



Park Profile - Guatemala

Sierra del Lacandón National Park

Date of most recent on-site evaluation: February 2003

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Location: Libertad municipality in the department of Petén, in the Maya Biosphere Reserve

Year created: 1990 **Area:** 202,865 hectares

Ecoregion: Tehuantepec humid forest

Habitat: Wetlands, savannahs, riparian forest, high forest, low forest



Summary

Description

Sierra del Lacandón National Park is located in northern Guatemala, in the western section of Libertad municipality of the department of Petén. This park was created in 1990. It is an incredibly important zone, providing connectivity between the protected areas and remaining habitats of the Selva Maya. Sierra del Lacandón is Guatemala's second largest national park. It has, along with Mirador-Río Azul National Park, the most diverse vegetation of the Maya Biosphere Reserve. High diversity areas include more than 200 tree species per hectare. Its uneven topography and high annual precipitation help create characteristics unique to this protected area. In addition, Sierra del Lacandón National Park contains high quality archeological ruins from the Maya Civilization of the classic and pre-classic periods.

Biodiversity

Sierra del Lacandon National provides habitat for 27 mammal species, 424 birds (both resident and migratory), 97 reptiles, 32 amphibians, and 30 genres of fish—112 species in the Usumacinta River. Regionally endemic species are found here, including: Morelet's crocodile (*Crocodylus moreletii*), Guatemalan howler monkey (*Alouatta pigra*), black-handed spider monkey (*Ateles geoffroyi*), and ocellated turkey (*Agriocharis ocellata*). Felines include jaguar (*Panthera onca*), puma (*Felis concolor*) and margay (*Leopardus wiedii*). Several species in the reserve are included on the World Conservation Union's Red List (IUCN) and on Guatemala's National Council of Protected Areas' Red List (CONAP).

Threats

ParksWatch has determined that Sierra del Lacandón National Park is **critically threatened**, meaning that there is an extremely high risk that the protected area will fail to protect and maintain biological diversity in the immediate future, unless urgent solutions are prescribed and implemented. The main threats include the advancing agricultural and ranching frontier, forest fires, logging, overuse of non-timber products, human invasions and settlements, and lack of institutional control.

Note: Certain excerpts of this Park Profile were extracted from the following report: Carr, D. 1999: *Un Perfil Socioeconómico y Demográfico del Parque Nacional Sierra del Lacandón*. CONAP / TNC.

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*View of the Usumacinta River on the western limit of the park.
The park is on the left-hand side of the photo and Mexico is on the right.*

Description

Physical Description

Sierra del Lacandón National Park is located in northern Guatemala, in the western section of Libertad municipality of the department of Petén. Its name comes from the southeast to northeast mountain range that passes through the central part of the park. It is a core zone of the Maya Biosphere Reserve (MBR)—the most important tropical forested area in the country. The park is bordered to the northeast by one of the MBR's multiple use zones; to the north by the Mexican state of Tabasco; to the west by the Usumacinta River (the natural border between Guatemala and Chiapas, Mexico); and to the south and east by the MBR buffer zone (CEMEC/CONAP, 1999a). At 202,865 ha, it is the second largest park in Guatemala, after Laguna del Tigre National Park. Its legally established limits are between latitudes 17°15'10,09" and 16°48'36,3" and longitudes 91°26'22,2" and 90°32'11,7" (1) (Decreto 5-90, 1990). Except in a few southern and western areas, the park is surrounded by agriculture and ranching activities, which place a lot of pressure on the park.

The protected area's geology is karstic (Apesa, 1993), with hills formed by folding limestone and plains. The landscape in the north and west through the central zone is that of uneven hills. There is a mountain range greater than 400 m that crosses the park from southeast to northeast (TNC, 1998a). Surrounding this range, to the south and west, is generally flat land with occasional elevated areas that increase in number and size as they get closer to the Usumacinta River. The elevations in the park vary between 636 m (approximately 2086 feet) at the highest point found within the Sierra del Lacandón mountain range to just 50 m (164 feet) in the lowest areas (CEMEC/CONAP, 2000a).

The climate is hot and humid, with distinct seasons. The rainy season is from June to December and the dry season is from January to May. Sierra del Lacandón National Park receives more rain than in other parts of the Maya Biosphere Reserve; on average, it receives 1,822 mm (almost 72 inches) and in some years, more than 2,500 mm (almost 100 inches) have fallen (TNC, 1998b). The average temperature is 25° C, maximum of 26° C and minimum of 25° C (CDC/CECON, 1995).

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Sierra del Lacandón connects the Maya Biosphere Reserve in Guatemala to the Montes Azules Biosphere Reserve in Chiapas, Mexico. The Usumacinta River acts as a bridge between the ecosystems along the Passion River and the Sierra del Lacandón Range (TNC, 1998b). The park has several unique elements to its landscape, such as the “cenotes,” which are pockets of karstic soils and located close to the Macabiler Stream and Usumacinta River. These unique elements are important because of their biophysical characteristics and their scenic beauty. Additionally, in the park, there are several archeological sites, including Piedras Negras, which has ruins dating from the pre-classic to late classic period of the Maya Civilization (IDAEH, 1999).

Biodiversity

Flora

According to the classification by Dinerstein *et al.* (1995), the park lies within the Tehuantepec humid forest ecoregion. Major habitats are high and medium tropical forests found in the plains and hills and occupy approximately 80% of the protected area (CONAP, 2001a). CONAP data indicate that there are 5,803 hectares of permanent and seasonal wetlands (including rivers, lakes, and lagoons), while habitats such as low forest, riparian forest, and savannahs—all of which are closely dependent on the water sources—make up approximately 4% of the park (CONAP 2001a). Tree diversity varies depending on the zone; in some zones, there are more than 200 species per hectare while in others there are less than 100 per hectare (APESA, 1993). The majority of the park has between 100 and 200 species per hectare. The most diverse areas cover slightly more than 13,000 hectares and the least diverse areas extend about 6,000 hectares (CONAP, 1998).

A large part of the park is influenced by human actions and the forest is being replaced by pasture and agricultural land. The forest is still in good condition from the center to the western limits of the park, while the eastern, southern and part of the northern forests are becoming more and more fragmented and severely impacted by agriculture and grazing.



Vista del bosque del parque nacional

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Tall and medium forests

This forest is densely vegetated, characterized by trees with large and developed buttresses. The canopy reaches heights between 20 and 25 meters (65 to 80 feet) depending on the area with emergent trees reaching more than 35 meters (114 feet). In closed canopy forests, distinct layers within the understory are evident: the intermediate layer is found between 12 to 15 meters and the understory at 6 meters. A common species to the high and medium forests is ramon, also known as breadnut (*Brosimum alicastrum*). In the peaks of the hills, vegetative associations are dominated by black poisonwood (*Metopium brownei*) and mamey species (*Pouteria* sp.). In the valleys, Santa María (*Calophyllum brasiliense*) and chicozapote (*Manilkara achras*) are common. In the Sierra del Lacandón Range, common species include *Alseis yucatanensis*, *Rollinia microcephala* and *Guarea excels* (TNC, 1998a). The understory of the shady highlands usually includes a large abundance of palms such as the Cohune palm (*Orbignya cohune*), bayleaf palm (*Sabal morrisiana*), xate (*Chamaedorea* sp.), and *Desmoncus ferox*.



Interior of the highland forest, with members of PW Guatemala at the bottom of the photo

Low forest

Low forest grows in the northern and southwestern areas of the park. It grows in areas with heavy, sticky soils that flood during the rainy season, and dry and crack in the dry season. They are found in low-lying areas, called “bajos,” of small to medium extensions. The soils are poorly drained and are covered with water during the rainy season. Depending on the specific drainage and the local topography, the length of water coverage depends and that in turn determines the floristic composition. In the northwest and southwest, the heights of these forests vary between 6 to 20 meters, while in the northeastern portion of the park along the lagoons called “Repasto” the forest only reaches 6 meters (TNC, 1998b). In the low forest, there are associations of black olive (*Bucida buceras*) and San Juan (*Vochysia hondurensis*) (TNC, 1998a). Other species present include logwood (*Haematoxylum campechianum*), *Coccoloba* sp., and *Nectandra membranacea*, as well as palms like bayleaf palm (*Sabal morrisiana*) and *Chryosophila argentea* (CONAP, 2001a).

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Savannahs

Savannahs are not widespread in the park; they are restricted to an area close to the lagoons called “Repasto” in the northeast, and between the Bolochac and Mendoza lagoons in the south (TNC, 1998b). In total, the habitat covers 5,093 ha (TNC, 1998a). Savannah formation requires extreme climatic conditions, with flooding in the rainy season and extreme arid conditions in the dry season (Pennington y Sarukhán, 1998). The vegetation is mostly comprised of plants from the Poaceae family, including bambusoideae (CONAP, 2001a).

Riparian forest

Riparian forest is also directly related to the presence of water. Riparian forests are found along the margins of streams. The trees of the riparian forests in the park can reach up to 30 meters in height. This habitat is found mostly in the southern part of the protected area, along the banks of the Yaxchilán Stream. Riparian forest, although with shorter growing trees, is also found in the western portion of the park, along the banks of the Macabilero Stream (CONAP, 2001a). This type of forest covers 1,106 ha in the park and includes the following species associations: black olive (*Bucida buceras*) with zapote (*Pachira acuatica*) or with black poisonwood (*Metopium brownei*), and the presence of logwood (*Haematoxylum campechianum*), *Lonchocarpus hondurensis*, *Pachira acuatica* and *Inga vera* (CONAP, 2001a).

Fauna

Sierra del Lacandon National provides habitat for 27 mammal species, 424 birds (both resident and migratory), 97 reptiles, 32 amphibians, and 30 genuses of fish—112 species in the Usumacinta River (CONAP, 1998). Because of the large quantity of water, it is assumed that the protected area contains one of the highest concentrations of jaguar (*Panthera onca*) in the entire Maya Biosphere Reserve (Balas, 2003, personal communication). The park is also extremely important for the survival of the scarlet macaw (*Ara macao cyanoptera*), as it is home to the last wild populations of this species in Guatemala (Morales et al., 2001).

The park is also habitat for several flora and fauna species endemic to the region, and some that are endangered. In the area known as “cenotes,” the cactus *Selenicereus donkelarii* (which is endemic to the Yucatan Peninsula) and the herbaceous plant *Anemia bartlettii* (which had previously only been registered in Belize) have been recorded. There are four plant subspecies unique to Sierra del Lacandón (Morales y Flores, 2001). A recent study recorded the presence of the bigmouth sleeper fish (*Gobiomorus dormitor*), which had not been previously registered in the Usumacinta water basin (Kihn, 2001).

Among the 27 mammals in the park, there are Guatemalan howler monkeys (*Alouatta pigra*), Baird’s tapirs (*Tapirus bairdii*), red brockets (*Mazama americana*), jaguars (*Panthera onca*), and other felines. Some species are considered threatened or endangered by conservation groups: Morelet’s crocodile (*Crocodylus moreletii*) is a regionally endemic reptile that is listed on CONAP’s Red List (2001b); the scarlet macaw (*Ara macao*) is included as listed on Appendix I of the Convention on International Trade of Endangered Species (CITES), which means that trade in the species is highly restricted. The jaguar (*P. onca*), Guatemalan howler monkey (*A. pigra*) and the red brocket (*M. americana*) are listed on IUCN’s Red List (2003). CONAP’s Red List of Fauna includes several felines and other mammals in the area as highly endangered (CONAP, 2001b). CONAP’s Red List of Flora considers that many of the flora species in the area could become endangered if their commercial use is not strictly regulated (CONAP 2001c). Included on the Red List of Flora is the la pita floja (*Aechmea magdalenae*), which is sporadically harvested.

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Management

Sierra del Lacandón National Park was created January 30, 1990 by Decree 5-90. In this decree, the geographical boundaries of the park were established and its status as a core zone of the Maya Biosphere Reserve was declared. During the first several years after its creation, the Guatemalan National Council of Protected Areas (CONAP) was responsible for its administration, although CONAP's presence in the area was sporadic and weak. In 1996, CONAP and The Nature Conservancy (TNC) began a joint cooperation to reinforce the protection and management of the area. In February 1998, CONAP signed an agreement with the Guatemalan organization called Fundación Defensores de la Naturaleza (Defenders of Nature Foundation) to jointly administer the national park.

There are 45 personnel assigned to this park: 35 park guards, five staff assistants, and five personnel responsible for management and administration. The 35 park guards are divided into five sectors of the park and they dedicate their time to patrolling and community relations activities. Seasonal staff is also employed to help in specific duties, mostly to increase control and vigilance during the dry season. Additional reinforcement staff comes from the National Police Nature Protection Service, although this support is intermittent. All of the field staff, except for the seasonal workers, receive their salaries and benefits from CONAP. Field staff work for 17 days and then take 8 days off, which in addition to vacation days and national holidays, results in a lack of personnel at the guard posts on some occasions.

The administrative headquarters of the protected area, in the municipality of Santa Elena, serve as the management center of the park. The administrative structure of the park is simple: the park director answers to the director of Fundación Defensores de la Naturaleza. The management is in charge of four departments: 1) the Protection and Conservation Unit, 2) Community Relations Unit, 3) Administrative Unit, and 4) the Planning and Monitoring Unit (Paiz, 2003, personal communication). The Protection and Conservation Unit works in four of the five park sectors, each sector has a director that is responsible for the park guards and support staff of that sector. The Community Relations Unit has three programs: one working on settlement relocations, one working on intervention with invading groups, and one working to improve relations with existing, local communities. They work in the fifth sector where the Protection and Conservation Unit does not work. The Planning and Monitoring Unit is responsible for creating and maintaining the park's database, and for construction.



The co-administrators headquarters along the "Naranjo" route in the eastern part of the reserve

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The park has a 5-year master plan in place (1999-2003). Because this is the last year of the 5-year plan, some of the objectives are being modified and updated according to the actual situation (Paiz, 2003, personal communication). The plan bases its strategies in three aspects:

1. *Reducing human pressure within the protected area.* To reduce human pressure, the plan suggests four strategies: 1) match community processes with conservation activities; 2) promote economic stability to reduce threats; 3) reduce the human population within the park; 4) establish areas and mechanisms to absorb the human impact.
2. *Increase effective management and control of the area.* To accomplish this goal, the plan outlines a coordination strategy, in which other institutions such as the Army, governmental agencies, non-governmental organizations, and grassroots community groups coordinate efforts. Along with this, the plan emphasizes that the park administrators should independently carry out conservation activities that have direct impacts on the park while delegating conservation activities that have indirect impacts.
3. *Improve ability to reach the protected area's goals in the medium and long term.* To reach this goal, conservation messages should be spread to raise awareness and park administrators should participate in regional conservation strategies.

The master plan also establishes three zones in the park. The intangible zone is the area dedicated to conserving biophysical characteristics in pristine condition, while the special use zone and the restoration zone are areas that have already been degraded because of human actions. The master plan does not provide the exact coordinates for these zones.

1. Intangible Zone

This zone is comprised of the areas of the park that are still in their natural states and that retain intact ecosystem functioning, although two areas that had human settlements in the past are included in the zone. It occupies 55.4% (112,000 hectares) of the park and is in the central to western portion of the park. It is dedicated to protect natural ecosystems, to guarantee biodiversity conservation, to guarantee natural processes functioning, and to conserve archeological sites and the landscape. Human modifications are not allowed; natural resource use is prohibited, infrastructure construction is prohibited (except for management, research, and/or ecotourism purposes), and human settlements are prohibited. Scientific research (both ecological and archeological) and low impact ecotourism are allowed in this zone.

2. Special Use Zone

The special use zone is the zone where human settlements already exist and the natural ecosystem is fragmented and degraded. The zone is located in the southeastern and eastern part of the park. The zone is approximately 63,600 hectares (31.4% of the park). Its goal is to establish productive activities while halting their expansion, promote sustainable use of the resources, and promote activities compatible with ecosystem recuperation. Human presence is permitted in the special use zone, as long as agreements regarding their stay have been signed. Use of non-timber products, timber, hunting, fishing, agricultural activities, and grazing are permitted in the zone—but only where they had already been occurring, new areas for these activities is not permitted. Maintenance of access routes and opening of new access routes is permitted as is providing basic public services to existing, recognized communities. Establishments of new human settlements are not permitted.

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3. Recuperation Zone

The recuperation zone is the zone where the natural ecosystems have been altered by human activities and where some unauthorized human settlements are located. The master plan considers these areas critical for the conservation of the intangible zone. The recuperation zone is located in the northeastern and eastern portions of the park—next to the intangible zone, and in the south-southeastern portions of the park, next to the special use zone. It is approximately 26,700 hectares (13.2% of the park). The objective is to stop ecosystem fragmentation and degradation of the resources and promote the ecological restoration of altered areas. Communities in the zone are supposed to come to agreements regarding their relocation. Goals for this zone are sustainable natural resources use and mitigation of activities compromising the intangible zone. Using non-timber products, timbering for subsistence, subsistence hunting, and subsistence fishing are permitted in the zone as long as they follow the regulations and norms established by the park administrators. Infrastructure construction is not permitted, except if it is for park administration, research, and/or regulated ecotourism. New human settlements are not permitted in this zone.

The infrastructure to protect this park is in better condition than infrastructure found in other MBR core zones, although the enormous problems faced by the park surely require additional investments. There are five district headquarters, all with formal (more or less) structures. There is also an administrative center in Santa Elena with all the facilities of a formal office. Field staff members have the necessary equipment to carry out their duties, including radios for each district. The park has vehicles and boats available for mobilization in the districts when needed. The park guards do not carry arms because at times, they carry out patrols with the National Police Nature Protection Service. Despite the infrastructure support and availability of equipment, actually controlling illegal activities is rare and the intangible zone is still vulnerable—all sectors within the intangible zone are preyed upon to some degree.

The 2003 budget is close to US \$ 750,000. Of this, US \$ 100,000 are designated for the Piedras Negras archeological site, US \$ 19,000 designated for equipment costs, and US \$ 83,000 for park guards pay, supplies, and fuel. The rest of the funds goes to operations and other staff pay.

Human influence

The park is accessible by various roads and by the river. From the east, one can access the park by using the paved road that runs along almost the entire eastern limit. From the community called “Ruinas” in the southeast, the special use zone is accessible by a road that enters to the community called “Pozo Azul.” In the south, there are various routes, accessed by a dirt road that goes to the communities of Esfuerzo, Retalteco, Lucha and Unión Maya Itzá. From the northeast, the park can be accessed by a breach that is impassible during the rainy season and goes all the way to Guayacán. The entire western limit is accessible by the Usumacinta River.

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Community near Poza Azul—the southeastern part of the park has large human populations, which has caused severe problems. The photo shows one of the communities that was established prior to the park’s declaration. It is located 8 km in from the park’s boundary.



Poza Azul Road: CONAP has signed agreements with the settled communities. One such agreement permits access road maintenance. One of the conflicts within the park is that the administration is following through with its end of the bargain, while community members continue to conduct prohibited activities in the intangible zone. The photo is of the recently repaired road to the Poza Azul community, in the southeast.

Various communities, both inside and around the park, significantly pressure the protected area—especially in the southern and eastern part of the park where forest cover has been severely fragmented or lost completely. Satellite photographs show that the entire southern, southeastern, and eastern portions of the park (which is almost 50% of the park) have lost most of their forest cover, or they are severely fragmented, while in the west and the north the forest remains in good condition (CEMEC/CONAP 2000b). Human pressure is mostly coming from land use changes,

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specifically using previously forested areas for agricultural activities and grazing activities, which then create the forest fire hazard that causes the most damage to the forest. Uncontrolled and widespread harvesting of forest resources is another human impact. Humans harvest products such as xate (*Chamaedorea* sp.), pita floja (*Aechmea magdalenae*), bayleaf palms (*Sabal morrisiana*) and different types of timber. In theory, according to the laws governing the Guatemalan national parks, collecting and harvesting of any kind is prohibited inside of a national park. In reality, these things occur, and even the master plan for Sierra del

Lacandón National Park allows extractive activities, including hunting, in almost 50% of the park. Sierra del Lacandon is not a first-class tourist destination in the Petén. This year, tourism monitoring activities began in order quantify the number of tourists arriving to the park because this information had not been gathered before. Even without the results of this monitoring effort, it is clear that when compared to other tourist destinations in Guatemala, such as Tikal National Park, Sierra del Lacandón is still “undiscovered” despite its tourism potential. Currently, there are no entrance fees and the small amount of tourism in the park is concentrated at Piedras Negras archeological site.



Road to Naranjo: A view of the road boarding the eastern limit of the park. This road has been one of the principle access routes for park squatters. The photo shows that part of the park was destroyed to build the road.

Conservation and research

Research on the flora and fauna of the cenotes and on the migration of the scarlet macaw (*Ara macao*) has been carried out in the park. A jaguar inventory program has also been planned by the Wildlife Conservation Society because of the theory that the park may have some of the highest concentrations of jaguar in the world (Balas, 2003, personal communication). The Fundación Defensores de la Naturaleza maintains a park database with information on the results of scientific research conducted, and vegetation and zoning maps.

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Threats

Sierra del Lacandón is **critically threatened**, which means that there is a high risk that in the immediate future the park will fail to protect and maintain biological diversity, unless urgent intervention actions are taken. The main threats include the advancing agricultural and ranching frontier, forest fires, logging, unsustainable use of non-timber forest resources, hunting, human invasions and new settlements, and lack of institutional control over the area. The master plan allows certain activities in certain parts of the park, such as ranching, agriculture, hunting, and commercial logging. This could aggravate the problems and cause a breakdown in the law. The area lacks a sufficient number of park guards to control such a large, difficult area. There are also reports of exotic plants and animals, although there is little information as to their potential impacts on the natural biodiversity.

Current threats

Forest fires

Forest fires are one of the most serious threats to this park. Before 1998, between 5 and 10% of the park was affected by fires and mostly in the eastern part (TNC, 1998b). In 1998, there was a major forest fire that, depending on the source of information, affected between 58,400 (CEMEC/CONAP, 2000c) and 100,000 hectares (TNC, 1998a). As of 1998, the fires have continued, albeit to a lesser degree. The fires have also been advancing in the northeastern section towards the intangible zone (CEMEC/CONAP 2000d; __, 2001). The forest fire problem is caused by agricultural and grazing activities, and occasionally, they have been caused by fires started by harvesters of forest resources.



***Left:** One of the principal sources of deforestation and land use change within the park. In the foreground, one can recognize corn fields, with the deforested foothills within the park in the background. **Right:** A grazing area within the park.*

The critical time for forest fires is during the dry season, from January to May. During this time, the park administrators contract additional help to control and prevent forest fires. The fire fighting strategy includes contracting additional help and working directly with local communities. During ParksWatch's field visit in February 2003, we observed that part of the fire fighting strategy is a series of workshop presentations to children in the community. While this is important to instill an environmental ethic for the future generations, we wonder if at this critical juncture if it is the most effective way to solve this serious, potentially destructive problem.

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The community fire-fighting program includes workshops on stopping forest fires for children

Administrative reports admit that some of the other activities within the fire-fighting plan are not being completed, such as a register of cleared lands. We were able to verify along the road to Poza Azul that the fires caused by the advancing agricultural frontier continue. If the park experiences extreme drought and heat, as they did in 1998, forest fires would be detrimental.



*In 1998, a large forest fire swept across the park.
The photo shows a burned area that is still trying to recover 5 years later.*

Permanent human presence and ungovernability

Permanent human presence is a complex problem and is related to many of the conflicts within the national park. The Nature Conservancy (TNC) estimated that in 1998, there were between 8,000 and 10,000 people living in the park. They estimated that 16,000 people were in the immediate surroundings (the “zone of influence” on the park) and that by 2008, there would be more than 65,000 people (TNC 1998b). Human presence has led to changes in land use: forested land has been converted into agricultural and grazing land throughout the southern and eastern parts of the park. Despite data collected by CEMEC/CONAP (200c) that indicate since 1997, land conversions have diminished when compared to earlier years, we saw during our visit that problem continues. Official data suggest that only 14,000 hectares have been deforested since the park’s creation, and only 7,500 hectares deforested before the park’s creation. The official data represent a very conservative estimate and in reality, more than 40% of the protected area is fragmented forest. The fragmented areas within the park look exactly like the buffer zones: widespread deforestation.

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This photo provides a good example of what is happening along the entire eastern park boundary: in the foreground, you see the posted sign indicating the park boundary and then behind the sign, inside of the park, you see deforested land and a settlement.

Human presence in the park has resulted in an ungovernable situation that makes resolving any of the park problems practically impossible. Some of the planned strategies to minimize human impacts lack legal backing. The master plan, for example, allows all types of human activities in the special use zone and regulates certain activities in the recuperation zone. Yet, it is questionable whether this master plan is following the spirit of the Protected Areas Law and its regulations, which restrict the majority of human activities within a national park. In the case of the human invasions, the administration has opted for negotiations with the squatters rather than enforcing the Protected Areas Law (Decree 4-89), which states that people engaged in illegal squatting in protected areas or attempts against natural heritage are to face criminal charges and jail time. In the case of the permanent settlers, the signed agreements are not carried out. There are also inconsistencies in the master plan. For example, the master plan prohibits new settlements in the park (i.e.: more people), yet does not say anything about population growth because of lack of family planning (i.e.: more people). All of this has created a situation that is difficult to resolve.

Harvesting of forest products and illegal hunting

As in other protected areas within the Maya Biosphere Reserve, controlling and regulating forest products extraction is difficult due to multiple access routes and lack of personnel. Several forest species, including xate (*Chamaedorea* sp.), bay leaf palm (*Sabal morrisiana*) and some timber species, are illegally extracted. The extraction carried out in the intangible zone could be depleting the wild populations.

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The illegal extraction of forest products is a problem throughout the intangible zone and one that could be depleting natural populations. This photo shows illegally collected bay leaf palm fronds.

Evidence of illegal logging and illegally harvested forest products is everywhere, from next to the communities in the southern part of the park to the interior of the core zones in the west. Primarily, extractors enter from the west side using the Usumacinta River and in the south they enter using the roads that lead up to communities within the park.



Member of ParksWatch-Guatemala observing an illegally cut tree from the core (intangible) zone



A truck piled high with illegally cut timber leaving the park. As the photo was being taken, the driver changed the trucks license plate in order to protect himself from possible denouncements.

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Hunting is another problem that is most likely affecting fauna populations. According to data by Jolón (2001), hunting within the protected area is mostly for subsistence. Wildlife populations are also affected by habitat destruction and the extraction of other forestry products. There are no data on hunting frequency or on the actual impacts on wildlife populations, but park guards claim to find evidence of illegal hunting during their patrols.



Esta foto fue tomada en el sur del parque nacional. Se trata de un cazador con perros al que se fotografió sin su consentimiento. Cuando PW le pregunto sobre la posibilidad de tomarle una fotografía se negó, consciente de que estaba realizando una actividad ilegal.

Lack of personnel

Although Sierra del Lacandón National Park has a larger number of park guards than other parks, the number is still insufficient to effectively patrol and care for the area. As was mentioned in the management section, there are 35 park guards divided into 5 management sectors. After accounting for vacation time, national holidays, and the rotating schedules, there are times when a management sector only has one or two park guards on duty. Even if all park guards were on duty simultaneously, each one would be responsible for covering 5,796 hectares. This hectare/guard ratio is worse than [Tikal National Park](#) and the [Yaxhá, Nakum, Naranjo Natural Monument](#), which have 3,000 hectares/guard (ParksWatch, 2002a and 2002b). Considering the enormous problems and conflicts present in the southern portion of the park, the number of park guards is despicably low. Lack of personnel prevents adequate control of illegal activities, which results in impunity in the park. This problem can be resolved as long as the capacity to raise funds increases. Defensores de la Naturaleza, the park's administrative partner, has demonstrated the ability to raise funds in the past and may prove able to rise to this challenge.

Conflicts within the master plan

As was mentioned earlier in this report, the master plan permits many human activities within the park. Within the special use zone, there are practically no limitations to the type of allowable human activities. In the special use zone, human settlements, logging, harvesting of non-timber products, hunting, fishing, agricultural activities, ranching, road construction, road maintenance, and public services are all allowed and implemented. Supposedly, these activities are regulated and controlled by park administrators. It is

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doubtful that these activities contribute to strengthening conservation by reducing threats and restoring degraded habitats as outlined for the zone in the master plan (CONAP, 2001a). By establishing the special use zone, the authors of the master plan did not follow the spirit nor intent of the Protected Areas Law.



Deforestation in Union Maya Itza (UMI): This community was settled in 1995 by the Guatemalan government (after the establishment of the park). According to the master plan, this community can convert up to 50% of their territory into agricultural lands. Both the settlement itself and the land use agreement lack legal backing.

Exotic invasive species

Presence of the Africanized bee (*Apis* sp.) has been reported within the park (Paiz, 2003, personal communication). Apparently, the bees interfere with scarlet macaws (*Ara macao*), although no scientific studies have been done to verify the effects. The invasive plant, *Oeceoclades maculata*, also from Africa has been recorded (Morales y Flores, 2001). A monitoring program is needed to determine if these two exotic species could threaten biodiversity within the park.

Future threats

Dam construction

The Mexican Government has plans to build a large dam along the Usumacinta River to produce hydropower. Because there is little public information regarding the project, most of the information on the proposed dam is speculative. What is known however is that a large dam would flood the western portions of Sierra del Lacandón National Park and would alter Usumacinta River's physical, chemical and biological processes. This dam is a serious threat to the currently well-conserved areas of the park. (See ParksWatch—Guatemala September 2003 News Item: *Do You Know Where They Are Planning to Dam Usumacinta River?*)

Recommended Solutions

Most of the problems and threats described could be resolved by raising additional funds to increase patrols and vigilance. Stronger control of the area and continuous police presence could stop illegal

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activities. In addition, enforcing the full extent of the law would produce good results for the national park. Yet, doing so, especially in the case of illegal squatters, could cause certain amount of social conflict. Even so, it may be the only way to reestablish authority and governance in the area.

Human settlements and ungovernability

There are only two ways to resolve this problem. The first option is to modify the park boundaries so that all the human settlements are located outside of the park. The second option is to radically change the community-park relationship and instead of negotiating, enforce the law, and require the communities to live up to their signed agreements or face severe sanctions. Both solutions are difficult to accept because they are radical and have many people in opposition. But, continuing along with status quo will surely ruin the national park and destroy its biological characteristics at some point in the near future.

The major benefit of modifying the parks boundaries is that institutional control could be established and part of the park could be saved. A major drawback however, is the precedent it would set, which could debilitate the entire protected areas system. By redrawing the limits, the government is also conceded, showing that the area is ungovernable and above the law. Even though, if redrawing the limits would safeguard the new borders, stop illegal activities, and guarantee the area's conservation, then it may be worth it. This solution would also require a new community-park relationship, in which the laws be applied and fully enforced with zero tolerance for illegal activities within park limits.

Establishing a new way of relating to the community will most likely bring about conflict. Strong political will is needed to do something like this. In order to soften this approach, a land buy-out scheme could be implemented targeting degraded lands in order to slowly recuperate the park. Lack of funding is definitely an impediment, there is a lack of money to support control and vigilance activities, much less buy land. Before making such a decision, a long and deep discussion is needed between the conservation community and other relevant stakeholders. This is needed now, as the park is approaching a point of no return.

Conflicts within the master plan

The master plan should carry out the objectives established for a national park and be in line with the Maya Biosphere Reserve's overall master plan. At this time, Sierra del Lacandón's master plan does not do either, and therefore needs to be urgently modified. The new plan should establish clear, verifiable goals and it should provide justification for any permissible extractive activity. It must clearly show how permissible extractive activities will contribute to the overall conservation of the area and/or how they will help minimize human impacts and it must specify the goals of such permissible activities. Moreover, adaptive monitoring programs of permissible activities are needed to identify problems and then prescribe solutions.

Conclusions

Sierra del Lacandón National Park is of utmost importance because of its cultural and natural significance. It is one of the Maya Biosphere Reserve Core Zones with unique biophysical characteristics. It is not too late to reverse, at least in part of the park, the threats caused by humans both within and around its borders. With immediate intervention and continued efforts, biological diversity within two-thirds of the park can be saved. Biological studies and records indicate that the protected area is home to potentially stable populations of threatened species, yet there is not enough information in these records to indicate the amount of pressure being placed on those populations.

Because of human pressure, the national park is **critically threatened**; there is an extremely high risk that the protected area will fail to protect and maintain biological diversity in the immediate future,

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unless urgent solutions are prescribed and implemented. Updating the master plan and resolving the problems caused by human settlements within and around the park are critical to removing the threats. ParksWatch field visits suggest that the southern and eastern parts of the park are experiencing the most human pressures and urgent actions are needed here. The biggest threats include forest fires, human presence, agricultural and ranching activities, and conflicts with the master plan. Lack of personnel is significant, especially in the face of the enormity of the conflicts within the zone. As a priority, a decision must be made regarding what to do about the human settlements within the park. The actual situation is not sustainable; the administrators already know this and they know it needs urgent attention. Once a solution has been proposed, either altering the park limits or redefining the community-park relations, enforcing the full extent of the law will be essential—including denouncing officials, invaders, and communities that try to act against the protected area and following through with punishments allowable by the law.

In 2004, a new 5-year plan will be written. This is a good opportunity to improve the plan. It should be written with participation from various stakeholders. It must clearly define realistic, measurable, and adaptive objectives and goals. The current plan permits activities that are actually prohibited according to national laws. It also allows these activities without justifying the reasons or proving how the activities contribute to the overall conservation goals of the park; and it lacks a monitoring scheme in order to determine if the activities are helping or hurting the area.

Political will is absolutely necessary to enforce the laws and protect the park. The administrators seem to be working toward this. Additional funds are also necessary in order to carry out the solutions required. The administrators have an incredibly difficult task in front of them. If they succeed, this important natural and cultural area will be conserved. If they fail, it will be lost forever.

Notes

(1) Según el Decreto 5-90 sus límites son: 16° 57' 17.3" / 90° 40' 50.3"; 16° 55' 04.4" / 90° 32' 11.7"; 16° 48' 36.3" / 90° 32' 57.2"; 16° 48' 40.4" / 90° 38' 41.5"; 16° 50' 16.3" / 90° 38' 40.3"; 16° 50' 21.6" / 90° 46' 34.6"; 16° 56' 27.2" / 90° 53' 48.0"; 16° 51' 03.2" / 90° 55' 51.5"; 17° 15' 10.9" / 91° 26' 22.2"; 17° 15' 1.8" / 90° 58' 41.8"; 17° 13' 45.5" / 90° 54' 57.6"; 17° 09' 25.3" / 90° 55' 00.5"; 17° 04' 15.6" / 90° 51' 15.7"; 17° 02' 01.8" / 90° 45' 31.6"; y 17° 00' 00.9" / 90° 42' 14.4".

References

- APESA, 1993. Evaluación Ecológica Rápida de la Reserva de la Biosfera Maya, Guatemala. APESA / TNC / PBM-USAID.
- Balas, R., 2003. Comunicación personal. Director de WCS en Guatemala CDC/CECON, 1995. 50 áreas de especial interés para la conservación en Guatemala. Centro de Datos para la Conservación y Centro de Estudios Conservacionistas. Guatemala.
- Carr, D. 1999. Un Perfil Socioeconómico y Demográfico del Parque Nacional Sierra del Lacandón. CONAP / TNC. Guatemala.
- CEMEC/CONAP, 1999a. Departamento de Petén. Cartografía básica. Consejo Nacional de Áreas Protegidas. Sistema de Información Geográfica. Centro de Monitoreo y Evaluación. Guatemala.
- CEMEC/CONAP, 1999b. Incendios forestales, Departamento de Petén, 1998. Consejo Nacional de Áreas Protegidas. Sistema de Información Geográfica. Centro de Monitoreo y Evaluación. Guatemala.

Guatemala: Parque Nacional Sierra del Lacandón

- CEMEC/CONAP, 2000a. Mapa de elevaciones del Parque Nacional Sierra del Lacandón. Consejo Nacional de Áreas Protegidas. Sistema de Información Geográfica. Centro de Monitoreo y Evaluación. Guatemala.
- CEMEC/CONAP, 2000b. Parque Nacional Sierra del Lacandón. Landsat 7 año 2000. Guatemala.
- CEMEC/CONAP, 2000c. Áreas de cambio en el bosque de la Reserva de la Biosfera Maya hasta 1999. Consejo Nacional de Áreas Protegidas. Sistema de Información Geográfica. Centro de Monitoreo y Evaluación. Guatemala.
- CEMEC/CONAP, 2000d. Incendios forestales, Departamento de Petén, 1999. Consejo Nacional de Áreas Protegidas. Sistema de Información Geográfica. Centro de Monitoreo y Evaluación. Guatemala.
- CEMEC/CONAP, 2001. Incendios forestales, Departamento de Petén, 2000. Consejo Nacional de Áreas Protegidas. Sistema de Información Geográfica. Centro de Monitoreo y Evaluación. Guatemala.
- CONAP, 1998. Plan maestro 1999-2003 del Parque Nacional Sierra del Lacandón. Consejo Nacional de Áreas Protegidas, The Nature Conservancy, Centro Maya y CARE. Guatemala.
- CONAP, 2001a. Plan Maestro de la Reserva de la Biosfera Maya 2001-2006. Serie coediciones técnicas número 30. Consejo Nacional de Áreas Protegidas. Guatemala.
- CONAP, 2001b. Listado de especies de flora silvestre amenazadas de extinción (Lista Roja de Flora). Resolución ALC 028-2001 del Consejo Nacional de Áreas Protegidas. Guatemala.
- CONAP, 2001c. Listado de especies de fauna silvestre amenazadas de extinción (lista Roja de Fauna). Resolución ALC 032-99 del Consejo Nacional de Áreas Protegidas. Guatemala.
- Decreto 4-89. Ley de Áreas Protegidas, reformas a la ley Decretos 18-89, 110-96 y 117-97, y reglamento. Congreso de la República de Guatemala. Guatemala.
- Decreto 5-90, 1990. Declaratoria de la Reserva de la Biosfera Maya. Congreso de la República de Guatemala. Guatemala.
- Dinerstein, E.; D. Olson; D. Graham; A. Webster; S. Primm; M. Bookbinder; G. Ledec, 1995. Una evaluación del estado de conservación de las eco-regiones terrestres de América Latina y el Caribe. Banco Mundial y Fondo Mundial para la Naturaleza. Washington.
- IDAEH, 1999. Protección de sitios arqueológicos en el Petén. Concepto de desarrollo arqueológico - turístico del noreste de Petén. Instituto de Antropología e Historia de Guatemala. Guatemala.
- Jolón, M., 2001. Plan de manejo de cacería para el Parque Nacional Sierra del Lacandón, Petén, Guatemala. Consejo Nacional de Áreas Protegidas y Fundación Defensores de la Naturaleza. Guatemala.
- Kihn, P., 2001. Ictiofauna de las dolinas de la Sierra del Lacandón en Petén, Guatemala. Fundación Defensores de la Naturaleza. Guatemala.
- Ley de Áreas Protegidas, 1989. Decreto 4-89 y sus reformas, Decreto 110-96. Congreso de la República de Guatemala. Guatemala.
- Ley Forestal, 1996. Decreto Legislativo 101-96. Congreso de la República de Guatemala. Guatemala.
- Morales, J. y M. Flores, 2001. Vegetación de los cenotes del área de Macabilero, Parque Nacional Sierra de Lacandón, el Petén, Guatemala. Fundación Defensores de la Naturaleza. Guatemala.
- Morales, R., W. Molina y G. Rivera, 2001. Uso de hábitat y patrones migratorios de la guacamaya roja (*Ara macao* cyanoptera, Psittacidae) en el Parque Nacional Sierra del Lacandón, la Libertad, Petén 200-2001. Fundación Defensores de la Naturaleza y Consejo Nacional de Áreas Protegidas. Guatemala.

Guatemala: Parque Nacional Sierra del Lacandón

- Paiz, M. Comunicación personal. Directora del Parque Nacional Sierra del Lacandón.
- ParksWatch, 2002a. Perfil del Parque Nacional Tikal. ParksWatch Guatemala. Guatemala.
- ParksWatch, 2002b. Perfil del Monumento Natutal Yaxhá, Nakúm, Naranjo. ParksWatch Guatemala. Guatemala.
- Pennington, T.; Sarukhán, J., 1998. Árboles tropicales de México. Instituto de Ecología de la Universidad Autónoma de México / Fondo de Cultura Económica. México.
- TNC, 1998a. Base de datos del Parque Nacional Sierra del Lacandón. The Nature Conservancy. Guatemala.
- TNC, 1998b. Parque Nacional Sierra del Lacandón. Estado actual, 1997. The Nature Conservancy. Guatemala.
- UICN, 2003. Red List of threatened species. International Union for Conservation of Nature and Natural Resources. En <http://www.redlist.org>.