



Observation tower at Kaxil Kiuic Biocultural Reserve.

# MONITORING JAGUAR AND ITS PREY AT THE PUUC BIOCULTURAL STATE RESERVE

Organization  
Kaxil Kiuic, AC  
Project start year  
2013  
Location  
Oxkutzcab, Yucatan



## INTRODUCTION

Meeting point in the forest, or K'aax in Mayan, and its archaeological site called Kiuic are the origins of the name Kaxil Kiuic Biocultural Reserve of 1,642 hectares, located in the heart of the Puuc Biocultural State Reserve. But its value is not only for its historical heritage, but also for its natural capital, since it has a medium semi-deciduous forest in good condition and high biological value. Proof of this is the confirmed presence of the five feline species cited for the Yucatan Peninsula, including the mythical jaguar. It also has 19 cases of endemism, including two species of amphibians, five reptiles, nine birds and three mammals (Callaghan and Pasos 2010).

## INITIAL SITUATION

When the new century was just beginning, James Callaghan, director of Kaxil Kiuic Biocultural Reserve (KKBR), had a casual encounter that would mark the destiny of the reserve. The photograph shown to him of a female jaguar killed by hunters in an area near the reserve was a moment to remember. This meant



Overview of the Kaxil Kiuic Biocultural Reserve. Photo: Todd Fry.

not only the presence of the species, but also reflected the difficult reality of coexistence between humans and jaguars. After this episode, there were many stories that led to suspect of the presence of a stable population of jaguars in the Puuc region.

In this context, and together with Dr. Markus Tellkamp, from Millsaps College at the time, and biologist Ricardo Pasos, the “KKBR Wildlife Monitoring” program begins in 2005 with a reduced number of trap cameras and the objective to determine and record the species that make use of the habitat. In 2008, with funding from Millsaps College and in collaboration with Biocenosis AC, the sampling effort increases and begins a large data collection of the fauna present in the reserve. Among the earliest finds was a female cougar using the land as a breeding site, as it was photographed repeatedly and at different stages of gestation, even with its offspring. However, it is in 2010 when the most anticipated photo is captured, a female jaguar. That’s when a strategy to increase the sampling effort started, with a standardized methodology for big felines and their prey.

### **KEY MOMENTS**

The first photograph of a female jaguar in 2010 marked a first milestone, although the monitoring project had not yet begun.



The documented presence increased the interest of a group of benefactors to consolidate a strategy that culminated three years later with the birth of the jaguar conservation project. With that goal, during the years 2011 and 2012, events were organized for raising additional funds. By then, the first efforts in the study of the jaguar in the Yucatan Peninsula, such as the case of El Eden Ecological Reserve in the north of Quintana Roo, and Pronatura in the Zapotal reserve north of Yucatan, among others, began to provide solid data on their populations. This encourages the KKBR to define a previously agreed methodology in the study of the species, based on the methodological framework developed by the Jaguar and its Prey National Census (CENJAGUAR), from the Ecology Institute at UNAM and Conabio.

With sufficient funds raised to purchase trap cameras and the necessary equipment, the project "Jaguar Conservation in the Puuc" starts in 2013 and monitoring jaguar and its prey is defined as the initial objective by Kaxil Kiuic, with the participation of neighbors with private land to the north and the San Agustín *ejido* to the south. For the sampling design, and by recommendation of experts in the study of jaguars, the CENJAGUAR methodology was adapted according to the features of the reserve's landscape, based on the assumption that it presented similar low densities to the north center populations of the peninsula, com-



Trap camera (left) and students at Kaxil Kiuic carrying out fauna monitoring (right).

pared to Southern populations. In that sense, they created alliances with various organizations working under the CENJAGUAR scheme to homologate more appropriate monitoring methodologies that allow the obtained data to be comparable.

Among the adaptations of the methodology to the sampling site, the need to avoid certain areas of the Puuc Biocultural Reserve stands out, due to the high presence of organized hunter groups, which implies a very high probability of loss or damage of the cameras. However, poaching areas where there is a high sighting frequency of cougar and jaguar were also identified. For this reason, a partnership with the Nukuch K'áax alliance was initiated to work directly with the communities that felt threatened by the presence of the jaguar.

Once the project started, in the first sampling season of 2013, five jaguars, eight cougars and a high number of ocelots, in addition to other important mammals such as deer and collared peccary were identified; but in 2014 the cameras did not have records of jaguar. On its second year two new obstacles arose, financial resources to continue to project ran short, and the main investigator from Millsaps College on the reserve, Dr. Markus Tellkamp, leaves the college. This causes a slowdown in the project, which regains momentum in 2014 with the forum developed in Cancun in which an initiative called "Jaguar's Voice" is born. In this event, several organizations allied for the study of



Jaguar, *Panthera onca*, photographed with a trap camera. Photo: Kaxil Kiuic, AC.

this species in the Yucatan Peninsula, adding momentum to this project at a regional level.

### LESSONS LEARNED

The Kaxil Kiuic Biocultural Reserve has always had an educational component and a link with nearby communities. Many inhabitants of the region have been benefitted from temporary jobs and many owners of neighboring lands ask to be included in the monitoring program. Private and *ejido* neighboring properties are a fundamental part of the landscape, and must be included in the initiative, mentions Callaghan. Obstacles arise with poachers that do not hunt for subsistence; in this sense the project is beginning to establish collaborative strategies with them. Among the strategies, and in the context of REDD+, a nursery of wild species of economic and ecological importance is strengthened for landscape restoration in communities of the area (see box). Thus, some hunters and relatives of organized groups have already approached and expressed their interest in establishing cooperation agreements in order to be benefitted with plants produced in the KKBR and integrate them into their silvopastoral and agroforestry



Tree nursery at Kaxil Kiuic Biocultural Reserve.

systems. “We believe that through dialogue and in the exchange of useful resources we build community. And we have to build community, we are neighbors,” concludes James Callaghan.



## **Agricultural and forest landscape restoration in the area of the Puuc Biocultural State Reserve**

Among the main strategies of forest conservation and restoration is the “conservation and propagation of the genetic material of wild species important for timber and wild fruit”, where a gene bank and a nursery are integrated. The strategic location of the reserve allows it to be available to users with restoration programs. Such programs include forest management; habitat restoration for priority species and recovery of forest cover; acahuales enrichment and establishment of agroforestry and silvopastoral plots, the latter under the Mexico REDD+ Alliance, which in the Yucatan Peninsula has largely focused work in reducing deforestation around the Puuc region. Currently, the nursery operates thanks to a donation of the Arbor Day Foundation through The Nature Conservancy, whose objective is the production of one hundred thousand plants by 2016, and ensuring their establishment in 150 hectares of agricultural areas defined in the Mexico AMREDD+ Alliance carried out within the Puuc Biocultural State Reserve and areas of influence.

### Bibliography

Callaghan, J. M. y Pasos, R. 2010. KaxilKiuic Biocultural Reserve. ‘Biodiversidad y Desarrollo Humano en Yucatán: estrategias para la conservación.’

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