



Park Profile – Peru Tambopata National Reserve and Bahuaja-Sonene National Park

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Location: Province of Tambopata, department of Madre de Dios; provinces of Sandia and Caraballa, department of Puno, in southeastern Peru

Year created: 1990

Area: 1,366,106.00 ha (National Park: 1,091,416 ha; National Reserve: 274,690.00 ha)

Eco-region: Southwestern Amazon tropical humid forest

Habitats: Tropical rainforest and tropical cloud forest foothills



Summary

Description

Tambopata National Reserve and Bahuaja-Sonene National Park border one another in the southern Peruvian Amazon region. The area contains high levels of biodiversity and beautiful natural landscapes. The two protected areas were initially declared as a reserved zone in the early 1990s. Subsequently, after a drawn-out consultation process and negotiations with stakeholders, two definitive areas were set aside as a national park and reserve.

Biodiversity

The Tambopata River watershed is one of the world's richest ecosystems in terms of biodiversity. The area features a major diversity of plant life, including forest species of economic importance such as cedar (*Cedrela odorata*) and mahogany (*Swietenia macrophylla*), and palm trees such as the pona (*Iriartea ventricosa*) and aguaje (*Mauritia flexuosa*), among others. The area is home to large numbers of giant river otters (*Pteronura brasiliensis*), an endangered species, as well as vulnerable species such as the anteater (*Myrmecophaga tridactyla*), the giant armadillo (*Priodontes maximus*), black spider monkey (*Ateles paniscus*), the jaguar (*Panthera onca*), pink river dolphin (*Ajaija ajaja*), the yellow-headed river turtle (*Podocnemis unifilis*) and the anaconda (*Eunectes murinus*).

Threats

ParksWatch – Peru classifies Tambopata National Reserve and Bahuaja-Sonene National Park as **vulnerable** due to a variety of threats. The most pressing problems are agriculture and land conversion, gold mining, illegal logging, excessive extraction of other natural resources (wild game, fish, fruit and palm fronds, among others), paving of the Cuzco-Puerto Maldonado road, and increased migration to the region.



Heath River

Description

Physical description

The protected area features eight life zones: subtropical humid forest, tropical humid forest, subtropical high-humidity forest, subtropical high-humidity foothills cloud forest, subtropical rainforest, tropical cloud forest foothills, subtropical lower foothills cloud forest and semi-flooded subtropical lower foothills cloud forest.¹

The main rivers that flow through the area are the Tambopata, Malinowski, la Torre, Tavera, Candamo and Guacamayo. The main rivers flowing around the area are the Heath, Inambari and Madre de Dios. A series of smaller rivers and gullies make up the rest of the area's watershed.

There are several ways to access these protected areas. One can fly to the southeastern jungle town of Puerto Maldonado, the capital of the department of Madre de Dios. By road, one can drive from the Andean city of Cuzco to the northern edge of the protected areas or from Puno to the southern border. River access is down the Madre de Dios and Tambopata Rivers in shallow-bottomed boats. From Bolivia, one can reach the area via the Madre de Dios and Heath Rivers.

Average annual temperature is 26° C, ranging from 10-38° C; with average annual rainfall of 1600-2400 mm.² Rainfall in the protected area is typical of most areas in the Peruvian Amazon.

The climate ranges from humid and warm (3000 mm and 25° C on average), sub-level humidity and semi-warm (1700 mm and 26° C on average), high-level humidity and semi-warm (4000 mm and 23° C).³

Biodiversity

Tambopata features a high diversity of habitats, and therefore an incredible number of species are represented.⁴ In the Andes there are high levels of endemism,⁵ and this is true in the protected area as well. The protected area is concentrates rich biodiversity for several groups of organisms.⁶ The protected area features common species and concentrates a rich biological diversity in several groups of organisms. The Tambopata River watershed is considered to be one of the world's richest ecosystems in terms of biodiversity. An indicator of this vast wealth is the fact that in an area of just 550 hectares, researchers have found 91 species of mammals, 570 birds, 127 reptiles and amphibians and 94 fish, among other surprising records.⁷

Flora

The Tambopata River in Madre de Dios near the Puno foothills is riddled with clumps of bamboo, the exclusive habitat of a variety of species of birds and mammals. The area features mature flooded forest and jungle typical of lower cloud forest. Flora in the national reserve is fairly typical of the southwest Amazon Basin.⁸ The Heath River and surrounding plains are a unique ecosystem in Peru. The pampas are pastures that are periodically flooded, and small groves of trees with varied plant life grow in isolated clumps on the plain.

The protected area is home to a wide diversity of plant life, including exploited forest species such as cedar (*Cedrela odorata*), mahogany (*Swietenia macrophylla*), tornillo (*Cedrelinga sp.*), Brazil nut (*Bertholetia excelsa*), palm trees such as the pona (*Iriartea ventricosa*), aguaje (*Mauritia flexuosa*), huasaí (*Euterpe sp.*) and ungurahui (*Jessenia bataua*).

Fauna

Researchers have discovered in the protected area large numbers of species that are now rarely found elsewhere in the Amazon jungle due to poaching, particularly tapirs and spider monkeys, but also jaguars, white-lipped peccary, medium-sized and large monkeys and caiman. The rivers teem with giant river otters and beavers.

Within the reserve, the lower elevation zone is dominated mostly by Amazonian bird species, the ones that are at or near their upper elevation limits, and by species that are restricted (or partially restricted) to the narrow band of rain forest found on the lower slopes of the Andes. Because of the growing deforestation rate along this latitudinal border in other parts of the Andes, this ecosystem is one of these most threatened in all of South America. A relatively large portion of this ecosystem is found within the Bahuaja-Sonene National Park.

In a 5,000-hectare area where La Torre River feeds into Tambopata, almost 575 bird species have been registered. In addition, this same area contains approximately 1200 butterfly species, making its conservation extremely important (CI Peru).⁹

The Heath plains and environs have yielded 74 species including marsh deer (*Blastocerus dichotomus*), maned wolf (*Chrysocyon brachyurus*), giant anteater (*Myrmecophaga tridactyla*),

short-haired highland dog (*Atelocynus microtis*), 28 species of amphibians and 17 species of reptiles.¹⁰

According to the Red Book on Wildlife in Peru by Víctor Pulido, the protected area features various species with differing conservation status. There are species on the verge of extinction such as the beaver (*Lutra longicaudis*) and giant river otter (*Pteronura brasiliensis*); vulnerable species such as the anteater (*Myrmecophaga tridactyla*), giant armadillo (*Priodontes maximus*), howler monkey (*Alouatta seniculus*), black spider monkey (*Ateles paniscus*), white squirrel monkey (*Cebus albifrons*), black squirrel monkey (*Cebus apella*), choro monkey (*Lagothrix lagothricha*), jaguar (*Panthera onca*), pink river dolphin (*Ajajaja ajaja*), paujil (*Crax globulosa*), South American river turtle (*Podocnemis expansa*), yellow-headed river turtle (*Podocnemis unifilis*), anaconda (*Eunectes murinus*); and rare species such as the hairy armadillo (*Dasypus pilosus*), Goeldi's marmoset (*Callimico goeldii*), highland dog (*Speothos venaticus*), pacarana (*Dinomys branickii*), harpy eagle (*Harpia harpyja*); and species in a status yet to be determined such as the musmuqui (*Aotus miconax*), shot-eared dog (*Atelocynus microtis*), tropical weasel (*Mustela africana*), ocelot (*Leopardus pardalis*), margay (*Leopardus wiedii*), jaguarundi (*Herpailurus yagouaroundi*), ash deer (*Mazama gouazoubira*), macaws and parrots *Ara ararauna*, *Ara militaris militaris*, *Ara macao*, *Ara chloroptera*, *Ara severa castaneifrons*, *Ara couloni*, red-footed tortoise (*Geochelone carbonaria*), white cayman (*Caiman sclerops*), and rainbow boa (*Epicrates cenchria*).

Management

Administration

Peru's natural protected areas are monitored by the General Department of Natural Protected Areas, with administration provided by the National Institute of Natural Resources INRENA, an entity which is part of the Agriculture Ministry. The current administration is governed by Law N° 26834, the Law of Natural Protected Areas promulgated 30/06/97 and Supreme Decree N° 038-2001-AG.

Tambopata National Reserve and Bahuaja-Sonene National Park were created out of the same protected area, Tambopata-Candamo Reserved Zone. Despite the fact the areas feature different categories of protection and management, the reserve and the park share a single administration, which includes 13 park wardens (11 in Madre de Dios and two in Puno), one administrative employee, a manager and four professionals providing support (three in Madre de Dios and one in Puno). The master plan for the protected area is currently being prepared.

The area is protected by five control posts: 1) At the entrance to Lake Sandoval on the Madre de Dios River; 2) the Huisene post on the Madre de Dios River where the Palma Real River flows into the Madre de Dios; 3) the Torre post, on the Tambopata River where it merges with the La Torre River on the border of the national reserve near the community of Infierno; 4) The Malinowski post, on the Tambopata River where it merges with the Malinowski River, near the border of the national park; 5) the San Antonio post on the Heath River. In the department of Puno, in the area of San Juan del Oro, an office functions in the town of Putina Punco, staffed by a professional and two park wardens.

Budget

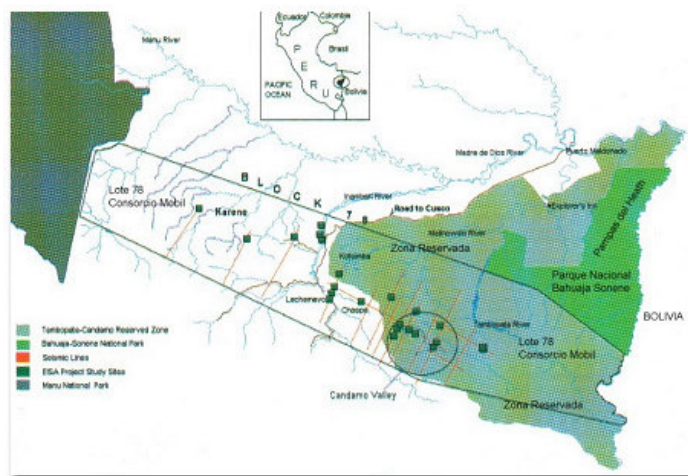
The total annual budget is 140,000 nuevos soles (approximately US\$38,000) allocated to covering operating expenses, and which is financed by the park's own cashflow, largely from entrance fees paid by tourists entering the protected area. Salaries are covered by national funding. WWF Peru helps cover the salaries of three professionals and a park warden. There are also budgets from international funding: US\$30,000 from Dutch cooperation and US\$8,000 from Biofor to prepare a Master Plan. In the medium term there will be funding available from Phase II of the Global Environmental Facility's (GEF) project for the protected area.

History and Borders

In January 1990, the Peruvian government established the Tambopata-Candamo Reserved Zone through Ministerial Ruling No. 032-90-AG-DGFF covering an area of 1,478,942.45 ha. The initial boundaries of Tambopata-Candamo Reserved Zone were used to create the Bahuaja-Sonene National Park and later the Tambopata National Reserve.

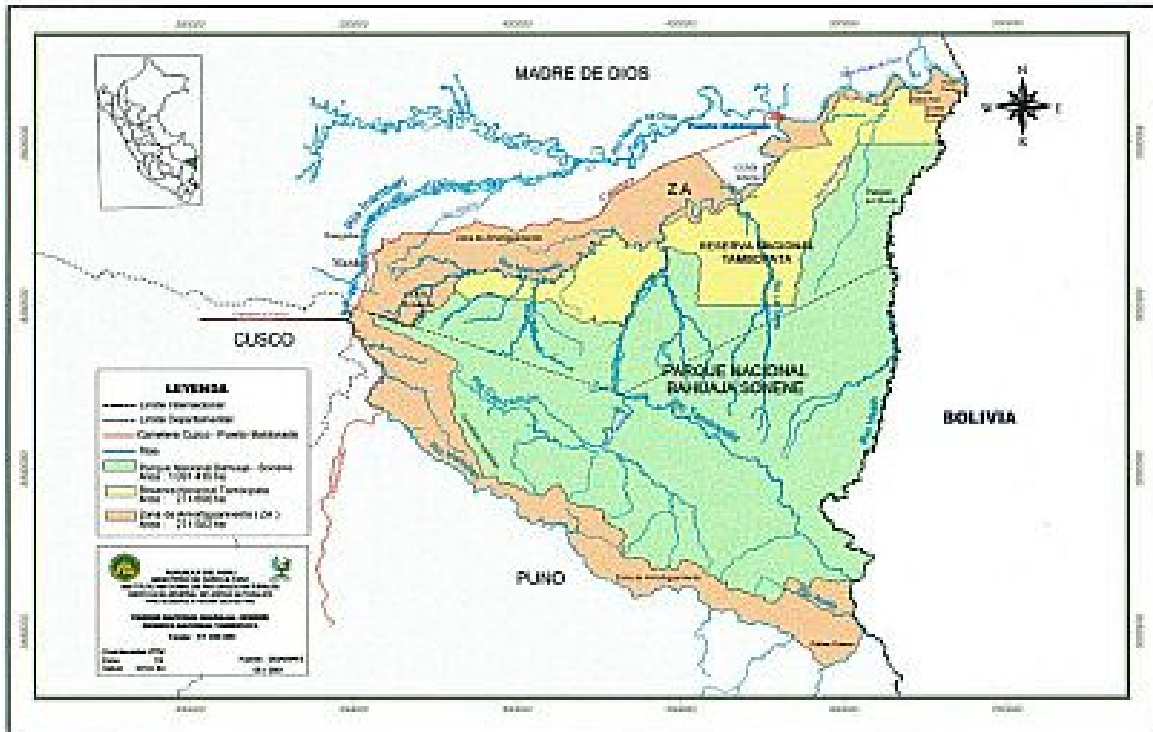
After a participatory process, Supreme Decree No. 012-96-AG of July 17, 1996 created the Bahuaja-Sonene National Park as a strictly protected zone covering an area of 537,053.25 hectares.¹¹ The area covered by the Tambopata-Candamo Reserved Zone, without taking into account the Bahuaja-Sonene National Park, continues to be a reserved zone.

The new national park was curtailed by the presence in Block 78 of a US oil firm, which was exploring for oil in the area. The area in Block 78 overlapped the southwestern section of the reserved zone, including the Tavera River Basin. Mobil, having failed to discover quality hydrocarbons in abundance, handed Block 78 back to the Peruvian government. The territory was then incorporated in to the national park. Thus on September 4, 2000, Supreme Decree No. 048-2000-AG (5/09/00)¹² expanded the area covered by Bahuaja-Sonene National Park to 1,091,416 ha. Supreme Decree No. 048-2000-AG also created the Tambopata National Reserve in Madre de Dios with an area of 274,690 ha. Finally, Head Office Ruling No.298-2001-INRENA marked out the borders of the buffer zone for the Tambopata National Reserve.¹³



Map by Conservation International, showing initial park boundaries in relation to Block 78

The western buffer zone extends from the northern border of Tambopata Reserve to the Cusco-Puerto Maldonado highway. The eastern buffer zone extends from the Reserve to Tambopata River and lower Madre de Dios. INRENA's resolution 298-2001 established a temporary buffer zone for Bahuaja Sonene National Park until corresponding studies are completed to officially declare its boundaries. Currently, Bahuaja Sonene's buffer zone surrounds the southeastern park until the community of Mazuko.



INRENA, 2001

Human influence

Population

There are no human establishments within the boundaries of the Bahuaja-Sonene National Park. Within Tambopata National Reserve, there have been isolated settlements along stretches of the Malinowski River and where it flows into the Tambopata River.

The buffer zone in the northern section of the Madre de Dios is home to some 3,200 people.¹⁴ This figure is a conservative estimate as it does not include migration over the past five years or those living on the other side of the road, who despite living outside the area, nevertheless make direct use of it. The buffer zone in Puno to the south is home to a temporary population of some 3,800 people,¹⁵ Andean indigenous migrants who travel to the region to plant coffee. This figure is also conservative, according to the manager in charge of the park's master plan and the national national.¹⁶ The area has a floating population of seasonal migrant workers which can reach some 11,000 people at times of year when there is demand for workers.

There is little information on the Inambari River area. It is known that there are settlements in the area, but there is no exact data on how many settlements exist nor what their residents do for a living; it is presumed that they farm in the upper reaches of the forest, cut timber in the lowlands and work in informal mining activities throughout the area.

The creation of the protected area was the result of a participatory process which gauged the opinions and concerns of the local inhabitants, private institutions and non-profit development entities. When the protected area was originally created, at first the local population opposed the idea for fear they would be prohibited from making use of the area's natural resources and working in their subsistence activities. Today, there is less opposition to the concept, and there is

greater awareness among the local population, thanks to the coordinated efforts of NGOs and state entities.

Tourism

Tourism is becoming an increasingly important activity in the area in recent years. Madre de Dios is home to 25 registered tourist lodges, 11 of which lie within the buffer zone and two within the reserve. There are also independent tour guides operating in the area, with 13 guides registered to date. Some local inhabitants are participating with their own lodges and hostels with the aid of loans and institutional backing. The area features two lodges that are owned by indigenous communities, one in Infierno on the Tambopata River, *Posada Amazonas*, and the other in Sonene on the Heath River, *Ese Eja Indian Lodge*.

Tourism in the protected area is concentrated around the Tambopata River and the lower Madre de Dios. Every year, 7-8,000 tourists visit the area mainly from abroad. Tourists are charged an entry fee to visit, and the amount depends on the activity: whether the tourist is spending the night, visiting the macaw clay lick or whitewater river rafting. The area features a rafting circuit which runs down the Tambopata River from Putina Punco crossing the entire national park down to Puerto Maldonado.

Some lodges located in front of the buffer zone on the other bank of the lower Madre de Dios River use the buffer zone by crossing the river, establishing trail networks and visiting Lake Sandoval and environs. Some tour operators offer visitors the chance to go fishing or hunting, and demand authorization from the protected area. Independent guides tend to take tourists to campsites instead of the lodges, making it harder to control their activities.

The giant river otter is a species of great interest to tourists, and tourists often stress otter colonies residing in lakes. A similar problem occurs with the parrots and macaws, which descend to peck at the clay lick. Here tourists often get too close or make too much noise, upsetting the birds. The administration of the protected area has set up regulations for all tour operators working in the area and rules for visitors' behavior, with fines for companies that fail to comply.

Conservation and research

Since the protected area was created, a series of conservation and research projects have been developed, including:

- The giant river otter research project run by the Frankfurt Zoological Society
- Rainforest Expeditions' Macaw Ecological Research Project
- Environmental Education project run by the Southern Jungle Conservation Association (ACSS)
- INRENA's regional project for protected areas of the Amazon. All research has been carried out at the Explorer's Inn on the Tambopata River and in other parts of the protected area by students and naturalists over the past 25 years, much of it thesis work, essays and unpublished reports.
- Mobil's environmental and social impact studies for oil exploration in Block 78
- Various studies or data collected by park guards including logs registering the climate, visitor entrances, community relations activities, research into the palmiche palm tree and felines, among other studies and research projects

- INRENA's project to protect the yellow-headed river turtle in the Heath River with the participation of the native community of Sonene, with backing by Peruvian NGO Pronaturaleza
- Projects run by Conservation International, such as Rapid Biological Evaluation (RAP), which produced fast and simple inventories to provide scientific information to help determine the protected category of the area

Threats

Activities that pose the greatest threat to the Tambopata National Reserve and the Bahuaja-Sonene National Park include:

- Gold mining
- Illegal logging
- Extraction of forest resources
- Increase in farming

Gold mining

From the mid-1970s to the late 1990s, gold mining has been the key economic activity in this part of Peru. When the government created the Tambopata-Candamo Reserved Zone in 1990, there were mining operations in existence, and they continued to operate after the reserve zone was declared. Today, the traditional mining areas of Madre de Dios have been massively overexploited and less gold is extracted as a result, forcing many miners to explore new opportunities for employment.

Gold mining causes a major impact on the forests, riverbeds and canyons. It makes the water cloudy and sediment-filled, as well as pollutes rivers with mercury. Mining in the lower Madre de Dios River is done on a small-scale by gold panners and on a larger scale with floating dredges. The capacity of the dredges is greater than that of gold panning as it digs up more of the riverbed and the ground, causing more environmental impacts.



A floating dredge

Gold mining is done informally along the Malinowski River, with the minerals being extracted by hand on the riverbanks. While today the administration in charge of the protected area has banned the entry of dredges into the area, preventing impact by mechanized, larger-scale operations, there are still large numbers of individual miners working on a smaller scale in the area. Because of the temporary nature of gold panning and difficult access to many areas where it is carried out, it is difficult to pinpoint exactly how many people are working in the area. Miners have formed a variety of groups and associations to defend their interests.¹⁷ At workshops and other participatory events for the preparation of a master plan for the protected area, these organizations have expressed their opinion that the entire area around the Malinowski

River should be open to mining. Mechanized mining operations have concentrated in the area around Mazuko, in the buffer zone, using tractors, frontloaders, trucks, powerful waterpumps and large extraction platforms.



Mining within the community of Kotsimba is done on a small scale. Part of this community lies within the buffer zone, but it also borders the park and the national reserve and is home to the headwaters of the Malinowski River. Despite the fact that this settlement is considered a native community, only two native families live there and the rest are highland migrants making a living from gold panning and logging. The community's population is approximately 300 inhabitants that are spread out across a large area. The village recently carved out a dirt road that runs down to the Malinowski River. The opening up of this trail has made access easier for all kinds of extraction-based activities, particularly miners in search of new prospecting areas.

The road to Cuzco features several access routes down to the Malinowski River, whereby one can reach the river in a couple of hours. These detours are used mainly by miners based along the river to transport their tools and food supplies down to the area of operations. Miners based at the mouth of the Malinowski River travel down the Tambopata River and cross through INRENA's control posts, while the other access routes are not monitored.

Illegal logging

According to Supreme Decree No. 038-2001-AG, commercial logging is prohibited within national reserves. Also described by this decree are acceptable practices, which include the management of agroforestry and secondary forest plantations.¹⁸ Yet, illegal logging occurs in both the buffer zone and the national reserve. While the control posts along the Tambopata and Heath Rivers prevent much of the wood from being taken out of the national reserve, wood is continually extracted for commercial purposes, and loggers often manage to avoid INRENA's control posts.

The main method of forestry management in the area is that of selective logging. Woodcutters generally chop down the most commercially valuable trees with chain saws and split up the tree trunks, cutting them into planks on-site before transporting the wood to the sales point. Wood is smuggled downriver, through gorges and down side roads. Briolo Gorge within the protected area is a site where many people (mainly residents of Puerto Maldonado) enter to extract wood. The Gorge is between Lake Sandoval and the Palma Real River in the lower Madre de Dios. According to local sources, approximately 5,000 feet of wood is extracted per week along the Tambopata River, in the village of Condenado near the mouth of the Malinowski River.



Timber cut and then made into planks using a chainsaw

Along the road to Cuzco along the Puerto Maldonado-Mazuko stretch, loggers are also smuggling out large quantities of wood. Extraction is done mainly by migrant farmers based along the road who have cleared the nearby forests of valuable wood and are forced to look ever deeper within the buffer zone for wood which they then truck out from their farmlands beside the road.

The Jayave River, which crosses the road at Kilometer 126 on the way to Mazuko, is an important link in the illegal logging trade. Loggers float trunks and planks down to the road before loading the wood onto trucks headed for Cuzco. At the same time, the villages of Villa Rocío and Santa Rita are also heavily involved in illegal logging.

Migration to the area has increased illegal logging. In the Manuani Gorge, near Mazuko in the buffer zone, a group of migrants has invaded the area and set up operations under the guise of an agro-forestry herders' association. This group of migrants is involved in illegal logging and is clearing the forest to prepare it for grazing pasture.

The community of Kotsimba is also involved in logging and holds contracts for wood extraction in its territory, so logging is legal in this case. The inhabitants of this community have received the support of a group of loggers to build a dirt road down to the Malinowski River. This support gave them access to loans to rent heavy machinery and other necessities which they now have to repay. Debt payments are made in wood equivalent, not in cash. This road also makes it easier for miners to enter the area, both small-scale and mechanized operations, as well as migrant farmers looking for land to settle. When the forests of the Kotsimba community have been overdeveloped, this will force settlers deeper into the protected area.



Access road to Kotsimba

Logging roads and trails open up areas of tropical forest that were previously inaccessible to migrant farmers. This was the case of an area called *Jorge Chávez*, where an old logging road made it possible for people to enter the area to extract wood and plant fields in area bordering the

national reserve. In the buffer zone in the southern section of the national park, there is intense, ongoing logging.¹⁹ This activity opens up more forest trails, which are then used by migrant farmers to access and settle the area.

Extraction of forest resources

The main types of extraction of non-timber forest products include hunting game, fishing and gathering of fruit, palm fronds, honey and eggs among other products. This is done by the local rural population for subsistence, but also for commercial reasons.²⁰



Studies conducted by Loja show that there is more fishing pressure on Tambopata River than lower Madre de Dios River.²¹ Inhabitants of the native community of Infierno often venture onto the La Torre River, a tributary stream of the Tambopata River within the national reserve, to hunt and bring back other products from the forest. Similarly, the inhabitants of the communities of Sonene and Palma Real travel upstream along the Heath River, deeper into the national park, without being prevented from entering by park guards, as this area is part of their ancestral lands. At the same time, in the village of Mazuko and west of the buffer zone, migrants hunt intensively in the area.

Subsistence hunting

Fishing is done for subsistence, although there is also commercial fishing in the lower Madre de Dios, on the northeastern edge of the buffer zone. Average fish catches in the lower Madre de Dios account for 90% of total registered catches in Puerto Maldonado, underscoring the importance of the area for the region's fishing industry. It should be pointed out that pressure from the fishing fleet on hydro-biological resources in the lower Madre de Dios is on the rise. At the same time, fishing on the Tambopata River is facing the onslaught of a growing population, with fish as their main source of protein.²²

Another resource in demand in the area is the palm frond, which is used to roof homes in both rural and urban areas. Moreover, fruit from palm trees such as the aguaje (*Mauritia flexuosa*), ungurahui (*Oenocarpus bataua*), pona (*Iriartea deltoidea*), are popular on the local market. The method of harvest is currently unsustainable because to extract the palms and fruit, the trees are cut.

Brazil nut harvesting (*Bertholetia excelsa*) is a major activity in both the buffer zone and the national reserve, and an important product in the entire region. Large groves of Brazil nut trees are found within the protected area, and there even concessions to harvest Brazil nuts in the area. INRENA, with backing from conservationist NGOs, is preparing a plan to put the Brazil nut

trade in order. The plan will obligate harvesters to have their papers in order, install septic tanks in their camps, mark the trees, and clear trails. Brazil nut gatherers must declare the exact quantity they have harvested, the amount of workers employed, what wages are paid, how much is invested in food, etc. All this data will help monitoring in the future and make the activity more efficient.

Other products are extracted on a lesser scale, such as resins, fibers, medicinal plants, and honey. However, more of these products are being sold on the local market.²³ The growing population of Puerto Maldonado has spurred more vendors' booths selling natural medicines and herbal remedies than existed five years ago. In the case of turtle eggs (*Podocnemis unifilis*), these are becoming increasingly scarce along the major rivers due to over-extraction. The Heath River features beaches that are important nesting sites.



Subsistence fishing, CCNN Sonene Heath River

Illegal hunting of threatened species, Puerto Prado

Agriculture

Migrants in Madre de Dios generally prefer to cut down new areas of virgin forest instead of returning to previously planted areas. It is becoming a widespread custom for farmers to cut down four or five hectares of virgin forest every year, only to use just one hectare for subsistence crops, leaving the rest unused and degraded. Ignorance of proper agricultural techniques has ravaged the land in the region. In the buffer zone, this situation is particularly bad among the migrants along the road, including those living on the Tambopata River and the lower Madre de Dios.

An activity that also causes a major impact on forests in the buffer zone is livestock herding. Cattle ranching in the region, like in all tropical forests, produces low yields, and needs 1-2 hectares of pasture per head of cattle. Each year, ranchers have to cut down more forest to feed their cattle. This situation can be seen above all along the Puerto Maldonado-Cuzco road, where there are large numbers of cattle.



The southern part of the national park, in the district of San Juan del Oro, in the area of Puno, is under intense pressure from farming. The access road into the region, which runs past the village of Putina Punco and runs alongside the upper Tambopata River as far as the Bolivian border, has made it possible for Andean migrants to enter the area to plant coffee and other staple crops. The impact of farming is easy to spot: erosion and soil depletion, slash and burn activity in large areas of forest, and pollution of rivers and gorges.

Growing migration to this area has expanded the amount of land planted with crops, subsequently destroying the forest. The topography in this area is hilly which is easily eroded. The situation in this area is alarming, as local authorities see the area as an opportunity for expanding agricultural land and locals generally oppose the concept of the protected area. Farming leaders are also pushing to penetrate deeper into the area and into the national park. There have been cases of holding, manipulating and invading land, involving lower-ranking local government officials.²⁴

The area is the site of a project run by the United Nations Development Program (UNDP) that as part of the counter-narcotics program is promoting coffee to halt the spread of coca leaf plantations used to make cocaine. The project is promoting the installation of greenhouses to produce coffee shrubs. By producing coffee plants and distributing them for planting, the project is spurring the deforestation of the area for agricultural purposes. Furthermore, the project supports the construction of an airstrip and the improvement of access roads. Support provided by this project in the area has consolidated the presence of migrant farmers and spurred larger numbers of farmers to flock to the area, which has turned out to be counter-productive for the protected area.

Future Threats

- Gold Mining
- The Inter-Oceanic Highway
- Migration and landgrabs

Gold mining

Due to the fact that alluvial deposits in the areas of Huaypetue and Punkiri have been overexploited, these produce little gold today. The owners of the mining machinery, finding their income dwindling and being unable to maintain their infrastructure and operations, have been searching for new areas to mine and are looking at the possibility of entering the area around the Malinowski River near the Kotsimba community to work all along the river.

The entry of mechanized mining operations into the headwaters of the Malinowski River is an imminent and major threat to the area. The operation would affect the watershed, causing an impact on the Tambopata National Reserve and the surrounding buffer zone.

Inter-oceanic Highway

In recent months, local authorities, special interest groups and the population in general in Madre de Dios have been providing strong political and public support to pave the trans-Amazon Highway. Brazil is paving its stretch of the highway, known locally as the Estrada do Pacifico, and work has moved within 50 km of the Peruvian border. Under current circumstances, the highway will have a tremendously negative impact on the region in terms of social, environmental and ecological problems. A paved road will provide access to all kinds of vehicles and hence more people.



Migration and land grabs

The arrival of immigrants leads to an increase in forest clearing for agriculture and greater extraction of natural resources. A critical hazard for the protected area is the increase in migration in the southern stretch of the reserve near Puno. Migrants are drawing nearer to the national park. In this section of the protected area, the process of occupying virgin cloud forest is continuing down into the lower reaches of the valley and along tributaries of the Tambopata. Ever since the access road reached Putina Punco in the late 1980s, the road has been moving further into the jungle with the help of municipal equipment and gasoline donated by mostly coffee cooperatives. It is estimated that during the last decade approximately 2.5 km of highway advances per year. Members of the coffee producing cooperatives have stated that they will continue to push the highway forward with or without the support of governmental institutions.²⁵ In environmental terms, the consequences of the road are severe.

The presence of more people south of the protected area is fueling greater demand for natural resources in the area. At the same time, this is further exhausting the soil, leading to more slash and burn agricultural techniques and more river pollution that flows downriver into the national park. These impacts are linked directly to the pressure that Andean migrants are putting on the area's natural resources.

Recommended solutions

Gold mining

It will be important to get a better understanding of the real situation of mining activity in the protected area, and to check the area near Mazuko for mining activities within the national park and visit the buffer zone in the Inambari River to gauge how many people are operating in this region.

We recommend keeping a log to register all the miners working within the protected area, check their operating permits and contracts and size up the scale of each operation. New mining operators should be banned from the protected area.

A plan for mining needs to be designed and implemented to provide guidelines and mechanisms to run mining operations so that they do not affect the protected area or the environment. Once the master plan is ready, the area should be zoned and mapped, and mining activities strictly enforced. Supervision visits need to be made to areas where miners operate, especially during the mining season, and visits need to be made unannounced, to verify miners are complying with the plan. Miners need to be obligated to prevent mercury from polluting the rivers.

There needs to be awareness campaigns with the miners. They need to learn about the environmental and mining regulations and how to follow those regulations. In addition, control and monitoring of mining activities is essential. The administration of the protected area needs to be in close contact with national and regional mining authorities in order to establish coordination mechanisms and information exchange.

While the Energy & Mines Ministry is promoting growth in the mining sector by providing facilities for miners, it needs to be strict when enforcing mining legislation. INRENA's technical

opinion is required in order to set up mining operations in buffer zones. INRENA should reject all new mining activity in the area and oppose the start-up of new operations. It is fundamentally important that mechanized mining operations be prevented from entering the area around the Malinowski River through the community of Kotsimba.

Illegal extraction of wood and other forest resources

The relevant authorities must be strict when enforcing forestry legislation and the law of protected natural areas. The government should promote the design and execution of management plans and establish regulations covering logging and the extraction of other products. The administration of the protected area, together with the General Forestry Department of INRENA, should carry out inspections and field visits to areas where illegal logging is known to be ongoing, in order to put a stop to the activity and sanction violators. While forest wardens are currently limited in their capacity to monitor the field, due to financial restrictions, one alternative is the use and construction of temporary control huts. These shelters would facilitate the presence of wardens in the field and make it possible to save money on monitoring expenses.

Hunting is done without any regulation, meaning some species are hunted to excess and others, which could be of use, are not sought after. Work needs to be done to promote and provide incentives for communities based around the protected area to establish monitoring and control mechanisms. This would require professional advice and training and institutional support. Steps like seasonal bans on hunting certain species, prohibiting the slaughter of animals with litters of young, the rotation of hunting territories, restrictions in the frequency of firearms use, breeding of wild species, and limits to commercial hunting should be taken into account for hunting management plans.

For commercial fishing, size and weight limits for fish caught should be established and respected. Communities with backing from professionals and institutions need to organize their own mechanisms to control the activity, marking borders and fishing seasons, and banning the entry into the protected area by fishermen from other areas.

In the fruit and palm trade, harvesters should be prohibited from cutting down the trees to harvest the products. Traditional but rarely used tools and mechanisms enable people to climb trees. Use of these tools should be promoted to those involved in non-timber products extraction.

Increase in agriculture

Regulations must be established for agricultural concessions, implementing a process of legal re-zoning of the land while ensuring proper management of the land itself. Farmers should be prevented from unnecessary slashing and burning of the forest and should be obligated to plant and use all the land that has been cleared in order to cut down on “wasted” land.

In the area of Putina Punco in Puno, the land needs to be protected from soil erosion. Coffee plantations should be established using techniques that conserve nutrients in the soil and the productivity of the earth while diminishing forest clearing. Peru needs to promote a change from traditional slash and burn agriculture and instead look to a more sustainable farming system with diversification, crop rotation and soil enriching.

The upper Tambopata region will continue to have a vulnerable economic development situation as long as it depends on the coffee monoculture. Complementary products and services should be developed as well. It is necessary to identify new commercially viable crops and other viable and sustainable activities, such as ecotourism and adventure sports.²⁶

Awareness campaigns are needed, as well as training and technology transfers to promote the efficient and sustainable management of the ecosystem, and to implement organic farming, diversified agriculture, and forest management.

The protected area urgently needs infrastructure, more professional personnel and park guards, as well as strengthening INRENA control posts in the southern area of the national park in Putina Punco (Puno).

The Inter-oceanic Highway

Paving Cuzco-Puerto Maldonado road will attract large numbers of people. It will be necessary to tighten control of the road through the buffer zone, focusing on existing access to the Malinowski River. Due to the difficulty of controlling a large sector and INRENA's limitations in its implementation, it will be vital to involve local communities in the process of control and monitoring. This involves strengthening organizations, providing training and establishing efficient communication channels that will make it possible to file timely reports and denunciations.

The administration of the protected area should establish personnel in Mazuko so they can have presence in the field and control part of the road from Puerto Maldonado and to San Gabán in the west section of the national park. In coordination with the Forestry Department and the Energy & Mines Ministry in the area, authorities could run joint monitoring and control of miners, loggers and migrants in this threatened part of the protected area.

The situation in Kotsimba is critical regarding the protected area, as it borders the national reserve and the park, and what occurs there will have an influence on the protected area. Work needs to be done to strengthen organizations and ensure internal cohesion amongst communities so that they can defend their natural resources and prevent the entry of new extraction-oriented migrants.

NGOs and other development institutions need to run environmental awareness campaigns in the area, especially about the road in order to garner local political support for conservation measures and to alert the local population to any threats so they know how to react in case of an emergency.

Migration and land grabs

It is vital that new settlements be prevented from establishing a foothold in the protected area, above all in the area around the Malinowski River, as people can enter and move around with ease using the various access roads from the highway.

In the area of Putina Punco in the southern section of the protected area in Puno, urgent measures need to be taken prevent the current trend in migration to this area. Land ownership needs to be analyzed and clarified, and the mechanisms that allow migrants to gain access to the land needs to be studied and understood. Efforts should be coordinated with local authorities to impose the law and order through the intervention of the government.

In the area of Puno, awareness campaigns and consultations on the protected area and the region's future development are urgently needed. These can be similar to campaigns that have run in Madre de Dios which have had encouraging results. It is important that local inhabitants be informed in detail of the advantages of the protected area, its limits, what is permitted by legislation, and that they are able to voice their concerns so that their opinions may be taken into account in the decision-making process.

Tourism

Tourism is a key activity in the area. Entrance fees from tourists are a significant source of income for the administration of the protected area. A tourism-use plan needs to be implemented, which ensured that all tour operators comply with established regulations. Educational campaigns and training will need to be promoted for the tourism trade, for both guides and visitors. Tourism operators need to distribute educational leaflets to visitors detailing guidelines and procedures for tourism in the protected area and to ensure that guides comply with established rules. Administration of the protected area needs to focus on ensuring all tour operators comply with the regulations, levying fines and other sanctions to non-compliers which will provide income for the protected area.

Conclusions

The Tambopata National Reserve and the Bahuaja-Sonene National Park are adjoining natural areas that function with a single administration. The areas are home to a rich diversity of flora and fauna distributed though several life zones and breath taking natural landscapes.

Within the reserve and park themselves, there are no settlements, but there is a burgeoning population around them. Both protected areas are listed as vulnerable. Today, the buffer zone is under intense pressure, with a growing possibility that the reserve and the national park could be affected.

The most pressing threats to the area are agriculture and land grabs in the southern region of Puno, and gold mining along the Malinowski River and the west section of the national park. Illegal timber harvest is also a problem, especially in the national reserve in Madre de Dios and the southern part of the national park in Puno. At the same time, excessive extraction by local inhabitants of other natural resources such as wild game, fish, fruit and palm fronds is also a threat to the future availability of these resources. The paving of the Cuzco-Puerto Maldonado

road will facilitate migration and give more people access to the area, which in the future will bring pressure to bear on the protected area.

The current situation regarding mining operations within the protected area needs to be better understood and clear operating regulations need to be established. The relevant authorities must be strict when enforcing the laws of forestry and protected natural areas. Farmers should be prevented from unnecessary slash and burn agriculture, and work should be done to promote the use of techniques, which conserve soil nutrients and the productive quality of the earth. Land ownership should be legally reordered, with obligatory proper management of the land. Communities need to be involved in managing and monitoring, which will demand improvements in organizational capacity. In Puno, environmental awareness campaigns are needed in which authorities and local institutions discuss the protected area and the future development of the region.

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