



Jaguar at El Eden Ecological Reserve. Credits: Marco Antonio Lazcano Barrero y Mederick Calleja, El Eden Ecological Reserve; Cuauhtémoc Chávez, Universidad Autónoma Metropolitana-Lerma.

EL EDEN ECOLOGICAL RESERVE AND A CONNECTIVITY VISION OF ECOSYSTEMS

Organization
Reserva Ecológica El Edén, AC
Project start year
1993
Location
Lázaro Cárdenas, Quintana Roo



INTRODUCTION

El Eden Ecological Reserve was created in 1993, thus becoming the first private reserve dedicated to research and conservation of biodiversity in Mexico. That was the beginning of a journey full of unexpected challenges, but also of achievements that kept motivation going on what once was the dream of a group of researchers and conservationists, with the renowned ethnobotany specialist Dr. Arturo Gómez Pompa amongst them. Initially, the main purpose of the reserve was to demonstrate that civil society can make conservation and allocate spaces to use for research and education, which over time was consolidated into a critical mass of researchers and technical information useful for conservation and natural resources management at a regional level. El Eden began with an area of 900 hectares which grew at different stages. Today the reserve has 3,000 hectares, and hopes to reach 4,500 in the short term. But the biggest challenge is to maintain the ecosystem connectivity of the region by making the jaguar a primary conservation objective, and for this it is necessary to expand the vision beyond the reserve's borders, and generate partnerships with land-owners and other public or private nature reserves.



Cougar at El Eden Ecological Reserve. Credits: Marco Antonio Lazcano Barrero y Mederick Calleja, El Eden Ecological Reserve; Cuahtémoc Chávez, Universidad Autónoma Metropolitana-Lerma.

INITIAL SITUATION

In the late 1980s, Dr. Arturo Gómez Pompa and biologist Marco Lazcano first flew over northern Quintana Roo. The purpose was to identify priority sites for wetlands conservation, and Marco was particularly interested in crocodile's conservation. After this first fly-over there was a major fire in northern Quintana Roo, so Gómez Pompa was invited to fly again over the area to assess the status in which ecosystems were left, and on that flight Marco participated as well. After those two flyovers, researchers noticed that the area was immense, very well preserved and with ecosystems different to what was known in the rest of the country. They could see from the air linearly wetlands from north to south, following the Holbox fault, intertwined with forests, cenotes and caves that were not common even in the peninsula. Arturo and Marco knew of the ecosystems fragility, that the agricultural frontier was beginning to accelerate and that very close one of the biggest tourist destinations in the world was also growing. Time began to run in those years, the challenge was huge but so was the dream to preserve this biodiversity treasure, a true paradise.

KEY MOMENTS

Once the first 900 hectares of the reserve were purchased, one of the most important moments for El Eden was in 1994, when it was possible to have the infrastructure for a formal biological station that allowed to start inviting researchers to use the property, provide training and develop human resources to build a resources information system of the reserve. The year 1996 was another key moment, Marco says, because there was a large forest fire that forced them to begin a learning journey for vegetation and infrastructure protection, not only from a technical point of view of surveillance and firefighting, but also for coordination with government agencies and neighbors of the reserve.

To start studying jaguars also marked a milestone for the reserve, but it was more an overtime process than a moment in the history of El Eden. From the beginning, Marco was focused on the study of crocodiles in a different way than conventionally, as he began to identify individuals and nests that could be tracked over time. The advantage the reserve offered by having an ecosystem of stable wildlife populations encouraged researchers to begin studying other animal groups. They began by placing video cameras filming for hours and then checking if any mammal passed through the area. In 2005, with the incorporation of the trap cameras technology, it was possible to photograph the first jaguar, and three days later a cougar that went through the same place. "This encouraged us, Marco says, because it was the evidence that cougars and jaguars shared territory".

The year 2005 was key, on one hand the reserve received national conservation recognition for its history, and on the other hand with the addition of trap cameras they moved from documenting traces and footprints to identifying individuals by their spots pattern. This allowed them to record four different jaguars in a three month period, in the same place and with a single camera. That set the tone for them to think that the jaguar population may be large, leading to establish links with other researchers in order to achieve a closer approach at a regional level. The exchange of information with other reserves allowed to recognize that an individual photographed in El Eden in 2006 was the same one that had been photographed by Pronatura in El Zapotal in 2004, 50 km away and across a road.

In 2008, the UNAM Ecology Institute invited El Eden to become part of the first National Jaguar Census, and thus the first population estimate is made in the reserve and was actually high, six jaguars in a 100 km² area. But photos provided even more information, given that the first image obtained was from a male and female walking together; this was the evidence that the area had reproductive events. The fact that the reserve was a breeding site led to generate a connectivity proposal to ensure genetic exchange of jaguar populations. For that reason, in 2007 a joint work is initiated with different stakeholders such as Pronatura, Amigos de Sian Ka'an, Biocenosis, ONCA Maya, the Center for Tropical Studies of the Veracruzana University (Citro), Conafor, Unidos para la Conservación, and the Independent University of Tabasco. With the information gathered by all of them, a first map of the Yucatan Peninsula is designed, with the location of important jaguar conservation areas and scenarios of possible biological corridors. "With this we realized that to achieve the permanence in time of the populations at El Eden, the conservation strategy had to be broader," Marco points out.

The conservation strategy of El Eden focuses on a regional level in central North Quintana Roo, and that means clearly identifying conservation units that still preserve enough vegetation to sustain a population of at least 250 or 300 jaguars, which is what is estimated for that area. It is very important to work on the connectivity of this region, Marco mentions, because today we know that in the Yucatan Peninsula there are about 2,000 jaguars, nearly 50% of the country's population, and it is essential to maintain genetic viability over time.

In 2009, the Yum Balam Flora and Fauna Protection Area obtained a photo of the same jaguar that had been documented at El Zapotal in 2004 and at El Eden in 2006. In the years 2010 and 2011, El Eden documents again the same jaguar, and with this sufficient evidence was gathered to prove that the individual has a residence in the area of at least seven years, and the area of occupation coincides with those identified as priority in the maps that were generated in 2007. Following this, El Eden together with UNAM researchers Cuauhtémoc Chávez and Sandra Ortiz, placed a satellite collar on a jaguar from which information was obtained for 16 months, being able to prove that this individual

moved 60 km from east to west and 25 km from north to south. With all the information gathered so far, Marco indicates, what we know is that we have a functional unit of continuous ecosystems for jaguar conservation; we know that individuals are there and are using it.

LESSONS LEARNED

“Establishing a private reserve has been a great challenge, Marco states, a complicated learning process of obtaining resources and building capacity. We have achieved this thanks to the fact that it has been a joint dream of several people working together even before having El Eden. Although we have agreements and funding from various sources, today we still do not have a long-term resource guaranteed; but we are at a crucial point because, unlike when we started, the value of biological diversity on a property is recognized”.

In the view of Marco, there are now mechanisms that allow, in financial terms, to devote land to conservation, such as the PES. The big challenge is to maintain these PES in the long term, and that other incentives exist for owners and possessors of land to voluntarily allocate land for conservation, because the ecosystems viability depends on the connectivity and genetic exchange of their populations, and that scale is much broader than the limits of a reserve.

