PARKSWATCH
Strengthening Parks to Safeguard Biodiversity

Park Profile – Venezuela
Yacambú National Park

Date of the first on-site evaluation: April 2001
Date of the most recent on-site evaluation: August 2003
Publication Date: November 2003
Location: Lara State
Year created: 1962
Area: 26,916 ha
Ecoregion: Venezuelan Andes montane forest
Habitat: Cloud and rain forest, semi-deciduous forests, and savannahs

Summary

Description
Yacambú National Park is in the state of Lara, on the southern slope of the Portuguesa Cordillera, which is part of the northern Andes range. The park was created in 1962 to protect the watershed of the Yacambú River, whose waters will feed the José María Ochoa Pilé reservoir once dam construction is complete. The reservoir will be a vital source of water for the city of Barquisimeto and for economic development in the dry valleys of Quibor, where a sustainable agricultural protected area is located (category VI, IUCN). Due to its strategic geographic location, Yacambú is key to preserving Andean species, coastal species, and species of the Venezuelan flatlands (called "llanos"). In 1999, Yacambú was officially increased by 85%, from 14,580 to 26,916 hectares. The expansion included an additional 4,000 hectares of the Yacambú watershed. Yet increasing the size of the park also requires additional institutional support, control, and infrastructure. At the time of this second evaluation, Yacambú's new management plan (which includes the expansion) had not been implemented and the new area has not benefited from any management action. Management presence only occurs within the original 14,580 hectares of the park.

Biodiversity
Yacambú is characterized by high levels of floristic and avian diversity. Six hundred plant and 254 bird species have been recorded in the park. Famous for its number and variety of orchids, the park also protects globally endangered and threatened fauna species, such as the spectacled bear and the helmeted curassow.

Threats
ParksWatch – Venezuela has determined that Yacambú National Park is a **threatened** park, meaning that there is a very high risk that the protected area will fail to protect and maintain biological diversity in the near future if remedial action is not taken. This could

also mean that the park could fail to provide the water resources for the reservoir. Human encroachment into the park is the most significant threat, which also leads to other threats, such as poaching, forest fires, and timber extraction. Lack of infrastructure, sign posting, and staff aggravate the situation.

El Blanquito Lagoon, part of the recreation area within the park.(Photo: César Aponte, 2001)

Description

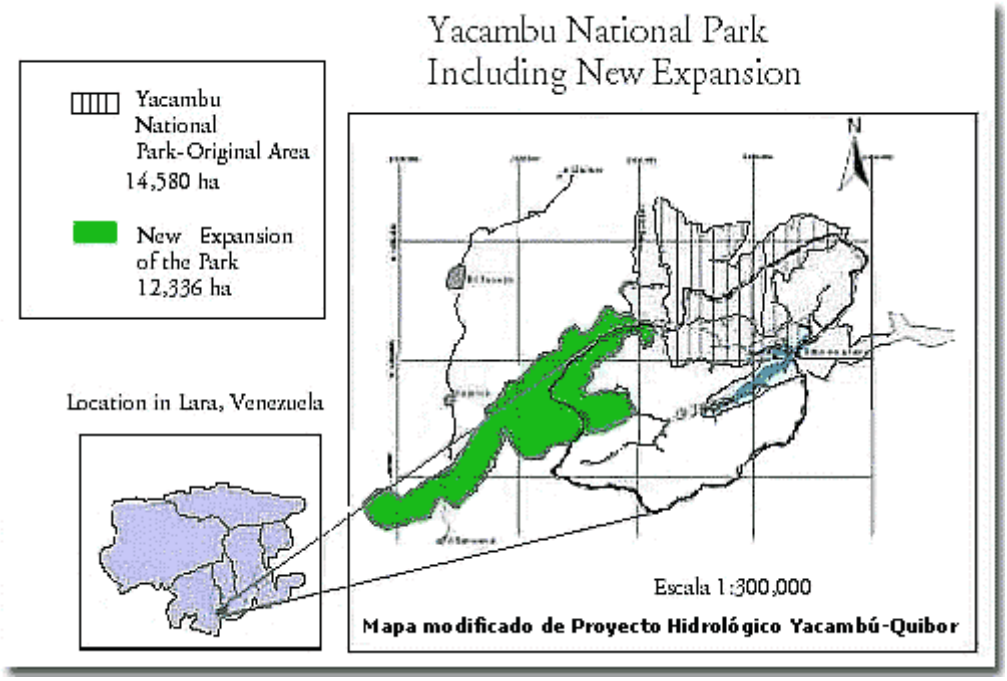
Physical description

Yacambú National Park is located on the southern slope of the Portuguesa Range and whose waters drain towards the Orinoco Basin. It is found in the state of Lara, south of the Quibor Valley. The park is 26, 916 hectares of steep slopes and numerous gorges, typical characteristics of this region of the Andes. Altitude in the park varies between 500 and 2,200 meters above sea level (1,640 to 7,220 feet). Since most of the park is above 1000 meters, the primary vegetation type is cloud forest, although other habitats do exist. In the northern sector, xeric species are prevalent. From 500 to 700 m in elevation, semi-deciduous forests are dominant, and at the lower altitudes, grasslands and savannahs. Yacambú's climate is cool, with an average annual temperature of 20.6 º C. Average annual precipitation is 2,040 mm, with the majority of the rains falling between April and November.

On the northern slope of Yacambú there is a unique natural feature. There is an accumulation of Pyrite minerals, which produces a chemical reaction upon contact with humid air. This generates a sulfur vapor that forms a column of smoke. This area is known as the "Fumarola." The natural phenomenon has been reported since colonial times, has been erroneously catalogued as volcanic smoke. It is also one of the park's popular tourist attractions. This "smoke" is clearly visible from the town of Sanare, 10 km away.

11,234 ha of Yacambú's watershed are located within the park. The waters from the river will feed the reservoir currently under construction. Water from the reservoir will eventually reach the desert valley of Quibor via a 27 km tunnel excavated through the mountain, under Yacambú National Park. Once completed, the dam and reservoir will affect 250 hectares along the southern border of the park, the resulting road will be closed to the public, the construction buildings removed, and the dam construction workers transferred out of the park. The project's viability depends entirely on the protection of the watershed within the park. Therefore, the company responsible for the dam construction, Sistema Hidráulico Yacambú-Quibor (SHYQ), is working to guarantee that protection (SHYQ is a state enterprise and is property of the Ministry of the Environment).

In addition to protecting Yacambú's Watershed, the park also protects important portions of the upper watersheds of the Tocuyo and Turbio rivers.



Map of Yacambú National Park

Biodiversity

Yacambú is home to a diverse array of species, resulting from its large elevation gradient and the convergence of three ecosystems: the Andes mountain range, the Coastal mountain range, and the interior plains known as Llanos. The park contains at least 5,000 hectares of virgin forest with diverse flora. Two tree species rare in Venezuela, *Lafoensia punicifolia* and *Simira lezamae* (the latter, member of the Rubiaceae family, was recently discovered) are well represented in the park. Some other common species include macawood (*Platymiscium polystachyum*), *Erythrina poeppigiana, Machaerium acuminatum,* and the trumpet tree (*Tabebuia chrysantha*). The cloud forest is found over 1000 meters and 600 flora species have been recorded in the cloud forest. It is estimated that hundreds more species exist (Marrero 1995). Trees found in this zone, which extends to the mountain peaks, include *Calatola venezuelana, Alchornea triplinervia, Zanthoxylum ocumarense, Posoqueira coriacea, Sloanea caribaea, Simira erythroxylon*. There are also ferns from the genus *Cyathea* sp., and palms of the genera *Geonoma* sp. and *Bactrys* sp.

The cloud forest is found above 1000 meters and is home to a great variety of floral species (Photos: César Aponte)

Raputia larensis is an endemic flowering plant of Lara and Yaracuy states and is well represented in the park (Marrero 1995). Additionally, there is remarkable orchid diversity in the park that has made Yacambú famous with orchidologist. Among the orchids found here is the famous May flower (*Cattleya mossiae*), the national flower of Venezuela.

Yacambú is also home to several globally and locally endangered and threatened fauna. Two critically endangered species are the spectacled bear (*Tremarctos ornatus*), the only bear species in South America, and the helmeted curassow (*Pauxi pauxi*), one of the most endangered cracids in the world. It is also possible to find populations of locally endangered species like jaguar (*Panthera onca*) and puma (*Felis concolor*). Other mammals like the paca (*Agouti paca*, *A. taczanowski*), agouti (*Dasyprocta leporina*), and other small rodents and marsupials are common in the park. More extensive research is needed on the mammalian communities located within the park.

Yacambú is popular among birdwatchers, who are attracted by more than 254 bird species. Of these, four are endemic and/or are distributed mostly in Venezuela (*Laterallus levraudi*, *Pyrrhura hoematotis*, *Chlorostilbon alice* and *Sternoclyta cyanopectus*); and 26 are northern migrants. Fifteen butterfly species have also been recorded for the park, among them *Caligo* sp. and the blue morpho (*Morpho peleides*), both typical of the cloud forests.

Insects, such as sand flies, live within the park and are vectors for various diseases. *Leishmania venezuelensis* and *L. brasilensis* transmit cutaneous leishmaniasis; *Cisticerco* sp. can transmit cysticercosis, and *Aedes aegipti* transmits hemorrhagic dengue.

Management

The Natioanl Parks Institue (INPARQUES) is responsible for Yacambú's management and administration. Although the park was created in 1962, its management and regulation plan was written recently in 1995 by INPARQUES. Currently, a new management plan is being elaborated to include the expanded area.

At the time of ParksWatch first on-site evaluation in April 2001, the 12,336 hectares of the expansion were not being managed as if they were part of the park. As of our second evaluation in August 2003, the park rangers had been carrying out patrols in the zone and they were able to identify park boundaries of the expansion. Nonetheless, the expansion area is without ranger stations and the monitoring activities are sporadic.

The management plan details the permitted, regulated, and prohibited activities of the original park area. The management plan details eight management zones, including their geographic limits and legal uses:

- Integral Protection Zone (PI): Includes all virgin rainforest, most of which is found in the park's highest elevations. Access is restricted and only scientific research, environmental protection, and environmental monitoring are allowed.
- Primitive and Wilderness Zone (P): Restricted area. Permitted activities include scientific research, hiking, posting educational signs, and maintaining previously created trails.
- Managed Natural Environment Zone (ANM): Consists primarily of the buffer zone between the highway and the park. Permissible activities include sign posting, vehicle transit, and passive recreation.
- Natural Recovery Zone (RN): Dedicated to conservation, restoration, or natural resource recovery.

- Recreation Zone (R): Several sectors of the park are favorable for low impact recreation. Infrastructure is permitted. Three streams popular with visitors have been designated as part of this zone: El Blanquito (2 km from the Gran Parada along the route to the dam), El Avileño, and Alto del Viento. Also included in the Recreation Zone are the trail to La Fumarola and an interpretive trail with tourist facilities at Alto Viento. The capacity of these areas should not exceed one person per 30 square meters.
- Service Zone (S): This zone contains INPARQUS housing and ranger stations in Hacha and El Blanquito. Lodging is permitted.
- Historical, Cultural, Paleontological Interest Zone: (IHC): Includes the areas where possible historical villages existed and where petroglyphs have been found.
- Special Use Zone (UE): Includes areas in which activities are incompatible with the park objectives, but existed before the park was declared. These areas are known as special use because the infrastructure provides some sort of social service that the surrounding communities value. It also includes the Yacambú-Quibor Hydrological Project infrastructure within the park, and a few non-intensive agricultural sites that were present at the time of the park's creation.

Park boundaries are cartographically defined but are poorly marked on the ground. The boundaries of the new portion of the park are not marked at all even though they are surrounded by human settlements and marking the boundaries should be a priority. Yacambú is located between 69°30', 69°51' W and 9°33', 9°48' N. There are seven park rangers, most of who are from nearby towns. The current superintendent has been working as such for 20 years. There are two ranger stations built, but neither is being used. The rangers have one motorcycle for making their inspection rounds, but no other vehicles. Staff does not have radios or other communication equipment. Five 4-wheel drive vehicles assigned to INPARQUES Regional Office in Lara State have been stolen over the last six months. This negatively affects Yacambú and all of the parks in the state because although these parks do not have vehicles assigned directly to them, the vehicles of the Regional Offices are available to them and used frequently.

Yacambú was officially increased in 1999 from 14,580 ha to 26,916 ha (Decree No. 3.222 in Gazette E- No. 5.293, January 26, 1999), but the management plan has not been completed and land use regulations have yet to be established. There is a draft plan, which was financed by the Sistema Hidráulico Yacambú – Quibor state enterprise. During ParksWatch first evaluation in 2001, we were told that it was practically completed and only a public consultation was needed for its approval. Yet, two years later, at the time of this second evaluation, the public consultation is still underway.

Human influence

Before the park was created, several small plantations and shifting agriculturalists (known as "conucos" in Venezuela) occupied territory in the area that is now part of the southern portion of the park. Relocation of these land proprietors began sixteen years ago; many received similar land parcels outside of the park. Come 1991, there were still thirteen home sites with 87 people in the park (in the areas known as Cerro Cojón and la Escalera).

The compensation and relocation process was not as just or harmonious as it should have been, according to some of the current park residents. It seems that a large number of these previous habitants were given lower quality lands or were not justly compensated. Backed by political patronage, new settlements have been established and have subsequently deforested parts of the park to plant coffee and other crops. The majority of these crops require agrochemicals that are prohibited under soil and water conservation laws and that ultimately enter Yacambú River and other bodies of water in the park, including the reservoir. During our evaluation, we interviewed several current occupants that claimed the right to the land they occupied because they had not been properly paid during the resettlement. We also noted that there was a hostile attitude toward INPARQUES and its staff. Since our first evaluation in 2001, we could see that deforestation due to human encroachment had increased notably.

Numerous farms and towns surround the park, primarily near the southern boundary where many of the former park inhabitants were relocated. The towns closest to the park have around 8,000 inhabitants in total. Sanare is the region's most important town. Sanare has a population of 11,000 people and is located 10 km north of Yacambú. Coffee cultivation is the primary economic activity, and has been since the 18th Century, in the region. Potatoes (*Solanum tuberosum*), tomates (*Lycopersicum esculentum*) and cauliflower (*Brassica oleracea*) are also grown. In the past, the indigenous communities planted cotton in the region.

There is one paved highway crossing the park; it allows access from Sanare to the dam on Yacambú River. The road is not used much because it does not connect Sanare to any major towns. Principal road users include employees from the state enterprise constructing the dam, small farmers, and park visitors. This road's cleanliness is a sign of its light traffic; unlike roads going through other national parks, this one does not pose a threat and is not a source of contamination.

Tourism

Yacambú has not yet taken advantage of its great ecotourism potential. Both national and international tourists frequent the park, mostly attracted by the spectacular avifauna or the various recreation areas. El Blanquito Lagoon is popular with national tourists, especially during weekends and holidays. Entrance fees are 2,000 Bolivares (US$1). The park receives approximately 250 visitors every week, for a total of 13,000 per year. Yacambú has enough guesthouses and dormitories to lodge up to 70 people, but these accommodations are rustic and do not offer additional services. There are also several buildings that make up an information center, but they are deteriorated and hardly used. Recently, the buildings of the information center were remodeled to increase the capacity by 30 people and turn it into an education/training center for park rangers. There is also a possibility that INPARQUES will turn administration of these installations over to a private concession, which may be able to manage them better, provide better services, and bring income to the park.

The tourist accommodations were remodeled two years ago, but they have not been utilized and are already showing signs of deterioration due to lack of proper maintenance (Photo: César Aponte)

During weekends, it is common to see visitors enjoying the waterfalls found along the road and throughout the park (Photo: César Aponte)

There is also an interpretive trail originally designed for tourism close to El Blanquito Lagoon. This trail could also be used for environmental education. Compared to our last visit, however, the trail has deteriorated and there are no informative signs. This trail needs immediate repair.

Around the lagoon, there are also bathrooms, picnic areas, and parking. At the time of our first evaluation in 2001, these had been recently redone. Now, the area is completely abandoned and tourists have reported that there are homeless people living there. A new trail had also been constructed for recreation and monitoring activities, but it too has been left to deteriorate. In summary, all the recently remodeled installations around the lagoon are already showing signs of decline.

Outside of the park, there is a growing tourism circuit that includes accommodations and trips to various sites throughout Lara. The tourism operators and hotel owners should be educated about Yacambú National Park so that they can offer quality services and begin to exploit the park's potential as a tourist destination.

Yacambú - Quibor Hydro Project

As previously mentioned, the Yacambú-Quibor Dam is being constructed on the southern border of the park. The dam will create the Yacambú Reservoir, whose water will be transported via a tunnel passing through the mountain to the Quibor Valley to be used to irrigate the desert zone. The primary stockholder in the state enterprise building the dam is the Ministry of Environment, on which INPARQUES depends. As one would assume, the Ministry of Environment wants to protect the river watershed, of which 35% is found within the new expansion of Yacambú National Park. The Yacambú-Quibor Hydro Project has developed an extensive program dedicated to conserving, managing, and administering the river's watershed and the new park section. The state enterprise has helped create a new management plan, has financed elaboration of maps, and has conducted socio-ecologic impact studies of the park expansion and of the dam itself. The program also includes measures to control population growth and agricultural activities in nearby towns. SHYQ state enterprise is one of the main conservation actors for Yacambú National Park.

Top photo*: The zone that will flood once the dam is complete (Photo: César Aponte)*

Left photo: *Dam in the Angostura Canyon (photo taken during the first visit to Yacambú in 2001)*

Conservation and research

Yacambú National Park is a good place to conduct research on ecology and conservation. Fieldwork is ideal because lodging is available in the middle of the cloud forest. Previous research topics include ecology, biogeography of rodents, tourism, geology, botany, and zoology. Carlsen (1999) lists at least 19 recent studies conducted in Yacambú. In addition to scientific research, there are also many conservation projects carried out by various local organizations and research centers of Lara.

BioParques, ParksWatch's partner in Venzuela, is carrying out a project called, "Yacambú and Terepaima Allies Network," which brings together all the communities and stakeholders involved in these parks' conservation. Fudena (WWF's partner in Venezuela) is working in several national parks in Sierra de Portuguesa and trying to establish an ecological corridor between Yacambú and Terepaima National Parks. The Audubon Society of Venezuela published the park's bird list (1998). Recently, a researcher from the University of Montana, Tomas Martin, and Carlos Bosque of the Universidad Simón Bolívar in Venezuela began a project on evolutionary ecology called, "Demography of birds of North and South America." (**There is a list of links to all of the organizations mentioned here after the reference section of this report)

Threats

Yacambú is a **threatened** park, meaning that there is a very high risk that the protected area will fail to protect and maintain biological diversity in the near future if remedial action is not taken. This could also mean that the park could fail to provide the water resources for the reservoir. Yacambú's threatened status represents a drop in its conservation status just two years ago, when we classified it as **vulnerable**. Human encroachment is the most significant threat. It generates additional threats such as poaching, forest fires, and timber extraction. Lack of infrastructure, sign posting, and staff aggravate the situation. Threats to Yacambú's biological integrity include:

- Lack of personnel and equipment
- Lack of proper infrastructure
- Human encroachment
- Lack of signs
- Poaching
- Forest fires
- Logging and timber extraction

Lack of personnel and equipment

Seven park rangers are responsible for protecting the entire park. They work a rotating schedule from one ranger station. There was an additional station for the rangers that during our first visit in 2001 was being converted into an information center, but has since been abandoned. Because park rangers congregate in one area and do not have adequate means of transportation, their ability to monitor and apprehend those breaking park regulations is severely limited. Even though the park's area was expanded significantly, no new rangers have been hired and no stations built in the new area. In addition, due to a budget crisis throughout INPARQUES, staff salaries go unpaid and staff morale is low.

Lack of proper infrastructure

Even though the park has been recently enlarged, no new park guards have been hired and no new management infrastructure built. Five additional park ranger stations are needed for strategic pints throughout the park in order to begin to achieve effective monitoring. According to one ranger with more than 18 years experience at Yacambú, the new stations should be located in the following sectors: Volcancito, Paso Higuerones in Cubiro, Moreco, Portal de Entrada and Cerro Negro. These sectors have experienced recent human encroachments and/or have been burned due to human influence. They were vulnerable to these threats due in part to complete lack of INPARQUES presence.

In 2001, as was mentioned before, the infrastructure in the Service Zone and Recreation Zone at El Blanquito were rebuilt. The reconstruction project was financed by the "Sobremarcha Ecológica," program of the Ministry of Environment at a cost of 60 million Bolivares (equivalent to $67,797 at the time). The park ranger education center was remodeled to increase its lodging capacity by 30 additional people. Project plans included a conference room as well. The kiosks around El Blanquito Lagoon were remodeled to provide better tourist accommodation. Unfortunately, this large financial investment seems to have gone to waste. During our second visit to Yacambú in August 2003, we saw that many of these remodeled buildings were severely degraded because of lack of up-keep. The Recreation Zone around the lagoon is practically abandoned and the new kiosks already deteriorated. The physical conference room was completed, but is empty; it lacks furniture and equipment. The ranger station, which was not included in the remodeling project, remains in shambles.

The old ranger station located at El Blanquito remains in shambles (Photo: César Aponte during the first park visit in 2001)

Human encroachment

Human encroachment has increased dramatically in the last three years. Inhabitants claim rights to the land and claim that they have the right to engage in agricultural activities on that land. It seems as though this encroachment is not random nor sporadic, rather promoted and organized by groups with political interest in the region.

In Yacambú, approximately 60 families have settled more than 200 hectares in the sectors called Cerro Cojón, Guayabal and Volcancito. One ranger confirmed that many of these inhabitants are the same people that inhabited the park and were relocated, with compensation, more than ten years ago. In the ranger's opinion, these settlers are looking for additional compensation.

Along the road that provides access to the dam, ParksWatch observed 25 small farms and even several 5-hectare plantations, the majority of which were new, within the park. These agriculturalists cultivate coffee, corn, and vegetable crops. Currently, because of the low international price of coffee, the small farmers are growing vegetables. As a result, they are using harmful agrochemicals and deforesting large areas to do so. Another direct consequence of human encroachment is forest fires, which have definitely increased over the last two years (see the section on forest fires below for more details).

Two consequences of human encroachment include agrochemical contamination and loss of vegetative cover (Photos: César Aponte)

The previous inhabitants of the park still resent INPARQUES, because in their opinion, the resettlement program was not fair. According to one resident of Chamiza (a town outside of the park), the land received is not entirely appropriate for coffee production. Apparently, the new land has many water-related problems—this is true for the towns located next to the park as well. Two years ago, after the first evaluation, ParksWatch warned that these people were not content and could possibly re-settle within the park. Unfortunately, now we report that human encroachment into the park has increased. It, along with forest fires, represents the most serious threat to the park.

Human settlements have also increased around Yacambú's dam, both within and outside of park boundaries. These rural farmers have learned that once the dam is complete, the area will be flooded and the company will relocate and financially compensate landowners.

Human encroachment and plantations within the park are increasing, destroying much of the forest needed to ensure a sufficient water supply for the reservoir. (Photos: César Aponte)

One of the park settlers interviewed by ParksWatch stated that he had property rights over the occupied land because he was not properly compensated 15 years ago. He accused INPARQUES staff at the time of swindling him. In an attempt to verify the settler's story, we asked INPARQUES staff, which informed us that the particular person's rights over the land expired ten years ago.

The majority of those interviewed seemed to understand the consequences of their settlement, such as damage to the forest and problems for the soon-to-be-completed reservoir. Yet, they still demand a solution to their situation. The main obstacle resolving this situation is that INPARQUES does not have the capacity to meet their demands for land titles in other zones.

These permanent settlements and agricultural activities in Yacambú are both violations of the Environmental Penal Code. In addition, problems like deforestation, forest fires, increased erosion, and contamination from agrochemicals threaten to destroy the forest and its ability to provide water. If Yacambú's forest is destroyed and it is unable to provide water, the María Ochoa Pilé hydrologic project could fail to supply water for agricultural and urban development in the region and the millions of dollars invested by the Venezuelan government would be for nothing.

Lack of signs

During the first evaluation of Yacambú, ParksWatch observed only one posted sign. That sign was donated by the local Mayor's office but later removed by INPARQUES authorities because it did not comply with existing sign standards. During June 2001, new signs were to be posted throughout the park. Yet, this work was never completed and none of the signs are up. In some sectors, the park limits are obvious, like along the mountain range; but in other sectors, the limits are not obvious and the only way to know would be by posted signs.

As with the old sector of the park, the new addition lacks signs. This park addition is surrounded by significantly altered areas and human populations, which could result in problems since the communities are unaccustomed to the new park limits. As long as there is no budget, it is likely signs will not be posted and the limits will remain vulnerable to human influence.

Despite the lack of funding, INPARQUES removed these park signs that had been donated by the local Mayor's office because they did not meet the official specifications. These signs have yet to be replaced two years after they were removed (Photos: César Aponte)

The lush forests of the park addition are surrounded by agricultural zones and towns, who remain unaware of the park's new boundaries. The limits were drawn intentionally excluding existing cultivated land (Photos: César Aponte)

Poaching

Poaching within Yacambú National Park, along with forest fires and human encroachment, is one of the most serious problems. During our first evaluation, we also found poaching to be significant. However, now because of a larger human population, poaching has gotten worse. Poachers tend to be people from nearby communities and from the settlements within the park. According to researchers that frequent the park, it is common to come across traps and rifle shells used to hunt mammals and birds. In general, hunters are not punished and the park administrators do not pay much attention to the problem. It seems as though poaching is mostly on a subsistence level. According to park rangers, common sought-after prey include paca (*Agouti paca*), white-tailed deer (*Odocoileus virginianus*) and collared peccary (*Tayassu tajacu*). While it is known that hunting is a common occurrence, the actual impact on the hunted species' populations in the park is unknown.

According to one park ranger, the legal procedures most often implemented in the park are related to fires and poaching. In this ranger's opinion, these legal proceedings are simply administrative, too slow, and do not actually punish those involved in the illegal acts. He believes that these procedures should be replaced by judicial ones that include arrests and fines, as are specified in the Environmental Penal Code. In order to implement this, more help is needed from the National Guard, the arm of the Armed Forces responsible for environmental security in Venezuela. In comparison with our first visit, we did see increased interest in collaboration between the National Guard and INPARQUES authorities.

Forest fires

Forest fires are a serious threat to the park. Despite its altitude, humidity, and the low number of people at the time, Yacambú was negatively affected by the fires that swept throughout Venezuela during the 2001 drought (see ParksWatch news about the fires). During this second evaluation, we observed that fire had destroyed a large area of forest was not naturally susceptible to fire. In 2001, approximately 50 hectares were destroyed by fire. During the 2002-2003 fire season, 29 fires were recorded in and around Yacambú that burned 490 hectares of vegetation, of which 137 hectares (27%) were gallery forests (MARN 2003).

Increased fires are directly related to increased human population in the park. Fire originates when the settlers slash and burn to establish plots for planting agricultural crops; sometimes these fires get out of control and turn into greater forest fires. During our 2003 visit, we observed damage from fire along the road that provides access to the dam and all around the 25 agricultural plots were identified during the visit. We also observed burned forest close to settled areas along the mountainous edge along the southern border of the park.

The zone most frequently burned is the area *bordering the town of Chamiza. This picture shows that the slope in the background was burned (Photo: César Aponte, taken during the first evaluation in 2001)*

Without forest fire fighters and without look-out towers or fire fighting equipment, there is little INPARQUES can do to quickly extinguish fires in the park. The closest fire fighting camp is in the town of El Tocuyo, 35 km from the park entrance. In 1995, INPARQUES signed an agreement with World Bank for $55 million dollars to improve the National Parks System. Among the list of improvements was a project to create fire fighting camps in several national parks. Unfortunately, Yacambú was not one of the parks targeted to participate in the project and now finds itself without resources to implement such a program on its own.

Logging and timber extraction

Logging and timber extraction are not extensive and are not done for commercial purposes, yet are common activities among nearby communities. Around the area of the "fumarola," harvest of macanilla palms (*Socratea exorrhiza*) is common as these palms are used for home construction and for handicrafts. In the sectors of Guayabal and La Escalera, recent settlers use logged timber to build their houses. As is the case with fire, this problem is growing in recently settled areas.

Proposed Solutions

Lack of personnel, equipment, adequate infrastructure, and lack of signs

In order to effectively patrol and monitor the park, at least five ranger stations are needed in the sectors of Volcancito, Paso Higuerones in Cubiro, Moreco, Portal de Entrada and Cerro Negro. In addition, stations are needed in the recently expanded part of the park. Increasing signs and infrastructure could be relatively inexpensive and could involve local communities—they would be temporarily employed in infrastructure construction or to post signs and at the same time would be actively involved with the park. Different government employment agencies or agencies working to increase citizen participation could be involved in such an effort. A possible source of financing is the Intergovernmental Fund for Decentralization (FIDES), which finances infrastructure projects through municipal governments and mayor's offices. Any projects to build infrastructure and/or signs must include Yacambú's expansion.

Human encroachment and poaching

The problem of human encroachment into the park is complex and should be dealt with in a very diplomatic way in order to avoid violating any human rights but at the same time effectively deal with those breaking the Environmental Penal Code. The ecological and economic costs of these encroachments should be emphasized in order to bring attention to the problem. In the case of Yacambú, it is also necessary to highlight the negative implications permanent settlements would have on Maria Ochoa Pilé dam's success. If the dam project fails, it will mean millions of dollars lost, 30 years of work wasted, the end of agricultural development in the region, and lower quality of life for those depending on Yacambú's water supply.

Authorities are well aware of human encroachments, yet INPARQUES does not have the means to agree to the conditions put forth by the settlers who would like new land as compensation for leaving the park (Photo: César Aponte)

Two years ago, Parkswatch-Venezuela suggested carrying out negotiation workshops as a first step to resolving the encroachment problem. One such workshop was conducted. The Conflict Resolution Center of Lara State, which had been trained by the Carter Center in negotiation techniques, organized and implemented the workshop. The workshop's aim was to begin to resolve conflicts between communities and INPARQUES; it brought together members of the National Guard, INPARQUES, Ministry of Environment, the Yacambú-Quibor Hydro Project, and ParksWatch-Venezuela. During this workshop, the settlers expressed their opinions. Participants discussed possible strategies for resolving the conflict.

The principal problem is that the settlers are demanding land or settlement payments that INPARQUES does not have the power to provide. INPARQUES lacks funds in general, and cannot afford to buy different land for these settlers. And, even if they did have funds, they are only authorized to administer park lands; they have no authority over other land. Because of this, the next workshops and/or negotiation meetings should include any relevant government agency, such as the recently created Land Institute (INTI), which is part of the Ministry of Agriculture and Land (MAT) and responsible for implementing the new Land Law. MAT has the authority to relocate the settlers onto different land in permitted zones outside of the park.

Aside from the importance of involving MAT, other ministries are also affected because the encroachments directly or indirectly threaten the dam and reservoir and subsequently threaten agricultural development in Quibor Valley. These ministries include Ministry of Production and Trade, Ministry of Planning and Development, and the Ministry of Environment.

Parkswatch-Venezuela believes that the hiring of a new Regional Director of INPARQUES for Lara State represents a positive step towards resolving this problem, which has reached crisis levels. The new director is an excellent negotiator and experienced in these types of situations.

The first negotiation workshop trained participants in conflict resolution. They learned techniques for resolving conflicts particular to the park such as human encroachment while also learning how to identify stakeholders' interests and common ground. Representatives from various institutions concerned with the park's conservation attended the workshop (Photos: Nelly Cuenca)

Forest fires

INPARQUES' capacity to prevent and combat forest fires at Yacambú must be improved. One model that could be emulated is Pajaritos Fire Fighting Camp at El Ávila National Park. The camp includes a small group of staff professionals that are dedicated to the park, an extensive network of volunteers trained in search and rescue operations, units trained in rapid response techniques, good communications, transportation, and fire fighting equipment. During the rainy season, the staff prepares and implements training programs and educational programs on forest fire prevention. The main reason the fire-fighting program at Ávila is successful, however, is due to the large number of stakeholders interested in the park. Many researchers, visitors, and travelers make up a network of interested users who propose ideas, solutions, and conservation mechanisms that all help Ávila achieve its conservation goals.

In Yacambú, the main stakeholder is the state enterprise, Sistema Hidráulico Yacambú-Quibor C.A. This company is a major stakeholder with an invested interest. Taking advantage of this situation, the company could be interested in working with other stakeholders to form a fire fighting camp for the park and greater region. This opportunity should be explored and developed.

Another model initiative is being implemented by management at Terepaima National Park, which is only a few kilometers away from Yacambú. There, park management has strengthened and/or formed relations with municipal fire departments, different rescue groups, automobile associations, and public and private business in the region. As a result, they have 800 volunteers available to help with fire fighting activities in and around the park. Funds from the *National Command against Forest Fires* have been used to encourage participation in the program; volunteers can benefit by receiving a work-scholarship, which is similar to a stipend. During the 2002-03 fire season, this volunteer group fought fires in 988 hectares of vegetation—almost one volunteer per burning hectare. Eighty percent of those fires were in zones around Terepaima Park and directly threatened the park and some of the businesses involved in the volunteer fire-fighting program.

Conclusions

Two years ago, ParksWatch evaluated Yacambú and determined that it was a well-conserved national park. Although we identified several problems at the time, feasible solutions were available. We recommended at the time that immediate attention be given to the few and manageable human encroachments. However, due in part to the financial crisis INPARQUES faced over the last two years, human settlements were not removed and have since continued. Encroachment creates additional, serious problems such as deforestation, fires, increased erosion, and water and soil contamination. Actually, the encroachments seriously threaten Yacambú's biological integrity. In addition, the encroachments threaten the protection of the Yacambú Watershed and Yacambú's capacity to supply water to the Maria Ochoa Pilé dam.

Although we have determined that Yacambú National Park is **threatened**, we believe that there are still opportunities for negotiation. The interested public and the official actors (INPARQUES) should inform other sectors of government, ones that have better capacity and

financial resources, of the magnitude of the problems in order to help protect Yacambú National Park, its biodiversity, and to safeguard the environmental services it provides.

View of the park, photo: César Aponte

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Links:

Sistema Hidráulico Yacambú-Quibor (SHYQ): http://www.yacambu-quibor.com/

Project Diagram: http://www.yacambu-quibor.com/proyecto.html

Website Inparques: http://www.inparques.gov.ve/

Website Bioparques: http://www.bioparques.org/

Website Red de Aliados de los Parques Nacionales Yacambú y Terepaima (Bioparques): http://www.bioparques.org/red_aliados.htm

Website Fudena: http://www.fudena.org.ve/index.htm

Website Sociedad Conservacionista Audubon de Venezuela: http://www.audubondevenezuela.org/

Tomas Martin, a researcher at University of Montana, USA: http://biology.umt.edu/dbs/martin.htm

Carlos Bosque of Universidad Simón Bolívar in Venezuela: http://www.bo.usb.ve/profesores/cbosque.html

Website Universidad Simón Bolívar,Venezuela: http://www.usb.ve/

Ministerio del Ambiente (Environment Ministry): http://www.marnr.gov.ve/

PW News regarding the fires of 2001: http://www.parkswatch.org/news.php?l=eng&id=94

Intergovernmental Decentralization Fund (Fondo Intergubernamental para la Descentralización): http://www.fides.gov.ve/

Carter Center: http://www.cartercenter.org/activities/showdoc.asp?countryID=87&submenu=activities

Ministerio de Agricultura y Tierras (MAT) (Ministry of Agricultural and Land): http://www.mat.gov.ve/index.html

Ministerio de Producción y Comercio (Ministry of Production and Trade): http://www.mpc.gov.ve/portal/

Ministerio de Planificación y Desarrollo (Ministry of Planning and Development): http://www.mpd.gov.ve/