# CONSERVATION, EDUCATION, AND RECOVERY OF THE LOWLAND RAINFOREST IN A PROTECTED AREA

## REPORT 2019.2022 AND PROJECTIONS

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The number of plants in Mexico under some category of risk has increased in recent years, from 894 species, subspecies, or varieties in NOM-059-ECOL-1994 to 981 in NOM-059-ECOL-2001 and 994 in NOM-059-SEMARNAT-2010, in (Espadas Manrique C., et.al. 2019).

In the state of Yucatan, primary forests have almost disappeared, the low deciduous forest is the ecosystem that has suffered the most from the loss of its vegetation cover, and currently, there are remnants mostly in a secondary state (Espadas Manrique C., et al. 2019). The dominant vegetation type in the private protected area "Komchén de Los Pájaros" is classified as Low Deciduous Forest (SBC) which has been poorly studied despite the fact that it represents 42% of the tropical ecosystems worldwide that are considered threatened (Blanca Rosales, 2012). In Yucatan, the low deciduous forest is threatened by henequen cultivation and agricultural development; today climate change threatens to provoke aridity and desertification in already dry lands. The remnants of this forest continue to be lost and fragmented in spite of being under the legislation. The SBC vegetation is home to a large number of species endemic to the region and constitutes the fundamental ecosystem of the private protected natural area (PNA). It is worth mentioning that it is also located within the Mesoamerican corridor, which implies a greater responsibility to safeguard the faunal and floral diversity it contains.

These properties have remained under protection for more than 30 years by their former owner, Mrs. Ana María Palos de Foronda, a passionate nature lover, and officially became part of the Caribbean Coast Conservancy civil association in 2019, a non-profit organization dedicated to the study, rescue, and conservation of biodiversity in those areas where it works within the insular and continental Caribbean. As a result of the above, the rainforest shows visible signs of recovery, providing shelter, food, and breeding sites for wildlife present in this ecosystem. However, in the near future a new threat is posed by the booming development of urban infrastructure that, although necessary, will negatively impact the preservation of the natural heritage that still surrounds it and in this context, the protected natural area (PNA) will constitute a conservation island that will serve as a lung and provide other environmental services to the human communities that surround it.

Conducted by a group of experts from several academic institutions, an extinction risk assessment of the endemic plants of the Yucatan Peninsula Biotic Province was carried out. A total of 167 taxa were identified as endemic, 154 of which grow in at least one of the Mexican states of (Campeche, Quintana Roo and/or Yucatan) while thirteen are found exclusively in Belize and/or Guatemala. Eighty-five (50.9 %) species are in some category of risk: 17 (10.18 %) in the Critically Endangered (CR) category, 40 (23.95 %) in the Endangered (EN) category, 28 species (16.77 %) in the Vulnerable (VU) category. Eighty-one species (48.5 %) are not threatened: 12 (7.19 %) Near Threatened and 69 (41.32 %) as Least Concern (Carnevali et al., 2021). Considering these results, it is necessary and relevant to conserve the entire Natural Protected Area because it is immersed in the lowland rainforest, an ecosystem where most of the Cactaceae species registered for the Yucatan Peninsula occur, as well as endemic species such as Jatropha gaumeri and Samyda yucatanensis, the first used in traditional medicine; as well as other elements such as Gymnopodium floribundum, which is a very important plant for beekeeping. The conservation and maintenance of the Natural Protected Area will allow us to maintain documented collections of living plants for scientific research, conservation, and educational purposes", is an ambitious project that covers nearly 300 hectares in total, and focuses on conserving and showing the rich ethnobotanical relationships between plants, animals, and people, and sustainability in all aspects.

It is intended that in the future it will have a herbarium, a seed bank, facilities for seminars and a field study center for visitors, a nursery, and a limited space in the sustainable use area, which will be dedicated to the exhibition of species of conservation interest, as well as rustic facilities that already exist (four cabins, a large library, and common kitchen,

electricity and internet) for the overnight stay of technicians and researchers. This has allowed us with basic research, such as the inventories of the flora and fauna of the ANP carried out since 2019. (Available in the block).

To execute the actions we organized ourselves, through two fundamental subprojects, with multiple activities in each one.

**1. RESCUE AND CONSERVATION OF THE DIVERSITY OF FLORA IN THE PRIVATE PROTECTED AREA, KOMCHÉN DE LOS PÁJAROS, WITH EMPHASIS ON THOSE SPECIES WITH SOME DEGREE OF THREAT.**

Since the entire forest is considered a botanical garden, endemic species will be identified and geo-referenced, as well as those important for their use as medicinal, melliferous, etc., and those that are in the official Mexican norm (NOM) will be followed up. The phenology of these species will be studied to guarantee the collection of seeds and/or propagules, with particular emphasis on ten of them recommended by CICY for their multiplication and ex situ conservation with the objective of maintaining viable populations, in order to support in situ conservation programs, ensuring the medium ,and long term existence of these species.

The effects on the forest fragments are of great importance for the survival of a highly endemic flora, which also contains an important number of medicinal plants, many of which have already been corroborated by pharmaceutical companies. Therefore, in the sustainable use zone, those shrubs and herbs used by Mayan medicine will be recovered, multiplied and interspersed like a garden.

## 2-DESIGN AND CONSTRUCTION OF AN ARBORETUM FOR THE VISITATION AND EDUCATION OF LOCAL AND FOREIGN PUBLIC.

Under the advice of the Centro de Investigations' Científica de Yucatán (CICY) and with the direct supervision of specialists (Dr. Rodrigo Duno de Stefano and Ing. Alfredo Dorantes Euan) we are working on the construction of a nursery to multiply and recover at least ten of these species. In addition, a space will be demarcated within the sustainable use zone of the ANP to create an arboretum for exhibition and environmental education for local and foreign visitors, with species typical of this deciduous forest that will limit visits to the rest of the restricted area where the researchers' work is being carried out. There are also plans to invite the communities near the ANP, to visit the arboretum to raise awareness among adults, children, and the general public about the importance of this native vegetation.

Specific objectives:

- To conserve and exhibit live plants fundamentally native where each species has a plaque or sign in which its name is placed with the necessary information so that whoever visits it is informed about the species of the specimen observed.
- That on the website the CCC, the Arboretum of the Natural Protected Area, is a means of dissemination and environmental education to facilitate knowledge about aspects of plant diversity of the low deciduous forest, available to anyone interested.
- To be a center for the multiplication of native species, including the rescue of those that are threatened, in order to obtain specimens that can be used for reintroduction within the ecological reserve and its area of influence.
- To awaken and cultivate in people, especially in school children, responsibility and respect for nature.

The Arboretum will carry out scientific research activities, as well as educational recreation, forestry talks, and guided tours on trails to facilitate the identification of some important plants and show the relationships between plants, animals, and people, and will provide a favorable, comfortable and safe environment for observations and studies on biodiversity in general, in order to support the conservation of the rainforest and to attract and increase wildlife species: migratory and resident birds, butterflies, insects, mammals, and reptiles, among others.

In order to achieve our objectives, we will rely on a conservation education program with social participation, including a dissemination strategy, with the aim of raising awareness and promoting the orientation of values, skills, knowledge and

behaviors of the members of the neighboring communities and empowering them to improve their family economy based on the conservation of their natural heritage and culture.

## ARBORETUM

Photo: A. Dorantes-Euán y R. Durán-García

If you wish to support this project in kind: donating plants or medicinal herbs, contributing your time to weeding, planting, or working in the nursery, contributing with funds for inputs or paying day laborers, we will be very grateful for your contribution.

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