



An Investigation of Illegal Mahogany Logging in Peru's Alto Purús National Park and its Surroundings

January 2005

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1. Summary

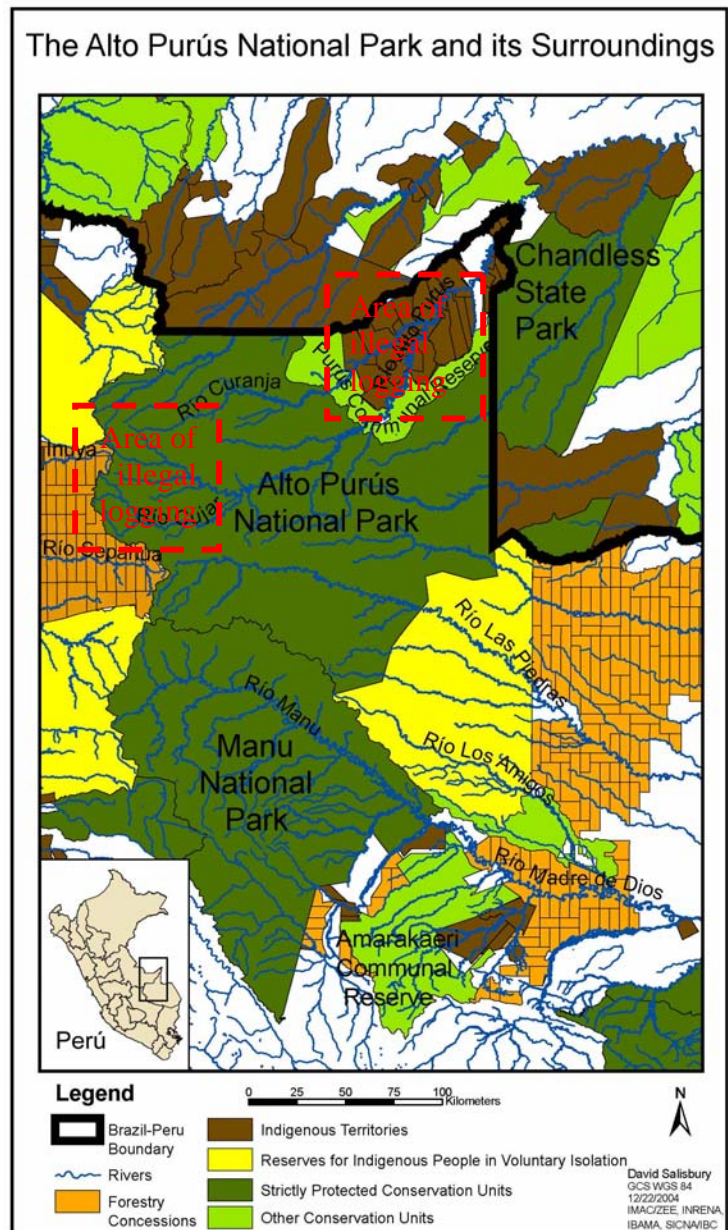
Illegal logging of bigleaf mahogany trees (*Swietenia macrophylla*) in Peru's Alto Purús National Park and adjacent lands continues despite Peruvian laws and international regulations intended to protect mahogany, indigenous people and conservation areas (see Map 1). This illegal logging is detrimental to the ecosystem of the Alto Purús region, indigenous communities in the area, uncontacted indigenous groups and global biodiversity.

We recommend:

- removing immediately loggers operating in the park
- constructing and staffing control posts on the primary access routes into the park
- monitoring closely the logging operations in the indigenous communities northeast of the park and the forestry concessions along its western border
- creating an independent research team to investigate mahogany logging in the region and the legality of Peru's mahogany exports
- pressuring importing countries to reject shipments of illegal mahogany from Peru

We were also prepared to recommend the creation of the Alto Purús National Park in what was formerly the Alto Purús Reserved Zone, a move being considered by the Peruvian government at the time of our investigation. However, the recommendation became immaterial in November 2004, when the government announced the creation of the Alto Purús National Park, covering 2.5 million hectares, 93% of the former reserved zone.

Our findings and recommendations are based on an investigation conducted in the fall of 2004 in the Alto Purús National Park (the Alto Purús Reserved Zone, at the time), as well as forestry concessions and indigenous communal lands adjacent to it. The investigation involved two overflights and four weeks of river travel. Data were collected through personal observations and a combination of informal and structured interviews with indigenous leaders, government officials, non-governmental organization (NGO) staff, loggers and local inhabitants.



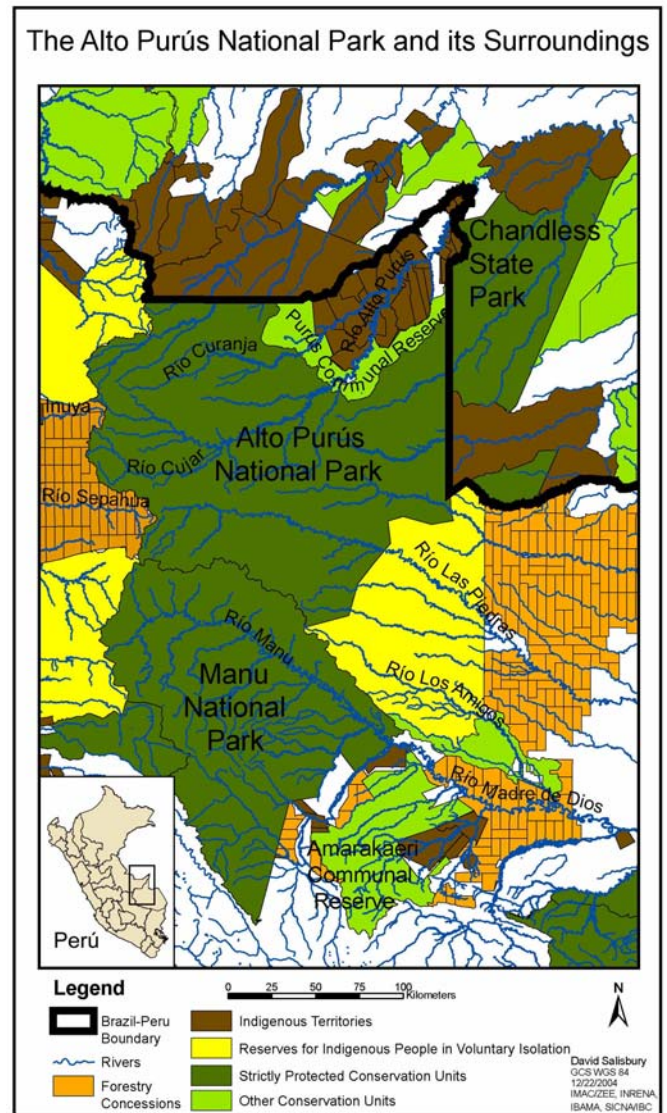
Map 1: Illegal logging occurs inside the Alto Purús National Park and the indigenous communal lands outside its borders.

2. Introduction

Located in Madre de Dios and Ucayali states, in one of the most remote and inaccessible parts of the Peruvian Amazon, the Alto Purús region has long been recognized as a conservation priority nationally and internationally. The region supports numerous endangered plants and animals, such as the harpy eagle (*Harpia harpyja*), the short-eared dog (*Atelocynus microtis*) and the giant river otter (*Pteronura brasiliensis*). In addition to being one of the most important and best-preserved refuges for endemic and endangered species in Amazonia, this vast, pristine wilderness is home to some of the last nomadic, indigenous people living in voluntary isolation on earth.

On November 20, 2004, after years of debate among governmental agencies, non-governmental groups, indigenous federations, the timber industry and other stakeholders, the Peruvian government took a great step forward in preserving the region by creating the 2,510,694-hectare Alto Purús National Park and the 202,033-hectare Purús Communal Reserve in what was formerly the Alto Purús Reserved Zone^{1 2}. The new park becomes Peru's largest and connects the 1.7 million-hectare Manú National Park to the south with Brazil's 670,000-hectare Chandless State Park to the east, forming the largest expanse of strictly protected land in the entire Amazon basin—an area almost the size of Costa Rica (Leite-Pitman et al. 2003) (see Map 1b). This network of protected areas has a forest canopy that stretches virtually unbroken from beyond the Brazilian border all the way to the Andes, some 300 kilometers to the southwest, forming perhaps the most important wilderness corridor in the upper Amazon.

Despite this progress, the area—including its flora, fauna and peoples—is still threatened by illegal logging of mahogany, which occurs in two primary places: along the western boundary of the park and within the titled indigenous communities northeast of the park (see Map 2).

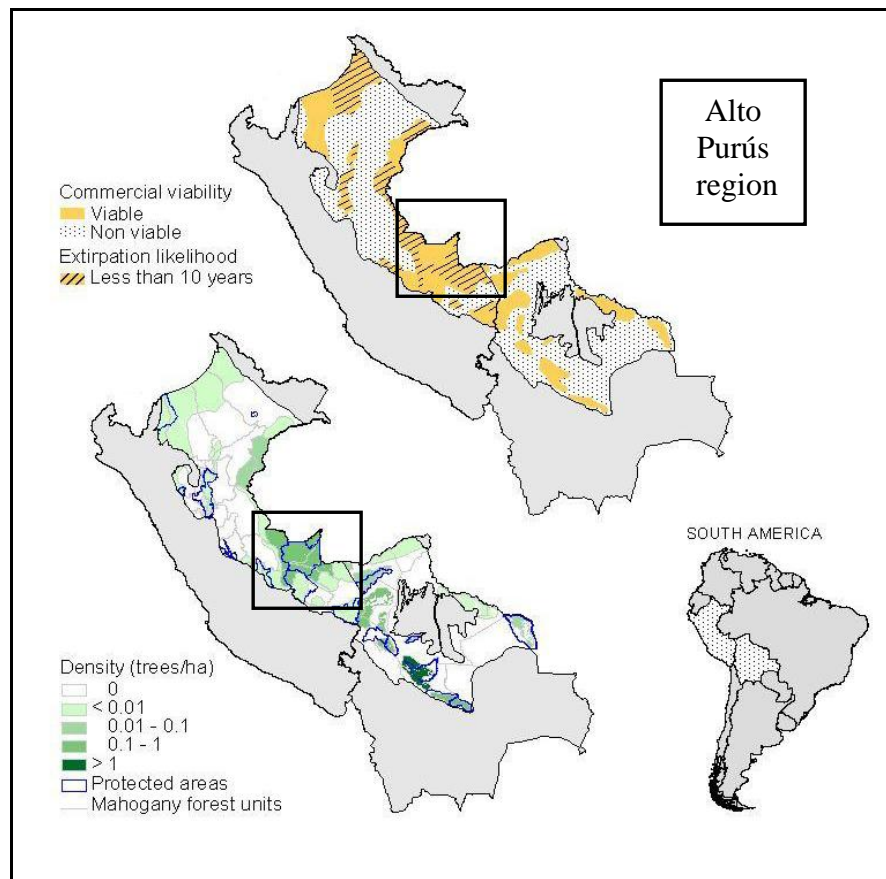


Map 1b: The new park is the central link to a huge network of protected areas on both sides of the Peru–Brazil border.

¹ Supreme Decree No. 040-2004-AG

² ParksWatch presented results described in this report to Peru's park service, INRENA, in late October 2004.

ParksWatch was one of many organizations that had been advocating national park status for the Alto Purús. One of the most significant contributions to these efforts was the book, *Alto Purús: Biodiversidad, Conservación y Manejo* published in 2003 by Duke University's Center for Tropical Conservation and edited by Renata Leite-Pitman, Nigel Pitman and Patricia Alvarez. The book highlights the region's remarkable biological and cultural diversity, as well as human impacts, and provided the scientific justification for making the Alto Purús a national park.



Map 3: Density (trees/ha) and commercial viability of mahogany in Peru and Bolivia (Kometter et al. 2004).

The illegal logging affects not only the mahogany population and ecosystem of the Alto Purús, but also its indigenous peoples, who include nomadic, uncontacted groups⁴. Loggers have set up exploitative trade relationships with small indigenous communities in the area just northeast of the Alto Purús National Park, whereby the indigenous peoples give the loggers permission to cut down mahogany trees in exchange for extremely-overpriced supplies. Loggers may also be encountering uncontacted indigenous peoples in the park, leading to situations that often turn violent.

Concerned by reports of illegal logging of mahogany in the Alto Purús, in September 2004, ParksWatch, in collaboration with the regional government of Ucayali, began a four-week investigation of logging inside and adjacent to what was then the Alto Purús Reserved Zone. By documenting this logging activity and its effects, then disseminating our findings, we hoped to spur efforts to discourage illegal logging and better protect the people and ecology of the Alto Purús National Park and surrounding lands.

⁴ “Uncontacted groups” or “uncontacteds” refers to indigenous people living in voluntary isolation.

3. Objectives

The primary objectives of the investigation were to:

- document illegal logging activities in the western section of the Alto Purús Reserved Zone (now the Alto Purús National Park);
- gain insight into the legality of logging operations in the indigenous communities located to the northeast of the park, as well as the forestry concessions on the Sepahua River adjacent to the park's western border;
- better understand the effects of illegal logging on local indigenous communities, uncontacted indigenous groups and the biological integrity of the park;
- bring international attention to the problem of illegal logging in the Alto Purús in order to spur actions to mitigate its detrimental effects;
- gather information that would strengthen the proposal under consideration by the Peruvian government to make the Alto Purús a national park; and
- provide Peru's park's service, INRENA, with information needed to improve management of the Alto Purús regardless of its eventual protected area category.

4. Methods

The on-site investigation was carried out from September 16th to October 15th 2004. Data were collected through personal observations and a combination of structured interviews and casual conversations with local inhabitants, loggers, NGO staff and government employees as well as other stakeholders. A video camera, print cameras and a Geographical Information System (GIS) were used in gathering data (see Map 4 for expedition routes).

Data collection began in the city of Pucallpa, the logistical hub for loggers working in the Alto Purús. In Pucallpa, we chartered a plane to take us to Puerto Esperanza, flying over our planned on-the-ground expedition route through the park.

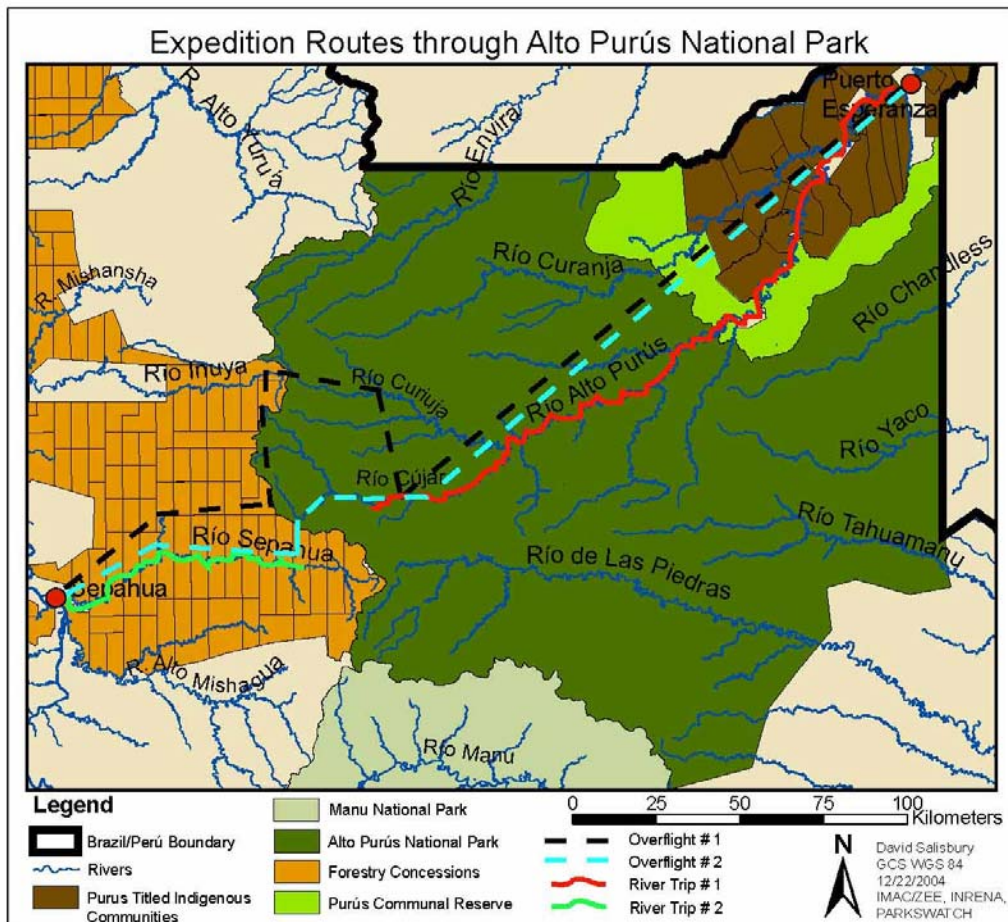
Our intention was to traverse the indigenous communities, communal reserve and park by boat and on foot, beginning in Puerto Esperanza, located within the indigenous communities northeast of the park, and ending in the town of Sepahua outside the park's western border. In order to be successful, we would need to locate a logging road connecting the park with forestry concessions on the Sepahua River.

The expedition departed Puerto Esperanza in two boats, carrying food, supplies, gasoline and oil for the entire trip. We hired seven local Sharanahua men as assistants and guides. The first four days were spent traveling and gathering data on logging activity in the indigenous communities. On the fifth day we crossed through the communal reserve and entered the park. Five days later on the Cujar River, a tributary stream of the Alto Purús, and approximately two days from the logging road where we would begin walking, we unexpectedly came across camps made by uncontacted

indigenous people. To avoid any possibility of transmitting diseases to them or a violent encounter, we turned around immediately and began the long journey back to Puerto Esperanza. The following day, on our descent, two of our assistants saw two uncontacted men watching us leave from the river's edge.

Unable to traverse the entire park and logging road as intended, we decided to return to Puerto Esperanza and fly to Sepahua with the intention of traveling the logging road from the other side, stopping short of the area where we encountered the uncontacted people. During the flight to Sepahua, we took photos and video from the air and recorded GIS data on illegal logging activities. In doing this, we were able to document illegal logging activity in the park in close proximity to the area where we found the uncontacted camps. In light of this discovery, we became particularly interested in gauging the effect, both current and potential, of illegal logging on the uncontacted people.

In Sepahua, we hired two assistants and one boat and traveled five days up the Sepahua River to the Quebrada la Unión, the stream where the logging road begins. We spent three days walking the logging road and interviewing loggers working in the park's border region before returning to Sepahua.



Map 4: The routes of the two overflights and two river trips.

5. Results

The results of our investigation are summarized here, then explored in more detail in this section.

1. **The government ban on mahogany logging is ignored.** Peru's Forestry Law No. 27308 (July 16, 2000) established a 10-year ban on mahogany and cedar logging in several watersheds including the Purús River, but logging occurs wherever there are mahogany trees regardless of permits or management plans.
2. **Timber from within the Alto Purús National Park is laundered through forestry concessions on the park's western side.** Management plans for the logging concessions lack complete inventories of mahogany reserves, so the number of legally harvestable trees in each concession is not known. As a result, illegal logs from the park are easily mixed with logs from the concessions, and there is no way to confirm whether the wood was cut in the concession or the park. While the logs are painted with the name of the concession, without complete inventories of the concession, or monitoring of logging activities in the concessions, there is no way to know if the wood is actually from where the logger claims it is.
3. **Alto Purús National Park boundaries are not monitored.** We confirmed that there is no enforcement of park boundaries or monitoring of logging activities in the adjacent forestry concessions on the Sepahua River to ensure that loggers respect park boundaries.
4. **Shipments of timber down the Sepahua River are not effectively monitored.** INRENA monitors the Sepahua River only during the rainy season when, according to one local man, "the river is so full of logs that you can't even travel downriver." However, as we found, in the dry season loggers are able to transport illegal boards from the park to the city of Pucallpa without any concern of being asked to show permits or prove that the wood was legally harvested.
5. **There is very little mahogany left in the forestry concessions on the Sepahua River,** according to INRENA and WWF-Peru forestry engineers; therefore, at least some, if not all, of the mahogany that is transported down the Sepahua River is cut inside the park and not in the concessions as loggers claim.
6. **There is no "ground-truthing" of logging activities in the indigenous communities northeast of the park.** There is no on-the-ground monitoring of logging activities in the communities. Loggers ignore forestry management plans—if they exist—as well as community boundaries and any other regulations. And, they often set up exploitative trade relationships with the indigenous communities when bartering for permission to log their lands.
7. **Air cargos of mahogany from Puerto Esperanza are not effectively monitored.** There is no effective monitoring system to ensure wood leaving Puerto Esperanza by plane has been legally harvested. Before being loaded onto a plane, each board or log should be checked by INRENA to ensure that it came from an indigenous community with a proper permit. We found that wood is not always checked before being transported by plane to Pucallpa. Furthermore, without any on-site monitoring of the logging camps inside the communities, it is impossible to verify the origin of the wood.

8. **Chainsaws are commonly used to cut mahogany logs into boards**, a practice illegal in Peru because it is wasteful.⁵ According to an official with the Ucayali state government, an estimated 80% of the mahogany felled in the indigenous communities is cut into boards with chainsaws.
9. **Uncontacted peoples are being harmed by intrusions into the park.** We found evidence that encounters between the uncontacted groups and visitors to the park are occurring more frequently. These encounters can have tragic consequences for the uncontacteds when the situations turn violent or the uncontacteds are exposed to foreign diseases.

5.1 Illegal Mahogany Logging

We found evidence of illegal logging inside the Alto Purús National Park's remote western border and in the titled indigenous communities outside its northeastern border. The two areas are separated by over 150 kilometers and involve different logging teams and entirely different circumstances. The loggers accessing the park's western section come from adjoining forestry concessions on the Sepahua and Inuya Rivers. Following small tributary streams, they walk across the hills that divide the watersheds of these two rivers from those of the Cujar and Curiuja Rivers, tributaries of the Alto Purús River located in the park. We found that wood stolen from the park's Cujar River is easily transported past a logging control post on the Sepahua River. Somewhere along its journey from the park to Pucallpa, and eventually Lima, it is mixed in with wood legally harvested from the concessions.

The situation in the titled indigenous communities on the northeastern side of the park is more complicated. Logging is legal in these communities, but only under certain regulations that ensure it is done in a sustainable manner. Unfortunately, these regulations are not being implemented. The logging is done without sound management plans or under the guise of plans developed haphazardly by the loggers, not the communities. In addition, the system for monitoring the permits and source of the wood before it is loaded onto planes in Puerto Esperanza is ineffective and, according to local people, marred by corruption. The illicit logging activity in the communities threatens not only the mahogany species, but it has fostered a system of egregious exploitation of the indigenous people. The communal lands provide the loggers with a virtually untapped supply of mahogany, so, at least for now, there is no reason for the loggers to venture further upstream into the Purús Communal Reserve or the park.

5.1a Access to the Alto Purús

The only direct access to the Alto Purús is by air to Puerto Esperanza, a modest town of approximately 600 people located on the Alto Purús River. The town is the capital of the Purús province within the state of Ucayali. There are no roads nor is it possible to access the Alto Purús by river from other parts of Peru. The Brazilian border is a one- or two-day trip down the Alto Purús River from Puerto Esperanza; however, this route is used infrequently for travel or trade. Puerto Esperanza has a paved airstrip, which is used by small and mid-sized planes from the city of Pucallpa, located approximately 400 kilometers to the northwest. All flights are chartered, the majority by loggers, who monopolize travel to and from the region and use these planes to fly

⁵ According to Article No. 311 of Supreme Decree No. 014-2001-AG. April 9, 2001, ruling of Peru's Forestry and Wildlife Law No. 27308.

mahogany out and supplies in. There is an active army base in Puerto Esperanza, and various small shops sell food and supplies flown in from Pucallpa to town residents, indigenous peoples and now the burgeoning logging community.

From Puerto Esperanza, the park is accessed by traveling upstream on either the Alto Purús or Curanja Rivers, through the indigenous communal lands and then the communal reserve (Map 2). Going up either river, it is a four- to five-day journey to the (eastern) park boundary in a motorboat with a nine horsepower “peque-peque” engine. Both rivers begin in the hills on the opposite (western) side of the park.

It is possible, but extremely difficult, to access the park from other directions. For example, loggers are accessing the park by traveling up the Inuya and Sepahua Rivers and then walking over the hills that serve as the park’s western boundary. The interior of the park is virtually unexplored, a vast and untamed wilderness used only occasionally by narcotic traffickers on their way to Brazil and the uncontacted groups living nomadically there.

5.1b Mahogany logging in the Sepahua–Cujar River region of the park

The Sepahua River and its tributaries form part of the western border of the Alto Purús National Park. There are twelve forestry concessions along the Sepahua with various levels of activity, four of which border the park. In most cases, the loggers operating in these concessions are subcontractors with agreements with the concession owners to extract wood. The concession of primary interest to us borders the park and has a camp on the Sepahua River at the mouth of the Quebrada la Unión stream. The camp is the beginning of a logging road that enters the park near the Cujar River. In previous years, the road has been used by tractors to pull mahogany logs from the park to the Sepahua River.

The Quebrada la Unión camp was not occupied when we arrived and the tractors had been removed. The condition of the logging road indicated that the tractors had not been used there since last year’s cutting season. However, the presence of supplies, including cables used to pull logs, indicated that the camp is being used as a supply depot for loggers working in the area, and a cleared footpath along the logging road indicated that loggers are using the road to access the boundary area of the concession and the park.



The logging road used in the past by tractors to pull logs from the park to the Sepahua River.



An abandoned logging camp on the logging road near the border of the park.

According to local people living on the Sepahua River, the concession owner used the tractors to extract approximately one million board-feet of mahogany from the area during the previous three logging seasons. We do not know how much of the wood came from the concession and how much from the park. However, we do know that in September 2002 there were approximately 300 mahogany logs stacked in the Quebrada la Unión camp awaiting transport. We did not find any logs at the camp or, for that matter, any live mahogany trees in the concession. There is not enough mahogany left in the concession to make a large-scale operation possible or the use of the tractors economically viable.

We interviewed an indigenous Amahuaca woman who had recently returned from a logging camp located inside the park where she worked as a cook. The camp belongs to the owner of the Quebrada la Unión concession mentioned above. Several informants that we interviewed on the Sepahua River told us that with mahogany trees now scarce within the concessions, loggers have begun cutting inside the park where mahogany is still abundant and its extraction economically viable despite high transportation costs.

We also interviewed two loggers who were part of a team based at Quebrada la Unión cutting mahogany in the park. Two weeks before our arrival, twelve of their colleagues traveled down the Sepahua on five rafts of mahogany boards cut with chainsaws from trees in the park. The mahogany rafts passed through the town of Sepahua and were loaded onto boats bound for Pucallpa. The passing of these rafts was confirmed by local people living on the river, as well as the caretaker for the otherwise abandoned INRENA logging control post.



The forestry control post and logs on the Sepahua River.

This forestry control post along the Sepahua River was one of two in the area that were built in November 2003 as a joint project among WWF-Peru, the non-governmental organization Conservation of the Cutivireni Patrimony (ACPC) and INRENA. The other, which was located on the Inuya River, was burned down by loggers in May 2004. The post on the Sepahua River is supposed to be staffed by INRENA personnel who check permits and verify the sources of wood floating downstream from the forestry concessions located upstream near the park. However, no one from INRENA was at the post during our investigation, and according to the caretaker, they had not visited the post for over four months. INRENA personnel in the town of Sepahua, located several days travel downstream from the control post, confirmed that they would not occupy the control post until the rainy season begins and the river becomes high enough for the loggers to transport whole logs. They were not aware that rafts made out of mahogany planks cut in the park had passed by the post two weeks earlier or of an illegal logging camp in the park near the headwaters of the Sepahua River.

During an overflight of the border area between the Sepahua River and the park, we located a logging camp on a small tributary of the Cujar River well within the boundaries of the park (S 10° 57.266' – W 072° 21.854'). The camp included a cleared area of several hectares, which we assume was to become a garden for the loggers and a center of operations. There appeared to be a shelter and several stacks of boards on the side of the clearing. The camp proves that logging is occurring inside the park, and anecdotal evidence we collected from local people and the loggers indicates the likelihood of other similar camps inside the park. According to local people, some logging camps are also used as production centers for narcotics, which are transported through the park to Brazil.



An illegal logging camp in the western section of the park.

Loggers are also extracting wood from other rivers inside the park's western border, according to our informants. A pilot for a local mission informed us that he has seen a significant amount of logging activity in the Inuya-Curiuja River region. Future investigation of this section of the park is necessary.

5.1c Mahogany logging in the titled indigenous communities

The cultural diversity of the Alto Purús is staggering. Approximately 80% of the population of 3000 belongs to eight distinct indigenous groups (Cashinahua, Sharanahua, Culina, Mastanahua, Amahuaca, Chaninahua, Asháninka and Yine) living in 31 communities within the titled communal lands located northeast of the Alto Purús National Park. The communities vary in size from approximately five to 30 families. The Cashinahua are the largest group followed by the Sharanahua and the Culina. The remaining 20% of the population is primarily mestizos, and to a lesser degree Brazilians, living in Puerto Esperanza.

Logging activity in the indigenous communities has increased dramatically since ParksWatch last evaluated the Alto Purús in July 2002 (Fagan and Salisbury 2003). At that time, mestizo loggers with chainsaws were new arrivals to the region, and only a handful of communities had begun to sell their trees to the loggers. Since then, several communities have allowed mestizo loggers financed by large international timber companies to set up operations in their lands. The town of Puerto Esperanza has been transformed into the hub of logging operations occurring upstream. The only species logged other than mahogany is cedar (*Cedrela* spp.); however, according to local officials, close to 100% of the wood that is transported from Puerto Esperanza to Pucallpa is mahogany because air transport of cedar or any other species is not economically viable.

Logging is legal in the communal lands with proper permits from INRENA's forestry sector. Permits ensure that the logging is done in a sustainable manner, with proper management plans and participation on behalf of the communities.⁶ However, the question of whether the loggers have valid permits, or if they are working under legitimate management plans, is actually quite irrelevant because the loggers do not abide by any regulations once they are upstream in the communities.

Much of the logging activity three years ago had been in the Sharanahua indigenous communities on the Alto Purús River—communities such as Gastabala and San Marcos. However, according to the Sharanahua community leaders, they grew tired of being exploited by the loggers and instead have decided to work with WWF-Peru to develop legitimate management plans for their land. They will begin logging again once the management plans are finished and the permits issued.

Three of the 31 communities in the region have legal permits. They are the Cashinahua communities of Miguel Grau, Curanjillo and Colombiana located on the Curanja River. However, according to local officials, once upstream, the loggers work wherever there are mahogany trees regardless of permits or community boundaries. The loggers use the existing permits to launder wood extracted from communities without permits. In the three communities with permits, the management plans are not being followed. Furthermore, even if they were followed they do not ensure sustainability. In a rush to obtain permits and extract the wood, the loggers develop the management plans on behalf of the communities in a haphazard manner in a matter of days. In comparison, management plans being developed for other communities working with WWF-Peru take upwards of two to three months to develop.



A felled mahogany tree in the community of Colombiana (left) and cut mahogany boards (above) (photos from 2002).

The logging companies no longer hire men from the communities to cut the trees as they did in 2002. Now they bring their own teams of loggers to do the work. The loggers arrive at the communities offering advanced payments of various goods in exchange for the wood. The loggers

⁶ According to Title V, Chapter VI, Subchapter VII of Supreme Decree No. 014-2001-AG. April 9, 2001, ruling of Peru's Forestry and Wildlife Law No. 27308.

then travel to the town of Atalaya to buy logging permits on behalf of the communities because community leaders cannot afford the cost of air travel. The cost of the permits are inflated and added to the communities' debt. The community leaders reach agreements with the loggers to cut a certain number of mahogany trees over a given period of time. However, once the camps are established, the loggers do not leave the communities until all the mahogany trees have been cut, continuously making new agreements with the community leaders to harvest more trees. The agreements are based on the exchange of mahogany for food and other supplies, such as sugar, salt, shotgun cartridges and plastics. The loggers inflate prices of supplies, and usually the community members are given the supplies before the cutting begins, perpetuating their debt. Trees are cut until the communities have paid for the supplies based on the inflated prices.

The prices that the loggers pay the community leaders for the wood are a fraction of market price. Loggers offer between 10 and 50 Peruvian centavos (6 – 15 U.S. cents) per board-foot of mahogany in the communities. The sawmills in Puerto Esperanza pay significantly more (4.00 soles or 1.33 U.S. dollars) per board foot; however, not all the communities possess the chainsaws or motorized boats to transport the wood from their communal lands to Puerto Esperanza, so they are forced to accept the logger's offer. Money rarely changes hands; the loggers simply deduct the cost of the mahogany from the debt the communities owe for the permits or the food and supplies they were given in advance—at outrageously inflated prices. As of October 2004, the price of mahogany per board foot was 9.00 soles (3.00 U.S. dollars) in Pucallpa, 12 soles (4.00 U.S. dollars) in Lima, and 18.00 – 20.00 soles (6.00 – 6.66 U.S. dollars) in the United States. In the end, the communities receive between 100 and 200 Peruvian soles, or 30 – 60 U.S. dollars, for one mature mahogany tree worth several thousand dollars on the international market.

The difficult access to and from Puerto Esperanza would seem to facilitate the monitoring and control of wood leaving the region. However, the large majority of planes are chartered from the military by loggers and ultimately the loggers control the transport of people, supplies—and wood—between Puerto Esperanza and the rest of Peru. Illegal mahogany leaves Puerto Esperanza without proper monitoring by authorities whose offices are just a stone's throw from the landing strip. During the four days we spent in Puerto Esperanza, the office of INRENA's Forestry Division remained closed. Freshly cut mahogany boards were transported from the sawmills to the airstrip without any discernible monitoring by local officials. It is a commonly held belief that INRENA's Forestry Division's monitoring efforts are marred by corruption. Local people do not believe that INRENA is enforcing the laws intended to protect mahogany and ensure the sustainable use of the resources within the indigenous communities. At risk is not only the future of mahogany, but also the future of the indigenous inhabitants and their children, who become poorer with each extracted mahogany tree. Unfortunately, logging is one of the only ways for local people to earn money or supplies, which they desperately need, so they are forced to accept the prices and conditions set by the loggers.



Mahogany boards being transported to the airstrip in Puerto Esperanza (left). A Naval plane chartered by loggers to transport wood from Puerto Esperanza to Pucallpa (above).

5.1d Mahogany and CITES

A large portion of the mahogany logged in the Alto Purús region is most likely exported to the United States and Europe, and thus protected under CITES regulations meant to protect endangered species from international trade forces.

In 2001, 30 – 40% of Peru’s mahogany exports were illegal (Traffic 2001). This figure is undoubtedly much greater today as most commercially-viable trees are in protected areas (Kometter et al. 2004). The logging giant Bozovich, the largest exporter of Peruvian mahogany to the United States, is operating in both the Sepahua River basin and in the indigenous communities northeast of the park. According to WWF–Peru staff in Sepahua, Bozovich is the largest timber company active in the Sepahua River concessions, and “almost all the mahogany from the Sepahua River goes to the United States.” A local sawmill operator in Puerto Esperanza, and an official with the Ucayali state government and former logger, estimate that 70 – 90% of all mahogany from the titled indigenous lands is exported to the United States.

According to Manuel Sobrol Filho, Executive Director of the International Tropical Timber Organization (ITTO), “The inclusion of *S. macrophylla* in Appendix II of CITES imposes exporting, importing and monitoring requirements on the species, which should be linked to its sustainable management in natural forest habitats” (ITTO 2004). The listing is intended to protect the species from overexploitation as a result of international trade and to ensure that the trade is sustainable. As such, exporting countries, like Peru, must verify that mahogany shipments are not detrimental to the survival of the species (CITES 2002). Mahogany can be exported legally only if it receives a “non-detrimental” finding from the Peruvian Scientific Authority. However, in April 2004, the Peruvian Scientific Authority and the Peruvian government acknowledged that non-detriment findings have not been made for mahogany, and furthermore that the government lacks the capacity to do so (Hershowitz and Muffett 2004). Yet, despite this admission, the government continues to enable the exportation of mahogany by issuing CITES permits for mahogany, an obvious contravention of this international accord. Additional research is needed to determine where along the chain-of-custody, from stump to market, the exporters are obtaining export permits for wood so obviously out of compliance with CITES criteria.

Based on the evidence that we have provided, Peruvian mahogany is not being managed in a sustainable manner, and is not in compliance with the non-detriment finding as mandated by Appendix II of CITES. However, it continues to be exported, primarily to the United States and Europe where it is received by importers and furniture makers. In 2002, 85% of the mahogany sawn wood exported by Peru went to the United States (ITTO 2004). Undoubtedly, the United States government and importers, and less so those of the European Union, deserve part of the blame for ignoring CITES trade regulations meant to protect endangered species. If mahogany is to be conserved, importing countries must uphold their responsibilities to enforce CITES regulations.

5.2 Uncontacted Indigenous Groups

There are two uncontacted indigenous groups known to use the Alto Purús as part of their seasonal migratory routes. The smaller group is locally referred to as the Curanjeños because they live in the headwaters of the Curanja River with a migratory route to the north towards the headwaters of the Embira River in Brazil. After many years of infrequent sightings by the native Cashinahua communities on the upper Curanja River, a small group of Curanjeños is now in sporadic contact with members of the Pioneer Mission, a Protestant evangelical group headquartered in the United States. The Pioneers are also interested in contacting and Christianizing the Mashco-Piro, the larger and more mysterious of the two uncontacted groups.

The Mashco–Piro, or simply the “Mashco” are believed to be in constant movement between the upper stretches of the Alto Purús River and the Las Piedras and Manú Rivers to the south. The evidence suggests that they visit the Alto Purús during the driest parts of the year (primarily in June and July) to collect the Izana plant (*Gynerium sagittatum*) to make arrows. Another possibility is that they visit to collect the eggs of the Taricaya turtle (*Podocnemis unifilis*), which are laid on the exposed beaches when water levels are low during the dry season.

Not much is known about the effect of illegal logging on the lives of these uncontacted people. One reason may be that loggers are reluctant to report encounters with uncontacteds that occur in protected areas. However, we do know that the immune systems of the uncontacted groups are susceptible to the unfamiliar viruses brought by outsiders, with many such encounters leading to viral outbreaks and, subsequently, death of indigenous peoples (Schulte-Herbruggen and Rossiter 2003). Another threat is that loggers deplete local game populations, which are the primary protein sources for the uncontacted people. Most distressing, however, are violent encounters between the uncontacteds and loggers or other travelers. Our findings indicate that the majority of recent encounters in the Alto Purús have resulted in the death of uncontacted people.

5.2a Encountering uncontacted people in the Alto Purús National Park

While encounters with the Mashco are very rare, we were acutely mindful of the possibility, albeit small, of encountering them in the park. However, the unanimous opinion among our assistants and other local people was that it was already too late in the dry season for the Mashco to still be in the area. That said, we were aware that their migratory routes often change from year to year, and there was no guarantee that they were not still in the area. Thus it was with the utmost caution that we proceeded through the titled indigenous lands and the Purús Communal Reserve and into the park towards the logging road and area of reported logging activity.

Nine days after leaving Puerto Esperanza and approximately three days from the logging road, we found a camp used by the Mashco. The condition of the brown, desiccated palm leaves used to make the shelters indicated that it had been used two or three months earlier. The camp consisted of 30

separate shelters grouped together on either side of the river. There were individual shelters slightly upstream and downstream from the main camp, presumably used as lookouts. We assumed that two adults shared each shelter and therefore estimated that the group numbered approximately 60 adults. Each shelter had the remains of a campfire. Scattered around the fires were bones of capybara (*Hydrochaeris hydrochaeris*) and tapir (*Tapirua terrestris*) and shells of motelo turtles (*Geochelone denticulata*), among other unidentified animal remains. Also found were three manufactured items: a plastic plate, an old, burned tuna can and a small piece of red fabric tied to one of the several, old leaf-woven baskets. Marks on bones and bamboo indicated that the inhabitants had at least one machete.



Evidence of the two- to three-month-old Mashco camp.



The presence of the camp confirmed that the Mashco used the area during the peak of the dry season. With the rainy season already underway, we assumed that they had left the area and we continued traveling upstream towards the logging road. Later that same day, by chance, we observed a muddy trail of human footprints leading up the riverbank and into the forest. On the top of the riverbank, barely discernable among the dense vegetation, was a group of six shelters. Each had a campfire and bedding made out of leaves. They were similar to the shelters we had found earlier that morning, however the condition of the shelters and the presence of raw meat on a cracked turtle shell implied that the camp had been used within the past few days. We stayed for only a few minutes and then began floating downstream (the direction from which we had come), without starting the motors.

Within minutes, we heard distinct sounds coming from the forest, which our assistants identified as the Mashco calling to one another by mimicking the call of the spider monkey. We started the motors and headed downstream as fast as possible. The following morning, approximately eight hours of travel from where we heard the calls of the Mashco the day before, we began hearing similar sounds in the forest. As we traveled a bend in the river, two members of our group saw two men emerge from the dense riverbank and watch us leave. The assistants identified the two men as Mascho. Given our location, we surmise that the two men were members of a separate and friendly sub-group of the group we heard the day before and traveling at a different pace.



Evidence of the recently made Mashco camp.

While we were disappointed to abandon our plan to traverse the entire park and travel by foot over the logging road to the Sepahua River, the decision to change plans was relatively easy. We were not going to risk a face-to-face encounter, which could have led to violence or the transmission of an infectious disease to the Mashco. Our Sharanahua assistants, several of whom had encountered the Mashco in recent years, believed that, instead of avoiding contact, as was the norm in the past, the Mashco had begun reacting aggressively to intrusions. The opinion among our assistants was that the Mashco were avenging deaths from skirmishes with illegal loggers. This belief had fostered a feeling of intense anxiety towards the Mashco on behalf of the Sharanahua men. Rather than risk an aggressive reaction to a face-to-face encounter, from either the Mashco or our Sharanahua assistants, we decided to turn around and leave the area.

5.2b A shrinking forest: the last stand for uncontacted people

Any explanation for why we encountered the Mashco so late in the dry season is purely speculative. As our guides suggested, it is possible that because the rainy season had been late in developing, the Mashco were waiting for the heavy rains to begin before continuing on their migration. While that may very well be true, it is also possible that they have been forced to change their migratory movements to spend more time in the park because of encroachment by loggers in the lands surrounding the park. Clearly, the area of undisturbed forest is shrinking. The area northeast of the park contains the titled indigenous communities; inside the park's western border there is localized logging on the Cujar and Curiuja Rivers, with widespread logging occurring further to the west in the forestry concessions on the Sepahua, Inuya and Mapuya Rivers; and to the southeast there is extensive logging activity in the Las Piedras River basin.

In the only study done on the impact of illegal logging on uncontacted groups in the Alto Purús region, Schulte-Herbruggen and Rossiter (2003) documented 176 illegal logging camps along the Las Piedras River in the southeastern portion of the Alto Purús National Park and the adjacent State Reserve for Indigenous in Voluntary Isolation. These loggers reported 18 separate encounters with uncontacted people in 2001 and 2002. Overall, 17.3% of all the loggers interviewed had encountered uncontacted people, and the number of encounters increased by 600% from 2001 to 2002.

During our investigation we collected testimony from local people regarding encounters with uncontacted groups in the headwaters of the Alto Purús and Sepahua Rivers in or near the park. All of the encounters occurred in 2001 and 2002, and all but one resulted in violence. The following are excerpts from the testimonies.

- In **February 2001**, Sharanahua and Mashco men fought at the mouth of the Santa Cruz stream on the Alto Purús River. A group of local loggers arrived at a tree they had cut several days earlier on the Santa Cruz stream to find numerous human footprints, so the loggers left the area. Later that day, a group of approximately 100 Mashco men and women arrived at a small settlement at the mouth of the stream and began killing domesticated animals and destroying a house. After watching the events for several hours from the other side of the river, two Sharanahau men poled their canoe to the middle of the river and fired their shotguns at the Mashco. Two Mashco were killed and their bodies carried into the forest by other members of the group. According to the man who shot them, the Mashco visited the area each dry season to take peanuts from his garden and there had never been any violence. He suggested that they acted aggressively this time because they were angry about the mahogany logging taking place in the forest along the Santa Cruz stream. For a detailed account of this encounter see Shoobridge (2001).
- In **July 2002**, the catholic priest from Puerto Esperanza and a local guide attempted to travel from the Alto Purús to the Sepahua River to investigate the route for a potential road to connect the Alto Purús with the rest of Peru. They turned around because of the presence of a group of Mashco. According to his guide, the Mashco saw the two men but did not react aggressively.
- In **July 2002**, a few days after the encounter described above involving the catholic priest, four narcotic traffickers encountered what is believed to be the same group of Mashco on the upper Alto Purús River. A fight ensued in which two of the drug traffickers were killed and the other two escaped into the forest. The bodies of the dead traffickers were never found, and it is not known if any of the Mashco were killed.
- In **May 2002**, on the upper Sepahua River near the logging road, three native Amahuaca men fought with a group of uncontacted people. According to one of the Amahuaca men, he was attacked while fishing with his wife. They escaped unharmed, and he returned with two other men and followed the uncontacted group into the forest where they were camped. The Amahuaca men killed four of the uncontacteds in the subsequent fight. It is likely that this group if uncontacteds were not Mashco but a different group (see discussion below).

The Sharanahua and Amahúaca men living close to the park believe that there has been a marked change in posture of the Mashco in recent years, from one of avoidance to one of aggression. As one of our assistants explained:

“When we worked on the Alto Purús and Cujar Rivers in the 1970’s and 80’s collecting animal skins, occasionally we would see the Mashco and they would always avoid us and run away. There were never any problems. Now it is different. They shoot arrows at us and want to kill us to take our things.”

Local people blame the supposed change in the Mashco’s behavior on the arrival of the loggers working in the park and surrounding lands. Several local men who have encountered the Mashco in the past, believe that the Mashco have become more aggressive in order to protect their shrinking territory and avenge murders by loggers. In a 2003 study of encounters in the Alto Purús, Michael and Beier found that in at least 10 encounters before 2001, the Mashco showed no signs of

aggression but instead retreated in every instance. The evidence indicates that the increase in violent encounters involving the Mashco coincides with the arrival of loggers to the region.

The testimonies we collected about the four encounters seem to support the belief among local people living near the park that the Mashco have a new willingness to fight instead of flee, as was the norm in the past. However, it is not entirely clear who initiated the violence; in fact, the notion of a more violent Mashco is contradicted by our own encounter with them. Despite hearing our motors and having ample opportunity to react aggressively to our presence, the Mashco chose not to confront us and instead let us leave peacefully. We believe that the increased number of violent encounters involving the Mashco can be at least partly attributed to the anxiety that local people and loggers feel towards the Mashco. Their deep fear of the Mashco has fostered a propensity to react quickly—and violently—to any signs of aggression from the Mashco.

Regardless of why more violence is occurring, any willingness by the uncontacted groups to fight will ultimately prove disastrous. Although they are skilled hunters, their bow and arrows are simply no defense against shotguns. As illegal loggers continue to view the Alto Purús National Park as a lawless frontier ripe for the taking, the survival of the Mashco and other uncontacted groups in the Alto Purús is in jeopardy.

5.2c How many groups of uncontacted people live in the Alto Purús?

The evidence suggests that there were two different groups of uncontacted people involved in the encounters described above. The participants in the first three accounts describe the uncontacteds as Mashco. The men had long hair hanging down their backs tied in a headband; they wore red paint and ornaments on their arms and legs and penis straps. The two men our assistants saw during our trip match this description.

However, the Amahuaca men involved in the fourth encounter on the Sepahua River near the logging road and the boundary of the park, inspected the bodies of the four men they killed, and their descriptions do not match those given for the Mashco. The men they killed were very tall, with long beards and substantial body hair. In addition, their skin had a yellowish color that was not paint. The Amahuaca men believe that the uncontacted group they fought with was not Mashco but an entirely different group, given their very aggressive nature and unusual appearance. Among the possessions left by the uncontacted group, the Amahuaca men found a heavy metal pot that is typical of those made in Brazil. The Amahuaca reasoned that the group was from Brazil, possibly from the Embira River region.

A third group, the Curanjeños, live in the park in the headwaters of the Curanja River. A small group of them have some contact with the evangelical Pioneer Mission. It is not known whether they will choose to leave the forest for settled life in the near future.⁷

⁷ According to the Sharanahua man who is working as a translator for the Pioneer missionaries (the Sharanahua speak a similar dialect to the Mastanahua language that the Curanjeños speak), he has conversed with a group of three Curanjeños six times over the past year. From these conversations, he has learned that the Curanjeños are a small group that lives in fear of the larger Mashco group. The missionaries are now learning Mastanahua in order to communicate directly with the Curanjeños. It is possible that they intend to learn as much as possible from the Curanjeños with the ultimate goal of contacting the more mysterious and “uncivilized” Mashco.

6. Conclusion and Recommendations

The Alto Purús National Park will not be consolidated overnight. The logging industry is fueled by a powerful demand for mahogany in the world's richest countries, primarily the United States and in Europe. As local populations of mahogany are depleted throughout other parts of Amazonia, the amount of pressure that loggers put on the Alto Purús and nearby protected areas in the region will increase. The future of the Alto Purús as a viable protected area—and the future of the uncontacted people that regard it as their home—depends on strict enforcement of the park's boundaries and thorough monitoring of logging operations on adjacent lands. In addition, importing countries need to do their part to reduce the demand for illegal mahogany from Peru. We offer the following recommendations for consolidating the Alto Purús National Park and preventing the continued illegal logging of mahogany in the region.

1. Remove the loggers currently operating inside the park

Illegal logging is occurring inside the western border of the park in close proximity to uncontacted indigenous groups. We call for the immediate removal of loggers operating in the Sepahua–Cujar River region. Unsubstantiated reports of logging in the Inuya–Curiuja River region and the Mapuya River should be investigated immediately. According to our information, the extent of illegal logging on the Las Piedras River has decreased since 2003 when new control posts were constructed; however this area should also be investigated. In addition, there is evidence of Peruvian loggers working along the Brazilian border that may be approaching the park from the Yurúa and Breu Rivers. This, too, needs to be investigated.

2. Restrict access to areas of the park used by uncontacted indigenous groups

Our investigation proves that at least one uncontacted group, the Mashco, still uses the Alto Purús as part of their migratory route. In addition, the testimony we collected on the Sepahua River indicates that an additional group, quite possibly from Brazil, used the region as part of its migratory route in 2002 and could do so again in the future. Evidence of logging activity inside the park and on adjacent lands indicates that the territory available to these nomadic tribes is shrinking. Furthermore, an increase in the frequency of violent encounters involving the uncontacteds coincides with the arrival of loggers in the region, and many of these encounters have had tragic consequences for the uncontacted people.

We recommend that the park's Cujar and Curiuja Rivers be declared an area of strict protection in order to reduce the likelihood of encounters with the Mashco. Only local indigenous people, who occasionally travel through the park to the Sepahua River basin, should be allowed to access these areas. In addition, missionary work should not be allowed inside the park or communal reserve.

3. Build control posts on the five rivers that serve as the primary access routes to the park

The limited number of access routes to the park will facilitate the control of its borders. Our recommendations regarding control posts are similar to those described by Leite-Pitman and Pitman (2003). The priority use for park funds should be spent on building and staffing control posts on the park's boundary on the five rivers that serve as the primary access routes to the park—the Alto Purús and Curanja in the northeast, the Las Piedras in the southeast and the Sepahua and Inuya in the west. In addition, the effectiveness of the control post in the town of Puerto Esperanza—where all the wood from the communities leaves via plane—needs to be improved significantly. Additional

posts within the forestry concessions on the Sepahua, Inuya and Las Piedras Rivers are needed to ensure the legality of logging activities in the concessions; however, these posts are of secondary importance to the five posts to be located on the park's border.

Alto Purús River:

A new control post should be built on the border of the communal reserve and the park in order to monitor all access to the park from the Alto Purús River. Once this post is operational, and if funding allows, a second post should be built to monitor use of the communal reserve. The best located for this second post is at the abandoned INRENA camp called Caobal. The camp was used by INRENA's forestry sector to collect mahogany seeds for reforestation projects but has been abandoned for several years. It is strategically located inside the communal reserve between the boundary of the park and the community of Monterrey, an excellent location for monitoring use of the communal reserve by local people and other visitors.

Curanja River:

As with the Alto Purús River, the ideal scenario is to build two posts on the Curanja River to monitor both the park and communal reserve. However, the priority should be to construct a post on the border of the communal reserve and the park in order to monitor all access to the park from this river. If funding is available, a second post should be built to monitor use of the communal reserve. The best location for this second post is the border of the communal reserve and titled communal lands near Puerto Paz, a small settlement being used by the Pioneer Mission to contact the Curanjeños indigenous group.

Sepahua River:

The existing control post on the Sepahua River should be staffed year-round in order to prevent the transport of illegal wood during the dry season. However, it is more important to build a new control post upstream near the Quebrada la Union logging camp in order to control access to the park and to monitor logging activity in the four forestry concessions in the vicinity that border the park.

Inuya River:

A post needs to be built near the border of the park in order to control access to the park and monitor logging activity along its border. In addition, the post that was burned down in May 2004 should be rebuilt and re-staffed. As with the Sepahua River, this post is needed to monitor the legality of wood being transported from the forestry concessions located upstream.

Las Piedras River:

The existing control post should be staffed year-round. The current status of logging activity in this region should be investigated to determine if a second post is needed on the border of the park and the forestry concessions.

Puerto Esperanza:

A stronger presence in Puerto Esperanza is necessary to control the flow of illegal wood from the indigenous communities to Pucallpa via plane. The existing INRENA office there needs to be staffed full-time by senior level personnel.

4. Implement frequent and thorough monitoring of the forestry concessions on the Sepahua River

Management plans need to be developed and implemented in the forestry concessions along the Sepahua River as a first step towards ensuring that mahogany trees are being managed in a sustainable manner and in accordance to Peruvian and international laws. Frequent and thorough on-site inspections of the concessions will encourage concessionaires to implement the management plans. The plans must include complete inventories of mahogany trees in order to stop the mixing of wood from the park with that from the concessions. Of particular importance are the four concessions that border the park.

5. Develop a new committee under the Indigenous Federation of the Alto Purús (FECONAPU) to oversee and monitor logging activities in the indigenous communities along the Curanja and Alto Purús Rivers

The committee should be coordinated by FECONAPU, which has a vested interest in the sustainability of mahogany reserves in the communal lands. The committee will work to ensure that logging in the communities is being done in a sustainable manner, with proper management plans and legal permits and in compliance with Peruvian and international laws. In addition, it will report any exploitative business transactions between the loggers and the indigenous people. The on-site inspections should be conducted in collaboration with INRENA.

6. Assist PIMA in the development of a FECONAPU committee to monitor use of the new communal reserve and park

The park and communal reserve are managed by PIMA (the Participation of Native Communities in the Management of Natural Protected Areas), an INRENA project with funding from the Global Environmental Facility. PIMA's success at enforcing new boundaries and regulations will depend a great deal on their ability to involve the local communities in the process. PIMA's monitoring team should include representatives from the local indigenous communities located near the communal reserve and park. These "park guards" should be placed at the control posts on the Curanja and Alto Purús Rivers as well as in Puerto Esperanza.

7. Create an independent research team to work in collaboration with Peru's CITES Scientific Authority to investigate the management of logging concessions in the region and the legality of Peru's mahogany exports

Peru's 2000 forestry law mandated an independent forest control and supervision agency for auditing forest concessions and for the chain-of-custody tracking of mahogany logs. However, the agency has not been developed. An independent agency will help remove any corruption from the monitoring activities. The group should begin by focusing on the logging concessions bordering the Alto Purús National Park to the south and west.

8. Develop publicity campaigns to raise awareness of the environmental and social impacts of illegal logging of mahogany in Peru and to pressure importing countries to reject shipments of mahogany from Peru

Timber importers, furniture makers and consumers need to be made aware of the harmful impacts associated with illegal mahogany logging in Peru. Importing countries, primarily the United States and the European Union, should be pressured to reject imports of mahogany from Peru until the Peruvian government can ensure that its wood is in compliance with international trade laws as mandated by CITES.

7. Acknowledgements

We would like to thank the Intendencia de Áreas Naturales Protegidas del Insituto Nacional de Recursos Naturales (INRENA) and Jhonny Aysanoa Lopez and Ricardo Jon Llap; Javier Balbin Durand of Fondo Mundial para la Naturaleza – Peru (WWF – Peru); Jorge L. Herrera Sarmiento and Reynaldo Tuesta Cerron of Proyecto de Participacion Indigena en el Manejo de Areas Protegidas (PIMA); Josefina Takahashi of Sustenta; Lelis Rivera of the Centro para el Desarrollo del Indígena Amazónico (CEDIA); Jaime Del Aguila of the Federacion de Comunidades Nativas del Rio Purús (FECONAPU); Sydney Hoyle de Vega and the Government of Ucayali Province; Roy Hoyle de Vega; María Del Carmen Alvarez, Edgar Alzamora and Orializ Olivera of the Asociación Navarra Nuevo Futuro; Don Pancho; field assistants and guides Jorge Del Aguila, Raul Silvano, Moises Fernandez, Alfredo Melendez, Mario Melendez del Aguila, Sebastian Olivera Montes, Manuel Olivera Bardales, Alberto Olivera Olivera, Pasqual and Mateo; Nicolas Salcedo, mayor of Sepahua; Aeroandino and Alas de Esperanza airlines; reviewers Sara Ashenberg, Ted Gullison, Martha Martinez, Harold Beck and James Todd; and cartographer David Salisbury.

8. Literature Cited

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2002. Amendments to Appendices I and II of the Convention adopted by the Conference of the Parties in Santiago, Chile, from 3 to 15 November 2002. CITES, Geneva, Switzerland. Available online at: [http://www.cites.org.common.cop/12/appendix_notice.PDF](http://www.cites.org/common.cop/12/appendix_notice.PDF).

Fagan, C., and D. Salisbury. 2003. Uso de la Tierra y Actividades Economicas en Cinco Comunidades Indigenas de la Provincia de Purús. Pages 177 – 189 in R. Leite-Pitman, N. Pitman, and P. Alvarez, editors. Alto Purús: Biodiversidad, Conservation y Manejo. Center for Tropical Conservation. Durham, North Carolina.

Hershowitz, A., and C. Muffet. 2004. NRDC and Defenders of Wildlife write to European Commission detailing concerns about the continued importation of mahogany from Peru in violation of CITES. Available online at: https://www.peruforests.org/news/NRDC_Defenders_EU_mahogany12_04.pdf

ITTO (International Tropical Timber Organization). 2004. Making the mahogany trade work. Report of the workshop on capacity-building for the implementation of the CITES Appendix-II listing of mahogany. ITTO Technical Series 2004.

Kometter, R. F., M. Martinez, A. G. Blundell, R. E. Gullison, M. K. Steininger, and R. E. Rice. 2004. Impacts of unsustainable mahogany logging in Bolivia and Peru. *Ecology and Society* 9(1): 12

Leite-Pitman, R., N. Pitman, and P. Alvarez. 2003. Resumen Ejecutivo. Pages 21 – 25 in R. Leite-Pitman, N. Pitman, and P. Alvarez, editors. Alto Purús: Biodiversidad, Conservation y Manejo. Center for Tropical Conservation. Durham, North Carolina.

Leite-Pitman, R., and N. Pitman 2003. Hacia un Futuro Sostenible Para la Zone Reservada del Alto Purús. Pages 255 – 269 in R. Leite-Pitman, N. Pitman, and P. Alvarez, editors. Alto Purús: Biodiversidad, Conservation y Manejo. Center for Tropical Conservation. Durham, North Carolina.

Michael, L. M., and C. Beier. 2003. Poblaciones Indígenas en Aislamiento Voluntario en la Región del Alto Purús. Pages 149 – 162 in R. Leite-Pitman, N. Pitman, and P. Alvarez, editors. Alto Purús: Biodiversidad, Conservation y Manejo. Center for Tropical Conservation. Durham, North Carolina.

Schulte-Herbruggen, B., and Rossiter, H. 2003. Project Las Piedras: A socio-ecological investigation into the impacts of illegal logging activity in Las Piedras, Madre de Dios, Peru. Available online at: www.savemonkeys.org.

Shoobridge, D. 2001. ADAR Reporte de la segunda fase del Proyecto de Evaluación y Asesoría medio ambiental en el río Purús. Informe inédito de la Asociación para el Desarrollo Amazónico Rural (ADAR). Lima.

TRAFFIC. 2001. Legislation and controls for harvest and trade of big-leafed mahogany *Swietenia macrophylla* in Bolivia, Brazil and Peru. Available online at: <http://www.traffic.org/mahogany/legis.html>.