



# Community Biodiversity Monitoring in Yucatan

## Case Study Database

A compilation of good practices and lessons learned to bring innovative subnational solutions to global prob



## Introduction

Global biodiversity loss is a critical challenge due to habitat degradation and overexploitation of natural resources. Mexico is one of the 17 megadiverse countries that are home to about 70% of all the world's biodiversity. Communities living in areas of high biodiversity face specific challenges and need to be included in conservation projects, such as "Community Biodiversity Monitoring", in which, through techniques such as phototrapping, communities can learn about and conserve the biodiversity of the area, generating information to make decisions about the sustainable use of natural resources. This encourages their active participation in the conservation and protection of their ecosystems and diverse populations.

## Author

Sustainable Secretariat of the Government of the State of Yucatan  
With the support of:

- WorldWide Fund for Nature (WWF)

Together with partner such as:

- Intermunicipal Biocultural Board of Puuc (JIBIOPUUC). Cooperative lands (ejidos, in Spanish): Chandzhitnup, Sacpukenhá, San Isidro Yaxché and San Martín Hili
- National Forestry Commission (CONAFOR)
- United Nations Development Programme (UNDP)

## Project Summary

As part of the international co-operation project implemented with the Innovation Fund of the GCF Task Force, called B Window, a Community Biodiversity Monitoring component was carried out, with the participation of 43 people from 4 communities, including men, women and youth.

They were trained in setting up photo-trapping stations and identifying wild species in their community, with the goal of promoting the interest of community members, valuing biodiversity and its ecosystems.

Simple community monitoring techniques were used, which contributed to their full participation in generating and appropriating knowledge for decision-making inside and outside the community.

## Key Information

### Location

Tekax, Yucatan, Mexico.

### Areas of Focus

Biodiversity monitoring, capacity building, participatory processes, environmental education.

### Founded

April 2021

### Investment

96 thousand Mexican pesos  
(Approx. 5450 euros)

### Aichi Biodiversity Targets addressed

Strategic Objective A: Targets 1 and 2

### Sustainable Development Goals addressed

SDGs 13, 15 and 17

### Targets of the Kunming-Montreal Global Biodiversity Framework addressed

Targets 4, 9, 20, 21, 22 and 23

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## BACKGROUND AND CONTEXT

Mexico is one of the 17 megadiverse countries that are home to about 70% of all the world's biodiversity. On the other hand, the communities that inhabit key biodiversity areas in Yucatán have different practices of use and exploitation of their natural resources.

In 2020, UNDP launched a call called Window B, under Norway's engagement with the Climate and Forest Governors Group Investment Fund, with the aim of financing strategic interventions to accelerate the reduction of deforestation in subnational jurisdictions in Yucatan. Yucatan was once again selected for its contribution to tracking the outcomes of Window A.

The project encouraged the alignment of sustainable rural development and forest ecosystem conservation policies by strengthening institutional arrangements. This improved the implementation of low-emission sectoral development policies that comply with the Yucatan REDD+ Strategy. Additionally, the collaboration of key actors from different sectors strengthened biodiversity.

The government of Yucatan, in the coordination and execution of the project, has the support of the World Wildlife Fund (WWF), an implementing partner selected for its extensive experience in achieving relevant, lasting and strategic results in conservation that simultaneously benefit local communities. Actions are being carried out in collaboration with local and indigenous communities to implement its management program for the Puuc Biocultural State Reserve (REBP). **This includes biodiversity monitoring trainings and the establishment of wildlife monitoring sites, thus preserving the identity and history of communities and fostering knowledge sharing.** These actions make it possible to effectively protect the biological and cultural wealth they hold.



Photo by: Gilberto M. González Kuk



## KEY ACTIVITIES AND INNOVATIONS

The Community Biodiversity Monitoring project had the participation of 43 people from 4 communities, including men, women and youth. It was applied in four communities located in the south of the State of Yucatan. More specifically, in the municipality of Tekax, in the ejidos (cooperative lands) of Chandzitnup, Sac puc ken ha, San Isidro Yaxche and San Martín Hilí, which are part of the buffer zone of the REBP.

The community-based biological monitoring process was developed in a participatory framework, using simple techniques to promote the implementation of monitoring strategies based on methodological approaches applied in other contexts of the country.

In the training program funded by the international cooperation project through the Innovation Fund of the GCF Task Force, Window B, the aim was to train community monitors for biodiversity. These monitors, comprising community members of various ages, including young adults and elders, were tasked with setting up camera traps to monitor wildlife activity. This initiative had the goal to deepen their understanding of their local environment while equipping them with technical and scientific expertise to contribute to environmental conservation efforts. The selection criteria for these community biodiversity monitors were as follows:

- **Available budget**
- **Agreement on the voluntary nature of monitoring**
- **Ability to invest part of their time in training**
- **Conducting Monthly Monitoring**

Following this, a workshop was conducted to identify priority sites for community-led trap station monitoring. This workshop integrated local expertise through participatory mapping exercises, pinpointing key conservation areas. Moreover, comprehensive training materials were developed to facilitate the learning process, including a detailed step-by-step

guide on equipment usage. Priority locations for camera placement, such as trails, wildlife crossings, and burrows, were also identified during this preparation phase.

During the process, photographic sampling was conducted using camera traps, with a total of 16 photo-trapping stations deployed over 118 days of effective sampling. These stations were strategically positioned on natural trails located approximately 3 km away from the community's human settlements, selected based on the community's identification of priority wildlife sighting areas using indirect tracks. Each sampling station was equipped with *Oudmon model 30mp 1080p IP67* camera traps, positioned no more than 40 or 50 cm above ground level, adjusted according to the topography and slope of the sampling area.

The cameras were programmed to operate continuously for 24 hours, with the precise location of each station georeferenced using a *Garmin eTrex® geopositioner*. Subsequently, monthly monitoring activities were conducted by community members, who retrieved data from the cameras and processed it into databases for further analysis.

Only photographic records meeting the following criteria were considered:

- a)** Consecutive photographs of each species; **b)** Consecutive photographs of different individuals of the same species (for species like the jaguar, identifiable individually by rosette patterns); **c)** Consecutive photographs of individuals of the same species (unrecognized individuals) taken with at least a 1-hour interval between photos.

Upon conclusion of the process, a list of species present in each community was compiled, incorporating photographic records meeting the aforementioned criteria. The faunal list comprises 36 species, including mammals, birds, and reptiles.



## ENVIRONMENTAL IMPACTS

Through the project, biodiversity monitoring initiatives were conducted within a community-based biological framework. The enhancement of technical capabilities facilitated the establishment of a system for disseminating and adopting community monitoring strategies aimed at addressing biodiversity conservation challenges.

Community monitoring activities have been essential in determining strategies for the management and conservation of natural resources. Voluntary Conservation Areas (VCAs) were developed. This will encourage communities to continue community monitoring in order to conserve biodiversity. The data collected through monitoring activities yielded valuable insights, serving as foundational materials for disseminating information about species present within the community. This, in turn, enables the development of environmental education activities aimed at fostering a deeper understanding of local biodiversity and its conservation.

The diversity of identified species serves as a crucial indicator of ecosystem health and well-being. This valuable information forms a solid foundation for implementing environmental awareness initiatives within the community. **The integration of local communities in monitoring activities is essential, as they have detailed knowledge of the studied regions and are directly responsible for resource utilization and conservation efforts.**



Photo By: Ejido Sacpukenhá y Chadzitnup





## SOCIOECONOMIC IMPACTS

The training provided for the implementation of community monitoring has empowered the involved communities to generate their own information. This knowledge will enable them, with future technical support, to develop their own strategies and projects for sustainable use, as well as opportunities for self-employment through sustainable tourism initiatives.

Moreover, within the Window B project, there are other components that are linked to the productive environment of the community, such as the Mayan milpa and beekeeping. These efforts aim to strengthen local modes of production while transitioning towards more sustainable practices that minimize the impact on biodiversity.

Furthermore, monitoring activities directly contribute to assessing the conservation status of ecosystems, thereby influencing the provision of ecosystem services to the communities.

## GENDER IMPACTS

Community-based monitoring is of great importance, as it contributes to the formation of young groups, men and women with a better understanding of natural resources and their potential ecosystem services, especially in key populations and other marginalized groups. The inclusion of women in these activities not only contributes to broadening the perspectives of communities, but also opens up new opportunities to develop other initiatives and generate employment related to biodiversity conservation.

## POLICY IMPACTS

These actions align closely with the objectives, goals, and commitments outlined in various state, national, and international frameworks, including the Sustainable Development Goals (SDGs), the Aichi Biodiversity Targets, the National Biodiversity Strategy of Mexico (ENBioMex), and the Strategy for the Conservation and Sustainable Use of Biodiversity of the state of Yucatán (ECUSBEY). By adhering to these frameworks, significant progress is achieved in enhancing mechanisms for the conservation and preservation of ecosystems and biodiversity within the state of Yucatán.



Photo by: Fabiola Perianza Gómez



## SUSTAINABILITY

A community-based biological monitoring scheme was adopted, involving sensitization efforts within the community and the promotion of innovative conservation models, such as Voluntarily Designated Conservation Areas (ADVCs). As highlighted in the environmental impact section, the establishment of ADVCs will encourage communities to sustain their engagement in community monitoring activities aimed at conserving local biodiversity.

In addition to the measures mentioned, other steps were taken to ensure the long-term sustainability of the project:

- **Strengthening inter-institutional alliances for cross-cutting policies on low-emission rural development through agreements and program enhancements.**
- **Implementing priority actions to achieve goals outlined in the Investment Program of the Puuc Biocultural State Reserve with a focus on biodiversity conservation.**

- **Building municipal capacities to implement sustainable development policies effectively.**
- **Developing strategies to encourage the conservation of local biodiversity.**

The biodiversity project received an investment of 96 thousand Mexican pesos through the Window B project, as part of Norway's commitment to the Investment Fund of the Governors' Group for Climate and Forests. This funding aimed to finance strategic interventions to accelerate the reduction of deforestation in subnational jurisdictions in Yucatan.

However, this funding amount has proven to be very limited, posing challenges for ensuring the project's continuity despite the valuable data obtained. There is hope that the four ejidos where the project was implemented will establish Voluntarily Designated Conservation Areas (ADVCs) within their territories and develop sustainable usage practices to sustain monitoring activities.



Photo By: Joana Carrillo Burgos



## PARTNERSHIPS

Synergies were established among various entities including the Ministry of Development, WWF, and key partners such as the Intermunicipal Biocultural Board of Puuc (JIBIOPUUC), the National Forestry Commission (CONAFOR), and the United Nations Development Program (UNDP). These organizations are actively involved in multiple biodiversity conservation initiatives within the region of the state reserve. These alliances have been further strengthened through the coordination of resources and equipment, as well as the provision of technical support for monitoring activities. Notably, while there hasn't been an alliance with academic institutions thus far, plans are underway to engage them soon to provide training in information processing.

Photo By: Gilberto M. González Kuk





## REPLICATION AND APPLICABILITY

Given that various regions of Mexico encounter challenges similar to those experienced in the Mayan jungle, there's significant potential to expand the development of technical capabilities for implementing ecosystem monitoring systems via community involvement. This approach can be replicated in similar regions across the country and even in other countries with comparable ecosystems, thanks to the practicality of the methodology employed.

The development of technical capacities for the implementation for community-based monitoring holds promise for widespread replication. These monitorings can be integrated into the landscape, conserving biodiversity, maintaining and recovering ecosystem services, and enabling economic benefits through activities and payments for environmental services.

The factors to be considered for its successful replication are:

**Local Participation and Commitment:** The success of the project was based on the active participation of local communities. Replicators should prioritize involving and engaging local communities in similar initiatives, fostering a sense of ownership and responsibility towards biodiversity conservation.

**Public Awareness and Education:** Public awareness campaigns and educational activities should be included to inform local communities and the general public about the importance of biodiversity conservation and the benefits of community monitoring.

**Capacity Building and Training:** Providing training and capacity building opportunities to community members is critical. Replicators should consider organizing workshops, training sessions, and educational materials to equip participants with the skills and knowledge needed for biodiversity monitoring.

**Partnerships and Collaboration:** Collaborative efforts involving government agencies, non-governmental organizations, and other stakeholders were key to the project's success. Establishing alliances and collaborations with relevant institutions in the region is essential to share resources, knowledge and support in the implementation of the project.

**Technology Transfer and Methodology:** The use

of camera traps and community-based monitoring techniques was a key aspect of the project. Replicators must ensure that the technologies and methodologies chosen are suitable for the local ecosystem and can be easily adopted by the community.

**Policy Alignment:** It is recommended that the project is aligned with national and local conservation policies, international biodiversity strategies, and the Sustainable Development Goals. This alignment will facilitate support and recognition from the relevant authorities.

**Long-Term Sustainability Planning:** Develop a comprehensive plan for the long-term sustainability of the project. This could involve strategies such as creating voluntary conservation areas, promoting sustainable resource use, and identifying potential sources of funding beyond initial investments.

**Monitoring and Evaluation:** Establish a robust system for monitoring and evaluating the progress and impact of the project.

**Adaptation to the Local Context:** When replicating the project, it is important to adapt the approach to the specific ecological, cultural and social context of the region. Local knowledge and practices should be integrated into the project design.

### FOR MORE INFORMATION

For more information about this project, to schedule an informational meeting, resolve doubts, and/or obtain support in the execution of similar projects, please contact us through: [info@regions4.org](mailto:info@regions4.org).



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### ABOUT REGIONS4

Regions4 (formerly known as nrg4SD) is a global network that exclusively represents regional governments (states, regions, and provinces) in UN processes, European Union initiatives, and global debates in the fields of climate change, biodiversity, and sustainable development. Regions4 was established in 2002 at the World Summit in Johannesburg and currently represents over 40 members from 20 countries across 4 continents. Through advocacy, cooperation, and capacity development, Regions4 empowers regional governments to accelerate global action.

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