthy population of giant river otters in an untouched portion of the Amazon (Evangelista 2011).

Suriname, Guyana and French Guiana are regarded by biologists as the last major giant river otter strongholds in the world. The animals are considered common on most of the forested rivers of the nations (Carter and Rosas 1997). While there is no national census of total populations, Zelda van der Waal compiled a collection of encounters with giant river otters in the country of Guyana as shown in the map on the right. Her findings showed that the animals were present throughout the country in force. Many of the dots in the map represent clusters of 20 to 30 otters. (van der Waal 2012).

In 2004, two researchers Maribel Recharte Uscamaita and Richard Bodmer, conducted a population census of giant river otters on the middle section of the the Yavari-Mirin River and near the mouth of the Yavari-Mirin and on the Yavari River in Loreto, Peru. When animal populations are reduced to low densities because of
overhunting it takes many years for the population to recover back to the carry capacity.

These researchers relied on data from various researchers since 1993 on river otters in the area to compare their population data. Since 1993 there has been a tremendous growth in the number of otters in the researched region. The observed population has risen from zero individuals observed in 1993 to up to 41 individuals in 2004. By examining this data of population growth and comparing it to the land and resources available to the river otters, Bodmer and Uscamaita estimated that the otters would reach carrying capacity in the region in 2023 at a population of around 142 individuals. It will have taken this localized population 50 years to bounce back to a normal population size since the hunting ban became effective. Because river otter populations tend to be so small, the loss of just a couple individuals to poaching can have disastrous repercussions for small communities (Uscamaita 2009).

The giant river otter is not currently actively hunted extensively because there is no market for the skins, they are hard to find, and the uses for the animal are limited. In the previous population study of giant river otters in the Yavari region, the researchers conducted interviews of local people on their attitudes and actions towards the giant river otters. Some of the interviewees said that they do not hunt otters because there is no economic reason for hunting them and that they would rather use their precious gun cartridges on animals they can actually sell. Half of the interviewees said that parts of the giant river otter make good ornaments. One said he sold a skin to a passing trader. A young hunter even said that he
shot an otter because he had never seen one before. Some seem to think that river otters make good pets however anecdotal evidence suggests that most escape or become violent with their captors (Uscamaita 2009).

The IUCN Otter Specialist Group went to the Eastern Brazilian Amazon and conducted extensive interviews of local fisherman and hunters to ascertain local perspectives on the giant otters. In the surveyed communities there was a strong negative attitude towards giant river otters punctuated by recent reports of giant otter killings. Understanding the attitude towards giant otters requires understanding the socio-economics of the region. Most of the villages in the area are dependant upon fish for sustenance or for income. Otters are often perceived as a threat to fish populations because of their need for large amounts of fish. The otters can also disrupt fishing by ripping up fishing nets. They were listed by a significant amount of respondents as damaging monthly fishing activities. Twelve percent of respondents admitted to having killed river otters in recent years because of their disruptive behavior. Interestingly enough, interviewees who were more educated were less likely to think negatively of the river otter. The Otter Specialist Group also found in their research that because the species is long lived and has a complex social structure that killing even one river otter can have a serious effect on the long term viability of localized populations (Michalski 2012).

The relationship between giant river otters and human fisherman was closely examined in the Uacari Sustainable Development Reserve in Brazil. Giant river otter fecal samples were tested to assess which fish they were eating; regional human diets were researched through extensive surveys. The overlap between the
diet of the two groups over the course of a year was fairly low at 37%. However, during the periods of flooding both groups tend to become more general in their fishing and the overlap spikes to 60% as both parties eat anything they can catch. The researchers discovered that humans in the Uacari consume approximately 377 kg of fish daily while the otters in the area consume 192 kg. As the otters constitute almost a third of daily fish consumption in the region overfishing by humans could definitely have dramatic consequences for the otter population. Unlike other freshwater predators such as caiman and dolphins the otters eat their prey on the surface of the water. This contributes psychologically to fisherman’s dislike for otters when fishing is bad. In addition, when otters are approached by boats they often act very noisy and social in their natural territorial mindset. Their behavior is often construed by fisherman to be aggressive and this contributes to the negative perception fisherman have of the species. The researchers in the Uacari set out some helpful guidelines to limit negative interaction between fishermen and the otters. These guidelines included not setting gillnets unattended during the otters hours of peak activity, and prohibiting the blocking of entrances to streams and creek or well established routes of river otter activity (Rosas-Ribeiro 2012).

While giant river otters are sometimes in direct competition with humans for resources they are often also affected by indirect means such as chemical runoff. Researchers went into the Tambopata region and measured the mercury content of 13 different species of fish in the Tambopata river and Tres Chimbadas, an oxbow lake very close to the Posada Amazonas lodge. "Mercury is a pollutant that can cause developmental and behavioral abnormalities including impaired reproduction and
decreased survival in vertebrates” (Roach 2012: 1). Methylmercury is the form biologists are most concerned with because it bioaccumulates and can reach harmful levels in fish tissues. The USEPA recommends that fish tissue contents should not exceed 0.3 mg MeHg/kg wet weight. The Tambopata region is generally regarded as relatively safe from mercury poisoning because there are only small-scale miners in the area and there is a high turnover rate of sediment in the immediate region. Gold mining in the neighboring river valleys of the Inambari and Colorado have much larger scale gold mining and therefore a lot higher mercury content in the sediment. So any mercury pollution found in the Tambopata would most likely be much worse in those neighboring river valleys (Roach 2012).

Mercury levels in species of fish in the Tambopata ranged from 0.042 mg/kg ww to 0.463 mg/kg ww in the main river to 0.09 mg/kg ww to 1.282 mg/kg ww in Tres Chimbadas. The mercury concentration in the oxbow lake was less than the main channel because it is only indirectly connected to the main body of water through a stream and no mining can take place within the lake because it is protected. Most of the mercury content of fish in the lake is thought to be from migration. 7 of the 13 fish species sampled in the Tambopata study had average mercury levels above the accepted level for human consumption (Roach 2012).

All mammalian species handle mercury similarly. The researchers in the this study suggest that giant river otters would be at significantly more risk because fish is over 95% of their normal diet and they eat 10% of their body weight of it every day. Over years this would result in a lot of mercury accumulating in their bodies. Just like with tuna, mercury accumulates into higher concentrations at the top of the
food chain because those animals have ingested the most of the substance. The levels of mercury in the giant river otters might not be so high as to cause mortality, however, they could have other severe consequences. A species trying to recover from almost being hunted to extinction might not be able to take the added pressure of decreased survival and higher reproductive failure that mercury brings.

Conclusion

Giant river otters are faced with many challenges to their survival as a species. The IUCN is so concerned about their future that they have designated giant otters as an endangered species. The otters face direct competition for fish resources from humans, threats from deforestation, hunting, and water pollution. Because of a combination of all of these causes giant otters have become locally
extinct in large parts of South America. However, with commercial hunting now banned and the people of the region becoming more educated some of the pressure is coming off the giant otters. While it is economically impossible to do a full population census of such a rare and remote species researchers have demonstrated the existence of pockets of growing or stable giant otter populations throughout Amazonia. However, giant river otters still face threats of unknown magnitude such as the constantly expanding presence of mining and accompanying mercury pollution. Strong conservation steps to prevent deforestation and mining need to be taken in order to protect the giant river otter’s territory otherwise this amazing species might not survive the next century. Equally as important is educating the local people of Amazonia as the IUCN Otter Specialist Group has tried to do. By becoming educated people are more likely to help in giant river otter conservation efforts.
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Works Cited


