



## Park Profile – Guatemala Tikal National Park

**Date of most recent on-site evaluation:** September 2002  
**Date of publication:** November 2002  
**Location:** Department of Petén in the Maya Biosphere Reserve  
**Year created:** 1955  
**Area:** 57,582 ha  
**Ecoregion:** Tehuantepec humid forest  
**Habitat:** Wetlands, cloud forest and lowland forest



### Summary

#### Description

Tikal National Park is located in northern Guatemala, between the municipalities of Flores and San José, Petén. Created in 1955, it is Guatemala's best-known park and most popular tourist destination. It features a set of striking archaeological sites and a complex habitat of wetlands, lowland and highland forests, which have been well conserved. The park is one of few protected areas in Guatemala to have received the full support of authorities for its conservation. In 1979, Tikal was declared a UNESCO World Heritage Site.

#### Biodiversity

Regionally endemic species found in the park include: the crocodile (*Crocodylus moreletii*), Central American river turtle (*Dermatemys mawii*), the howler monkey (*Alouatta pigra*), spider monkey (*Ateles geoffroyi*) and ocellated turkey (*Agriocharis ocellata*). Felines include the jaguar (*Panthera onca*), puma (*Puma concolor*) and ocelot (*Leopardus wiedii*). Several of the species in the area are on IUCN's red list (2001). Guatemala's National Council of Protected Areas (CONAP 2001a) also considers that *C. moreletii*, *A. pigra*, *A. geoffroyi*, *P. onca*, *P. concolor* and *L. wiedii* are in serious danger of extinction.

#### Threats

ParksWatch classifies Tikal National Park as vulnerable, meaning that continuous efforts must be made to ensure the long-term success of biodiversity protection. The main threats to the park are forest fires, illegal extraction of forestry products, and poaching. Additionally, due to an imbalance between the number of personnel in charge of the archeological and tourist areas and the number of personnel available to patrol the natural areas, there are not enough park guards to adequately address the threats. The lack of job stability of those in charge of administration has also hampered the park's management.



*A photo of showing the start of excavation work in the park, compared with a recent photo.*

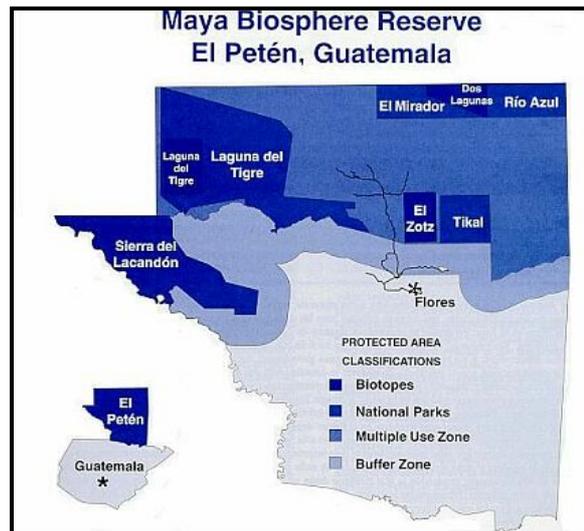


*Current view of Tikal National Park.*

## **Description**

### *Physical Description*

Tikal National Park lies in northern Guatemala, located between the municipalities of Flores and San José, Petén. It is located within the Maya Biosphere Reserve (MBR), and is one of the core zones of the reserve. The park stretches across 57,582 ha. It is bordered on the southwest by the San Miguel la Palotada Protected Biosphere (El Zotz). There is a strip between the biosphere and the park, which the National Council of Protected Areas (CONAP) has declared in a category for special use, with the same management goals as the core zones (CONAP, 2001b). To the east it is bordered by Yaxhá, Nakum, Naranjo National Monuments and to the northwest by a biological corridor that leads towards El Mirador-Río Azul National Park. The multi-use zone of the Maya Biosphere Reserve borders it to the north, while its southern edge is protected by a buffer zone.



*Map showing the location of Tikal National Park within Maya Biosphere Reserve*

The park features striking ruins, mainly from the classic Maya period. Tikal and Calakmul were the greatest and most heavily populated cities of the Maya civilization during the Classic Period (Schele & Freidel, 1999). The civilization was at its peak from 700-850 AD, when it covered an area of 120 km<sup>2</sup> and wielded influence over an area of 2,500 km<sup>2</sup> (Valdés et al., 1997). Tikal gradually became more important from the Late Pre-classic Period onwards (250 BC – 250 AD). Its decline was apparently due to internal fighting which led to the downfall of the civilization's leading cities (Fahsen, 2002, per. com.). In 1979 UNESCO declared Tikal National Park a Mankind Heritage Site for its exceptional cultural and biological characteristics (UNESCO, 1979).



*View of the archaeological site of the North Acropolis seen from the II Temple.*



*This carving is a portrait of one of the most important rulers of the Classic Period, called Stormy Sky. This is one of the best-preserved carvings found at Tikal, and is a work of art stored in the park's Pottery Museum.*

The landscape of the national park is generally rolling. To the northwest, there is a range of hills that extends into the Zotz Biosphere and the MBR Multiple Use Zone. From southeast to northwest the area is crossed by mid-altitude highlands with a flatter topography. From southwest to northeast, the area is covered by lowland forest that stretches as far as the park boundaries and is split only in the highest reaches of the central area of Tikal. The highest points, in the northeastern section, reach a height of 400 meters, while the lowest areas are 200 meters high (CEMEC/CONAP, 2001), and lie in the lowland areas of the northeast and southwest. The surface layer of organic matter is shallow, with an underlying layer of clay-like soil that lies on top of limestone. According to data provided by Tikal's meteorological station, the climate in the area is mainly warm and humid, although there is no clearly defined dry season. Average annual temperatures is 23.9° C, ranging from 20-30.7° C. Relative air humidity rates 81%, with a maximum of 100% and a minimum of 36%. Average annual rainfall is 1,323 mm. February - May are generally considered the dry months. There may be up to an 11°C temperature difference between the warmest and coldest months.

## *Vegetation*

According to the classification by Dinerstein *et al.* (1995), the biosphere lies within the Tehuantepec humid forest ecoregion. According to MBR's functional landscape map (CONAP, 2001b), habitats found in the protected area include highland and medium foliage forest, lowland forest and year-round wetlands. The forest of Tikal has been described as "an anthropogenic forest" due to the fact it features a large number of useful tree species such as cedar (*Cedrela odorata*), mahogany (*Swietenia macrophylla*), chicle tree (*Manilkara achras*), allspice (*Pimenta dioica*) and copal (*Protium copal*), among others (Balas, 2002). The forest is representative of the eastern section of the Maya Biosphere Reserve. The Rapid Ecological Evaluation of MBR (APESA, 1993) determined this to be a forest of medium tree diversity, as it is home to approximately 200 species per hectare, although Schulze & Whitacre (1999) calculate that the number is actually higher. The presence of the highlands means that the variety of vegetation in the area is determined by drainage. Like habitats found elsewhere in the Maya Biosphere Reserve, in areas that are only temporarily flooded one can find formations that are characteristic of dry savannah, with spiny, thick bushes.

### Highland forest and medium foliage in the highlands

This type of forest grows in the highest parts of the protected area, in the upper highland reaches which cross the area, over an altitude of 300 meters. Due to the fact the soil layers are often shallow and the material is porous, rapid drainage occurs. The canopy opens up at a height of 6-20 meters (CONAP, 2001b). The canopy is thin in some parts, as some trees lose their leaves during the dry season. Existing species include breadnut (*Brosimum alicastrum*) with guaya (*Talisia olivaeformis*), malerio (*Aspidosperma megalocarpon*), pucté (*Bucida buceras*) and manchiche (*Lonchocarpus castilloi*), among others (Schulze & Whitacre, 1999).



*Detail of the highland forest in Tikal*

### Highland forest and medium foliage on the plains

This type of forest grows in well-drained soil. It is one of the most common habitats in the area (CONAP, 2001b). The forest canopy can reach a height of 40 meters, although it is highly variable. The highland forest plant life is dominated by ramón (*Brosimum alicastrum*), some sapotaceous and meliaceus species. In the lower part of the forest one can also find species like allspice (*Pimenta dioica*).

## Lowland forest

This type of forest is common in the southwestern and western stretches of the protected area. It grows in areas with shallow, heavy and sticky topsoil that is flooded during the rainy season, but dries and cracks in the dry season. The trees grow in small or medium-sized hollows. During the rainy season, the soil does not properly drain and a sheet of water covers the area.

Variations in the soil drainage can lead to differing water availability and therefore influence the composition of the plant life. In some parts one can find forests with stubby vegetation where dominating species include the logwood (*Haematoxylum campechianum*), as well as the pucté (*Bucida buceras*) and the palo gusano (*Lonchocarpus guatemalensis*). The canopy rarely surpasses 11 meters in height (Lundell 1937). The areas of sunken hollows are covered by marshland. The driest areas are carpeted with xerophytic shrubs, stubby and compact, in characteristic savannah formations, with acacias (*Acacia* sp.) and thorny plants (Schulze & Whitacre, 1999). Other areas are covered with grasses and palm tree species such as escobo (*Chrysochloa argentea*) and Mexican palmetto (*Sabal mexicana*).



A detail of the palm tree grove. In some places, the corozo (*Orbignya cohune*) is common, while other areas are covered with xate (*Chamaedorea* sp.)

## *Biodiversity*

Researchers working in the Tikal National Park have discovered to date 185 tree species, and there are believed to be more than 200 (Schulze & Whitacre, 1999). The park features the highest density of xate (*Chamaedorea* sp.) in the entire Maya Biosphere Reserve, with 500 trees per hectare (Balas, 2002, per. com.). Over 352 bird species have been spotted, including 30 birds of prey and 60 migratory species (Balas, 2002). Due to the rarity and number of species of fauna, Tikal is considered an important area in Guatemala (SEGEPLAN/PROSELVA, 2000). Rare species found nesting in Tikal include the orange-breasted falcon (*Falco deiroleucus*) and the Guiana crested eagle (*Morphnus guianensis*), which makes Tikal one of the few nesting areas in Central America for this species. Tikal is home to 130 species of herpetofauna, which represents 85% of the 160 known species in the entire Maya jungle (Campbell, 1998). Of these, 105 species are reptiles, 48% of the known species in the country, and 25 are amphibians. The park is believed to be home to 100-105 mammal species (Balas, 2002), of which 60 are bats and five are felines. Some species have modified their habits due to the large numbers of tourists who visit the park. One can easily spot species such as the ocellated turkey (*Agriocharis ocellata*) and others close-up.



*The ocellated turkey (Agriocharis ocellata), a common regional species now under pressure from hunting elsewhere, has practically been tamed in the park, and is commonly spotted. In the photo, one can see wild turkeys do not flee from people.*

Reptiles registered to date include the crocodile (*Crocodylus moreletii*), a common regional species included on the CONAP Red List (2001a). Mammals include the howler monkey (*Alouatta pigra*), the tapir (*Tapirus bairdii*), red brocket deer (*Mazama americana*), jaguar (*Panthera onca*) and other felines, which are spotted with relative ease in the central section of the park. *Panthera onca*, *A. pigra* and *M. americana* are currently on the IUCN Red List. The Fauna Red List (CONAP, 2001a) includes several felines and other mammals in the area as species on the verge of extinction. The Endangered Flora List by CONAP(2001c) considers that many of the species in the area could become endangered if trade is not strictly regulated, including pita floja (*Aechmea magdalenae*), which is sporadically but intensely extracted.



*The photo shows a red brocket deer (Mazama americana), a species included on the IUCN Endangered List as “Data Deficient,” meaning that there is insufficient information in order to assess its risk of extinction. The red brocket deer is hunted throughout Peten, and it is extremely rare to spot one outside of the park.*

### *Management*

Tikal National Park was created May 26, 1955, by a government accord issued by the Presidency. In 1957 the government issued the regulations that determined how the park should function. A government accord also demarcated the park’s boundaries and the total area, although it did not give geographic reference points (PRG, 1957). In 1979 it was registered as a UNESCO World Heritage Site (UNESCO, 1979) through the Convention to Protect the World’s Cultural and Natural Heritage. In 1990, the government also created the Maya Biosphere Reserve, whereby the area was included within the core zone (Decree 5-90).

On September 2, 1957, when the administrative regulations were published, the Institute of Anthropology and History (IDAEH) was named park administrator (PRG,1957). In 1970, Accord 1210-70 declared Tikal an archaeological monument and ratified IDAEH as the project administrator. The park's administration was run exclusively by IDAEH until 1989, when the government passed the Law of Protected Areas, which established CONAP as the entity in charge of managing all the protected areas in Guatemala. Today, the law states that both institutions jointly administer Tikal, although in practice, IDAEH is in charge of management.

Tikal National Park is one of the best-staffed protected areas in Guatemala. It has a staff of 135 employees: 56 are park guards and 79 handle administrative and technical matters, both archaeological and biological. Of the 56 park guards, 39 run constant patrols day and night, while the others guard the museums, man the control posts and take turns covering other workers during vacations. In addition, the park also temporarily hires people from nearby communities to prevent forest fires, clear trails and do other maintenance work. All personnel work for the Institute of Anthropology and History (IDAEH). The park also features a squad of 75 guards manned by the Tourist Police Force who are split into two groups and take turns once a month. The squad is funded by the Government Ministry and is in charge of crime control and prevention within the park.



*The national park administration offices.*



*Due to attacks on visitors, the government decided to staff the park with 75 tourist police.*

The administrative structure of the national park is complex. There are two directors: one technical and the other administrative. The former is in charge of the following technical units: Archaeology, Architecture, and Biology. These units are in charge of restoration work and maintenance of archaeological monuments, as well as monitoring and biological studies. The units in charge of the biological research are still new and less developed than those in charge of the park's cultural heritage. The administrative director is in charge of control and maintenance of the "urban" area of the park, as well as the department of human relations established in the tourism area. Both directors have the same status and are supervised by the Department of Cultural and Natural Heritage of the Ministry of Culture and Sports.

The area has a Master Plan that dates back to 1972, which is now obsolete and out of touch with today's reality and problems in the area. Work on a new Master Plan is currently underway and is to come into effect in 2003. The 1972 plan formed the groundwork for tourist development and archaeological restoration in the area. Many of the plan's recommendations went unheeded, which meant that problems that could have been avoided at the time have since worsened, especially on the park's borders, as farming spread. The

plan established the creation of a buffer zone stretching for several kilometers around the park that would have prevented many of the problems that the area faces today. Today, the area has been zoned, but this exists in name only, and is based on the physical location of the best-preserved archaeological areas. Zoning divided the national park into a nucleus area and an area on the outskirts. The nucleus area is the central section of the national park where the archaeological, tourist and administrative areas are located, while the outskirts are home to the rest of the protected area.

The infrastructure that protects the area is very complete, especially in the central section, featuring a series of complexes for administration, workers, control posts, area for technical personnel, storerooms and buildings for security. In addition, the national park includes complete infrastructure for tourism, including two hotels, four restaurants, two museums, a campsite, bathrooms in several areas (even inside the archaeological area), guide and interpreter services. Camp personnel have been issued equipment for their tasks, including vehicles for patrolling the park, and camp and radio gear (although this is limited to the administrative offices). The park guards are authorized to carry guns, which lends them greater authority in the face of poachers, compared with other protected areas.

There are no figures for the park's budget. Despite the fact that such information is allegedly public, both park directors and officials at the Ministry of Culture claim that they are unaware of the figures. This data is difficult to find even within the ministry's budgets because the monies are registered by category and are not broken down into specific figures for each protected area. Based on interviews with current administrators and previous park directors, as well as personnel, and bearing in mind the number of personnel hired, services provided by the park for tourists and its infrastructure, the 2002 budget must run to at least US \$600,000 (The lowest possible calculation is 4,800,000 quetzals, of which approximately 80% would cover personnel expenses. The dollar figure is approximate and is based on an exchange rate of Q.7.70 to US \$1.). The entire budget comes from the park's entry fees.

### *Human influence*

The main access to the park is via a paved road that enters the park from the southwest and runs as far as the administrative center. The road surface is in good condition, and takes just 45 minutes to travel from the city of Flores, which has an international airport, to the center of the national park. To the north, a few kilometers from the protected area, lies the community of Uaxactún. A dirt road runs from the village across Tikal from north to south and links up with the paved road near the area where the administrative offices are located. During the rainy season, only a four-wheel drive vehicle can successfully use the dirt road. To get to the community of Uaxactún, one must request authorization from the park administration, because entry to the village is via the road that runs through the park. Allegedly, the permit is to keep control over the people who use this road.



*A view of the road that enters the park from the southwest. In the foreground, one can see power lines, which have been recently laid down as far as Tikal's park boundaries. In the background one can see the park's forest, and in the middle, a deforested area along the southwest boundary.*

Near the national park there are several communities who are bringing pressure to bear on the park, mainly in the southern area, where forest cover has thinned rapidly in the space of a few years. CEMEC/CONAP (2000) satellite photographs show the southwest area near Tikal has lost a large swath of forest, while the southeastern forest has also become sparse. Mostly, this human pressure in the southern area consists of forest fires caused by the farmers and cattle herders that are converting the land for agricultural purposes. The extraction of forest products such as xate (*Chamaedorea* sp.) and pita floja (*Aechmea magdalenae*) is also a major problem in some areas of the park. Despite the fact that extraction is illegal, there are loggers' camps in the southeastern section of the park.

Tikal is a first-rate tourist destination. Park authorities report that the area receives over 200,000 visitors a year. Tourists have to pay an entry fee of US\$6.50 for foreigners and US\$2 for Guatemalans. In addition to income from entry fees, the national park receives user fees from tourist businesses that operate within the park. The exact amount of the money collected is another one of the mysteries of Tikal. Rumor has it that they are a source of corruption, although no employee in the area has ever been put on trial for corruption charges. Tikal's income is sent to a private fund at the Ministry of Culture and Sports, which then allocates part of the sum back to the park and the rest to other departments of the ministry.

### *Conservation and research*

There are currently no permanent research projects ongoing in the area. In the past, the area has seen several research projects such as the Peregrine Fund, which studied the peregrine falcon (*Falco peregrinus*) and other birds of prey. The University of Pennsylvania has done a great deal of archaeological research, some of which has been published in English, but most of which is unavailable to the general public.

## **Threats**

ParksWatch classifies Tikal National Park as a vulnerable area and recommends that continuous efforts must be made to ensure the long-term success of biodiversity protection. The main threats to the park are forest fires, illegal extraction of forestry products, and poaching. Illegal extraction of forestry products and poaching within the park is occurring for two main reasons. First, it occurs because those engaging in these activities lack respect for park boundaries. Second, it occurs because an imbalance exists between the number of personnel in charge of the archeological and tourist areas and the number of personnel available to patrol the natural areas, meaning that there is actually a lack of necessary staff to monitor for and to control these illegal activities.

### *Current threats*

The threat to Tikal National Park include:

- Lack of personnel
- Forest fires
- Illegal extraction of forestry products and poaching
- Uncontrolled mass tourism

### *Lack of personnel*

Unlike other parks, Tikal is privileged in the total amount of personnel it employs. Yet, the number of employees in the field to run patrols continues to be insufficient. The 56 park guards are organized in shifts to guard the museums, control posts and patrols. There are 39 workers covering the entire park, 18 of whom work during the day and 21 at night. This situation is better than most protected areas in Guatemala, although it continues to be insufficient. In practice, considering the number of people per shift, each park guard has to cover 3,000 hectares, a situation similar to the threatened Natural Monuments Yaxhá, Nakum, Naranjo (ParksWatch, 2002). The difference between Tikal and Yaxhá arises not so much from the number of guards but how the local villagers view the protected area: Tikal National Park is a national symbol that has been protected for nearly 50 years. Despite this, extraction of forestry products continues to be a major problem, as well as the threat of forest fires, many of them started by people who oppose the existence of the park. Bearing in mind conflicts are not as exacerbated as in surrounding areas but still exist, the number of personnel in charge of control and monitoring patrols remains low. In interviews with members of nearby communities and during field visits, it is easy to see that control of illegal activities in the southeast is minimum and sporadic, as on the western boundary.

### *Forest fires*

Forest fires are a major problem for the national park. In 1998 forest fires burned more than 2,200 ha (CEMEC/CONAP, 1999.) In the Year 2000 there were 14 different fires that affected over 600 ha. The problem of fires is repeated year after year. The main source of fires is found in the lower southwest and center-east stretches of the park, the areas that have proven to be the most vulnerable to fires. Park guards say there are three different groups that start these fires. First, extractors and poachers light campfires in the area that can become forest fires. Those who are seeking revenge because they have been caught carrying out illegal activities within the park start other fires. But the main cause of forest fires is the advancing agricultural frontiers to the south, on the outskirts of the park. The critical time of year for the park is from April-May, the driest season, when the park administration often takes on additional personnel to control and prevent forest fires. From November-December

2001, the park management came up with a strategy to fight forest fires by placing emphasis on prevention with awareness campaigns in nearby communities, training in putting out fires, and reducing the sources of fuel. The plan was apparently successful, although the potential problem continues to exist. During our field visits, we spotted plots of land recently burned and cleared near the protected area.

### *Illegal extraction of forestry products and poaching*

Like in other areas in the Maya Biosphere Reserve, the problem of illegal extraction of forestry products is difficult to curb due to the many entry routes into the protected area, which grants easy access with no control over the routes. The non-timber product in heaviest demand is the xate (*Chamaedorea* sp.), which is possibly the cause of the decrease in wildlife species. Extraction is done with no control of any kind, and in the central area, near the most frequently visited archaeological site, one can spot plants that have been cut down by extractors. Evidence of extraction of pita floja is also easily spotted near the administrative offices. The main entry routes lie to the west, through the San Miguel la Palotada Protected Biosphere, to the southeast through the Caoba Rift, and to the northwest, near the community of Uaxactún and the village of Santa Cruz.

Although there is no specific data on the frequency or impacts of poaching in the national park, park guards claim that during their patrols they have found evidence of illegal hunting, something which is closely linked to the extraction of forestry products. Unlike extraction activities, hunting is done only in the most remote parts of the park, due to the control existing over areas near the archaeological site.



*A xate logging camp set up just a few meters from Tikal on the southeastern boundary. Extraction of forestry products is believed to be thinning out some species.*



*A field that a month ago was covered by forest has been cleared and burned to plant sweet corn. The photo was taken a few meters from the entrance, in the community of Zocotzal.*

### *Uncontrolled mass tourism*

Uncontrolled mass tourism is one of the most serious problems in the national park. The massive arrivals of tourists is deteriorating pre-Hispanic monuments, by erosion (due to the fact the ruins are exposed), access to the structures, and by acts of vandalism in some of the temples. Lack of control over visitors is evident in many of the temples, which have been scratched and deteriorated in the most accessible places. The fact that Guatemalans may enter the park for free on Sundays means thousands of people visit the park in a single day, and the

problems associated with mass visits have worsened. One of the most evident impacts can be seen in the change in behavior of many of the animals, which approach tourists to be fed. The pizote (*Nasua narica*) abounds in the park due to litter left behind by tourists. This mammal could be affecting the nesting habits of some of the park's bird species (Solórzano, 2002, per. com.). The existence of dozens of different garbage cans throughout the visitors' zones, and particularly in eating areas, have led to a rise in the number of vultures (*Cathartes* sp.), which use the same nesting space as some birds of prey, forcing them out of the area (Solórzano, 2002.) In the central area of Tikal one can often spot timid species that act tame around visitors, which shows how the massive influx of tourists has changed the behavior of even the most fearful species.



*Tourists can visit all areas without any restrictions, thereby damaging archaeological structures and eroding the roads.*



*On Sundays, the park is open free of charge to local tourists, which means thousands of people come here from all over Guatemala. This is increasing the damage caused by visitors.*



*The pizote (*Nasua narica*) abounds in the park due to litter left behind by tourists. This mammal could be affecting the nesting habits of some of the park's bird species.*



*Pizotes are so used to humans that they will even eat from their hand.*

## ***Future threats***

The main future threat that ParksWatch has identified is potential road construction projects in the area.

### *Road construction project*

Although there is little available information, it is known that there have been proposals for road building within the protected area on several occasions. For example, in early 2000, the Guatemalan government requested a loan from the Inter-American Development Bank (IDB) to build a road that would link Tikal with El Mirador-Río Azul National Park and from there to the Mexican state of Campeche. The IDB turned down the loan request and pressure from ecological groups and local villagers managed to halt the project. The construction of a road through the national park could end up destroying the entire northern half of the area within a few years due to population pressure.

## **Recommended Solutions**

### *Lack of personnel*

Lack of personnel should not be a problem for a park like Tikal. The park makes enough income from entrance fees to be able to maintain the proper number of park guards. While temporary hirings do help to ease the problem, evidence of illegal activity within the national park shows that this is still not enough. One of the difficulties in tackling this problem stems from the fact that, to date, there is no Master Plan to establish medium-term guidelines for the area, which is why annual operating plans fail to meet its goals with a single vision for the future. If in the future, a Master Plan seeks to increase the number of personnel to meet specific objectives, it will undoubtedly be much easier to line up the necessary funding for these hirings.

### *Forest fires*

To solve this problem, swift action is needed on several simultaneous fronts plus a long-term commitment. Administrators have started working with nearby communities, and coordination between state and private entities has begun. The incidence of forest fires could probably come down if work with outlying communities were to include incentives for establishing permanent crops that are compatible with the area. Although, before embarking on such a program, a detailed impact study is imperative, including ecological, economic and social impacts. The problem of forest fires could be tackled with greater hope of success if the activities are coordinated between the administration of Yaxhá, Nakum, Naranjo Natural Monuments and San Miguel la Palotada Protected Biosphere, so that communities work together in joint patrols and shared control posts.

### *Illegal extraction of forestry products and poaching*

An increase in patrols, which would lead to increased control and monitoring, would offer a solution to both illegal extraction of forestry products and poaching. This problem will not be solved until the park solves the problem of the lack of guard personnel. Increasing patrols in the areas where illegal extraction and poaching are most prevalent (in the west, southeast and northwest) must be complemented by establishing control posts along the most remote access routes, which are farthest from the central area, to ensure continuous guard presence. These

control posts could be coordinated together with the managers of nearby protected areas. This would increase guard presence not just in Tikal but also in neighboring parks.

### *Uncontrolled mass tourism*

Uncontrolled mass tourism is a difficult problem to solve at the moment because there is a lack of political will to tackle the issue, at least among central government authorities. The national park is seen as an important source of income, which is why day after day the government promotes more tourism. In this context, one can see that it would be difficult to curb the activities of visitors, and could end up discouraging those very visitors.

In workshops to prepare the Master Plan, it was insisted that a study be conducted to gauge the park's capacity to receive tourists. This study would provide scientific guidance for a public use plan according to the area's capacities. The RARE Center, with backing from UNESCO, is currently working on a public use plan for Tikal, which will be finished once the Master Plan is ready (Herdocia, 2002, per. com.). This plan also should be backed by a study of the park's tourist capacity, in order to be able to make decisions based on the national park's real capacity.

### *Road construction projects*

The negative impacts caused by roads running through the Maya Biosphere Reserve provide evidence that another road through the area would be completely inadvisable. Even though Tikal is a national park and thus, in theory, such a project would be illegal, the authorities' enthusiasm to push through such a project is alarming. The will of the administrators to tackle a project of this kind, should it occur, will be key in putting a stop to this hazard (see ParksWatch news).

## **Conclusions**

Tikal National Park is an area of vast importance, both due to its cultural and natural heritage. It is one of the core zones of the Maya Biosphere Reserve and one of the few protected areas in Guatemala that has a relatively stable situation with few problems. Despite the fact there are serious threats caused by human activity both around and within the park, the park can guarantee the conservation of its biological diversity as long as there are continued efforts, *and* assuming that the situations in surrounding protected areas are settled. Reports on flora and fauna suggest that the area is home to stable populations of endangered species. Reports also suggest that species such as the xate (*Chamaedorea* sp.), which are disappearing in other areas, have managed to reproduce in Tikal.

Due to external pressure, Tikal National Park is classified as a vulnerable area where continuous efforts have to be made to ensure success in protecting the area's biological diversity in the long run. Updating the Master Plan and completing the plan for public use will be crucial in order to guarantee medium-term protection.

Field visits carried out by ParksWatch to the area show that there is major pressure in the southwest, southeast and west, and need priority attention. The most serious hazard is that of forest fires, the illegal extraction of forestry products and mass tourism. Lack of personnel is not that serious of a problem, although it makes it difficult to solve two of Tikal's three most pressing problems. This is why we believe completing the Master Plan is a priority task so that annual operating plans can aim at medium-term action, designed to solve the lack of personnel for patrols and control. Work also needs to continue to increase local community

participation in the prevention and control of forest fires, as well as the control of the extraction of forestry products. The more benefits local communities receive from the park, the greater the possibility they will respect its boundaries.

The park management should evaluate the need for permanent guard posts, not just at the main entrance to park, but also in the more remote areas. This would spur the need to hire more personnel. To date, the park has been maintained practically isolated from the protected areas that surround it. However, evidence gathered by ParksWatch in the field shows that both the threat of forest fires and the illegal extraction of forestry products occur in areas of conflict between Tikal and neighboring areas. Coordination and mutual support are necessary and would make control and monitoring much simpler.

The public use plan currently being prepared is very important and could be a tool to help mitigate the damage caused by mass tourism. However, it is crucial that this plan be based on a study of the park's capacity to receive visitors, something that has yet to be done. Being able to make the right decisions about amount of tourism in Tikal depends on such a study.

In addition to the intrinsic importance of the national park, the fact that it is bordered by the Yaxhá, Nakum, Naranjo Natural Monument and the San Miguel la Palotada (El Zotz) Protected Biosphere have made the entire area one of the most important sections of the Maya Biosphere Reserve. The three areas comprise over 150,000 ha in strictly protected areas in the heart of the Maya jungle and form the gateway to the entire central area. Due to its location, it is crucial that Tikal is conserved, and that the efforts made in the protected area have a positive impact on a much broader area than just the boundaries of Tikal. Efforts being made by the park managers to update the Master Plan and the public use plan represent an important step, one that should be supported by the authorities of the Guatemalan government as well as the national and international community.

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