

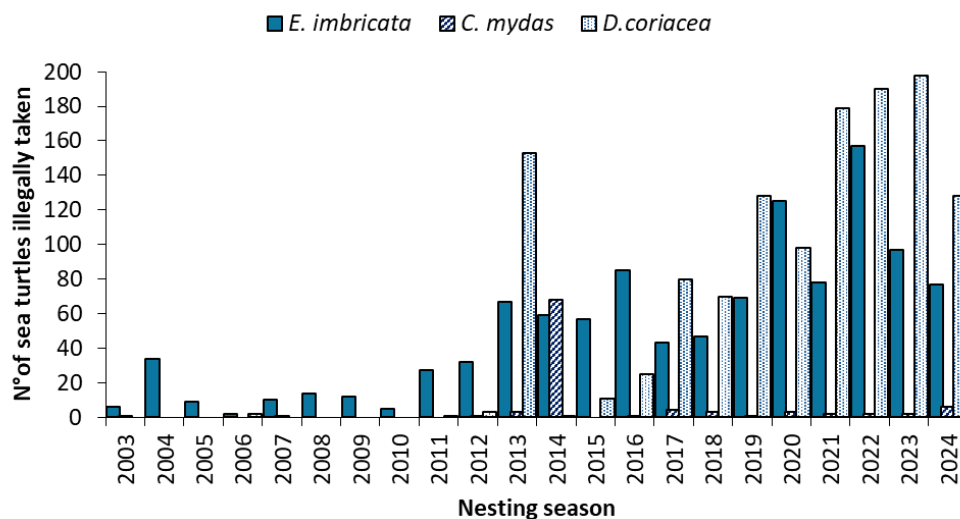
## Final Evaluation Report

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Your Details	
Full Name	Daniela Carolina Rojas-Cañizales
Project Title	Assessment of the sea turtle illegal take in Bocas del Toro, Panamanian Caribbean
Application ID	41961-1
Date of this Report	06/03/2025

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Estimate the number of sea turtles illegal take in Bocas del Toro.			x	We successfully analysed the 21 years of data provide by the Sea Turtle Conservancy. We found that 2, 478 turtles and nests has been taken since then (Fig. 1).
Identify attitudes and perceptions of the illegal sea turtles take in the area.			x	We conducted 25 semi-structured interviews in Bocas del Toro with key local informants from various communities and backgrounds.
Evaluate the perceptions of the communities towards sea turtle conservation law in Bocas del Toro.			x	We evaluate the perceptions and attitudes of the communities regarding the laws implemented in Bocas Del Toro for the protection of sea turtles.



**Figure 1.** Nesting sea turtles illegally taken per year at Bocas del Toro, Panama for the period 2003–2024. The graph include both turtles and nest taken by species.

2. Describe the three most important outcomes of your project.

a). We estimated that approximately 2, 246 nests and 232 sea turtles have been taken in Bocas del Toro since 2003. The most affected species are the leatherback turtles (*Dermochelys coriacea*), followed by the hawksbill turtle (*Eretmochelys*

*imbricata*) and the green turtle (*Chelonia mydas*) (Fig. 1). The number of sea turtles taken varies across seasons and nesting beaches. Our findings represent a minimum take, which is likely an underestimation as it does not account for the number of turtles taken in remote areas, transported elsewhere, captured at sea, and/or taken alive with undetected tracks/signs.

**b).** Interviews conducted during the study suggest that the illegal take of sea turtles in Bocas del Toro continues (Fig. 2) and operates through organized networks. The main reason for sea turtle consumption is based on cultural traditions passed through generations, where sea turtles were commonly referred to as the “cattle of the sea.” The take primarily occurs during the sea turtle nesting season between March and September, with the green turtle identified as the most targeted species. Although green turtles rarely nest in the area, the species migrate annually along the Caribbean coast, passing close to Bocas del Toro waters, on their way to Tortuguero, Costa Rica. These findings highlight the region as a new hotspot for the illegal take of green turtles, which could have significant conservation implications for the species across the Caribbean Sea.



**Figure 2.** Word cloud detailing the most common adjectives to describe the illegal take of sea turtles by the key-informants.

**c).** There are different perceptions about the sea turtle laws in Panama among local communities. While all interviewees acknowledged that sea turtles are protected species, some expressed the belief that such laws are unnecessary, perceiving sea turtles as abundant in the area. Additionally, most interviewees were unaware of the new sea turtle protection law (No. 371) approved in 2023, indicating a gap in community knowledge and outreach efforts regarding recent legal measures.

**3. Explain any unforeseen difficulties that arose during the project and how these were tackled.**

One of the challenges faced during the project was carrying out the environmental activities planned for Sea Turtle World Day. Initially, three activities were scheduled:

two in the main park of Isla Colón and another in Río Caña with the Ngöbe-Buglé Indigenous community. However, the park in Isla Colón was closed due to ongoing construction, and the activity in Río Caña had to be canceled because of a malaria outbreak in the area. To adapt to these unforeseen circumstances, we decided to conduct the environmental activities in a rural school at Bocas del Drago.

We were able to organize four activities over two separate days, engaging children from different age groups — kindergarten, second grade, third grade, and fifth grade (Fig. 3). The activities were designed according to the children's ages, all focused-on sea turtle conservation. We gave an educational talk about the sea turtles in Bocas del Toro followed by an interactive game called “The Cycle of Sea Turtles,” where the kids learned about the different stages of the sea turtle's life cycle in a dynamic and playful way.



**Figure 3.** Photos of the environmental activities conducted in Bocas del Drago school for the Sea Turtle World Day.

Unfortunately, the cancellation of the visit to Río Caña not only affected the environmental education activities but also limited the planned interviews with community members in the area. However, I was able to conduct several interviews with people from Río Caña while I was staying in Isla Colón, allowing us to gather some valuable insights despite the logistical challenges.



**4. Describe the involvement of local communities and how they have benefitted from the project.**

All the participants were willing in the project sharing their stories and experiences with sea turtles, demonstrating their interest and connection to the species. This social study provided an opportunity for the community to express their perspectives on sea turtles and what these animals represent to them (Fig. 4). The project served as a platform to amplify the voices of community members, especially those from underrepresented groups who are often overlooked in conservation efforts.



**Figure 4.** Community members of Bocas del Toro. The photos below show Inocencio “Checho” Castillo, a sea turtle poacher in the 1960s who later became a sea turtle conservationist. Now retired, his story reflects the relationship between the people and sea turtles in Bocas del Toro.

Additionally, the environmental education activities were conducted in a local school in Bocas del Drago, a community that is rarely visited by external organizations and where students have limited access to extracurricular activities. Through interactive games and discussions, we introduced the children to sea turtle

conservation while emphasizing the important role they can play in protecting these species in their own communities (Fig. 5).



**Figure 5.** Kids participating in the activities in Bocas del Drago school.

### **5. Are there any plans to continue this work?**

Yes, I am planning to expand this research during my PhD. The project will include a detailed literature review on the legal and illegal take of sea turtles across different regions, combined with fieldwork to explore the relationship between local communities and sea turtles. Especially to identify the social, cultural, and economic drivers behind the take of this species to create more inclusive and effective management plans to protect the species while respecting the cultural values and traditional knowledge of Indigenous communities.

### **6. How do you plan to share the results of your work with others?**

The results obtained from this project are part of my master's thesis in Biological Sciences. I presented the project during a seminar at Southeastern Louisiana University, and I am currently in the final stages of completing my thesis. The results will be shared during my thesis defense, which will be in person and broadcasted online. Additionally, I have been accepted to present both an oral and poster presentation of the project at the International Sea Turtle Symposium (ISTS), which will take place in Accra, Ghana, from March 22nd to 27th, 2025. Finally, we plan to submit two research articles based on the project's findings to a peer-reviewed scientific journal during the summer.



## 7. Looking ahead, what do you feel are the important next steps?

The next step is to use the information obtained in this study to the enforcement of the Panama sea turtle protection law (Law No. 371), approved in 2023. Bocas del Toro was identified as a key hotspot for sea turtle take in the late 1960s, and our findings indicate that the practice continues today, operating through illegal networks with no legal repercussions. Second, the Sea Turtle Conservancy is planning to reinforce its environmental education program in Bocas del Toro, aiming to promote awareness and community engagement in a more effective way. Finally, the data collected in this project fills critical gaps about illegal take in Bocas del Toro and the findings can be used to better assess the illegal take of sea turtles in the Caribbean Sea.

## 8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

During the project presentation at the Southeastern Louisiana University seminar, The Rufford Foundation was properly acknowledged as the main sponsor of this project (Fig. 6). The foundation's logo was prominently displayed during the presentation. The Rufford Foundation logo was featured on the infographic materials created for the environmental education activities conducted in Bocas del Toro. These materials were distributed to local schools, community organizations (both public and private), and interview participants, helping to increase awareness of the foundation's support. Finally, the logo will be displayed in the oral and poster presentations at the upcoming International Sea Turtle Symposium (ISTS) in Accra, Ghana in March 2025, ensuring the foundation's contribution is recognized on an international platform.



**Figure 6.** Daniela Rojas-Cañizales during the seminar presentation at Southeastern Louisiana university, January 2024. Infographic about the turtles of Bocas del Toro share in the communities.

**9. Provide a full list of all the members of your team and their role in the project.**

**Daniela Rojas-Cañizales** (Southeastern Louisiana University) – Lead researcher and project coordinator.

**Dr. Roldan A. Valverde** (Sea Turtle Conservancy, STC) – Scientific Director of STC and Master's advisor. Roldan supervised the project, providing essential guidance and facilitating the logistics necessary to conduct the research in Panama.

**Raúl García** (Sea Turtle Conservancy, STC) – STC Panamá President. With seven years of experience working in Bocas del Toro, Raul's extensive knowledge of the region's nesting beaches was key to the project's success. He played a vital role by supporting initial interviews, environmental education activities, and providing logistical guidance throughout the fieldwork.

**Georgina Zamora-Quiles** (Escuela de Biodiversidad) – Environmental educator specializing in nature-based conservation. Georgina previously worked in Bocas del Toro and contributed to the development of infographic materials, offering guidance on the design and implementation of environmental educational activities.

**Alba Rodriguez-Lujan** (Turtle Trax S.A.) – Environmental educator who participated in the planning and execution of environmental education activities.

**Rebeca Camacho** (Instituto Tecnológico de Costa Rica) – Environmental sciences student with a focus on community engagement. Rebeca contributed to the planning and implementation of environmental education activities.

**10. Any other comments?**

We are very grateful for the support granted by Rufford foundation with this project that was a long-standing dream. Bocas del Toro is a stunning tourist destination with a rich history. In the past, it was one of the world's largest sites for tortoiseshell extraction in the Caribbean Sea. While sea turtles continue to face significant challenges in the region today, the local community has undergone a remarkable transformation in its perspective. People now recognize the importance of protecting these species. We anticipate that this data will be used to improve future conservation measures to protect the sea turtles in the Caribbean Sea.