



## Park Profile – Guatemala Ceibal Cultural Monument

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**Location:** Department of Petén

**Year created:** 1995

**Area:** 1,512 ha

**Ecoregion:** Tehuantepec moist forest

**Habitat:** Tropical moist forest



### Summary

#### *Description*

Ceibal was declared a cultural monument in 1995 forming part of the “Complex II,” group of protected areas of southern Petén department. Ceibal constitutes one of the core zones of Complex II along with Aguateca and Dos Pilas Cultural Monuments and the Petexbatún and Pucté Wildlife Refuges. The archeological vestiges of Ceibal are very important. It was the largest Maya settlement of the Late Classic Period (700-890AD). Now, the area is completely surrounded by farmlands and cattle ranches with strong human influence. As a result, large predators have been extirpated while avian diversity remains high. Several avian species depend on Ceibal for their survival which makes Ceibal a priority for conservation.

#### *Biodiversity*

Regional endemic species include: Mexican black howler monkey (*Alouatta pigra*), Central American spider monkey (*Ateles geoffroyi*), mealy Amazon parrot (*Amazona farinosa*), pale-billed woodpecker (*Campephilus guatemalensis*) and Morelet’s crocodile (*Crocodylus moreletii*). According to the “Red List” produced by the Guatemala’s National Council of Protected Areas (CONAP), there are several species within the park that are considered vulnerable. Included are the kinkajou (*Potos flavus*), double-toothed kite (*Harpagus bidentatus*), ornate hawk eagle (*Spizaetus ornatus*), black hawk eagle (*S. tyrannus*) and king vulture (*Sarcoramphus papa*). Avian diversity in Ceibal is relatively significant compared to other Guatemalan protected areas. Due to habitat fragmentation and human disturbance, large felines have disappeared from the area. There are 91 reported arboreal species in Ceibal.

#### *Threats*

Ceibal Cultural Monument is considered **critically threatened** and urgent solutions are

needed in order to ensure the protection and maintenance of its biological diversity. Threats include human encroachment, forest fires, illegal deforestation, poaching, and looting of archeological sites.



*View of Tehuantepec moist forest*

## **Description**

### *Geography*

Ceibal Cultural Monument is located in the northern department of Petén, 12 km southeast of the town of Sayaxché—which is the capital of the municipality of the same name—on the west bank of the Pasión River. Ceibal's limits are the Pasión River to the east, Secacao Village to the west and Chorro Village to the south. The buffer zone extends into the municipalities of Sayaxché, Libertad and San Francisco (CEMEC/CONAP, 1999). Sayaxché municipality has one of the highest population growth rates in Guatemala, more than 2.5% per year. The majority of the population is of indigenous origin (Cho et al, 2000).

The climate of Southern Peten is characterized as having annual precipitation between 1,500 and 2,627 mm and average temperature is 25.5° C, with variations between 22 °C in January and 29°C in May. The ranges oscillate between 9.8°C in the coldest month and 41°C in the warmest month. There is no well-defined dry season like there is in Northern Petén, yet the months with the least amount of precipitation are usually March and April.

Ceibal Cultural Monument shares physical characteristics with protected areas of southern-southwestern Petén, the Biosphere Reserve Montes Azules of Mexico (Pennington and Sarukhán, 1998) and part of the central area of Guatemala in the departments of Alta Verapaz and Quiché.

The topography varies. It is characterized by a limestone platform, with rolling hills that reach up to 220 m above sea level. Between these hills there are areas of temporal wetlands, formed by the rains and flooding of Pasión River. Its geology corresponds to alluvial plains of Pasión River. Ceibal is a biological island because the surrounding zone is deforested (SEGEPLAN/PROSELVA, 2000). Based on the Dinerstein classification system, Ceibal's ecological region is Tehuantepec Moist Forest.

## Archeology

The archeological vestiges of the cultural monument are very important. Ceibal was the largest Maya settlement of the Late Classic Period (700-890AD). The archeological site is composed of a ceremonial center that covers approximately one km<sup>2</sup> distributed over three tall hills separated by lowlands. The groups are designated by the letters A,B,C and O. Thirty-one monuments sculpted with hieroglyphics have been counted. Group A contains the majority of the monuments and it contains 15 steles and nine panels with hieroglyphics. Researchers have interpreted the carvings of some sculptures as a sign of decadence of the Maya civilization (INGUAT, 2001).



An example of a stele found at the archeological site.



One of the pyramids found within Ceibal Cultural Monument.

## Vegetation

The forest is well-developed with many species. Within, there are three levels of the forest canopy. The lower level includes trees growing between 5 and 12 m. The medium level trees grow between 19 and 24 m. The trees in the upper canopy measure more than 25 m tall. Many trees have large and well-developed buttresses. The floristic composition of the forest is characterized by a great abundance of palms, including cohune palm (*Orbignya cohune*) and bay-leaf palm (*Sabal morrisiana*). There are 91 reported tree species (SEGEPLAN-AHT-APESA, 1994). Some worth mentioning, because of their abundance, are kapok tree (*Ceiba pentandra*), gumbo limbo (*Bursera simaruba*), cola de coche (*Pithecelobium arboreum*), jutahy (*Dialium guianense*), hog plum or jobo (*Spondias mombin*), angelica tree (*Dendropanax arboreus*), ramón (*Brosimum spp*), luin macho (*Drypetes brownii*) and luin hembra (*Ampelocera hottei*). Other common species are candelaria (*Erblichia odorata*), big-leaf mahogany (*Swietenia macrophylla*), Central American cedar (*Cedrela odorata*), and tigerwood (*Astronium graveolens*). Epiphytes are also common and there are numerous bromeliads and orchids. In addition, there are strangler plants, like *Ficus spp.* and *Clusia spp.*

## Biodiversity

Several avian and mammal inventories have been conducted in Ceibal and they have revealed that Ceibal has the most avian diversity of all southern Petén protected areas. In avian counting,

six indicator species of primary forest have been identified (SEGEPLAN/PROSELVA, 2000): mealy Amazon parrot (*Amazona farinosa*), ornate hawk eagle (*Spizaetus ornatus*), double-toothed kite (*Harpagus bidentatus*), slaty-tailed trogon (*Trogon Massena*), great black hawk (*Buteogallus urubitinga*) and white hawk (*Leucopternis albicollis*). Ceibal has more species of canaries than Tikal National Park (SEGEPLAN/PROSELVA, *Ibíd*). In total, studies have counted 92 different avian species in Ceibal. Despite its small size, Ceibal plays an essential role in conserving several avian species. Recent studies on the migration patterns of the mealy Amazon parrot (*Amazona farinosa*) have demonstrated that the survival of the species is directly linked to the existence of the small protected areas in Southern Petén (Bjork, 2001, pers. com). There are also indications that threatened species like the scarlet macaw (*Ara macao*) could be using the area during parts of the year. These studies signal the importance Complex II has for the biological health of some species despite the fact that it is no longer in its pristine state.

There are reports of two mammal species which are indicators of primary forest: Mexican black howler monkey (*Alouatta pigra*) and Central American spider monkey (*Ateles geoffroyi*). In reality, mammals are not abundant in this protected area. In addition to the mentioned primates, there are reports of the existence of the Central American agouti (*Dasyprocta punctata*), kinkajou (*Potos flavus*), northern tamandua anteater (*Tamandua mexicana*) and Amazonian skunk (*Conepatus semistriatus*). Because of its small size, ecological isolation and continued human disturbances in the area, the large predators and the large herbivores have disappeared from the zone. Notable amphibian species include Muller's narrowmouth salamander (*Bolitoglossa mulleri*), which is regionally endemic (Campbell, 1998), and possibly another endemic salamander, *Bolitoglossa odonnelli*. And, the reptile, Morelet's crocodile (*Crocodylus moreletii*) has been reported on the banks of Pasión River.

### *Management*

Legislative Decree 64-95 mandates that the administration, control, and vigilance of the protected area is under the responsibility of the Council of National Protected Areas (CONAP). Despite this, the Presidency of the Republic transferred Ceibal's administrative responsibilities to the General Direction of Cultural and Natural Heritage within the Department of Culture and Sports (Government Agreement 961-98). As a result, two administrations exist in Ceibal: The Institute of Anthropology and History (IDAEH) oversees the protection of the archeological heritage of the area while CONAP manages the natural aspects through its Southern Coordination Unit (UCOSUR) with the help of the Program to Conserve the Rainforest of Peten (PROSELVA). PROSELVA is an interdepartmental program implemented by CONAP, the National Forest Institute (INAB), the Ministry of Agriculture, Livestock and Nutrition (MAGA) and the Institute of Agrarian Reform (INTA), and is sponsored by the General Secretary of Economic Planning (SEGEPLAN). It was started in 1993 as a result of an agreement between Guatemalan and German governments and operates using funding from the German Development Cooperation and the Guatemalan Government.



*CONAP's sign for Ceibal at the entrance of the park.*



*IDAEH's sign about Ceibal near the camping area.*

*Note the difference between these two signs: each one names distinct laws to justify the institutions' presence in the park.*

CONAP and PROSELVA maintain headquarters in the municipality of Sayaxché, which is coordinated by a director and a technical team (CONAP, 1999a). The team is dedicated to monitoring and managing the protected areas of southern Petén. IDAEH has a “Monuments Inspector” in Sayaxché who is responsible for protecting all archeological sites of the municipality. CONAP and IDAEH also maintain a permanent presence at the control post located at the end of Ceibal’s access road.

The protected area has a management plan and an established internal zonification. Inside the core zone of the protected area, CONAP has actually created a special “extensive use zone” with a surrounding buffer zone. They took this action because of the illegal squatters established there and the zone was no longer free of human activity. A biological monitoring plan also exists, although it is not specifically for Ceibal, but for all of Petén’s southern protected areas.

Ceibal is part of Complex II management unit. Complex II totals 124,278 ha, with Ceibal constituting 1512. The entire buffer zone and part of Ceibal’s nuclear zone is deforested, and it has lost many of the biological characteristics it once possessed. Complex II was planned, in part, to alleviate in some ways the deficiencies in Ceibal’s management and other nearby protected areas that were being managed in an isolated fashion (Paiz, 2001, per. com).

Neither IDAEH nor CONAP has a budget designated for Ceibal. Like in many other protected areas of Guatemala, it is very difficult to estimate the annual amount invested in Ceibal because the institutional budgets are rarely subdivided by area. IDAEH spends approximately US\$20,000 on Ceibal personnel salaries and CONAP spends US\$16,000. This is not a clear picture of the annual operating budget because it does not include expenses for equipment or gasoline, for example. Dividing the total amount spent on personnel by the size of the cultural monument, approximately \$23.80 US dollars are spent per hectare per month. This is higher than the majority of other protected areas in Guatemala. Although more money is spent per hectare, this situation is deceptive because of the magnitude of problems in Ceibal coupled with the way the funds are being spent result in a budget scarcity. The funds barely cover a

minimum range of activities and do not sufficiently protect the area.

A total of 15 park guards work in Ceibal Cultural Monument; seven work for CONAP-PROSELVA and eight work for IDAEH. The CONAP employees monitor and patrol the area. They are organized in two groups. Each group has a shift of 22 days, which means at any given time only a maximum of 4 CONAP park guards are working. The IDAEH park guards clean and maintain the archeological site and visitor locations. They also patrol the area looking for looters. They are organized in a similar fashion to the CONAP guards. Normally, in each IDAEH group, one guard stays in the camping area while the others go on patrol. One guard is responsible for coordinating the daily activities. The employees do not receive the same salaries. Employees of IDAEH are paid monthly average salaries of 1,400 Quetzales (approximately \$187) while CONAP employees receive 1,200 Quetzales (approximately \$160) each month.

Neither agency has a specific director for the area. In CONAP-PROSELVA's case, the person responsible for Ceibal is the director of the Sayaxché headquarters who is responsible for directing all protected areas in the municipality of Sayaxché. The person responsible in IDAEH's case is the Monuments Inspector stationed in city of Sayaxché. He is also in charge of five other archeological sites: Aguateca, Dos Pilas, Arroyo de Piedra, Altar de los Sacrificios and Cancuén.

Because the surrounding areas are deforested, the boundaries of the cultural monument are obvious. In addition, in various locations there are signs indicating Ceibal's borders. Legislative Decree 64-95 clearly establishes the coordinates of the protected area (**P1**: 90°2'35" y 16°31'21"; **P2**: 90°3'12" y 16°29'20"; **P3**: 90°5'44" y 16°29'23"; **P4**: 90°5'54" y 16°29'59"; **P5**: 90°5'53" y 16°30'20"; **P6**: 90°5'29" y 16°30'19"; **P7**: 90°5'30" y 16°31'01"; **P8**: 90°4'06" y 16°31'00"; **P9**: 90°4'05" y 16°31'22").

### *Human Influence*

Inside the protected area, there are several human settlements, some legal and some illegal. Close to the archeological area, infrastructure is in place for visitors and there are control posts for park guards. Permanent human presence is maintained at these facilities. The facilities are roofed units in which the park guards set up camp. There is also a model of the archeological site that provides basic directions for visitors who wish to take self-guided tours. There is potable water and a latrine but no electricity. The area north of the monument has been encroached upon by two campesino groups that are attempting to claim the land. During the visit, ParksWatch confirmed the existence of these two illegal settlements. One settlement, in the northeastern part of the protected area, is made up of 40 families. The other settlement, in the northwestern part, is very recent and is only made of eight families that had previously been evicted. As mentioned, CONAP has created a "extensive use zone" inside the core zone of the protected area due to human settlements located there. Population in the communities surrounding Ceibal, according to the recent census, is 28 habitants per km<sup>2</sup>. The majority of that population is younger than 15 years of age, which means pressure for land in the area will continue to exist, even grow, in the years to come.

There are two ways to enter the protected area. The first is by a dirt road that during the rainy

season is only accessible by a 4-wheel drive vehicle. The road is occasionally maintained, although it is usually in poor condition. There are various sections of the road that flood and rapidly deteriorate when the rains start. The other way to enter the protected area is by boat, from the city of Sayaxché on Pasión River. The deforestation around the protected area allows easy, illegal access for settlers.

In 1999, there were more than 12,000 visitors to Ceibal, of which 50% were foreigners (IDAEH, 1999). The number of tourists visiting the monument has fluctuated from year to year. For example, in 1995, there were 17,000 visitors while in 1997, there were only 4,000 (PROSELVA, 2000). According to IDAEH, Ceibal is the second most visited protected area in Guatemala, after Tikal National Park (Ibid). Yet IDAEH believes that Ceibal has low number of visitors overall. They feel that tourism would increase with additional promotion, improved accessibility for visitors, and improved basic infrastructure (IDAEH, Ibid). CONAP plans to concentrate spending efforts in Ceibal from 2005-2008 in order to boost tourism in the zone (CONAP, 1999b).

## **Threats**

The threats to the ecosystem of Ceibal Cultural Monument are serious and complicated. The surrounding areas have been totally deforested. The protected area itself is very small and is suffering an *island effect* (SEGEPLAN/PROSELVA, 2000). Due to major human influences, both in the interior of the protected area and in the buffer zone, the majority of the large mammals have disappeared. These facts have provoked two conflicting reactions:

1. CONAP has decided to replan the management of the area so that it will be integrated with other nearby ecosystems (Paiz, 2001, pers. com). As a result, they formed the so-called "Complex II" of protected areas of Southern Petén. Aside from Ceibal, Complex II includes four other protected areas that together have close to 27,000 ha of core zones. Although this approach intends to reduce the growing isolation of the core zones within Complex II, it is a very difficult task with uncertain results.
2. On the other hand, overwhelming human influence, the isolation of the core zones in Complex II, and the depth of problems Ceibal faces have pushed many environmental organizations to dedicate their efforts in the tropical jungle of northern Petén and abandon the areas of southern Petén. CONAP also leans towards this approach and focuses a lot of its efforts and institutional budget on the Maya Biosphere Reserve of northern Petén (CONAP, 1999c).

Threats include:

- Lack of coordination of administrative duties
- Insufficient budget
- Insecurity due to illicit drug activities
- Human encroachment
- Forest fires
- Illegal deforestation
- Poaching
- Looting of archeological ruins

### ***Lack of coordination of administrative duties***

Like in other protected areas with shared management, Ceibal suffers from a lack of coordination between CONAP and IDAEH. Fortunately, the lack of coordination in Ceibal is not as critical as in other parks because within the higher levels of administration there is agreement on short and long term conservation strategies and both institutions encourage tourism (CONAP, 1999d; IDAEH, 1999).

In the field, the guards from both institutions do not coordinate their work and barely have contact with one another. During the visits to the area, ParksWatch witnessed practically no communication between the staff of one institution with staff of another even though they work in the same place. CONAP and IDAEH staff do not feel that they are part of the same team.

Although there is one park guard per 100 ha in Ceibal—a higher average than in most protected areas in Guatemala, for example in El Mirador the average is one park guard per 3,000 ha—the lack of coordination between CONAP and IDAEH prevents effective management. In many occasions their duties overlap.

### ***Insufficient budget***

The amount spent on salaries per hectare in Ceibal is relatively high (US\$23.80/ha per month), especially when compared to the average budget that CONAP and IDAEH rely on to administer areas in Northern Petén (US\$2.13/ha, based on the 1999 salaries, IDAEH and CONAP in Petén). But, the problem lies in the fact that the area does not maintain its own budget but shares one with other areas in Southern Petén, meaning that there is not enough for any single area including Ceibal. Insufficient funds has resulted in little infrastructure and a scarcity of equipment. In our visits to the area, for example, IDAEH park guards repeatedly informed us that they use their personal money buy gasoline for the water pump, and that part of the equipment they use is their own personal property. They cannot count on a permanent vehicle and their only armaments are their machetes that they carry during patrols and for cleaning/maintaining trails. The guard's camp grounds are in the same place that has been prepared for tourists and consist of little more than hammocks with mosquito nets under a palmed roof. The staff's morale is low. They feel that they do not have sufficient equipment, security, or authority to appropriately care for the cultural monument.

### ***Insecurity because of illegal drug activities***

The municipality of Sayaxché has seen more drug related conflicts, both in cultivation and trafficking, than anywhere else within Petén. According to one of the directors of CONAP, managing the protected areas of Sayaxché (including Ceibal) is almost chaotic because of the insecurity caused by drug trafficking.

### ***Human encroachment***

Human encroachment is one of the most serious threats to Ceibal. Recent data on human encroachment into the area show:

- Between 1997 and 1999, six settlement groups were detected;
- In 1999, approximately 194 ha were occupied by a total of 188 family in Ceibal,

Aguateca and Dos Pilas cultural monuments (PROSELVA, 2000); and

- In 2000, two new groups occupied Ceibal and Dos Pilas.

The problem is complex because it seems that the cultural monument has become a destination for many destitute campesinos looking for land. Some of the groups that have invaded the area are campesinos in transit to more northern areas, while others form communities with a true level of organization and coherence that are prepared to remain in the area for the long-term.

Undoubtedly, easy access via trails through cleared forest to the protected area is one of the main reasons why people can successfully encroach into the area. A factor that has been equally influential, or maybe even more so, is the policy pushing administrators to buy land outside of the protected area for the settlers and to relocate them out of the protected area. This practice has actually become an incentive for new groups of campesinos to move to the area to try to improve their economic situation. It is true that in some occasions buying land for the squatters has succeeded in moving them out of the protected area. But, it has not ended illegal occupation of the land and periodically, new groups arrive and settle in the protected area.

At the time of ParksWatch's visit, one of the two groups that were illegally occupying land in Ceibal's northern zone had been evicted a few months before. After long negotiations, they were relocated on land bought for them. Yet, the campesinos returned to the protected area and began the process all over again because the land that was purchased for them was of lower quality than the land in Ceibal.

Squatters cut down and burn the forest to cultivate corn and beans. In order to supplement their diet and income, they hunt, fish and capture animals in the protected area (SEGEPLAN/PROSELVA, 2000). During planting season, the main forest fires of the zone originate from the surrounding agriculture lands and illegally settled lands inside the protected area. The park guards comment that it is difficult to control the squatters, and it is dangerous for guards to capture or report any of them. In addition, doing this could hinder later relocation negotiations.

Sayaxché's traditional population, which according to the CONAP park guards is aware of the importance of preserving the area, is bothered by these new settlements. They have been respecting the protected area and now feel frustrated that their efforts have been in vain. They have threatened to occupy the area themselves if the problem of settlements by outside squatters does not end.

### ***Forest fires***

624,255 ha burned during 1998 within the department of Petén, mostly in the municipality of Sayaxché and the Maya Biosphere Reserve (COE, 2000). From 1999 and 2000, the total area burned was much less compared to 1998, 0.27% less forest burned in 1999 and 23.26% less burned in 2000 (COE, *Ibíd*). The problem is a serious one for Guatemalan protected areas. Every year, some part of the forest burns, a problem that is affecting the entire Complex II and the protected areas of southern Petén. Forest fires are an enormous problem in Ceibal. Fires in the zone are caused by careless agricultural practices on surrounding land (INAB, 2000), as well as slash and burn agriculture employed by settlers within the area, and locals who do not

respect the protected area (SEGEPLAN/PROSELVA).

Forest fire maps of the municipality of Sayaxché show that a considerable part of the northern and western part of the cultural monument have suffered from fires between 1998 and 2000 (CEMEC/CONAP, 1998; 2000). The park guards assure us that the Ceibal fires are usually started in the areas with illegal settlements, which is consistent with CONAP's forest fire maps. During February, March and April, the park guards work to control forest fires.

### ***Illegal deforestation***

Another problem in the municipality of Sayaxché is deforestation. Historically, deforestation has been a problem in the area because of commercially valued species like Mahogany and Cedar. According to forest inventories, both species are now rare, which means that Ceibal can no longer serve as a major source of the illegal wood in southern Petén. Deforestation done to convert forest into cultivated land is also an important problem in the entire northern portion of Ceibal.



*One of the areas in the north that had been recently settled and deforested by illegal squatters. The squatters have been resettled out of the area and the forest is beginning to regenerate.*

### ***Poaching***

Fifty-five percent of the economically active population of Petén works in agriculture, forestry, fishing, and hunting. CONAP/PROSELVA estimates that 16% of the population receive some income from hunting or poaching animals in Ceibal and the rest of Complex II.

The threatened species of the cultural monument are Morelet's crocodile (*Crocodylus moreletii*), banded anteater (*Tamandua mexicana*), black howler monkey (*Alouatta pigra*), toucan (*Ramphastos* spp.) and several birds of prey. The hunters use dogs to help them hunt the animals and the animals are usually consumed by the family or occasionally sold to local restaurants (PROSELVA, 2000). Park guards commented that it is very difficult to control the poachers since the guards do not have any authority to detain them or carry arms. Trafficking wild birds with high commercial value like the mealy Amazon parrot (*Amazona farinosa*) and the toucan is also a problem (Bjork, 2001, per. com). According to the administrators of the area, hunting and animal trafficking have contributed to the loss of biological diversity within Ceibal and other areas of Southern Petén.

### ***Looting of archeological ruins***

Looting the archeological ruins in Ceibal began years ago. IDAEH's efforts are concentrated on controlling this looting and they have increased their efforts since 1998. Even though, the ruins are still threatened by looters. IDAEH guards claim that looting does not occur often and that their patrols have become more and more effective. However, during interviews between staff members of CONAP and IDAEH, it became evident that they are still concerned about the looting of archeological ruins in Ceibal and other nearby archeological monuments.

### **Recommended Solutions**

#### ***Lack of coordination of administrative duties***

It is essential that staff from both institutions begin to work as a coordinated team. The solutions need to be sought both within the political arena of the agencies and in the field. CONAP (1999e) has proposed that they improve coordination. Their proposal consists of forming agreements that would regulate and coordinate the relations between both institutions. A permanent commission made up of both agencies would be created. A parks department in IDAEH would be established and the contacts with the Cultural Heritage Division of CONAP would be improved. CONAP's proposal could produce positive results as long as the political will of both agencies existed.

In the field, Ceibal provides a clear example of the what happens when there is lack of administrative coordination. In order to solve this problem, it is essential that the staff from both institutions integrate themselves in a way that they work as a coordinated team, so that they regulate shifts, vacation time, patrols, and the rest of the duties in order to avoid overlap.

#### ***Insufficient budget***

Assuming that Ceibal receives 12,000 visitors per year, Ceibal's annual budget could increase by US\$50,000 per year if they would charge visitors entrance fees (15.00 Quetzals for national visitors and 50.00 Quetzals for foreign visitors). Fees are being charged in traditional tourist destinations such as Tikal so it would not be unusual to do so in Ceibal. Several years ago, they stopped charging entrance fees because the funds were not properly managed. Both IDAEH and CONAP have identified charging entrance fees as a useful mechanism to increase the budgets for the protected areas of Guatemala.

#### ***Human encroachment and settlement***

CONAP and PROSELVA administrators believe that encroachment into Ceibal should be resolved through a program that would buy farmland for relocating the communities. By promoting agricultural diversification, restoring degraded lands, and by using fertilizers to increase production on these lands, they hope to decrease the pressure on the natural resources (SEGEPLAN/PROSELVA, 2000). CONAP and PROSELVA have elaborated a strategy to resolve the conflicts with settlers through open dialogue and negotiating relocation and land purchases with the help of a land fund (PROSELVA, 2000). At this time, negotiations have already begun with two groups that currently live within Ceibal's boundaries.

The experience in Ceibal and other protected areas has demonstrated that buying land to relocate the settlers is a partial solution that does not address the root of the problem. Land encroachment continues to increase and is made up of an organized flow of people. Land purchases for the squatters is the solution that they are looking for. In this sense, the solution that is being carried out serves as an incentive for new groups to occupy protected area lands.

CONAP has used varying strategies, from forceful evictions to negotiations, with discouraging results. CONAP lacks coercive force, and there is lack of political will to face profound social problems. The only solution to the threat of human encroachment into the protected areas is to use the full rigor of the Protected Areas Law of Guatemala. It is a controversial solution, but not more controversial than fact that state entities in charge of the protected areas do not carry out the functions for which they were created.

### ***Forest fires***

Ceibal's administrators have proposed a strategy to control this problem, made up of three parts. The first is to educate the local populations about the importance of protected areas so that they will be conscious of their importance. Second, to strengthen the administrative capacity to make them more efficient. The final part of the strategy is to establish forest fire preventive measures (SEGEPLAN/PROSELVA, Ibid). These suggested solutions should be sufficient to control the majority of the forest fires in the area based on the experiences in Petén, which since 1998 has had a plan to control forest fires in which both institutions and citizens have participated. But to truly control forest fires in Ceibal, it is necessary to first solve the problem of the illegal squatters.

### ***Poaching***

Administrators have suggested three measures needed in order to control poaching (SEGEPLAN/PROSELVA Ibid):

- Breeding the species that are most sought after for consumption;
- More park guards in the protected areas with better equipment; and
- Legal reform to grant park guards policing authority.

This approach would deal with the current roadblocks to controlling illegal hunting, and if put into practice will be effective.

### ***Looting of archeological heritage***

Recent visits to Ceibal provided evidence that some of the sites had been recently looted, though IDAEH and CONAP's patrols have proven effective overall. Better coordination between workers of both institutions would be sufficient to significantly reduce the looting problem.

### **Conclusion**

The future of Ceibal Cultural Monument is uncertain. Illegal settlements are frequent and as a result, deforested areas exist in the interior of the protected area. Ceibal has also been seriously

affected by yearly forest fires. Deforestation, illegal hunting, looting of the archeological site, budget scarcity and lack of coordination between the managing organizations all exist in Ceibal. Institutional efforts are further hindered by the insecurity of the area and by human encroachment. As a result, the quality of the ecosystems of Ceibal Cultural Monument is deteriorating.

The land encroachments creates two problems. First, the encroachments erode the quality of the natural and archeological heritage of the area. Second, squatters deteriorate the native local population's trust that the protected area will be maintained in the long run. The effort that is being made with the help of international cooperation is praiseworthy. It seems to be the only serious effort that has been made in the area that works to integrate a group of ecosystems that had been isolated previously. Yet, if current trends continue, the biological components of Ceibal and the rest of Complex II may become so badly damaged that they will reach the point of no return.

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