

## Exchanging ecological knowledge to protect our environment

### Intercambio conocimientos ecológicos para proteger nuestro medio ambiente

### Échanger des connaissances écologiques pour protéger notre environnement

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#### EXTENDED ABSTRACT

##### INTRODUCTION

Communities around the world are facing the degradation of Earth's natural resources, with Indigenous communities witnessing firsthand how these environmental changes threaten their livelihoods and economic stability. Combined with the cultural, socioeconomic, and political forces that systematically erode cultural and linguistic identity, many Indigenous and Creole communities struggle to understand the ecological challenges imposed upon them by external forces. This struggle is worsened by the lack of a relationship between Indigenous knowledge and Western science. The information that Indigenous communities need to combat ecosystem degradation is not written in the languages they use in their homes and local communities. This means that scientific information is not only unavailable in many cases, but also often fails to relate to the Indigenous ecological knowledge systems they use to understand the world around them (UNESCO, 2021). Marine Conservation without Borders (MCB) research has developed methods that seamlessly combine Indigenous place-based ecological knowledge systems with Western ecological knowledge systems. This allows the MCB team to create next generation biocultural curricula for the linguistically diverse education systems of Mesoamerica, the greater Caribbean basin and beyond.

Combining Western and Indigenous educational approaches is a critical part of successfully relaying scientific and environmental information, as well as protecting ecosystems, and maintaining Indigenous languages and identities. With most of the world's languages being geographically located in biodiversity hotspots, communities are not just losing access to local languages, but also local ecological knowledge that is a key part to protecting the world's natural resources. MCB views biodiversity, language, and culture as concepts that should be fully intertwined. This project may likely be creating the first STEM focused curriculum offered in Indigenous languages (Thigpen, 2018).

This poster shares the highlights about the research MCB is performing in México and other regions where MCB works. These projects will serve to refine the methods used to develop and test these materials, so that the results can be applied to projects with other Indigenous communities whose languages are threatened. While the MCB's biocultural curricula were developed for the linguistically diverse education systems of Mesoamerica, the participatory methods used to develop them can be applied globally. The objective of the project in the Mayan communities in México is to test the primary school edition, *Treasures of the Yucatan*, which is being developed and implemented in the students' home language, Maya. MCB also has projects financed by the European Union Caribbean Overseas Countries and Territories Resilience, Sustainable Energy and Marine Biodiversity Programme (RESEMBID) in the two of the OCT's. These ocean's literacy schoolbooks are being developed and tested in Papiamentu/Dutch for Bonaire and in Haitian Creole/English for the Turks and Caicos.

##### Background

It is understood that using a student's first language as the medium of instruction while in primary school improves learning in later grade levels and reduces student learning gaps. Despite this, an estimated 40% of the global population does not have access to education in a language they fully understand (Global Education Monitoring Report, 2016). This means that Indigenous language speakers fall behind everyone else, not because they are incapable of learning, but simply because they do not understand the language being used to teach them. In many cases, educators recognize that students are falling behind and want to help. Rarely do these teachers have the tools to assist. Teachers do not always speak the language that their students speak, nor do teachers have access to curriculum or teaching materials in Indigenous languages.

The cross-cultural biology curricula MCB is developing will not only support grander conservation efforts, but will also build respect for and help protect the languages and cultures of the Indigenous communities that MCB serves. MCB's project methodology aims to protect and promote biocultural diversity, as well as empower the First Peoples to protect their linguistic and cultural diversity.

**Yucatec Maya:** Working in coordination with *la Universidad Intercultural Maya de Quintana Roo* (UIMQROO), MCB now has a research agreements with UIMQROO and the Department of Indigenous Education *de la Secretaría de Educación Indígena de Quintana Roo* (SEQ) to use MCB's STEM curricula to teach mother tongue reading and writing skills.

This project is testing these biocultural curricula in five Indigenous schools throughout Quintana Roo, with the intention of refining and improving the curricula, and integrating these books into the school's standard curriculum in the next few years. This curriculum is designed for 3rd – 8th grade and is written in Maya.

### METHODOLOGY

During the summer of 2022, we tested the pilot edition of Treasures of the Yucatán in the five primary schools. To do this, we trained a team of ten Maya-speaking undergraduates from the UIMQROO as field research assistants. These field research assistants taught the curriculum to the primary school students as part of a two-week summer program. Following the summer program, teachers at each of the primary schools in the communities incorporated the Treasures of the Yucatán lessons in their established curricula, focusing about two hours per week on the material. As UIMQROO's field research assistants and SEQ teachers implemented the curriculum during the fall program they also collected daily written reflections that summarized their observations while teaching the materials, which allowed them to share valuable information about their experiences, recommendations, and challenges they faced as they taught the curriculum. In January 2023, we returned to the field to collect post-interviews with students, teachers, and parents. With this we closed Phase 1 of MCB's Maya Project.

**Where we are now:** Using the experiences we had in Phase 1 of the Maya Project, we are developing the second edition of the book. January 2024 our team will return to these communities with the next edition. At the end we will close with interviews that will help us to prepare the third edition that we hope to test on summer 2024. Our long-term goal is to demonstrate that the Maya Projects and the RESEMBID OCT projects can be used as models to work with other Indigenous and Creole linguistic communities in Mesoamerica, the greater Caribbean basin and beyond.

**KEYWORDS:** Biocultural, Marine Conservation without Borders, Science Communication, Indigenous Ecological Knowledge, Mesoamerica, Caribbean

### LITERATURE CITED

- Global Education Monitoring Report: Policy Paper 24: If you don't understand, how can you learn? 2016
- UNESCO. (2021). The International Decade of Indigenous Languages Global Action Plan 2021.
- Thigpen, Robby; Castillo, Celeste; Majil, Zaida & Castillo, Yarisel; (2018) Di Mangro Dehn (The Mangroves. Treasures of the Caribbean, Kriol Edition). Ed. Silvaana Udz. Marine Conservation without Borders, Florence, SC