UNITED NATIONS

EP

Distr. LIMITED

UNEP(DEPI)/CAR WG.45/INF.6 Addendum
7 April 2025

Original: ENGLISH

Eleventh Meeting of the Scientific and Technical Advisory Committee (STAC) of the Protocol Concerning Specially Protected Areas and Wildlife (SPAW) in the Wider Caribbean Region

Panama City, Panama
30 June – 3 July 2025

CALL FOR PROPOSALS SHORT-TERM SMALL GRANTS- YEAR 2023- INFORMATION NOTE FOR THE SPAW PROTOCOL SCIENTIFIC AND TECHNICAL ADVISORY COMMITTEE

Addendum 1- the reports

This meeting is being convened hybrid. Delegates are kindly requested to access all meeting documents electronically for download as necessary.

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Regional Activity Centre for the Specially Protected Areas and Wildlife Protocol of the Wider Caribbean Region (SPAW-RAC)

SPAW · RAC

SEA TURTLE BIOMONITORING IN THE YUCATAN PENINSULA

FINAL REPORT

2023

DISCLAIMER

The Sea turtle biomonitoring in the Yucatan Peninsula project, is pleased to share its activities through digital media. Please note that the material appearing in this report is for SPAW-RAC informational purposes only.

The statistical figures and tables included in the analytical section of the report have been estimated by the responsable of the project, based on partners and internal data of the project, and are not necessarily official Yucatan Peninsula statistics.

The findings, analysis, and recommendations of this Report, do not represent the official position of the Environment and Natural Resources Department of Mexico (SEMARNAT) and its commissions. They are also not necessarily endorsed by those mentioned in the acknowledgments or cited.
analysis are from official sources. All reasonable precautions have been taken to verify the information contained in this report. However, the responsibility for the interpretation and use of the material lies with the reader.

PROJECT REPORT

Official report of activities developed under the small grant for short-term projects, granted by the Regional Activity Centre for the Specially Protected Areas and Wildlife Protocol of the Wider Caribbean Region (SPAW-RAC).

All participants declare that there is no conflict of interest for the development and dissemination of this report.

NGO Director

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Lead project and researcher

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Project partnerships

Menos Plástico es fantástico en Mahahual A.C., Asociación Mexicana de Veterinarios de tortugas A.C., Universidad Nacional Autónoma de México, Yucatec Diving and Conservation S.A. de C.V., Flora Fauna y Cultura de México A.C., Dirección de Gestión Ambiental y Cambio Climático de Solidaridad, Regional Activity Centre for the Specially Protected Areas and Wildlife Protocol of the Wider Caribbean Region, Sea Turtle Rescue Alliance, Instituto de Biodiversidad y Áreas Naturales Protegidas de Quintana Roo, Red Biobanco de Tortugas Marinas Latinoamérica, Academia del Océano, Southeastern Louisiana University - Dept. of Biological Sciences, Universidad Las Palmas de Gran Canaria – SERTOX, Tecnológico de Monterrey Campus Ciudad de México

Project collaborations

Acuario Inbursa, Centro Veterinario Xalapa, Health Assessments in Sea Turtles from Baja California Sur, Laboratorio de Investigación y Medicina de Organismos Acuáticos, Departamento Académico de Ciencia Animal y Conservación del Hábitat-UABCS, Procuraduría Federal de Protección al Ambiente de México, Secretaría del Medio Ambiente y Recursos Naturales, Comisión Nacional de Áreas Naturales Protegidas, Centro de Estudios Tecnológicos del Mar No. 17, Comité Estatal para la Protección, Investigación, Conservación y Manejo de Tortugas Marinas en Quintana Roo, Centro Ecológico Akumal

SEA TURTLE BIOMONITORING IN YUCATAN PENINSULA PROJECT

Acknowledgements

We would like to acknowledge Menos Plástico es fantástico en Mahahual A.C., Asociación Mexicana de Veterinarios de tortugas A.C., Dirección de Gestión Ambiental y Cambio Climático de Solidaridad, Universidad Nacional Autónoma de México, Instituto de Biodiversidad y Áreas Naturales Protegidas de Quintana Roo, Centro de Estudios Tecnológicos del Mar No. 17, Flora, Fauna y Cultura de México A.C., Acuario Inbursa, and wildlife authorities which provide valuable logistics support, with special recognition to the operational staff Ana del Pilar Antillanca Olivar, Marcela Sánchez Carrillo, Luis Enrique Juárez Sotelo, Blanca Cabrera, Roberto Herrera Pavon, Julia Serena Francés, Luisa Fernanda Zapiain García, Flavio González Meljem, Alba Antonia Uribe Chalé, Carlos M. Hernández Ucy, Levi I. Lavalle Kantun, Juan Domingo, Sinai Kantun, Eduardo Antonio Gazol Patiño, Jesús Eduardo Reséndiz, Claire Petros, Maximiliam Poylak, Lucelly Guadalupe Ramos Montejo, Armando Lorences, Leonel Gómez Nieto, Itzel Trujano Rivera, Guadalupe Pauahi Quintana Pali, Alejandro Arenas, Isaac Hernández Hidalgo, Lucio Arturo García Gil, Martha Patricia Velazquez Peña, Gilberto Borges, Brenda Sarahi Ramos Rivera, and Albert Bassols.

We are grateful with all the volunteers, students, and turtle camps technicians who support the field work, and participate in our training activities. Also thank to wildlife authorities (SEMARNAT, DGVS, PROFEPA, CONANP) for issue all the permits. And to all our sponsors, with a special mention to the Regional Activity Centre for the Specially Protected Areas and Wildlife Protocol of the Wider Caribbean Region, which allowed us to achieve our 2023 goals.

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OVERVIEW

SEA TURTLE BIOMONITORING IN YUCATAN PENINSULA

SEA TURTLE BIOMONITORING IN YUCATAN PENINSULA

All species of sea turtles play a fundamental ecological role and are essential in maintaining the ecological balance of fragile marine ecosystems in our country. In Mexico, the protection and conservation of sea turtles is mainly carried out in turtle camps. Yucatan Peninsula is privileged for its biodiversity, in which Mesoamerican Reef System stands out with an approximate length of 300 km as well as large extensions of seagrass meadows, and it's considered a key area for feeding, migration, reproduction and nesting of sea turtles. Of the seven species of sea turtles, five nest on Yucatan Peninsula coastline (*Chenonia mydas, Eretmochelys imbricata, Caretta caretta, Lepidochelys Kempii, Dermochelys coriacea*), and six made a habitat use (previous mentioned species, and *Lepidochelys olivacea*).

Understanding causes of sea turtle stranding, and mortality are fundamental to the identification of threats, recovery, and sustainability which provide the basis for research prioritization. In addition, data analysis from stranding records can also issue insights into biology, and ecology of sea turtle populations, including spatiotemporal distribution, life stages, sex ratio, migratory patterns, diet, habitat use, and baseline data for effective recovery plans assessing human-wildlife conflicts.

The sensitivity of sea turtles to environmental stressors made them suitable species to use them as bioindicators, facilitating timely decision-making for marine conservation. To achieve this, it is essential to have multiple diagnostic tests to assess health indicators on wildlife populations and their ecosystems.

Sea turtle biomonitoring in the Yucatan Peninsula, legally named “Evaluación de salud en tortugas marinas del caribe mexicano” (SGPA/DGVS/04653), is a sea turtle conservation project carried out since 2017. This project aims to use sea turtles as bioindicators to assess the state of health of marine ecosystems, by epidemiology surveillance of emerging pollutants and strandings response.

Each year, we complete our activities and objectives in a timelapse of 12 months and renew all the permits to continue the conservation efforts for the next year. Our long-term goal (5 to 10 years) is to expand the project throughout the entire Yucatan Peninsula and open a sea turtle rescue and research center.

SEA TURTLE BIOMONITORING IN YUCATAN PENINSULA PROJECT

Objetives

Throughout the year, our partners and collaborators contribute to the project with the donation of supplies and human resources (volunteers, staff, and students), to achieve our objectives for 2023.

The generated information is expected to serve as baseline data for environmental risk assessment studies and as a national and international reference for the development of mitigation strategies.

01. Sea turtle stranding response
02. Ecotoxicology
03. Habitat restoration for nesting beaches
04. Professional development for young professionals in sea turtle conservation
05. Environmental education & outreach programs for sea turtle conservation

Implementation site

The study is annually conducted from January to December, along the coastline of Quintana Roo State, Mexico (17o 48'; 21o 10' N; 86o 48';89o 10'W) (Figure 1. A). This year, thanks to the finical support granted by SPAW-RAC, our study area expand to Yucatan State, supporting with veterinary care for stranded turtles between Sisal and Telchac (21° 09' 44.8" N, 90° 02' 50.8" W – 21° 20' 43.6" N, 89° 14' 58.6" W) (Figure 1. B)

Figure 1. Map of the Yucatan Peninsula Region. A. Blue line mark indicating Quintana Roo coastline. B Red mark indicating the new surveillance area for Yucatan State

Sampling and wildlife management permits were issued by the Secretary for Natural Resources Management, and Wildlife General Directive of Mexico since 2017 (SGPA/DGVS/05706/17, 000310/18, 003751/18, 12182/19, 017151/21, 04653/22).

ACTIVITIES

2023 SEA TURTLE BIOMONITORING IN YUCATAN PENINSULA PROJECT

Sea turtle stranding response

Daily monitoring was performed during other conservation and protection activities. Strandings were reported to wildlife authorities and to the lead researcher through local non-governmental organizations partnerships.

For each stranded turtle, we collect the following data: specie, sex, life stage, date, hour of first observation, location, decomposition stage, curved carapace length (CCL), curved carapace width (CCW), any abnormal condition (i.e. body condition, tumors, injuries), photo identification, and whenever possible, complete necropsies were performed on dead stranded sea turtles (Figure 2). During necropsies, pathology samples were collected for individuals with a presuntive cause of dead related to an infection diseases, and sent to the pathology laboratory for analysis.

In areas with high prevalence of natural predation of nesting turtles, in collaboration with Menos Plástico es Fantástico A.C., we start monitoring with trail cameras, to understand the natural predators behavior and their relation with the nesting sea turtles ecology (Figure 3).

Live-stranded animals on Quintana Roo were transferred to Xcaret aquarium, established by the Federal Attorney for Environmental Protection (PROFEPA) for rehabilitation. Medical treatment, diagnosis, and follow-up of these individuals at the aquarium is unknow.

Live-stranded animals on Yucatan were transferred to the 17th Center for Technological Studies of the Sea, established by PROFEPA for rehabilitation.

Figure 2. Necropsy of a juvenile loggerhead turtle, stranded at Sisal, Yucatan.

Medical treatment, diagnosis, and follow-up of these individuals are currently under external technical advisement of our project.

Seven inspections had been carry out since September 2023 for this facility, to evaluate the veterinary and husbandry care under this center (Figure 4). During those inspections, we support with veterinary attention including physical exams, one surgery, and clinical test to individuals that present reserved prognostic during the inspections (Figure 5).

Figure 3. Dead nesting green turtle by jaguar predation in a remote area of Mahahual, Quintana Roo.

Figure 4. Inspection made in October 17th Center for Technological Studies of the Sea, during a veterinary care activities.

Figure 5. Amputation of the right flipper in a nesting hawksbill turtle, caused by a non controlled infection, after a feral dog attack wound.

Ecotoxicology

For our anual biomonitoring of inorganic pollutants, we collect tissue from necropsies, and blood and scute tissue from nesting turtles of X'cacel-X'cacelito sanctuary in Quintana Roo (Figure 6).

Collected samples were frozen at -20 °C and sent to the Marine Science and Limnology Institute of the Universidad Nacional Autónoma de México, for humid digestion process following the methodological standards of the mandatory technical regulation NOM-117-SSA1-1994 (1995).

Due to the national administrative delay presented for wildlife permits, we sent samples from previous years to the Chapingo Autonomous University, to validate and test their ecotoxicology laboratory. If the results succeed, we could have our results in shorter time and no exportation and importation CITES will be required for current and future analyses.

Through our partnership with Menos Plástico es Fantástico A.C., this year we emphasize the work effort to study the

Figure 6. Scute sampling of nesting loggerhead turtle, at X'cacel-X'cacelito sanctuary, for ecotoxicology studies

impact of anthropogenic marine debris (AMD) in Mahahual nesting beaches (Puerto Angel and Punta Herradura), due to its high pollution. All MAD inside nest were collected, counted, selected, record and removed from the beach Figure (7). This activities were under federal nesting sea turtles management regulations following the NOM-SEMARNAT-059-2010.

Figure 7. Fishing rope inside of a relocated nest

Mentorship program

To promote professional development, since 2022 we develop a mentorship program for young and current professionals involved in sea turtle conservation. This initiative underscores our commitment to fostering a thriving community for wildlife conservation.

We count with the participation of six international mentors, each bringing a wealth of expertise and multidisciplinary insights to guide and empower mentees across the globe (Figure 8)

These mentors contribute their time and knowledge through share professional experiences, specialized lectures, clinical cases, hands-on fieldwork, and personalized support to support mentees navigate their careers within the realm of sea turtle conservation.

Throughout the year 2023, our mentorship program had a dynamic approach, offering mentorship opportunities in three modalities: hybrid, online, and in-person (Figure 9).

This strategic diversification allowed us to offer this program to a broad community with diverse needs, and preferences, ensuring that the mentorship experience was not only enriching but also accessible to individuals regardless of their geographical location.

Figure 8. Mentors of the 2023 mentorship program.

Figure 9. Mentorships carried out in different modalities. A, Online session with an undergraduate Spanish veterinarian student. B, In person session with an undergraduate Mexican veterinarian student.

Externships

In 2023, our externship activities were conducted as part of the comprehensive initiative known as the Sea Turtle Biomonitoring in the Yucatan Peninsula. Externs participating in the program had the unique opportunity to contribute directly to the objectives of our project.

Engaging in hands-on research activities, externs worked alongside experienced researchers, partners, and collaborators in diverse field settings within the Yucatan Peninsula, in two modalities: short-extern (1-5 days) and long-extern (4 weeks) (Figure 10)

The externship encompassed a range of multiple activities, including monitoring nesting sites, population assessments, implementing tagging and tracking, photo identification, and actively participating in our ongoing ecotoxicology and stranding response activities.

Throughout the externship program, participants also benefited from interactive workshops, seminars, mentorship program, and training sessions conducted by our project.

Figure 10. Externship activities record. A, Photograph of two externs with different modalities, during X'cacel-X'cacelito ecotoxicology activities. B, Long-term externship participant working in collaboration with our partners during nesting monitoring activities at Mahahual.

Education outreach

Throughout the year, our Education Outreach program strategically engaged diverse audiences through targeted programs, workshops, and community events. The primary goals was to raise awareness and share knowledge for primary or first-aid stranding response (Figure 11).

Figure 11. Workshops carried out during 2023 for sea turtle stranding response. A, Husbandry and welfare basic techniques. B, Primary response for sea turtle strandings in remote areas. C, Stranding response in Mahahual. D. First response for sea turtle strandings in Akumal

Our educational activities were customized to reach different audiences, including local communities, and stakeholders involved in sea turtle conservation:

01. Cold stunning
Lecture | 3 hours. Deliver on April 10th to externship and mentee students

02. First response for sea turtle strandings: Akumal
Workshop | 8 hours. Deliver on May 28th and 29th to Akumal community, and NGO Akumal Ecological Center staff

03. Stranding response: Mahahual
Workshop | 2 hours. Deliver on June 16th to Sandy turtle camp staff.

04. Problem Oriented Medical Record
Seminar | 2 hours. Deliver on June 14th to externship and mentee students

05. Photo identification: sea turtles and jaguars
Seminar | 2 hours. Deliver on June 27th to externship and mentee students
*Palace Resorts Foundation IAP turtle camp, workshop postponed until new schedule

06. Husbandry and welfare basic techniques
Workshop | 1 hour. Deliver on September 29th to 17th Center for Technological Studies of the Sea, sea turtle staff.

07. 7th National Meeting of Sea Turtle Conservation in Mexico (7RNTM)
National Meeting | 28 hours. Deliver on October 17th to 20th to 91 organizations

08. Primary response for sea turtle strandings in remote areas
Workshop | 8 hours. Deliver on October 18th and 20th to 7RNTM participants

09. Biomonitoring insights in sea turtle populations
Lecture | 40 minutes. Deliver on December 05th to World Aquatic Veterinary Medical Association members (students and professionals)

As part of our commitment to scientific divulgation, our team actively participated in the 41st International Sea Turtle Symposium (41th ISTS), and the 7th National Meeting of Sea Turtle Conservation in Mexico (7RNTM), trough poster presentations:

1.Sea turtle strandings and mortality cause in Quintana Roo State, Mexico
2.Implementation of mentoring programs as a learning and empowerment strategy for sea turtle conservation
3. Impact of marine litter on nesting beaches in Mahahual

These platforms provided invaluable opportunities to share our project, exchange insights with fellow scientists and conservationists, and contribute to educational outreach through a workshop delivery on the 7RNTM (Figure 12).

Figure 13. Participation in 41st International Sea Turtle Symposium, and the 7th National Meeting of Sea Turtle Conservation in Mexico. A, Poster presentation of the "Sea turtle strandings and mortality cause in Quintana Roo State, Mexico", at the 41th ISTS. B, Impact of marine litter on nesting beaches in Mahahual, at the 7RNTM. C, Regional partners and collaborators of the project who attended at the 41th ISTS.

RESULTS

2023 SEA TURTLE BIOMONITORING IN YUCATAN PENINSULA PROJECT

Achivements

62
Strandings

10
Educational activities

514
Participants
Students, volunteers, and staff

Networking

13
Partners

13
Collaborations

03
New partnerships

Funding summary

SPAW-RAC first granted amount $4 996,43 Euros

$3 496	$775,39	$388,15	$363,88
Staff remuneration	Equipment and supplies	External services	Indirect expenses

SEA TURTLE BIOMONITORING IN YUCATAN PENINSULA PROJECT

Sea turtle stranding response

Data collected through stranding reports, rescues, and necropsies have provided invaluable insights into the health and challenges faced by sea turtle populations in the Yucatan Peninsula.

Collaborative efforts with local organizations and wildlife authorities have enhanced our understanding of anthropology threats, infectious diseases and natural predation influencing sea turtle stranding and mortality causes, along these seven years of work effort in our biomonitoring project (Figure 13).

The integration of necropsies and pathology analyses, not only addresses immediate health concerns related to sea turtle mortality, also provide us veterinary and scientific knowledge for a long-term management in the Caribbean (Figure 14). Results of the pathology analysis are currently in progress, with results expected to be delivered in the first quarter of 2024.

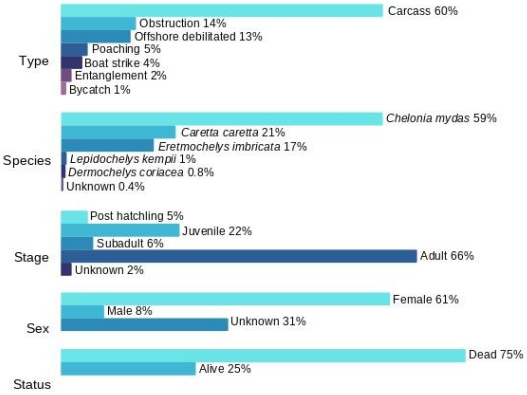

Figure 13. Accumulative data of strandings during the period 2017-2023*.

*This data could change in order of final results from laboratories, and recovered information from our partners and collaborators, after submit this report to SPAW-RAC.

Figure 14. Collected samples from multiple tissues of a juvenile loggerhead (*Caretta caretta*). Presuntive cause of dead, chronic debilitation syndrome secondary to *spirorchiid* tramatodes infestation.

The implementation of trail cameras, initiative of targeted strategic areas with high prevalence of natural predation, have been an outstanding collaboration with Menos Plástico es Fantástico A.C.

This collaborative effort, allowed us to monitor four threatened species: jaguar (*Panthera onca*), and nesting green, loggerhead and hawksbill turtles (*Chelonia mydas, Caretta Caretta, Eretmochelys imbricata*) in Mahahual.

Expanding our understanding of the ecological dynamics in these region, will foster informed conservation strategies for future management, and We expect to take this initiative further in the upcoming years (Figure 15).

Figure 15. Trail camera photograph record of a jaguar (*Panthera onca*) predating a nesting green turtle carcass (*Chelonia mydas*) in Mahahual.

During the inspections and veterinary support to the 17th Center for Technological Studies of the Sea, at Yucatan, we detect that general management and husbandry are lax, including welfare, hygiene, and veterinary care, with emphasis on prevention and control of diseases.

The sea turtles under this facility appeared to be in good physical condition, however the lack of specialized veterinary care, dilutes the health perception for the staff, and endorse this problematic situation within this institution (Figure 16).

Figure 16. Observed low water quality, addressed by a lack of filtration system, and weekly water change, in a tank of 150 L with two juvenile green turtles.

We still working on achieve a new partnership with this institution in order to support them with training and more veterinary care, starting next year.

This partnership will be important in order to fully achieve our goal of develop a stranding response activities at Yucatan State, due to the current command of our wildlife authorities, which dictaminates that all alive reported stranded turtles in Yucatan, have to go to this facility for rehabilitation.

Ecotoxicology

We complete our activities for humid digestion process of all samples collected during 2023 (Figure 17). However, due to the national administrative delay presented for wildlife permits, we're waiting to receive our 2024 CITES to complete the toxicology analysis and generate more information regarding inorganic pollution.

To counteract this situation, currently we're working on the validation process of Chapingo Autonomous University laboratory. If the analysis results succeed, we could be able to have our yearly results in shorter time and no exportation and importation CITES will be required.

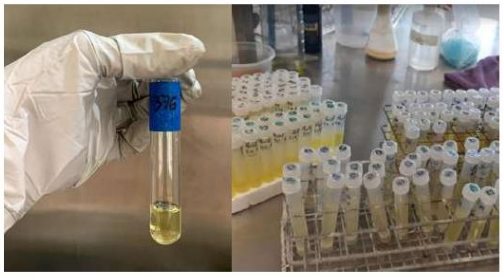

Figure 17. Humid digestion process following the methodological standards of the mandatory technical regulation NOM-117-SSA1-1994 (1995).

Another successful collaboration with Menos Plástico es Fantástico A.C. , was the initiative of analysis of anthropogenic marine debris (AMD) inside sea turtle nest.

Thanks to the rigorous field work of the Sandy turtle camp staff, we could determinate that for 2023, 20% of the sea turtle nest had marine litter inside. 80% of these AMD corresponded to fragmented hard plastic, impossible to develop a brand audit (Figure 18).

Figure 18. Record of anthropogenic marine debris, inside two different sea turtle nest.

AMD is one of the most challenging and growing concerns for this particular area of Yucatan Peninsula. We expect to take this initiative further in the upcoming years. Currently, under our partnership with Menos Plástico es Fantástico A.C., we're looking forward on grand additional founding and collaborations for a deeper analysis including some environmental variables into this study.

Mentorship program

The mentorship activities undertaken in 2023, has played a pivotal role for the participation of young professionals in our project. The mentorship modalities have not only accommodated the evolving circumstances of a globalized world but have also ensured international participation.

For 2023 mentorship program, we had the participation of eight mentees from Mexico, Brasil, and Spain; with a duration program of six to eight months. Of this group, two decline their mentorship at the middle of the program due to their need to prioritize their university credits.

We continue in contact with these students and offered them flexible schedule, hoping they complete their mentorship program in the future.

To evaluate the effectiveness of this program, we evaluate their final reports and request them an evaluation survey with eleven mixed structured questions, to understand the impact and learning of the mentees.

The three most repeated words on the survey were: mentoring, gratitude and experience (Figure 19). All mentees express gratitude to the mentors and program, a professional growth, gain of knowledge for their particular areas of interest in sea turtle conservation, and all would recommend our program to other colleagues.

So far, our mentorship program had eleven new mentees who will start activities at the beginning of 2024, and we expect more applications along the year.This program proved profoundly enriching for both sides: mentees and mentors The program's dynamic exchange of ideas, collaboration, and mutual support embrace our goals.

Figure 19. Word cloud, extracted from the most repeated words in the final reports and evaluation surveys of mentees who succesfully complete the mentorship program.

Mentees experienced accelerated professional growth through personalized guidance, gaining insights from mentors' extensive experience in sea turtle conservation. Mentors, in turn, found fulfillment in sharing knowledge, witnessing mentees' progress, and fostering a sense of legacy within the conservation community. We aspire to continue for a long term this initiative, and build a robust network of individuals united by their zeal to sea turtle conservation, fostering a legacy of collective impact on a global scale.

Externships

Externship covered essential topics such as data collection and analysis techniques, providing externs with a comprehensive understanding of the methodologies employed in sea turtle conservation research.

The externship program maintained a flexible structure, allowing participants to tailor their experiences based on individual interests, career aspirations and available time to carry out the externship (Figure 20).

For 2023, we had a long-term extern, and two short-term externs. The three participants complete their activities successful, contributing to all commissioned activities with enthusiasm.

Externship opportunities during the summer nesting period, is delimited for a frame of period to ensure the externs can learn during the the high nesting peak, and consequently practice more.

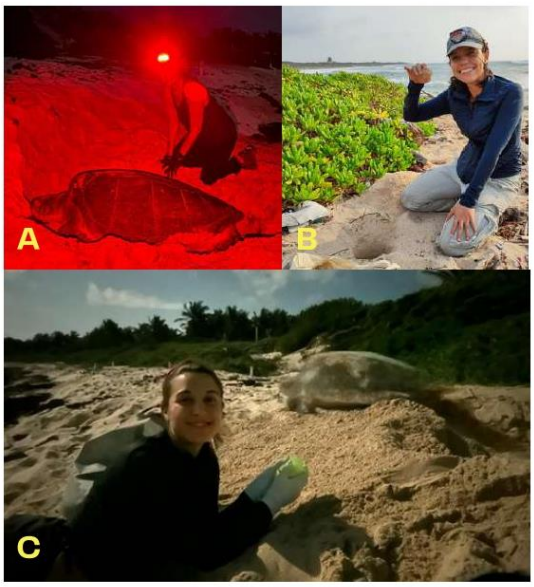

Figure 20. 2023 Externs supporting in nesting monitoring activities. A, Short-term extern (one week) from United States. B, Short-term extern (one night), from Mexico. C, Long-term extern (four weeks), from Spain.

As our primary goal is to ensure personalized learning, the number of students we can accommodate is intentionally limited. Additionally, while we do not charge any fees for participation, the externs are responsible for covering their expenses entirely. However, to mitigate financial burdens, we actively assist in finding low-cost accommodation and affordable food options, facilitating a more accessible and fulfilling learning experience for dedicated students passionate about sea turtle research.

To our perception, these experiences reinforce our commitment to involve a diversified community, ensuring their continued alignment with the project's objectives and the broader landscape of sea turtle conservation research.

Education outreach

The education outreach program served as a bridge between scientific research, professional training, and public awareness; empowering individuals with knowledge to instill a sense of stewardship and responsibility for sea turtle conservation.

Of the nine activities we carry out in 2023, we have the participation 245 assistants between our workshops, seminars and lectures. Further more, it is important to highlight that we were one of the Board of Directors and meeting organizers of the 7th National Meeting of Sea Turtle Conservation in Mexico (7RNTM), with an attendance of 269 participants of over 91 national and international organizations (Figure 21).

As organizers of the 7RNTM we ensure the evaluation and participation of 111 abstracts, 07 workshop proposals, 04 keynote speakers, and 03 special

Figure 21. Participants of 4 educational outreach activities in 2023. A, Attendance to the 7th National Meeting of Sea Turtle Conservation in Mexico. B , Assistants of the "Primary response for sea turtle strandings in remote areas workshop", during our field trip in the second day. C, participants of the "Husbandry and welfare basic techniques workshop". D, Practice of stranded turtles at pools, during the "First response for sea turtle strandings in Akumal workshop".

events: video night, photography contest, and cultural exchange, all aligned with our main topic, "communities" (For more information, please visit the web page https://reunionnacional.odoo.com).

As we reflect on the achievements of 2023, we recognize the integral role of these initiatives in promoting long-term conservation efforts. Moving forward, we remain committed to refining and expanding our educational and scientific outreach activities, recognizing that education and collaboration are powerful tools for positive change behavior in sea turtle conservation and their environment.

NEXT STEPS

SEA TURTLE BIOMONITORING IN YUCATAN PENINSULA PROJECT

NEXT STEPS

In the coming year, our project “Sea turtle Biomonitoring in Yucatan Peninsula”, intends to continue with all the activities with the same dynamic phase of growth and impact. Building upon the insights garnered from ongoing research endeavors, our next steps focus on the integration of pathology and toxicology findings to refine targeted conservation strategies. We plan to expand educational outreach initiatives to disseminate knowledge more widely, share our scientific contributions at conferences, and sustain externship opportunities for aspiring a career into sea turtle conservation Daily monitoring activities, with a heightened focus on timely strandings response, remain a cornerstone, while the trail camera program expands to deepen our understanding of natural predation dynamics in more than one threaten species. Strengthening collaborations with local and international partners, fostering community engagement, and assessing the mentorship program's impact underscore our commitment to build an inclusive, multicultural sea turtle community in a global scale that will ensure our conservation efforts to the Caribbean Large Marine Ecosystem and Adjacent Regions (CLME & AR).

01. Integration of research findings
Analyze and integrate the results from necropsies, pathology, and ecotoxicology analyses to gain insights into sea turtle health and potential disease threats.

02. Conservation Strategy Refinement
Utilize the insights from the integration research findings to refine and strengthen conservation strategies, addressing specific challenges posed by infectious diseases and natural predators.

03. Educational outreach expansion
Expand and diversify educational outreach programs to reach a wider audience, disseminating knowledge about sea turtle conservation and the project's findings.

04. Externship opportunities
Continue offering externship opportunities ensuring a meaningful learning experience for students interested in sea turtle research.

05. Networking
Strengthen partnerships and collaborations with local organizations, wildlife authorities, and international partners to enhance the impact of the sea turtle conservation project at the CLME & AR.

06. Community Engagement
Increase community engagement through our eduction outreach expansion, ensuring that local communities are informed, involved, and supportive of sea turtle conservation efforts.

07. Mentorship
Continue offering our mentorship program for young and current professionals who want to learn and share sea turtle conservation knowledge, to ensure well prepared new generations of sea turtle conservationist in an inclusive global scale.

08. Stranding response at Yucatan Peninsula
Continue with our sea turtle stranding response activities, and pursue the development of a research and rescue sea turtle turtle center for all Yucatan Peninsula.

SEA TURTLE BIOMONITORING IN YUCATAN PENINSULA PROJECT

CONCLUSIONS

SEA TURTLE BIOMONITORING IN YUCATAN PENINSULA PROJECT

CONCLUSIONS

The “Sea turtle Biomonitoring in Yucatan Peninsula” project, has demonstrated significant strides in understanding and safeguarding the health of sea turtle populations in the Yucatan Peninsula. From the meticulous stranding response and ecotoxicology analyses, to the enriching mentorship program, externships and educational outreach efforts. Our activities reflect a commitment to a collaborative engagement with local NGOs, communities, wildlife authorities, and international partners.

As we look ahead, the next steps outlined by integrating research findings, refining conservation strategies, expanding educational outreach, and pursuing the development of a sea turtle center. This last next step, will be crucial corner stone for the following years. After seven years in acquiring the knowledge and experience in the Yucatan Peninsula Region, we truly believe that is imperative the development of a sea turtle research and rescue center.

As we presented in this final report, our region is facing organized management challenges, particular with the management, husbandry and specialized veterinary care, that is required for a proper and professional care of stranded sea turtle respond. This initiative will addresses the existing challenge of losing valuable information in Quintana Roo, and the lack specialize veterinary care in Yucatan. Consolidating all these crucial factors under one leading organization and project will not only fortify our sea turtle conservation efforts, but also will ensure a collective interest in archiving welfare for these threatened species.

We extend our gratitude to all project collaborators, partners, and stakeholders who have played a crucial role in the success of the “Sea turtle Biomonitoring in Yucatan Peninsula” project. As we conclude this reporting period, we remain committed to building results, refining our strategies, and contributing to the broader field of sea turtle conservation through evidence-based practices and collaborative initiatives.

Thank you

Once again, we want to express our sincere gratitude to the Regional Activity Centre for the Specially Protected Areas and Wildlife Protocol of the Wider Caribbean Region, for the small grant granted for our 2023 activities, their invaluable support, and belief in our work. Their contribution had been instrumental in advancing our conservation efforts and promoting environmental sustainability in the Wider Caribbean Region. We are honored to have their partnership in our mission. This grant has not only provided essential financial support but has also strengthened our collaborative efforts to achieve our shared goals. We look forward to continuing our fruitful partnership and making a lasting impact on the conservation of the region's unique biodiversity.

SEA TURTLE BIOMONITORING IN YUCATAN PENINSULA PROJECT

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SEA TURTLE BIOMONITORING IN YUCATAN PENINSULA PROJECT

Impulsando la Restauración de *A.cervicronis* y *A.palmata* por medio de la diversificación de metodologías de intervención en Utila, Islas de la Bahía.

BICA UTILA
Elaborado por: Valeria Valladares y Francín Varela.

Créditos: Valeria Valladares | *Acropora cervicornis* desovando

Descripción del Proyecto

El arrecife de Utila ha experimentado pérdidas significativas debido a la Enfermedad de Pérdida de Tejido en Corales Duros (SCTLD por sus siglas en inglés) desde su detección en junio de 2021. Desde el año 2020, BICA Utila ha llevado a cabo monitoreos constantes durante dos años, revelando que más del 50% de los corales examinados han sucumbido a esta enfermedad en aproximadamente 10 sitios alrededor de la isla. Además, se ha observado un aumento en la frecuencia, intensidad y duración de los eventos de blanqueamiento masivo en el Caribe en los últimos tiempos. Estos fenómenos han exacerbado el impacto negativo que ha sufrido el arrecife de Utila en los últimos años.

Los principales objetivos del proyecto son “incrementar la cobertura arrecifal a mediano plazo por medio de la intervención activa” e “implementar la metodología de propagación de larvas con ayuda de la acción conjunta de la comunidad local y el sector privado”. Por ende, el proyecto pretende eficientar la restauración del género Acropora en la isla de Utila por medio del fortalecimiento de lazos con el sector privado y la estandarización del monitoreo de los viveros de coral. El género Acropora ha presentado ser de fácil crecimiento y ser resiliente ante el SCTLD. Lo que garantiza aumentar la biodiversidad genética usando técnicas climáticamente inteligentes con el apoyo de la comunidad local de la isla.

Desde Mayo del 2023, BICA Utila consiguió diez (10) árboles flotantes con la capacidad de 60 fragmentos cada uno. Estos árboles están en el sitio de buceo denominado Cabañas (16° 4' 16.56"N , 86° 57' 2.70"W). Consiguientemente, a partir de Abril del 2023, BICA Utila realizó monitoreo de desove con el objetivo de poder implementar una prueba piloto en fertilización asistida y poder escalar los esfuerzos de restauración de la isla para en un futuro poder abarcar más especies e incrementar la biodiversidad y resiliencia de la isla.

A continuación se detallan los resultados adquiridos a lo largo de 10 meses de apoyo de SPAW-RAC.

1. Calendarización y proceso de mantenimiento de los árboles flotantes.

Los esfuerzos de mantenimiento y monitoreo de los árboles flotantes han sido en conjunto con dos socios claves en la isla. Desde junio del 2023 se firma un Memorándum de Entendimiento para el mantenimiento bimensual de los árboles con Whale Shark and Oceanic Research Center (WSORC) y Utila Dive Center (UDC) por medio de su programa de conservación GoECO (**anexo 1**).

El protocolo de monitoreo y mantenimiento (**anexo 2**) específica y expone detalladamente la línea de acción en cuanto a:

- La limpieza de un árbol poblado de fragmentos.
- La remoción de coral de fuego de las estructuras flotantes.
- Limpieza de boyas y lazos.
- Identificación y cuantificación de fragmentos en el vivero.
- La medición de fragmentos (crecimiento lineal y extensión de tejido)
- Reconocimiento y manejo de enfermedades y registro de ellas.

Este protocolo fue compartido con los dos socios antes mencionados. Adicionalmente, estos fueron demostrados de forma práctica en el sitio de vivero de corales (**Figura 1**).

Figuras 1 y 2: (Izquierda) Asistente de investigación de WSORC colgando un fragmento de *Acropora palmata*. (Derecha) Aprendiz de programa de GoECO midiendo un fragmento de *Acropora cervicornis*.

La calendarización de los viajes de monitoreo se realizaban por medio de un calendario compartido de Google entre BICA (**Figura 2**), como coordinadores, la gerente de WSORC y la directora de GoECO. De esta manera, abordar el problema de la comunicación entre los socios y construir una comunicación fluida entre las partes interesadas en el vivero. Los socios tenían la potestad de poder visitar hasta 3 veces al mes el nursery, por medio del calendario, los mismos podían notar los espacios disponibles. Este sistema de calendarización resultó ser efectiva ya que no se dieron casos de encuentros mutuos en el nursery o confusiones en cuanto a reservaciones de fechas.

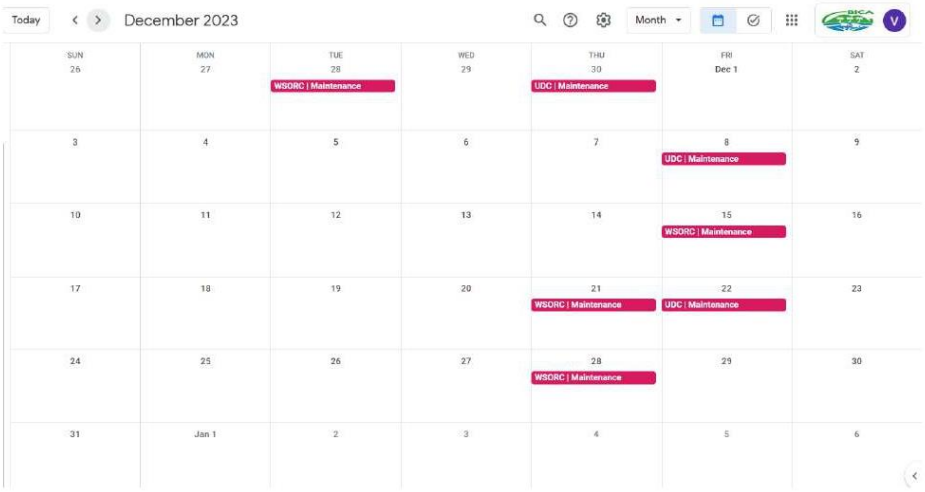


Figura 3: Ejemplo de calendario establecido para el mes de Diciembre.

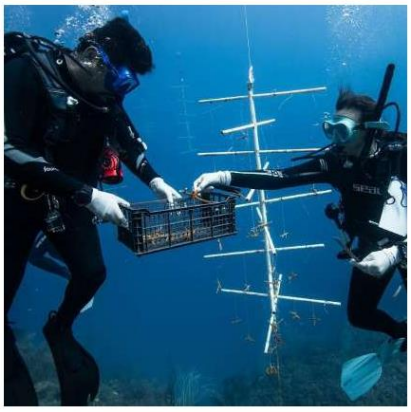
A continuación se detallan los viajes de mantenimiento realizados por los socios y BICA:

Organización	Fecha	Actividad
BICA	2/06/2023	Mantenimiento e inventario
BICA	06/06/2023	Mantenimiento
BICA	10/06/2023	Repoblación de árboles
BICA	22/06/2023	Repoblación de árboles
BICA	26/06/2023	Repoblación de árboles
BICA / UDC	03/07/2023	Repoblación de árboles
UDC	20/07/2023	Mantenimiento
BICA / WSORC	26/07/2023	Repoblación de árboles
BICA	11/08/2023	Mantenimiento
WSORC	19/08/2023	Mantenimiento
WSORC	25/08/2023	Mantenimiento
BICA / WSORC	30/08/2023	Repoblación de árboles
WSORC	13/09/2023	Mantenimiento
UDC	15/09/2023	Mantenimiento
WSORC	28/09/2023	Mantenimiento
UDC	29/09/2023	Mantenimiento
UDC	12/10/2023	Mantenimiento
WSORC	13/10/2023	Mantenimiento
WSORC	20/10/2023	Mantenimiento
UDC	25/10/2023	Mantenimiento
WSORC	26/10/2023	Mantenimiento
UDC	9/11/2023	Mantenimiento

Organización	Fecha	Actividad
WSORC	17/11/2023	Mantenimiento
WSORC	24/11/2023	Mantenimiento
WSORC	28/11/2023	Mantenimiento
UDC	30/11/2023	Mantenimiento
UDC	8/12/2023	Mantenimiento
WSORC	15/12/2023	Mantenimiento
WSORC	21/12/2023	Mantenimiento
UDC	22/12/2023	Mantenimiento
WSORC	28/12/2023	Mantenimiento
WSORC	18/01/2024	Mantenimiento
WSORC	26/01/2024	Mantenimiento
WSORC	1/02/2024	Mantenimiento
UDC	10/02/2024	Mantenimiento
WSORC	16/02/2024	Mantenimiento
WSORC	23/02/2024	Mantenimiento
UDC	26/02/2024	Mantenimiento
BICA / UDC	28/02/2024	Trasplante de fragmentos
BICA / WSORC	29/02/2024	Trasplante de fragmentos

3. Trasplante de al menos 6m2 de *Acropora cervicornis* en el punto de inmersión de Cabañas y trasplante de 18 fragmentos de *Acropora palmata*.

Durante la última semana de febrero, se coordinó el primer proyecto de trasplante de fragmentos de corales en el sitio conocido como Cabañas (figuras 4 y 5) con la valiosa colaboración de la escuela de buceo Utila Dive Center (UDC) en esta jornada, se logró trasplantar un total de 120 fragmentos de tres especies de coral, Este total incluye 9 fragmentos de *Acropora palmata,* 9 fragmentos de *Acropora prolifera* y 102 fragmentos de *Acropora cervicornis,* estos fueron trasplantados en 4 sitios diferentes con una longitud de 6m2 cada uno, lo que representa un total 24m2 exitosamente trasplantados.



Figuras 4 y 5. Colecta de fragmentos de uno de los árboles del vivero, y limpieza y preparación de uno de los sitios designados para el trasplante.

Inicialmente, se programaron dos eventos de trasplante, pero debido a condiciones climáticas desfavorables, solo se pudo realizar uno. El segundo trasplante ha sido reprogramado para el mes de abril.

Durante el proceso, enfrentamos diversas dificultades, entre ellas la dificultad de encontrar colonias donantes de *Acropora palmata,* lo que limitó la disponibilidad de fragmentos de esta especie, obteniendo solamente fragmentos de oportunidad, Sin embargo, se logró obtener un total de 39 fragmentos de *Acropora prolifera* que han mostrado alta resistencia al evento de blanqueamiento sufrido el pasado mes de noviembre, lo que genera esperanza para la recuperación de los arrecifes coralinos. (figuras 5 y 6)

Figuras 5 y 6. Fragmento de oportunidad de A palmata y fragmentos de A prolifera, previo a ser trasplantados.

4. Base de datos en la que se detallan las horas de seguimiento y las ventanas de desove. Asociación con tres centros de buceo para la rotación mensual del seguimiento.

El monitoreo se basó en el calendario de desove (**anexo 3**) realizado en Marzo del 2023 por la Ing.Valeria Valladares (Coordinadora de Investigación y Monitoreo) y revisado por Msc. Damaris Dueñas (Consultora independiente). En este calendario ilustra las ventas de los posibles desoves y las fechas de los monitoreos.

Los buzos profesionales de UDC recibieron entrenamiento y capacitación específica para llevar a cabo el monitoreo de Acropora palmata y A. cervicornis en el sitio de buceo Moonhole (N 16.08498; W 086.89317) **Figura 7**. Además, se estableció una colaboración con WSORC para llevar a cabo el monitoreo de Diploria labyrinthiformis en el sitio de buceo Little Bight (N16.07936; W086.92963). Estas actividades se llevaron a cabo desde abril de 2023 hasta octubre de 2023, con un total de 116 horas de monitoreo realizadas, abarcando 23 colonias y 3 especies adicionales (*D. labyrinthiformis*, *Orbicella faveolata* y *O. annularis*), además de las especies principales *A. palmata* y *A. cervicornis*.

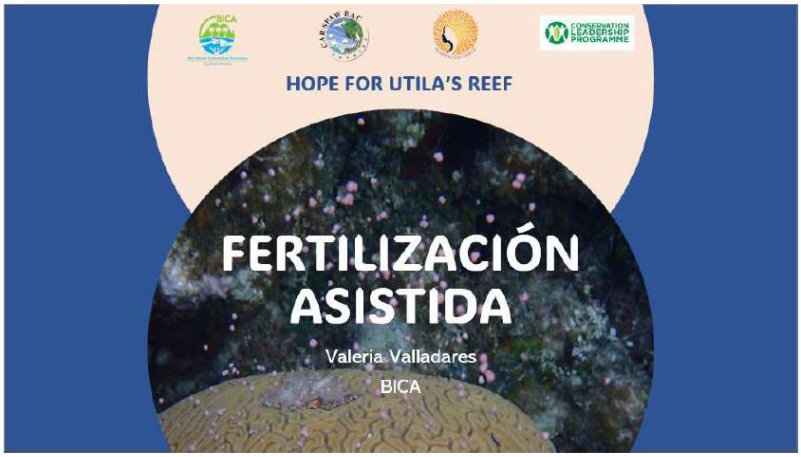


Figura 7: Presentación sobre fertilización asistida y monitoreo de desove

Los monitoreos de *D. labyrinthiformis* consistieron en sesiones de snorkel que se llevaron a cabo de 4pm a 6pm (**Figura 8**) durante los meses de abril a julio. Por otro lado, los monitoreos de las Acroporas implicaron buceos nocturnos que se realizaron de 8pm a 10pm durante los meses de agosto a octubre. Para los monitoreos nocturnos de las Acroporas, se etiquetaron un total de 9 colonias, distribuidas en 4 colonias de *A. palmata* y 5 de *A. cervicornis*. Con el fin de facilitar la ubicación de los voluntarios en el sitio, se llevó a cabo un mapeo detallado del área y se proporcionó a cada voluntario un mapa junto con hojas de datos (**anexo 4**) para registrar los eventos de desove.

Figura 8: *Monitoreo de Diploria labyrinthiformis. Derecha: voluntaria monitoreando colonias. Izquierda: hoja de datos proveída a los voluntarios para el registro de eventos de desove.*

A pesar del apoyo que se tuvo de Utila Dive Center y Whale Shark and Oceanic Research Center, se presentaron dificultades al momento de entablar una asociación con la tercera parte interesada, Underwater Vision, esto a causa por un déficit de personal y recursos por parte del centro de buceo. Por ende, esta empresa no pudo participar activamente en los monitoreos de buceo. Sin embargo, esto no presentó ser un problema para realizar las actividades con los otros centros de buceo.

RESULTADOS

Durante la temporada de desove se tuvo la oportunidad de poder encontrar patrones de desove en las cinco especies que se monitorearon, especialmente de las Acroporas, las cuales solo habían registros anecdóticos en Honduras.

Se ha descubierto que en la isla de Utila, el coral *D. labyrinthiformis* mantiene un desove sincrónico (múltiples colonias de la misma especie desovan en la misma noche) en mayo y junio. Por otro lado, las Acroporas y las Orbicellas presentan un desove multi sincrónico (múltiples especies desovan la misma noche) en los meses de agosto y septiembre (**Figura 9**). Además, se ha observado que las Acroporas y Orbicellas desovan de 5 a 6 días después de la luna llena, mientras que *D. labyrinthiformis* desova de 9 a 11 días después de la luna llena.

Figura 9: *Primera foto: A. cervicronis desovando. Segunda foto: asentamiento de gametos en colonia de D.labyrinthiformis. Tercera foto: Desove de O.faveolata.*

Estos resultados son de vital importancia para la ampliación de los esfuerzos de restauración en Utila. La restauración a través de métodos sexuales ofrece una mayor inclusión en la biodiversidad y la diversidad genética. Los datos de las 23 colonias monitoreadas se registraron en una base de datos donde se detalla la fecha del monitoreo, la cantidad de días después de luna llena, las horas de monitoreo y los eventos de desove (asentamiento, duración, hora de inicio y final) (**anexo 5**).

RETOS

Uno de los mayores retos que se presentó a la hora de los monitoreos fue la obtención de voluntarios. A causa de que los monitoreos se desarrollaron en horas de la noche, y debido a que se solicitaba la colaboración de profesionales de buceo, la reclutación de los mismos era pasajero. Por estas razones, hubo situaciones en las cuales se tuvo que realizar la búsqueda de voluntarios horas antes del desove por la cancelación de voluntarios ya agendados.

5. Se instalan redes de recogida de gametos y 2 personas de cada centro de buceo reciben formación en la técnica bajo la supervisión de un técnico de la BICA.

Las redes se realizaron con la mentoría de un grupo de Conservation Leadership Award llamado "Islanders for Change". Estas redes consisten de mallas en forma cónica, un vaso de plástico, un embudo, 8 gramos de pesas de plomo y una boya para la flotabilidad de la misma. Se realizaron 5 redes de captura de gametos y los voluntarios de los centros de buceo fueron capacitados en el manejo y el posicionamiento de dichas redes (**Figura 10**).

Figura 10: *Derecha: Ensamblaje de las redes. Izquierda: Demostración de la colocación de redes.*

Dentro de las capacitaciones en los centros de buceo se explicó la función de estas redes y el adecuado funcionamiento y uso de las mismas. Durante los monitoreos, las redes demostraron un funcionamiento adecuado y fue posible la captura de gametos (**Figura 11**). Sin embargo, en noches con corrientes muy fuertes, se experimentó dificultad para mantener la estabilidad de las redes.

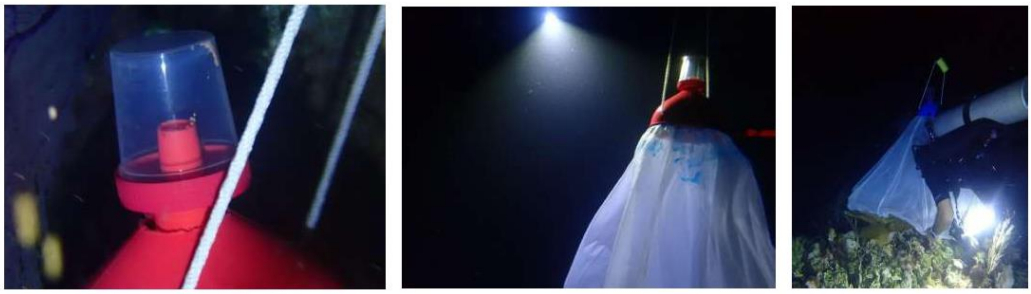


Figura 11: *Primera foto: captura de gametos por medio de las redes de colecta. Segunda foto: posicionamiento de las redes en monitoreos nocturnos. Tercera foto: voluntario de centro de buceo (UDC) posicionando las redes.*

6. Se dispone de materiales y equipos para la fecundación asistida de gametos de A. palmata y A. cervicornis. Se definen los milímetros cúbicos de gametos fecundados liberados en el arrecife.

La fertilización asistida se basa en la captura de gametos hermafroditas por medio de redes de colecta, las cuales fueron descritas anteriormente. Una vez capturado los gametos estos son trasladados a una incubadora donde ocurre la fertilización a través de movimientos mecánicos en zigzag cada 5 minutos durante 20 segundos, durante un periodo de 2 a 3 horas. Tras este periodo, se verifica si ha tenido lugar la fertilización, y para considerarse exitosa, el porcentaje de fertilización debe superar el 70%. Una vez asegurada la fertilización, los gametos se filtran mediante separadores de densidad y, finalmente, se liberan al mar.

Los materiales utilizados previo a la fertilización deben de ser desinfectados con cloro y posteriormente balancear el pH por medio de una solución de tiosulfato de sodio. Esto es para asegurar la salud de los gametos en las herramientas utilizadas para la fertilización.

El 6 de septiembre del 2023, junto a la asociación de GoEco y dos estudiantes se pudo realizar una prueba piloto de fertilización asistida dirigida por BICA Utila. Estos gametos fueron capturados a las 21:00 donde posteriormente fueron trasladados al muelle de Utila Dive Center donde en un laboratorio elaborado se realizaron los esfuerzos de fertilización (**Figura 12**).

Figura 12: *Izquierda: vertida de gametos en incubadora. Derecha: gametos de dos colonias recolectadas asentándose en la incubadora.*

El proceso empezó vertiendo los gametos en la incubadora donde por medio de pipetas pasteur se procedió a la remoción de depredadores mayores de 1cm, esto puede consistir de gusanos o peces que se quedaron atrapados en los vasos recolectores. Una vez removidos los depredadores, se empieza a mezclar los gametos por medio de movimientos de zig zag por 20 segundos cada 5 minutos durante 2 o 3 horas, dependiendo del porcentaje de fertilización.

Después de dos horas, por medio de un microscopio se define si ya ocurrió la división. En caso de haber ocurrido división, se define el porcentaje de fertilización, recordando que para que los gametos puedan ser liberados al mar, tiene que haber un mínimo de 70% de fertilización. En esta prueba piloto, después de 3 horas de movimiento mecánico en los gametos se pudo conseguir el 70% de fertilización (**Figura 13**).

Figura 13: *Izquierda: cantidad de gametos observados y fertilizados para el cálculo de porcentaje. Derecha: revisando el proceso de fertilización de los gametos recolectados.*

En la figura 9 se pueden apreciar los gametos observados en una de las muestras, y los gametos que han pasado al menos por la primera división están marcados con puntos rojos. Según el cálculo realizado basado en esa imagen, se observaron 65 gametos y 46 unidades pasaron por la división, lo que indica una tasa de fertilización del 70% en esa muestra.

Una vez asegurado el porcentaje de fertilización se procede a la limpieza de los óvulos con agua de mar filtrada. Esto se realiza para evitar la anoxia de los óvulos a causa de la degradación de los espermatozoides en el agua. Esto se realiza por medio de separadores de densidad, donde constantemente se están cambiando el agua hasta conseguir una turbidez nula en el agua donde los óvulos se encuentran (**Figura 14**).

Figura 14: Limpieza de óvulos a través de separadores de densidad.

Una vez completada la limpieza, los óvulos están listos para ser liberados en el mar. Estos óvulos fueron liberados en el mismo lugar donde fueron recolectados (Moonhole). Es importante destacar que esta prueba piloto fue un esfuerzo comunitario en colaboración con los socios del Utila Dive Center, como lo muestra la figura 15, tres personas fueron capacitadas en esta metodología y, además, proporcionaron voluntarios para los monitoreos de desove y el establecimiento para la fertilización asistida.

Figura 15: Voluntarios y personas capacitadas para fertilización asistida.

Definición de milímetros cúbicos y cantidad de embriones liberados.

Los milímetros cúbicos se definen mediante un cálculo matemático. La fórmula es la siguiente:

Número de embriones = (Em) × ($\pi \times r^2 \times h$)

Em: embriones por milímetro
π: valor de pi
r: radio del cilindro
h: promedio de altura de la capa de óvulos

Número de embriones = 27,000* × ($\pi \times (7.5)^2 \times 1$cm)
= 4, 771, 293.84 embriones liberados

Milímetros cúbicos = π $(7.5)^2$ × milímetros de capa promedio

V = π $(7.5)^2$ 10 = 1, 767.14 mm^3
= 1.77 ml^3

* SELLARES-BLASCO R., GUENDULAIN-GARCÍA S.D., VILLALPANDO M.F., VALDEZ-TRINIDAD A., CROQUER A. (2022). MANUAL DE REPRODUCCIÓN ASISTIDA DE CORALES: EXPERIENCIA EN REPÚBLICA DOMINICANA 104 P. ISBN: 978-9945-9270-1-6

Según los cálculos 4 millones de embriones fueron liberados al mar en una capa de 1.77 mililitros cúbicos.

Anexos adjuntos

Anexo 1. Memorándum de Entendimiento para el mantenimiento de los árboles con Whale Shark and Oceanic Research Center (WSORC) y Utila Dive Center (UDC)

Anexo 2. Protocolo de monitoreo y mantenimiento.

Anexo 3. calendario de desove.

Anexo 4. Mapa junto con hojas de datos.

Anexo 5. Base de datos detallada de fechas del monitoreo.

Call for proposals
Short-term Small Grants
- year 2022 –

Final report

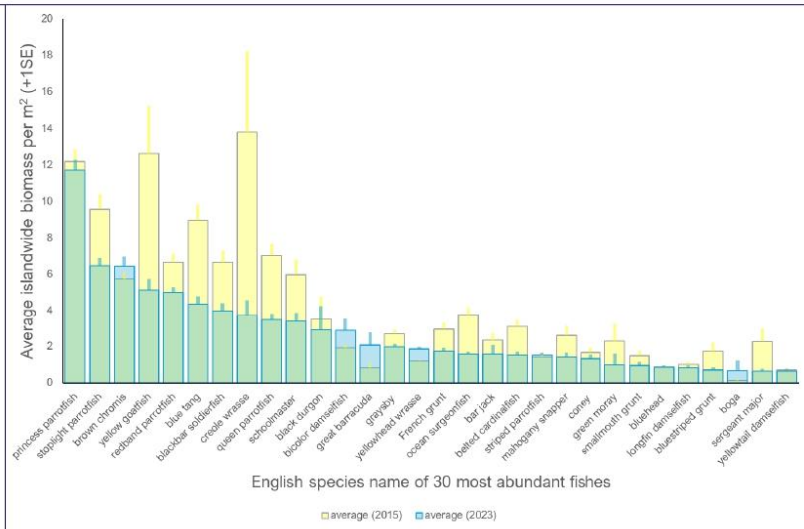
Name of the organization: Foundation for Caribbean Research and Management of Biodiversity (CARMABI)
Name of the project: Marine assessment of decadal changes in benthic and fisheries community composition on Curaçao

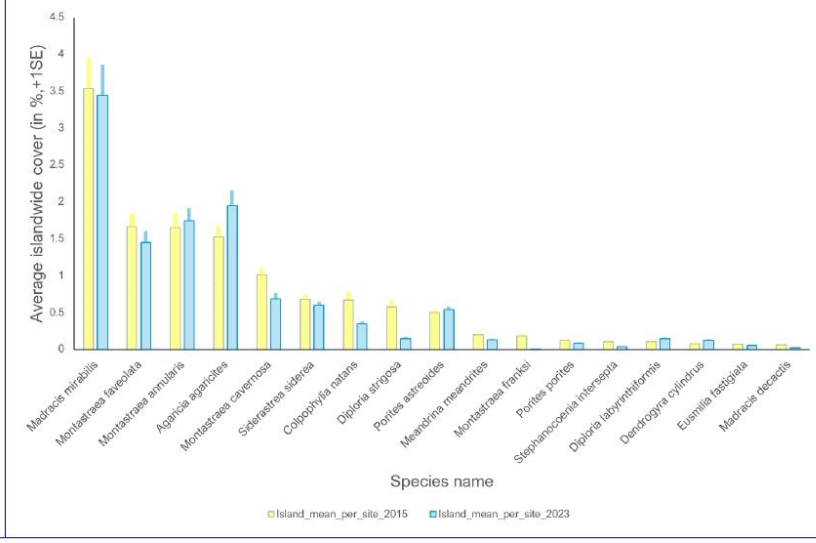
Total budget of the project: € 10.000
SPAW-RAC grant: Non received
Timeframe for implementation: July 17, 2023 – July 31, 2024

This report is intended to provide information on the organization(s) involved, the project, the concerned species and sites, the threats to their conservation, the methodology developed within the framework of the project, its implementation, the objectives sought, the results obtained, and the perspectives for the future, in order to enlighten the Parties on the interest of such a project for the achievement of the objectives of the SPAW Protocol.

1. Your organization	
Name / Title	Foundation for Caribbean Research and Management of Biodiversity(CARMABI)
Category (public entity, NGO, laboratory, private company, managers,...)	NGO
Is the organization already in contact with national or international networks? If yes, which ones?	We are part of international networks in the areas of conservation (e.g., IUCN), monitoring (e.g., GCRMN), research and education.
Address	Piscaderabaai z/n
Phone number	+5999 4624242
Website	www.carmabi.org www.researchstationcarmabi.org
Email address	info@carmabi.org
Legal representative (person designated in the legal status)	Dr. Mark J.A. Vermeij
Phone number of the legal representative	+5999 6750213
Email address of the legal representative	carmabilog@gmail.com
Name of the person responsible for this project (if different from the legal representative)	Dr. Mark J.A. Vermeij
Phone number of the person responsible for this project	+5999 6750213
Email address of the person responsible for this project	carmabilog@gmail.com
Indicative annual budget of the organization	~2.6M US$
Staff means (number of staff members, volunteers... etc)	~ 45
Preferred area for intervention (country(ies), region...)	Curaçao
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries: n/a	

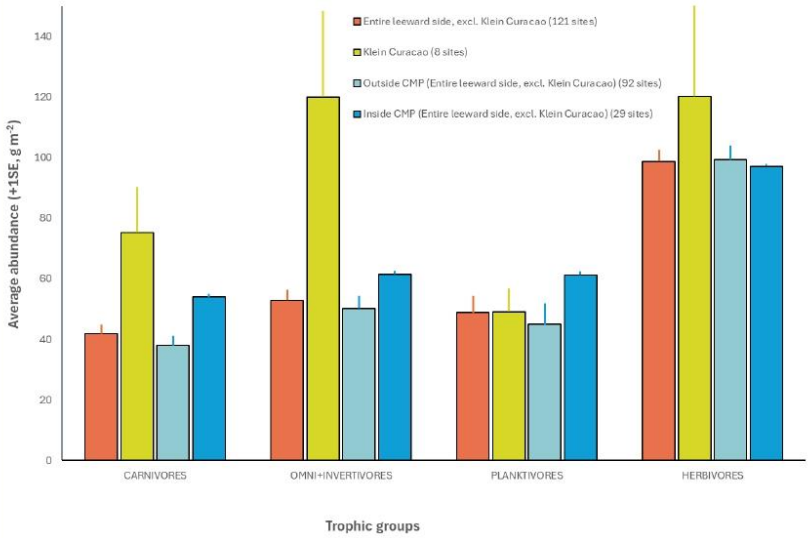
2. Your project	
Name of the project	Marine assessment of decadal changes in benthic and fisheries community composition on Curaçao
Timeframe for implementation	*July 17, 2023 – July 31, 2024* *Main stages: n/a*
Targeted specie(s)	Entire reef communities (fishes and benthic organisms)
Site(s) location	Curacao
Major threats	Background information on the reefs around Curacao, including information on threads, can be found in this report based on the 2015 reef surveys around the island.
Methodology developed within the framework of this project	None. The preferred GCRMN methods for reef community surveys (developed earlier by those involved in this project) were used (i.e., GCRMN-Caribbean guidelines for coral reef biophysical monitoring. Technical Report November. United Nations Environment Programme, Miami, USA; 2016).
Update on the implementation, progress and possible issues	Project was successfully completed. No issues were encountered.
Objectives sought and/or results obtained	Deliverables (taken from grant agreement): *A detailed report will be sent to the SPAW-RAC at the end of the project, containing the study protocol, the results obtained in relation to the objectives set out below, and an analysis of the results. In particular, it will contain the following information:* *1. Inventory of species-specific changes in benthic and halieutic communities (2015-2023) at high spatial resolution for a typical Caribbean area and identification of the factors associated with these changes (both on land and at sea).* The protocols used were the preferred GCRMN methods for reef community surveys (developed earlier by those involved in this project) were used (i.e., GCRMN-Caribbean guidelines for coral reef biophysical monitoring. Technical Report November. United Nations Environment Programme, Miami, USA; 2016). These data are now available, and island wide summaries are included below for the most common fish (i.e., the 30 most abundant of in total 187 species recorded) and coral species (i.e., species with an average cover > 0.05%). Island wide distributions of total coral cover and total fish biomass are also included:


Average islandwide biomass per m² (+1SE)
20
18
16
14
12
10
8
6
4
2
0
princess parrotfish
stoplight parrotfish
brown chromis
yellow goatfish
redband parrotfish
blue tang
blackbar soldierfish
creole wrasse
queen parrotfish
schoolmaster
black durgon
bicolor damselfish
great barracuda
grey snapper
yellowhead wrasse
French grunt
ocean surgeonfish
bar jack
belted cardinalfish
striped parrotfish
mahogany snapper
coney
green moray
smallmouth grunt
bluehead
longfin damselfish
bluestriped grunt
bogia
sergeant major
yellowtail damselfish
English species name of 30 most abundant fishes
average (2015)
average (2023)


Average islandwide cover (in %,+1SE)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Madracis mirabilis
Montastraea faveolata
Montastraea annularis
Agaricia agaricites
Montastraea cavernosa
Siderastrea siderea
Colpophyllia natans
Diploria strigosa
Porites astreoides
Meandrina meandrites
Montastraea franksi
Porites porites
Stephanocoenia intersepta
Diploria labyrinthiformis
Dendrogyra cylindrus
Eusmilia fastigiata
Madracis decactis
Species name
Island_mean_per_site_2015
Island_mean_per_site_2023

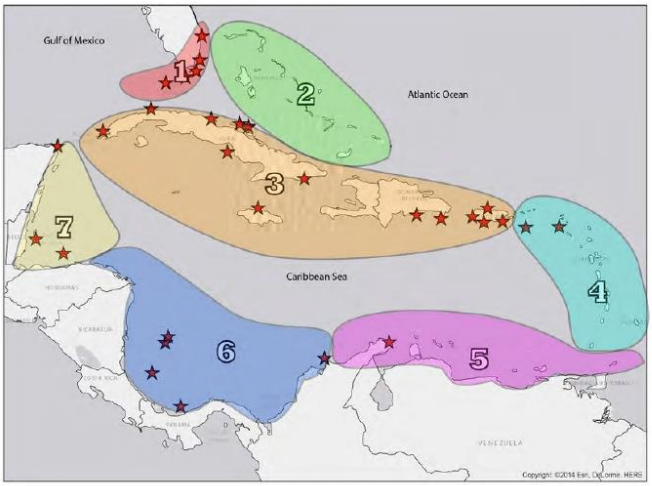

Legend
Total Fish Biomass 2023
0-50
51-100
101-150
151-200
>200
0 2.5 5 10 Kilometers


Legend
coral cover in 2023
TotalCoralCover
0.00-5.00
5.01-10.00
10.01-20.00
20.01-40.00
40.01-60.00
0 2.5 5 10 Kilometers

	Site specific data is being checked for errors and will be send (August 2024) to Jérémy Wicquart in response to his call for data for the two new GCRMN reports on the status and trends of Caribbean and global coral reefs. *2. Synthesis of observation of the effects of artisanal fishing on changes in fish community composition and biomass.* Unlike in our 2015 study that was identical to the one presented here, local (artisanal) fishing no longer has a significant locally varying negative impact on total fish biomass for the 122 sites surveyed along the leeward shore of Curacao. Total fish biomass has declined between 2015 and 2023 showing an island wide negative impact of overfishing and habitat loss on Curacao's fish communities. Site specific data is being checked for errors and will be send (August 2024) to Jérémy Wicquart in response to his call for data for the two new GCRMN reports on the status and trends of Caribbean and global coral reefs *3. Detailed information will be provided on the effectiveness of the SPAW-1 zone (marine park) on Curaçao and on changes in the abundance of marine species listed in appendices II and III of the SPAW protocol on the island as a whole.* We first based temporal trends on SPAW protected species on changes in overall coral cover and average biomass of trophic groups of fishes. The biomass of fishes in three trophic categories (see below) was higher in the Curacao Marine Park (i.e., Curacao's SPAW I area), while the abundance of herbivores was high island wide. Data for the small uninhabited island Klein Curacao is also shown.  Coral abundance declined island wide due to bleaching and SCTLD. Average declines within Curacao's SPAW-I area (site 93 to 121) were slightly less (12% decline in 8 years, from 20.5% cover (SD: 10.3 among sites in 2015) to 18.1% cover (SD: 10.0 among sites) in 2023) compared to all other reefs outside the SPAW-I area (16% decline in 8 years, from 11.7% cover (SD: 8.3 among sites in 2015) to 9.7% cover (SD: 7.1 among sites) in 2023) .

	Species specific trends can be distilled from the data that will be sent to Jérémy Wicquart. *4. Different reports will be produced (depending on the stakeholder group targeted, e.g. government, fishermen, schools) on the status and changes in Curaçao's marine resources. An analysis of an overview of the factors contributing to the reefs and recommendations on how to include this knowledge in local management and conservation actions will also be included in this report.* These reports are planned for Q4 2024 as data analyses are still ongoing. See also below.
How did the results and outcomes of your project have in the past contributed, are contribuing or will contribute in the future, to meet the needs of the agreements of your country to the SPAW Protocole ?	*(eg: Have the results (or progress) been, are they or will they be shared with the governmental administration charged of implementing the SPAW protocol? Have discussions with these services made it possible to work to the development or implementation of regulatory or conventional measures toward species or areas protected under SPAW?)* While data-analyses are ongoing, data from this project are already used to e.g., provide support for a total ban on the taking of all parrotfishes in Curacao (status: draft law currently being checked by the Ministry of Justice) and the creation of several no take zones for all fishes around the island (in collaboration with KUP, a local fishing cooperative). We have come to realize that islands like Curacao are too small for management through zoning (terrestrial pollution washes around the entire island, fishes swim around the entire island etc.). More outreach events, based on the data collected in this project, are expected in the coming months.
Outcomes and lessons learned	One of the more important findings in our opinion is hence that if a < 100 km long island intends to protect its marine resources, it should be as an "all or nothing approach". This finding is now communicated to e.g., the Curacaoan Ministry of Health, Environment and Nature (GMN).
Perspectives, renewal, evolution of such a project	It would be extremely useful if SPAW could set standard guidelines regarding the "sustainable harvest" of SPAW III species. Currently, and while Curacao has underwritten the SPAW protocol, the lack of this definition hinders the protection of e.g., parrotfishes and mangroves as different groups apply different criteria in this regard.
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries: It would be extremely useful if SPAW could set standard guidelines regarding the "sustainable harvest" of SPAW III species. Currently, and while Curacao has underwritten the SPAW protocol, the lack of this definition hinders the protection of e.g., parrotfishes and mangroves as different groups apply different criteria in this regard.	
Please annex any technical report, communication tools, pictures, maps etc you feel to be useful for the understanding of your project: Raw data files needed to produce these products will be made available soon to Jérémy Wicquart. We would like to suggest that, in contrast to the previous GCRMN report on the Caribbean, that the southern Caribbean be considered its own ecoregion within this report rather than be grouped with the islands of the	

Antillean arc ("Eastern Caribbean). There are plenty of biogeographic reasons to do so (e.g., the presence of upwelling near south America, relative lack of hurricanes) and this allocation is frequently made by other authors (e.g., Spalding et al. 2007, see below).



3. Effective budget of your project (in Euros)			
Expenses		**Resources**	
Procurement	**Amount**	**Products**	**Amount**
Material (e.g., printing, modification pier for boats, UW paper, food etc.)	7677	**Subsidies**	
Rentals (boat rent)	5023	SPAW-RAC	10000
Insurance	0	Waitt Foundation	18500
Documentation	0	CARMABI/ CMP	27950
Communication	0		
Marketing	0		
External services (e.g., catering, field assistance, analyses, expenses SCRIPSS)	21910		
Bank services	0	**Product sales**	0
Taxes	0	**Service sales**	0
Staff costs		**Donations, legacy...**	
Staff salaries	0	**Subscription**	0
Travel expenses (airfare)	1071		
Other staff costs	0		
Functioning / operational costs			
lodging, dive/ boat assistance	20769		
TOTAL	56450	**TOTAL**	56450
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries: None at this point.			

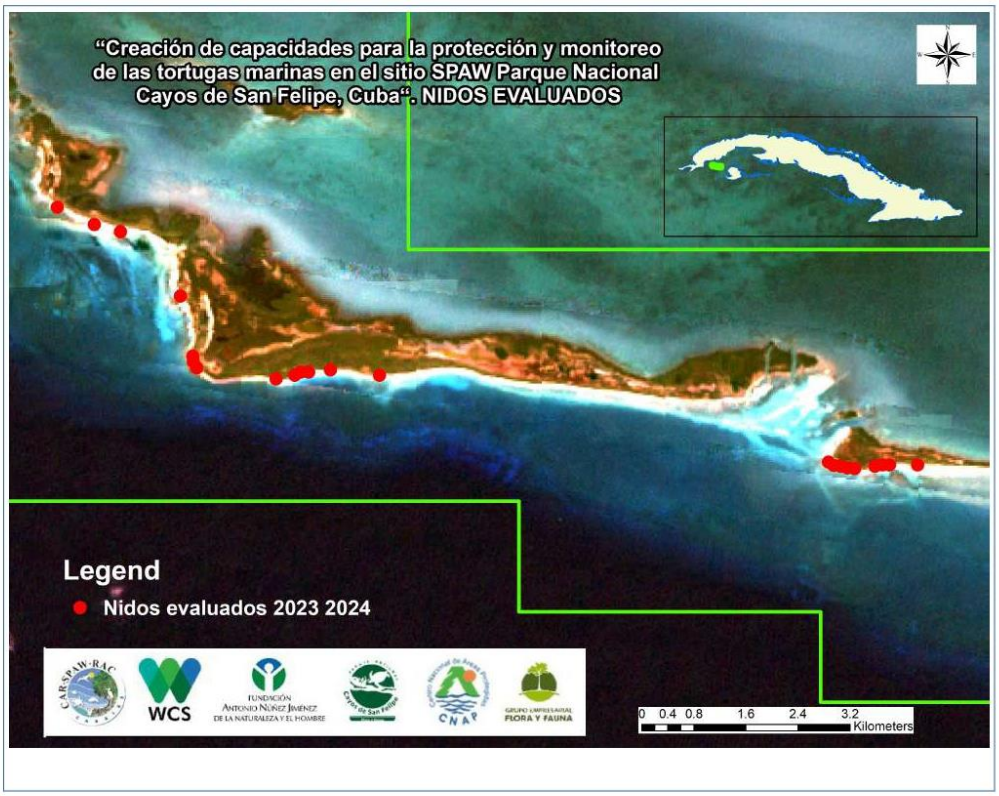
4. Assessment of the call for proposals	
How did you hear about this call?	Email list of GCRMN
Were the terms of references for this call for proposals clear enought?	Yes
Have you encoutered any difficulties regarding the preparation of your project, the submission process and then its implementation?	No
Were the discussions with SPAW-RAC helpful?	Yes
How this grant has been beneficial for your organization, territory or country?	Yes
What is your general impression on this call?	Good
Will you propose new projects to such a call?	Absolutely
What would you suggest to improve such a call?	To be more specific of when SPAW-RAC will consider support > 10K$ as mentioned in the previous call
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries: Nothing at this point.	

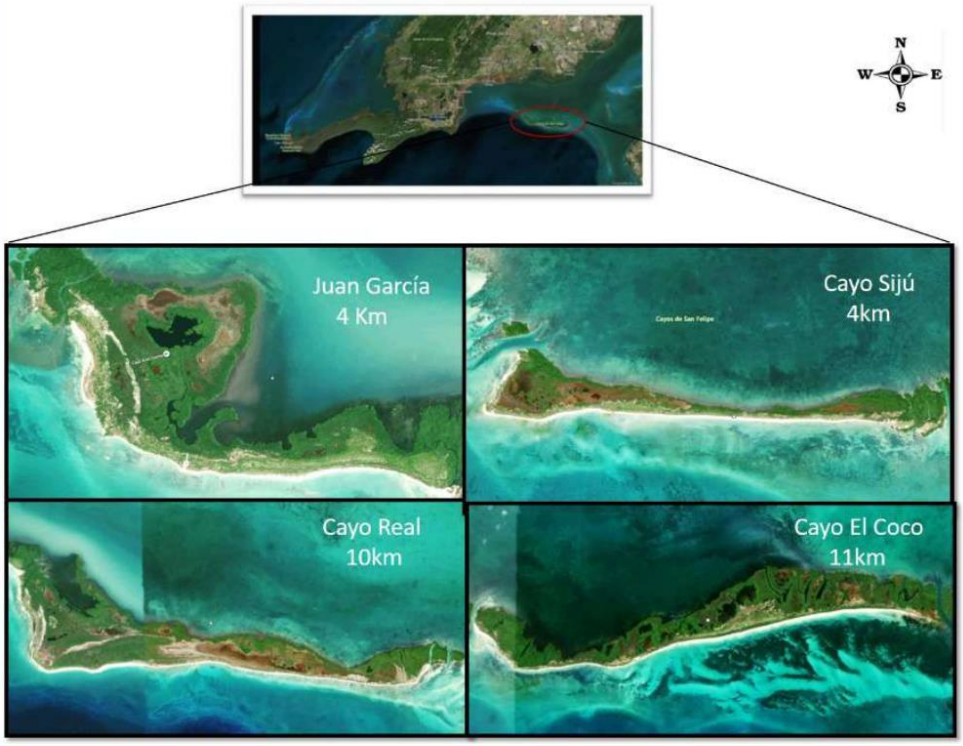
5. Annexes
If you want to share with us some communication material (picture, map..) you are more than welcome. See above.

Call for proposals
Short-term Small Grants
- year 2022 –

Final report

Name of the organization: WCS and Fundación Antonio Núñez Jiménez de la Naturaleza y el Hombre (FANJ)
Name of the project: "Creación de capacidades para la protección y monitoreo de las tortugas marinas en el sitio SPAW Parque Nacional Cayos de San Felipe, Cuba ".


"Creación de capacidades para la protección y monitoreo de las tortugas marinas en el sitio SPAW Parque Nacional Cayos de San Felipe, Cuba". NIDOS EVALUADOS
Legend
Nidos evaluados 2023 2024
WCS
0 0.4 0.8 1.6 2.4 3.2
Kilometers



Total budget of the project: 6,130 USD
SPAW-RAC grant: 6,130 USD
Timeframe for implementation: 1/11/2023 – 30/4/2024

This report is intended to provide information on the organization(s) involved, the project, the concerned species and sites, the threats to their conservation, the methodology developed within the framework of the project, its implementation, the objectives sought, the results obtained, and the perspectives for the future, in order to enlighten the Parties on the interest of such a project for the achievement of the objectives of the SPAW Protocol.

1. Your organization	
Name / Title	Wildlife Conservation Society y Fundación Antonio Núñez Jiménez de la Naturaleza y el Hombre (FANJ)
Category (public entity, NGO, laboratory, private company, managers,...)	ONG
Is the organization already in contact with national or international networks? If yes, which ones?	Si. IUCN, MPA networks, etc.
Address	WCS: FANJ: 5ta B No. 6611 e/ 66 y 70. Playa. La Habana. Cuba
Phone number	WCS: FANJ:+535 2042985
Website	WCS: FANJ: http://www.fanj.cult.cu/
Email address	Natalia Rossi, WCS Cuba Country Director nrossi@wcs.org Liliana Núñez Velis, President FANJ presidencia@fanj.cult.cu, liliana@fanj.cult.cu, Reinaldo Estrada Estrada, FANJ PI rey2005a@gmail.com
Legal representative (person designated in the legal status)	WCS: Natalia Rossi FANJ: Liliana Núñez Velis
Phone number of the legal representative	Natalia Rossi: +1 3474437648 Liliana Núñez Velis: +537 2042985
Email address of the legal representative	nrossi@wcs.org presidencia@fanj.cult.cu
Name of the person responsible for this project (if different from the legal representative)	Natalia Rossi (WCS) Reinaldo Estrada Estrada (FANJ)
Phone number of the person responsible for this project	+1 3474437648 +535 4027842
Email address of the person responsible for this project	nrossi@wcs.org Rey2005a@gmail.com
Indicative annual budget of the organization	
Staff means (number of staff members, volunteers... etc)	3000 (WCS) 18 (FANJ)

Preferred area for intervention (country(ies), region...)	Parque Nacional Cayos de San Felipe, Pinar el Río , Cuba.
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:	

2. Your project	
Name of the project	**"Creación de capacidades para la protección y monitoreo de las tortugas marinas en el sitio SPAW Parque Nacional Cayos de San Felipe, Cuba "**
Timeframe for implementation	from I_1_I_11_I_2023 I to I_30_I_4_I_2024_I_ Main stages:
Targeted specie(s)	Tortugas Marinas : Caguama (*Caretta caretta*), Tortuga verde (*Chelonia mydas*), Carey (*Eretmochelys inbricata*).
Site(s) location	Parque Nacional Cayos de San Felipe
Major threats	La depredación es una de las principales amenazas que presentan estas especies en el área protegida, unido a esto el embate de fenómenos meteorológicos en los sitios de nidificación ocasionan grandes pérdidas de las nidadas desfavoreciendo el éxito de eclosión de los huevos.
Methodology developed within the framework of this project	La metodología utilizada para el monitoreo de tortugas marinas es la establecida por el Sistema Nacional de Áreas Protegidas en el 2013. Se realizó mediante el playeo diurno para el conteo de rastros y camas. Fue comprobada la presencia de los huevos, los cuales se registraron por especie dentro de cada sector en las diferentes playas. Se determinados los rastros, su dirección y condición, se señalizaron todos los nidos encontrados con orden consecutivo, distancia de la línea de marea y zona de la playa. Fueron llenadas las planillas de monitoreo de campo. A los nidos se le realizo el análisis determinando cantidad de cascarones, huevos con desarrollo embrionario y sin desarrollo embrionario, huevos depredados por hormigas, cangrejos y con hongos, cantidad de tortugas muertas en el nido y con malformaciones.
Update on the implementation, progress and possible issues	Las actividades planificadas fueron ejecutadas
Objectives sought and/or results obtained	1. Para incrementar las capacidades para la protección de las tortugas marinas en la época de anidación enfocado en el análisis de nidos, fueron realizados durante el periodo de noviembre 2023 – febrero 2024, tres recorridos abarcando 44 kilómetros para el análisis de nidos de la campaña de anidación de tortugas marinas analizando un total de 31 nidos. 2. Se realizaron tres talleres de capacitación, dos de ellos a técnicos y obreros y uno a personal de la comunidad con un total de 45 participantes. Se desarrolló una capacitación de monitoreo de pastos como ecosistema prioritario para el desarrollo de especies amenazadas como las tortugas marinas, el 21 de marzo con la participación de 18 personas. El 5 de abril se desarrolló una capacitación a 15 jóvenes de la comunidad en el monitoreo de tortugas marinas. El día 15 de abril se desarrolló un taller con los trabajadores del área protegida donde se les compartió experiencia del uso de aplicaciones para el monitoreo, detección y georreferenciación de sectores monitoreados y nidos localizados. 3. Fueron realizadas expediciones de monitoreo durante la campaña reproductiva especialmente para la detección y seguimiento de nidos de carey logrando detectar 4 nidos de carey de ellos 1 en Juan García, 2 en Cayo Real Oeste y 1 en Cayo Sijú tras el playeo de los tres principales sitios.

	4. En aras de involucrar a la población en las acciones de monitoreo y protección fue creado un círculo de interés con 15 jóvenes deportistas de la comunidad que practican deportes náuticos como kayak y canoa, para la realización de recorridos de protección y vigilancia de especies claves y ecosistemas prioritarios, los que fueron involucrados en las acciones de monitoreo, identificando amenazas, posibles focos de incendios, y actividades ilegales. Además, se les capacitó en la toma de datos de la planilla de amenazas para tortugas marinas y como accionar ante cualquier incidencia. 5. Para desarrollar las actividades de educación ambiental comunitaria fueron realizadas tres actividades en la comunidad de La Coloma con la participación de estudiantes, profesores, cultura, comunales, Instituto Nacional de Deportes (INDER), Empresas productoras de la pesca con un total de 108 participantes de ellos 52 femeninos y 56 masculinos. El 12 de abril se desarrolló una actividad cultural en saludo al día nacional de las áreas protegidas la cual fue enfocada en la protección a las tortugas marinas, al comienzo de la temporada 2024 donde se lanzó un concurso, se realizó una gala cultural y se realizaron exposiciones de los círculos de interés comunitario. 6. En el periodo noviembre 2023 a abril 2024 se avistaron un total de 52 embarcaciones en el área protegida, de ellas 17 comerciales, 22 deportivas y 13 furtivas, las que representan una amenaza potencial para el desarrollo de las especies amenazadas y en peligro. 7. En la temporada de campaña de 2023 fueron encontradas un total de 12 tortugas muertas de ellas 10 tortugas verdes y dos caguamas. Fueron detectadas 11 en Cayo Real Oeste entre la baliza 18 a la 52 y una en Cayo Sijú. Fueron encontradas 9 tortugas viradas, en las playas de tío Juan y playa boba, la mayoría fueron encontradas con varios días de descomposición. Las medidas tomadas oscilaban entre los 75 y 80 cm de ancho curvo y 94 a 101 largo curvo del caparazón. Tras la detección de los individuos virados se realizaron varias acciones en la base de pesca deportiva y en Empresa pesquera Industrial, dándole charlas educativas a los pescadores, además se informó a Tropas Guarda Fronteras.
How did the results and outcomes of your project have in the past contributed, are contribuing or will contribute in the future, to meet the needs of the agreements of your country to the SPAW Protocole ?	El desarrollo de este proyecto ha propiciado el levantamiento de información en las áreas de nidificación de tortugas del Parque Nacional Cayos de San Felipe, proporcionando materiales y suministros necesarios para el apoyo logístico de las actividades a ejecutar pues el área protegida no cuenta con el financiamiento para cubrir todas las necesidades. Esta área protegida se encuentra entre las tres principales zonas de presencia y anidación carey en el país, aunque la cantidad de nidos encontrados no suele ser muy alto; la identificación y seguimiento de estos es vital para la especie. Contar con la colaboración de SPAW permitió intensificar el esfuerzo de monitoreo pues tras el paso de la tormenta tropical Idalia en agosto de 2023 se perdieron la mayoría de los nidos encontrados; de un total de 342 nidos se lograron analizar 31, tras el esfuerzo y las expediciones destinadas a encontrar los que quedaron en los sitios más altos de las playas, solo se lograron analizar los nidos que se encontraban a más de 19 metros de la línea de marea. Los datos tomados durante la campaña son colocados en una base de datos nacional para establecer comparaciones con las áreas de nidificación del

	resto del país y poder determinar el comportamiento y evolución de las especies de tortugas marinas.
Outcomes and lessons learned	El fortalecimiento de los esfuerzos es una garantía de una mejor protección de las áreas, tanto a través de los recursos, la capacitación y la sensibilización.
Perspectives, renewal, evolution of such a project	El trabajo de monitoreo de las tortugas marinas en el área protegida se realiza todos los años, el apoyo durante la temporada de nidificación es crucial, pues el personal del área y los insumos no son suficientes para cubrir una campaña que logra alcanzar hasta unos 800 nidos. Continuar con el levantamiento de información posibilitaría el conocimiento del estado y evolución de estas especies. De igual forma los recorridos realizados a las playas de nidificación en el transcurso del monitoreo funcionan como protección y vigilancia para estas especies pues mientras mayor presencia exista disminuye el riesgo de depredación.
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:	
Please annex any technical report, communication tools, pictures, maps etc you feel to be useful for the understanding of your project. Ver anexos a continuación.	

Budget Item	Approved Budget (USD)	Current Expenses (Nov 1, 2023 - Apr 30, 2024) (USD)	Total Expenses (USD)
Material/Equipos	3382	4190	4190
Communication	845	596	596
Marketing	845	887	887
Bank services	213	40	40
Staff salaries	0	0	0
Functioning / operational costs	845	417	417
Total direct costs	6130	6130	6130
Indirect costs	0	0	0
TOTAL	6130	6130	6130

4. Assessment of the call for proposals	
How did you hear about this call?	Trabajamos desde hace años con SPAW y estamos al tanto de sus convocatorias
Were the terms of references for this call for proposals clear enought?	Si
Have you encoutered any difficulties regarding the preparation of your project, the submission process and then its implementation?	No
Were the discussions with SPAW-RAC helpful?	Si
How this grant has been beneficial for your organization, territory or country?	La WCS y FANJ trabaja directamente con varias areas protegidas, proyectos como este lo facilitan; y al permitir fortalecer el trabajo en el area, les permiten cumplir mas eficientemente su funcion
What is your general impression on this call?	Excelente
Will you propose new projects to such a call?	Si
What would you suggest to improve such a call?	Mas frecuentes y con mas fondos. Incluir opciones para hacer nuevas propuestas de sitios SPAW. No es muy clara la forma en que organizan el presupuesto, aunque siempre logramos hacerlo correctamente.
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:	

5. Annexes

Tabla 1: Cantidad de kilómetros recorridos por cayos en el reforzamiento de la campaña de anidación.

	Sitio	Salida	Regreso	Total
Recorrido 1	Juan García	4	4	8
	Real Oeste	5	5	10
Recorrido 2	Juan García	4	4	8
	Real Oeste	5	5	10
Recorrido 3	Sijú	4	4	8
Total				**44**

Grafico 1: Nidos analizados de tortugas marinas en el Parque Nacional Cayos de San Felipe en los tres cayos monitoreados (TV: tortuga verde; Cg: Caguama; Cy: Carey).

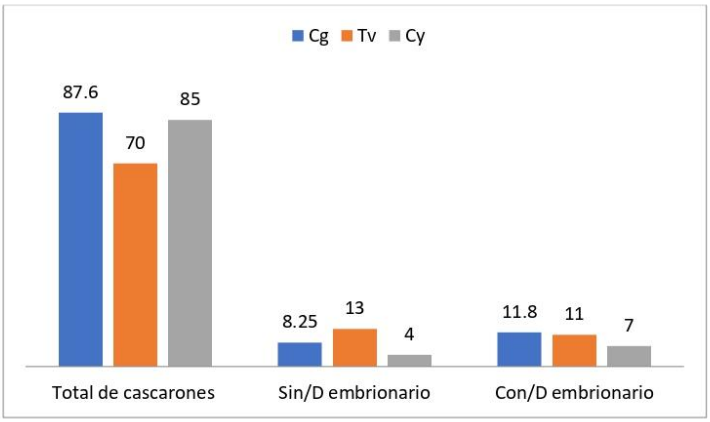
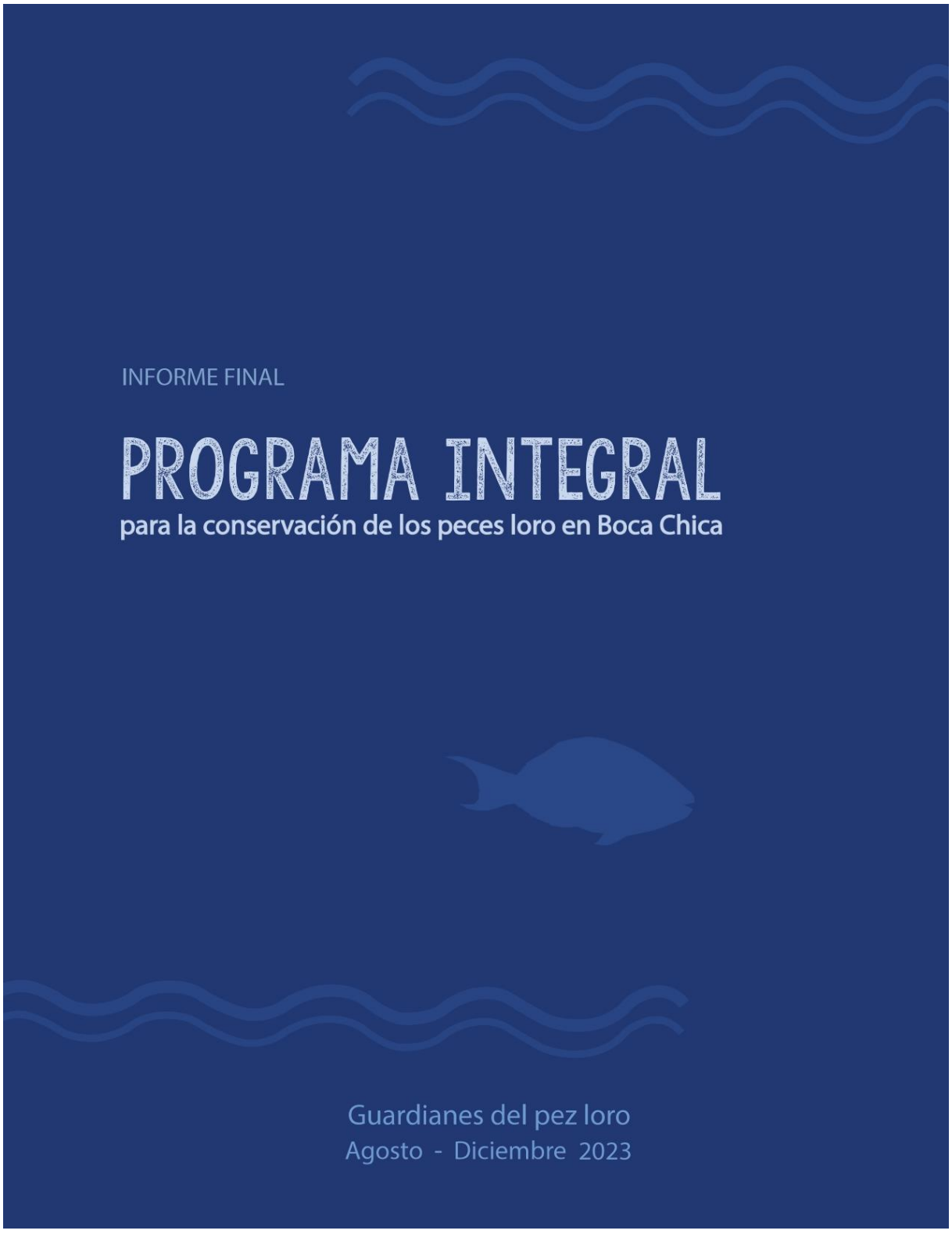


Grafico 2: Análisis de la efectividad de eclosión de nidos de tortugas marinas en el Parque Nacional Cayos de San Felipe (TV: tortuga verde; Cg: Caguama; Cy: Carey).

Análisis de nidos de la temporada 2023.

Capacitación de técnicos y obreros del área protegida.

Actividades de educación ambiental comunitaria.


INFORME FINAL
PROGRAMA INTEGRAL
para la conservación de los peces loro en Boca Chica
Guardianes del pez loro
Agosto - Diciembre 2023

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Este proyecto ha sido posible gracias al apoyo financiero de CAR-SPAW-RAC, a la coordinación y ejecución de la Fundación Verde Profundo (FVP) y al apoyo técnico del Ministerio de Medio Ambiente y Recursos Naturales (MMARTN), la Red Arrecifal Dominicana (RAD) y Buceo Ecológico RD

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I. INTRODUCCIÓN Y CONTEXTO

Fundación Verde Profundo (FVP) *es una organización sin fines de lucro que desde 2017 se ha dedicado a rehabilitar los ecosistemas costero-marinos de la Bahía de Andrés, Boca Chica, con especial impacto en la laguna arrecifal. Entre sus objetivos principales está el desarrollo de la comunidad para transformar el modelo económico tradicional extractivo en un sistema sostenible con el entorno.*

Los principales esfuerzos de conservación que ha realizado FVP tienen que ver con la creación de hábitat para la protección de las especies y la recuperación de la playa: restauración coralina, reforestación de manglares, protección del pasto marino y educación ambiental.

Dentro de los logros de FVP podemos mencionar:

- *Instalación de* **60 DOMOS**, *los cuales albergan gran parte de la biomasa de la laguna*
- *Reforestación de más de* **1,700 PLANTAS DE MANGLAR** *con una tasa de supervivencia del 75%*
- *Creación de un* **PARQUE MARINO MUNICIPAL** *o Micro-santuario con senderos educativos. Resolución 122-20 Alcaldia Municipal de Boca Chica*
- *Colaboración en la elaboración del marco legal de la Bahía de Andrés, Boca Chica, que designa la bahía como* **ÁREA MARINA DE MANEJO LOCAL** *Resolución 03-20 CODOPESCA*
- *Rehabilitación de los* **ISLOTES DE LA MATICA** *al remover más de 18,000 libras de basura*
- *Jornadas de* **EDUCACIÓN AMBIENTAL** *para más de 1000 participantes con programas de aprendizaje basado en servicio*
- **REHABILITACIÓN DE PLAYA** *con un aumento de 8 m de anchura y 150 m lineales*

La Fundación Verde Profundo es miembro de la Red Arrecifal Dominicana (RAD) y en el último año ha desarrollado y ejecutado varios proyectos con fondos internacionales que aportan a los objetivos a medio y largo plazo de la organización. A continuación la descripción de los proyectos desarrollados durante este último año 2023:

Proyecto de restauración de manglares con Seacology: *esta iniciativa se centró en la siembra de mangle rojo (Rhizophora mangle) en la laguna arrecifal para crear hábitat y corredores biológicos para diferentes especies ya que la laguna es un área de cría, designada así por CODOPESCA en su resolución 03-20 donde la Bahía de Andrés se designa como un Área Marina de Manejo Local.*

Proyecto de Ideas para una Recuperación Verde de GIZ, con el apoyo de AERODOM: *el proyecto, que todavía sigue vigente, consiste en dinamizar la economía y crear empleos a través de un modelo económico basado en el turismo sostenible y conservación de ecosistemas costero-marinos que permite la inclusión de los pescadores y otros actores en la comunidad de Boca Chica.*

Campaña piloto de sensibilización para la protección del pez loro de RAD, The Nature Conservancy (TNC) y CEBSE: *Esta campaña de sensibilización abordó el tema de protección del pez loro y otros peces herbívoros como una oportunidad para iniciar las acciones de capacitación y entrenamiento de jóvenes de Boca Chica que se irán constituyendo en educadores de la comunidad con respecto a este tema. Esta primera campaña, más que causar un impacto importante en la reducción de la pesca y consumo, se considera como el inicio de la movilización social de la propia comunidad. Se centró en proveer herramientas de comunicación y divulgación científica a jóvenes de la comunidad, además de proporcionarles materiales educativos, para que sirvieran de voceros y multiplicadores de la causa.*

Es importante destacar que el proyecto piloto de sensibilización de pez loro fue el preludio de esta nueva iniciativa **"PROGRAMA INTEGRAL PARA LA CONSERVACIÓN DE LOS PECES LORO EN BOCA CHICA"** *que tenemos la fortuna de realizar con el apoyo financiero del Centro de Actividades Regional para el Protocolo Relativo a las Áreas y la Flora y Fauna Silvestres Especialmente Protegidas del Gran Caribe.*

Además, gracias a este nuevo proyecto podemos continuar con la iniciativa que iniciamos con Ideas para una Recuperación Verde de GIZ ya que, entre los objetivos que se mencionan a continuación, está la certificación de jóvenes de la comunidad como buzos, lo cual es una puerta abierta a fuentes de empleo digno.

Los actores principales que han estado desarrollando la iniciativa Guardianes del pez loro han sido la **Fundación Verde Profundo** *como principal organización ejecutora del proyecto, con el apoyo de la* **Red Arrecifal Dominicana (RAD)** *a la hora del diseño del proyecto. Además el* **Viceministerio de Recursos Costeros y Marinos** *estará colaborando con el apoyo técnico en el proyecto, acompañamiento y cesión de derechos para el uso de la línea gráfica de la iniciativa nacional para apoyar la veda permanente de pez loro con el programa* **"Yo no como pez loro".**

2. OBJETIVOS

OBJETIVO GENERAL

El objetivo general del proyecto es implementar un monitoreo de herbívoros, específicamente peces loro, en los arrecifes de la Bahía de Andrés, Boca Chica, utilizando el Plan de Monitoreo para peces herbívoros diseñado por la RAD y TNC con el fin de determinar el estado de las poblaciones de diferentes especies. Mientras que se educa a la comunidad sobre la importancia de respetar la veda de pez loro.

OBJETIVOS ESPECÍFICOS

1. *Comenzar el proceso de* **establecer una línea base** *actualizada del estado de conservación de las poblaciones de peces loro dentro del Área Marina de Manejo Local de Boca Chica (Resolución 03-20 CODOPESCA) a partir de buceos recurrentes utilizando el Plan de Monitoreo de peces herbívoros diseñado por la RAD y TNC.*

2. *Elaborar una* **base de datos compartida** *con el Ministerio de Medio Ambiente y Recursos Naturales para poder generar recomendaciones para mejorar la efectividad de las áreas de restricción pesquera sobre la conservación de las poblaciones de peces loro*

3. *Crear* **capacidad local** *para el levantamiento de información ecológica y socioeconómica a través de la capacitación de 4 jóvenes comunitarios en buceo y en ciencia ciudadana*

4. *Implementar una* **campaña de sensibilización** *sobre la importancia de los peces loro dirigida a negocios como las frituras de pescado con el apoyo de 2 a 3 jóvenes comunitarios formados en ciencia y divulgación científica.*

3. CRONOGRAMA

Fases del Proyecto	Ago	Sept	Oct	Nov	Dic
FASE 1: *Taller de introducción a la importancia de los peces loro e identificación de peces herbívoros más comunes en el Caribe*	X				
FASE 2: *Taller de diseño e implementación de encuestas para levantamiento de información en la comunidad referente al conocimiento sobre la importancia de los peces loro y los hábitos de consumo a pesar de la veda permanente*	X				
FASE 3: *Taller de introducción a la metodología AGRRA para monitorear los peces herbívoros en el arrecife*	X				
FASE 4: *Certificación de cuatro participantes en Curso Educativo de Scuba Diving*		X			
FASE 5: *Entrenamiento de monitoreo con la metodología AGRRA para peces herbívoros*		X			
FASE 6: *Análisis de encuestas y diseño de charla de sensibilización para la comunidad sobre la importancia del pez loro*		X			
FASE 7: *Ejecución de la campaña de sensibilización a negocios, específicamente frituteras (dos jornadas de sensibilización y entrega de certificados)*		X	X		
FASE 8: *Monitoreos 1 para establecer línea base en arrecifes de la Bahía de Andrés*				X	
FASE 9: *Recopilación de datos de monitoreo para compartir con el Viceministerio de Recursos Costeros y Marinos*				X	X

Tabla 1: Cronograma de fases del proyecto

4. EL PROYECTO

Preámbulo

La convocatoria se realizó vía telefónica a jóvenes mayores de edad que habían realizado un taller previo de comunicación científica y sensibilización sobre el pez loro impartido por la Red Arrecifal Dominicana (RAD) y CEBSE con el apoyo de la Fundación Verde Profundo en enero de 2023

Los participantes que iniciaron el proyecto de Guardianes del Pez Loro fueron:

1. Claudia Daniela Castillo
2. Néstor Polanco
3. Lucy E. Cosme
4. Virginia Rodríguez
5. Isaac Villilo
6. Gustavo Romero
7. José Miguel Rodríguez
8. Dari Castro

Previo al inicio formal del proyecto se ofreció la oportunidad de apuntarse a las pruebas acuáticas aquellos interesados en certificarse como buzos y durante los días 22 y 30 de agosto se realizaron las pruebas acuáticas a los interesados. Se elaboró una rúbrica (ver Anexos) con diferentes aspectos que se tendrían en cuenta para seleccionar de forma objetiva a los beneficiarios de la certificación de buceo y todo aquellos que superaron con éxito el mínimo de puntaje establecido (12 puntos) fueron seleccionados.

Las personas que superaron la prueba acuática fueron:

1. Isaac Villilo *2. Néstor Polanco* *3. Lucy Cosme* *4. Dari Castro*

FASE 1: Introducción a la importancia de los peces loro e identificación de peces herbívoros más comunes en el Caribe impartido por Someira Zambrano

OBJETIVO: *Proveer claves para la identificación de peces herbívoros y aprender los peces loro y cirujanos más comunes en los arrecifes de República Dominicana.*

DESCRIPCIÓN: *El taller se realizó en las instalaciones del Hotel Club Rolling Stone en Boca Chica en el horario de 8.30 am a 2 pm aproximadamente. El encuentro comenzó con una introducción de las fases y cronograma del proyecto por parte de Carmen Cañizares, coordinadora del mismo. A continuación lideró Someira Zambrano con una introducción a la diversidad de peces herbívoros del Caribe, dando claves para la identificación de los mismos. Se hizo un repaso de las especies más comunes en sus diferentes fases de desarrollo y a continuación se hicieron diferentes juegos y ejercicios para facilitar la memorización.*
La última parte de la teoría consistió en una demostración de monitoreo en tierra firme, usando las herramientas que se usarían durante el buceo y con fotos de peces para practicar la identificación. Y finalmente los participantes se introdujeron en el agua, en una de las áreas de restauración de ecosistemas que la Fundación Verde Profundo tiene en la orilla llamada "Micro-santuario" para practicar con los equipos de snorkel la identificación de especies arrecifales en los domos de coral que tiene la fundación.

FASE 2: Diseño e implementación de encuestas para levantamiento de información en la comunidad referente al conocimiento sobre la importancia de los peces loro y los hábitos de consumo a pesar de la veda permanente

OBJETIVO: *Desarrollar las encuestas que se realizarían en la comunidad de Boca Chica para levantar información sobre los conocimientos populares referentes al pez loro y su veda*

DESCRIPCIÓN: *El taller fue impartido por Carmen Cañizares, coordinadora del proyecto, y durante el mismo se hizo una sesión de lluvia de ideas para proponer temas que debían abordarse en la encuesta. Además se les dieron consejos y estrategias sobre cómo elaborar una buena encuesta: con respuestas guiadas, preguntas breves, imparcialidad como encuestadores, etc. A continuación los participantes se separaron en 3 grupos de 3 o 4 personas para discutir la propuesta de preguntas y después compartir sus ideas en el gran grupo para seleccionar las mejores.*
La mañana transcurrió diseñando la encuesta entre todos los participantes, seleccionando y ajustando las preguntas en orden de dificultad y adaptándolas al público meta de Boca Chica. Además, se observó que los participantes tenían dificultades para ser imparciales a la hora de encuestar y desarrollar preguntas de modo que con las preguntas que proponían intentaban influir, involuntariamente, en la respuestas del encuestado. Tras discutir las posibles preguntas y la información que queríamos levantar para, posteriormente, identificar las necesidades educativas de la población en el tema de vedas y peces loro, logramos concretar una encuesta de 9 preguntas y esa misma mañana estuvieron realizando algunas encuestas de práctica en la playa.

DISEÑANDO LA ENCUESTA

PROBANDO LA ENCUESTA

ENCUESTA. LEVANTAMIENTO INFORMACIÓN SOBRE PECES LORO EN BOCA CHICA

1 ¿Qué pez consumes cuando vienes a la playa de Boca Chica?

a *Chillo*
b *Tilapia*
c *Cotorra, loro, cagón*
d *Otro*

2 ¿Alguna vez has comido alguno de estos peces? (mostrar fotos)

a *si*
b *no*
c *no estoy seguro*

3 ¿Dónde lo has consumido/visto que lo venden?

a *Restaurante*
b *Fritura*
c *Pescadería*
d *Otro lugar*

4 ¿Cuánto has pagado por lb o unidad de pez loro?

Cantidad *Lugar*

5 ¿Cuál o cuales de estos son peces loro y cuales no?

a *Fotos diferentes*
b *Los identifican*
c *Se confundieron con alguno*
d *No conocen ninguno*

6 ¿Conoce que el pez loro está protegido por una veda permanente?

a *Sí*
b *No*
c *No sé lo que es una veda*

7 ¿Por qué crees que está protegida y no se puede pescar?

a *Para poder vender otras especies*
b *Porque es bonito y colorido*
c *Porque es muy importante para el ecosistema*

8 ¿Por qué es importante para el ecosistema?

a *Producen arena blanca de las playas*
b *Mantienen limpios los corales*
c *Se comen el sargazo*
d *Todas son correctas*
e *No lo sé*

9 ¿Piensas que el pez loro vale más vivo o frito?

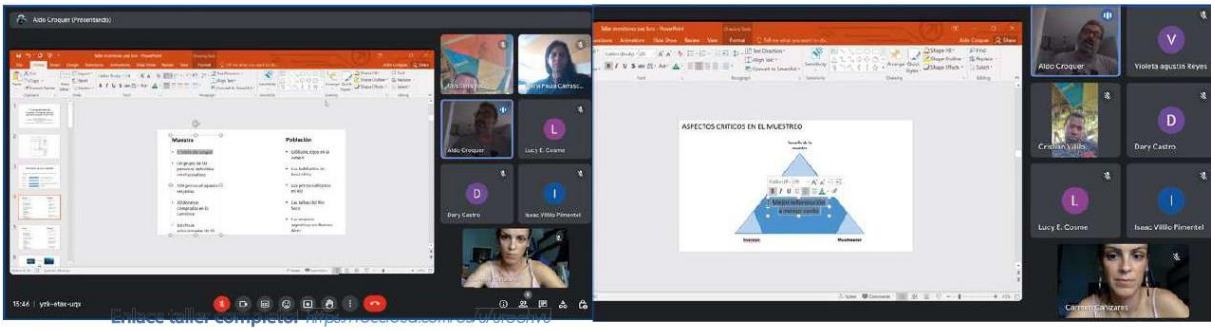
a *Vivo*
b *Frito*

FASE 3: Introducción al Plan de Monitoreo de peces herbívoros arrecifales impartido por Aldo Croquer

OBJETIVO: *Describir las técnicas de monitoreo que se utilizarán durante los buceso para establecer la línea base de las poblaciones de peces*

DESCRIPCIÓN: *Durante la jornada del 29 de septiembre, en horario de tarde 3-6 pm, tuvimos una reunión virtual en la que el Dr. Aldo Croquer impartió un taller sobre la importancia de los monitoreos para levantar datos relevantes en la toma de decisiones científicas y de gestión de la biodiversidad. Explicó los diferentes tipos de muestreos que se pueden utilizar y abundó en la metodología AGRRA que será la que se emplearía en este proyecto para recopilar información sobre las poblaciones de peces herbívoros en el arrecife.*

La metodología consiste en realizar 5 transectos de 30 m en 3 sitios de buceo e ir anotando, en cada transecto, las especies y la fase de desarrollo en la que se encuentran observadas a 1 metro de distancia a ambos lado del observador. Para ello se necesita llevar la hoja de datos, lápiz, una T fabricaba con pvc para calcultar mejor la distancia a ambos lados del observador y una cinta métrica de 30 metros.



Enlace taller completo: https://

FASE 4: Certificación de cuatro participantes en Curso de Scuba Diving

OBJETIVO: *Certificar a 4 jóvenes de la comunidad para crear capacidades locales, posibles fuentes de empleo e introducirlos en el mundo de la ciencia ciudadana.*

DESCRIPCIÓN: *Durante el mes de septiembre y octubre los cuatro participantes seleccionados (Dari, Isaac, Lucy y Néstor) estuvieron recibiendo las clases prácticas de scuba diving y estudiando la parte teórica para certificarse como buzos. Y en noviembre todos estaban certificados y habían recibido su carnet de buzo.*

FASE 5: Entrenamiento de monitoreo con la metodología AGRRA para peces herbívoros

OBJETIVO: *Practicar las habilidades de los buzos con la metodología y los instrumentos de monitoreo para calibrar la toma de datos de todos los observadores*

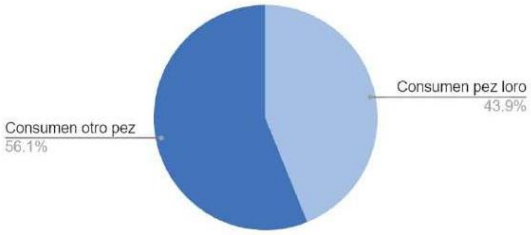
DESCRIPCIÓN: *Tras haber iniciado y avanzado el curso de certificación en scuba diving, los participantes realizaron una práctica de monitoreo en el arrecife el domingo 22 de octubre junto a Someira Zambrano, Aldo Croquer, Tasha Gough directora ejecutiva de Fundación Verde Profundo, Rafael Fernández y Maria Paula Carrasco de Buceo Ecológico RD, junto al instructor de buceo Cristian Villilo. Con este monitoreo de prueba, pudieron prácticar las habilidades de buceo, además de lo aprendido en el taller teórico sobre metodología AGRRA impartido por Aldo Croquer phD, donde se les explicó qué materiales necesitarían para desarrollar los monitoreos, cómo manejarlos, etc.*

FASE 6: Análisis de encuestas y diseño de charla de sensibilización para la comunidad sobre la importancia del pez loro

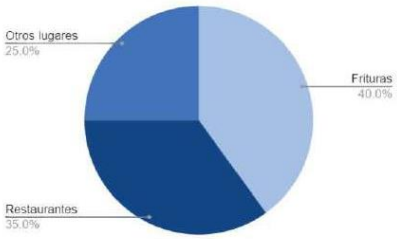
OBJETIVO: *Analizar las respuestas de los encuestados para conocer el sentir y los saberes de los pobladores de Boca Chica y alrededores con el fin de diseñar la charla de sensibilización lo más personalizada y asequible posible para alcanzar el objetivo que es transmitir la importancia de respetar la veda de pez loro*

DESCRIPCIÓN: *Se realizaron 56 encuestas en Boca Chica, de las que el 91% de las personas encuestadas fueron locales o visitantes nacionales. Tras el análisis de los datos obtenidos con las respuestas, algunas de las conclusiones fueron estas:*

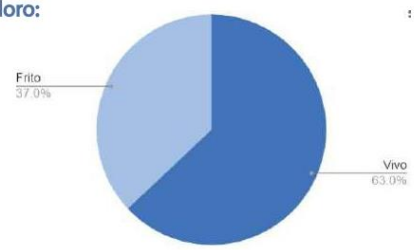
Personas que consumen pez loro en la playa:



Principales lugares de consumo:



¿Cómo tiene más valor el pez loro: vivo o frito?



ANÁLISIS DE RESULTADOS DE LA ENCUESTA 1/2

- *El 44% de las personas encuestadas respondieron que* **les gustaría comer pez loro o cotorra si van a la playa**
- *Más de la mitad de las personas encuestadas confirmaron que han comido alguna vez peces loro, se les mostraron imágenes para que los pudiesen identificar y no respondiesen solo por el nombre*
- *El grueso de los encuestados indicaron que donde han* **consumido o visto que se consume peces loro** *es en* **restaurantes y frituras**, *sumando el 75% de la población encuestada*
- *Solo el 35% de las personas* **supieron diferenciar los peces loro** *de otros peces. Por lo que se supone que quizá si conocen el nombre, pero no cómo se ve y ese desconocimiento podría conllevar a malas decisiones de consumo*
- *En cuanto al conocimiento de la veda permanente del pez loro, la mayoría de las personas encuestadas reconocen saber que el pez loro se encuentra en veda permanente. Y solo un 20%* **no sabe lo que significa que una especie esté en veda**
- *Más de la mitad de las personas (57%)* **saben que el pez loro está en veda permanente** *pero aun así* **consumen pez loro cuando van a la playa**
- *Más de la mitad de las personas encuestadas respondieron que el pez loro no se puede pescar porque es importante para el ecosistema. Sin embargo, casi un 30% indicaron que creen que la* **prohibición de pesca es una estrategia para poder vender otras especies.** *Existe esta desconfianza sistémica en el que creen que las decisiones con respecto a la conservación de especies tiene un componente político y comercial*

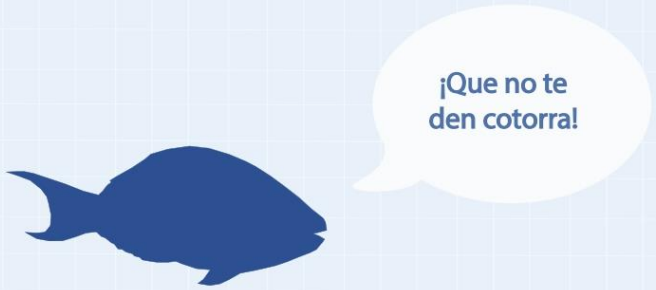
ANÁLISIS DE RESULTADOS DE LA ENCUESTA 2/2

- *Tan solo el 7% respondió correctamente identificando las razones principales por las que es importante conservar a los peces loro. La mayoría (57%) respondió que* **es importante porque producen la arena blanca de las playas** *y solo una quinta parte de la población encuestada identificó que mantienen limpios los corales.*

- *Mientras que de ese 73% que identificó alguna función importante de los peces loro, solo un* 7% **sabía que ambas funciones las realizan los peces loro**

- *La* **mayoría de las personas encuestadas opinan que el pez loro tiene más valor vivo que frito**, *sin embargo, de esa totalidad de personas,* **un tercio consume pez loro** *si va a la playa según las respuestas de sus encuestas. Aquí se observa cierta incoherencia en sus respuestas.*

- *El 83% de las personas que se dedican al consumo directo de peces (frituteras y pescadores) consideran que el pez loro vale más frito que vivo. Y el* 100% **de las personas que se dedican al ecoturismo (centro de buceo) consideran que el pez loro vale más vivo que muerto.** *Es evidente el cambio de perspectiva que conlleva una alternativa económica al modelo extractivo de supervivencia tradicional.*



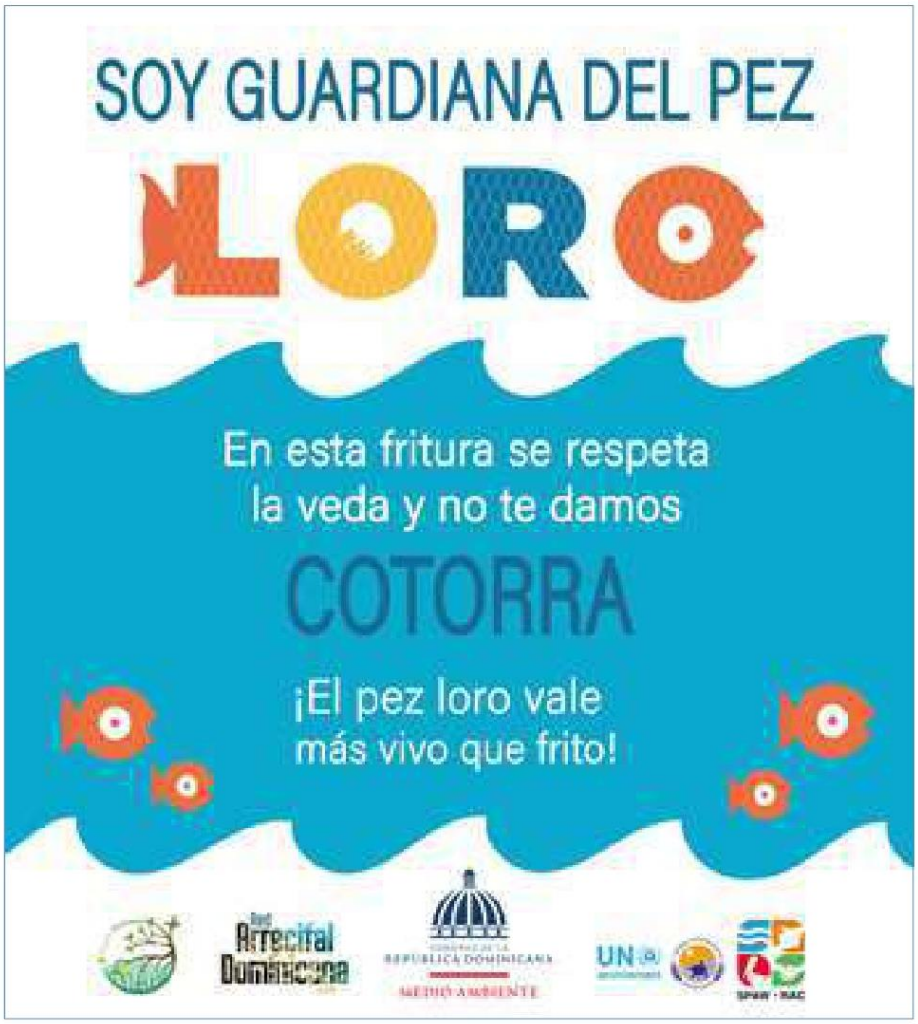
FASE 7: Charlas sensibilización a frituteras de Boca Chica y entrega de placas

OBJETIVO: *Sensibilizar a los dueños de negocio formal e informal de Boca Chica sobre la importancia de respetar la veda de pez loro.*

DESCRIPCIÓN: *En esta primera fase se hizo hincapié en la sensiblización de las frituras, para invitarlas a ser parte de los Guardianes de Pez Loro en sus negocios y negocios aledaños. Se realizaron dos encuentros (26 octubre y 16 noviembre).*
En el primer encuentro se realizó una charla de sensibilización a un grupo de frituteras y dueños de negocios en la Plaza de la Fritura, en la playa de Boca Chica, donde se reunieron aproximadamente 20 personas.
Los jóvenes del proyecto introdujeron a los participantes en la charla de forma dinámica e interactiva en la importancia de respetar la veda del pez loro y ser parte de la solución. A lo que los participantes fueron bastante receptivos y nos hicieron la sugerencia de realizar la charla también con el grupo de pescadores, ya que indicaron que los pescadores son los principales causantes del problema. Los jóvenes explicaron que todos formamos parte de la cadena del problema, desde el pescador hasta el consumidor final y acordamos realizar un segundo encuentro en el que aquellas personas comprometidas recibirían un distintivo para colocar en su negocio con el que estarían identificados como negocios seguros para el consumo de peces loro.
El contenido de la charla fue diseñado con los jóvenes participantes del proyecto en dos jornadas previas el 2 y 18 de octubre. Y el resultado de ambos encuentros dio lugar a una charla sencilla pero directa.
El segundo encuentro transcurrió en la mañana del 16 de noviembre, día en que realizamos un "café ambiental" en el Hotel Club Rolling Stone e invitamos a las frituteras para hacer un seguimiento de su compromiso y hacerles entrega de su placa distintiva con el mensaje "En este negocio no te damos cotorra", el cual continuaba con la línea gráfica del proyecto "Yo no como pez loro" del Ministerio de Medio Ambiente y Recursos Naturales. Al finalizar el encuentro acompañamos a las frituteras a sus casetas para instalar sus placas.

En ambos encuentros estuvieron presentes técnicos del Ministerio para apoyar la iniciativa y darle peso y valor gubernamental.

DISEÑO DEL DISTINTIVO PARA COLOCAR EN LOS NEGOCIOS SEGUROS



PRIMER Y SEGUNDO ENCUENTRO CON FRITURERAS DE BOCA CHICA

FASE 8: Monitoreos para establecer línea base en arrecifes de la Bahía de Andrés

OBJETIVO: *determinar la variabilidad espacial y temporal de los ensamblajes de peces herbívoros en Boca Chica, República Dominicana.*

DESCRIPCIÓN: *se planteó un diseño mixto con cuatro factores: (1) Localidad (factor aleatorio con 3 niveles: Localidad este, centro y oeste del área marina de Boca Chica), (2) sitio (factor aleatorio anidado a localidad con tres niveles: tres sitios por localidad, en total 9 sitios), y (3) año (factor fijo con N niveles [años de monitoreo]) y (4) mes y ortogonal a todos los factores (factor fijo con dos niveles: primer semestre y segundo semestre de cada año).*

**Gracias al apoyo financiero de CAR-SPAW-RAC hemos podido dejar pre pagados los otros 2 buceos restantes que sería necesario realizar en 2024 para poder establecer la línea base.*

La colecta de datos se realizó el 23 de noviembre de 2023 en tres sitios (Tabla 2), utilizando el método de censos visuales propuesto por AGRRA (Lang et al. 2010) con ciertas modificaciones. Con basen esto, se colocaron cinco transectos de 30 m de longitud por 2 m de ancho, separados entre ellos por al menos 5 m, sobre los cuales se estimó la abundancia de peces a 1 m a cada lado del transecto, formando una banda de observación de 60 m 2 por transecto. Los transectos se ubicaron de forma paralela siguiendo el contorno del arrecife en intervalos de profundidad que oscilaron entre los 7 y los 13 m dependiendo del sitio. Se estimó la biomasa de peces utilizando las constantes alométricas de ReefBasesiguiendo el procedimiento especificado por Agudo-Adriani et al. (2016, 2019).

Sitio	Coordenadas	Profundidad	Tipo de arrecife	Temperatura
Picadilly	18.438300, -69.603900	13 m	Spur and groove	28 °C
Acuarium	18.445200, -69.605400	7 m	Spur and groove	28 °C
Boya Blanca	18.442700, -69.606500	9 m	Spur and groove	28 °C

Tabla 2: Sitios de monitoreo y sus características

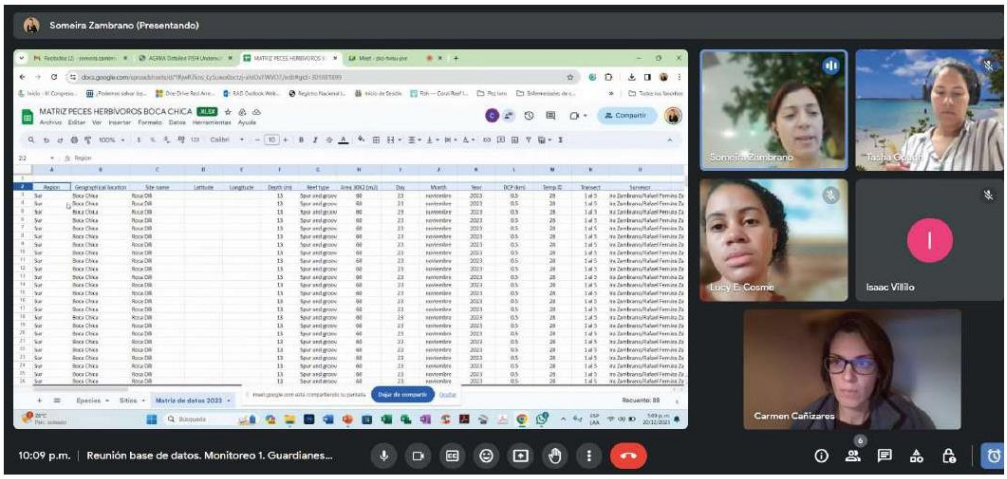
Monitoreo 1, 23 noviembre 2023

FASE 9: Recopilación de datos de monitoreo para compartir con el Viceministerio de Recursos Costeros y Marinos

OBJETIVO: *Elaborar base de datos donde introducir la información de cada monitoreo para poder hacer análisis, sacar conclusiones y compartirla con el Ministerio de Medio Ambiente y Recursos Naturales*

DESCRIPCIÓN: *El día 20 de diciembre Someira Zambrano impartió un taller virtual con los participantes para enseñarles cómo elaborar la base de datos en excel y enseñarles a trasladar la información de las hojas de monitoreo a la base de datos que después se utilizará para analizar la información y hacer la línea base.*

**Puedes encontrar un enlace a la base de datos completa en los Anexos.*

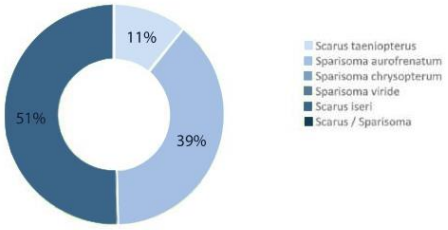


Con la información levantada las especies de peces loro más abundantes en los tres sitios fueron Scarus iseri y Sparisoma aurofrenatum, siendo notoria la ausencia de especies de peces loros de gran porte como por ejemplo Scarus guacamaia.

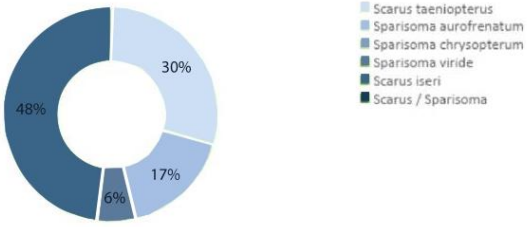
Sparisoma aurofrenatum

Scarus iseri

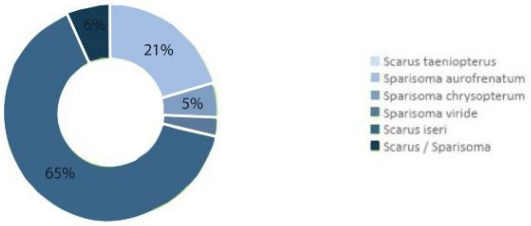
SITIO PICADILLY



SITIO BOYA BLANCA



SITIO ACUARIUM



La estructura de tallas muestra que los tamaños pequeños prevalecen consistentemente en todos los sitios, el mayor porcentaje de las especies registradas no superan los 10 cm de longitud. La mayor proporción de peces loros registrados en todos los sitios, se encontraron en la categoría de talla entre 0-5 cm y 6-10 cm, mientras que solo una pequeña parte tenía tamaños superiores

CONCLUSIONES Y RECOMENDACIONES. MONITOREO I

- *Se requiere de una* **serie de datos más larga** *para establecer la variabilidad de los ensamblajes de peces loro en los sitios de monitoreo, por lo que* **se sugiere mantener el esfuerzo de monitoreo** *y* **aumentar el número de sitios.**
- *La* **preponderancia de tallas menores a 10 cm** *en las especies observadas, es un posible* **indicativo de sobrepesca.**
- *El* **predominio de Scarus iseri y Sparisoma aurofrenatum** *parecen indicar que se podrían haber extraído especies más grandes, a pesar de que actualmente existe una veda que prohíbe la captura y comercialización de peces loro.*
- *Establecer* **comparaciones con bases de datos anteriores** *en caso de haberlos, para* **ayudar a la comprensión de la composición de especies históricamente predominantes en los sitios.**

5. CIERRE DEL PROYECTO

El proyecto Guardianes del pez loro cierra con el logro de su objetivo de determinar el estado de las poblaciones de peces loro en Boca Chica y educar a la comunidad sobre la importancia de respetar la veda de pez loro y otras especies de peces herbívoros.

Con el mismo se ha puesto en evidencia la disposición de los jóvenes de sumarse a actividades de conservación que ayuden a mitigar los daños del ecosistema de la Bahía de Andrés, su hogar. La ejecución de este proyecto también nos permitió ver la receptividad y compromiso de las fritureras y restaurantes de no comercializar el pez loro en sus establecimientos.

Este es un primer paso para aportar una solución que mitigue la extracción de esta especie y a la vez un avance importante en el involucramiento de distintos sectores de la comunidad.

Si bien este proyecto llega a su fin, nos sentimos inspirados por el cambio positivo que hemos generado y comprometidos a continuar nuestra labor para proteger y preservar nuestros valiosos ecosistemas marinos, sabiendo que cada pequeña acción cuenta en la construcción de un futuro más sostenible para las generaciones venideras.

Para el 2024 queda pendiente continuar robusteciendo la línea base del estado de las poblaciones de peces loros con los Monitoreos 2 y 3 y una tercera jornada de entrega de placas acreditativas con las fritureras en marzo. Estas actividades han sido pagadas por adelantado para garantizar que los servicios de monitoreo esten disponibles en el momento adecuado y que podamos mantener un seguimiento continuo de nuestro desempeño y cumplimiento de objetivos.

**Con respecto a los participantes, de los 8 jóvenes que iniciaron todo el proceso, 6 concluyeron el proceso y se les entregó un diploma acreditativo por su compromiso como "Guardianes del pez loro".*

6. PRÓXIMOS PASOS

La experiencia de este proyecto nos ha recalcado la importancia de continuar interviniendo la comunidad de Boca Chica a nivel educativo, no solo en la juventud sino también entre los adultos, negocios relacionados al turismo y gobernanza. Es un proceso lento, que debe permanecer de forma continua en el tiempo para que redunde en resultados beneficiosos tanto para el ecosistema como para la comunidad.

El proyecto Guardianes del pez loro ha sido un segundo paso en la continuidad de intervenciones que se necesitan para transformar un sistema extractivo, como denominamos al inicio de este informe, a un sistema sostenible tanto ambiental como económicamente.

Este proyecto nos impulsa a mantener la participación y el compromiso de la comunidad en actividades de conservación marina y motivarlos a participar en los programas de voluntariado de la Fundación Verde Profundo para mantener viva la conciencia sobre el pez loro y otros temas relacionados.

Sin embargo, para que esta iniciativa sea sostenible y pueda continuar ejecutándose en futuras etapas, es necesario establecer colaboraciones y alianzas con organizaciones locales, gubernamentales y sin fines de lucro que trabajen en áreas relacionadas con la conservación marina y educación ambiental para maximizar los recursos y el impacto de las iniciativas de conservación.

Para mantener el impulso generado por este proyecto proponemos ejecutar una segunda etapa en el 2024 que nos permita:

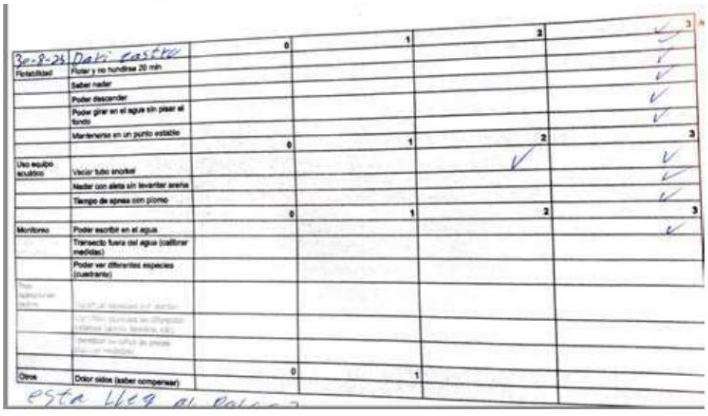
- **Certificar más jóvenes como buzos**
- **Continuar de forma periódica con más monitoreos para robustecer la base de datos y realizar análisis estadísticos que puedan generar información para publicaciones científicas**
- **Continuar interviniendo a los negocios con charlas educativas e impulsando sus iniciativas eco-amigables con una campaña de promoción para consumidores y turistas. Queremos que la gente apoye económicamente aquellos negocios que son responsables y respetan las vedas**
- **Colaborar con ONGs locales que trabajan con niños y comunidades vulnerables para educar a los más jóvenes y embellecier las fachadas de su comunidad con murales que muestren la biodiversidad marina de Boca Chica y que sirvan de orgullo local y, quizá, como atractivo turístico**

ANEXOS

1. RÚBRICA PRUEBAS ACUÁTICAS

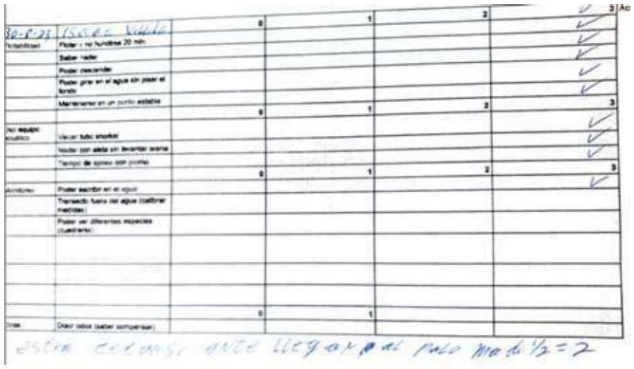
		0	1	2	3	Aceptable no negociable
Flotabilidad	Flotar y no hundirse 20 min	Moviendose se le hunden las piernas	Con mucho movimiento no se hunden las piernas	Con poco movimiento no hunden las piernas con la cabeza en el agua	Se pueden quedar sin mover las piernas y flotando	2
	Saber nadar	No nadan nada	Si nadan como perrito con cabeza fuera	Nadan estilo libre braceando. No aguantan ida a Polar Chill	Nadan estilo braceando y resisten hasta Pola Chill	2
	Poder descender	No pueden	Si pueden un poco pero flotan enseguida	Si pueden y aguantan al menos 3 segundos		1
	Poder girar en el agua sin pisar el fondo	No pueden	Si pueden			1
	Mantenerse en un punto estable	No se quedan quietos	Solo se quedan quietos 2 segundos	Se pueden quedar en un punto entre 5 y 10 segundos	Pueden mantenerse en el mismo punto más de 10 segundos	2
		0	1	2	3	
Uso equipo acuático	Vaciar tubo snorkel	No pueden/Necesitan más de 2 intentos	Si pueden a la segunda oportunidad	Si pueden a la primera		1
	Nadar con aleta sin levantar arena	No saben nadar con aleta/Levantan mucha arena	Cada vez que patalean levantan sedimento con cada pie de microsantuario al Polar	Levantan sedimento 1 o 2 veces del microsantuario al Polar	No levantan sedimento nunca	2
	Tiempo de apnea con plomo	10 segundos	15 segundos	20 sengundos	25 segundos	1
		0	1	2	3	
Monitoreo	Poder escribir en el agua	No pueden	Pueden garabatear algo legible pero se mueven de lugar y no saben regresar al punto que estaban	Pueden garabatear algo legible pero se mueven de lugar y si saben regresar al punto que estaban	Pueden escribir sin moverse en el agua	1
Crear metros con tubos pvc	Transecto fuera del agua (calibrar medidas)	No aciertan nunca la medida	De 5 intentos se acercan a la medida 1 vez (margen de error 30 cm)	De 5 intentos se acercan a la medida 2 veces (margen de error 30 cm)	De 5 intentos se acercan a la medida 3 veces (margen de error 30 cm)	
	Poder ver diferentes especies (cuadrante)	No aciertan nunca ni número de especies, ni cantidad	En dos intentos. Se acercan al número de especies (margen de error de 2) pero no a la cantidad por especies	En dos intentos. Se acercan al número de especies (margen de error de 1) y a la cantidad de especies (margen de error de 1)	En dos intentos aciertan número de especies y cantidad.	
Tras seleccionar buzos	Identificar especies por nombre					
	Identificar especies en diferentes					

2. RESULTADOS PRUEBAS ACUÁTICAS

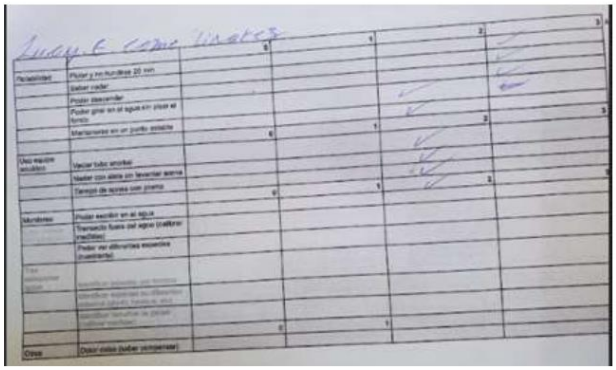


Dari Castro 26 puntos

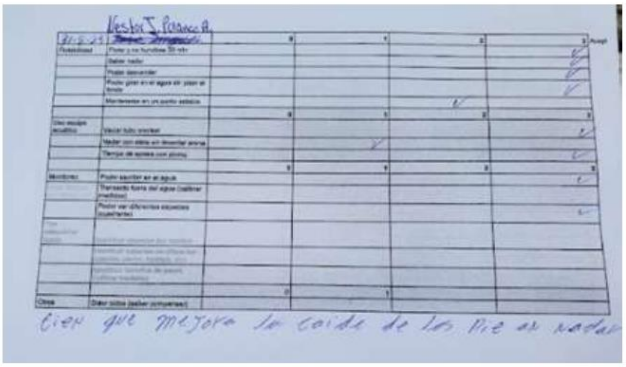
2. RESULTADOS PRUEBAS ACUÁTICAS



Isaac Villilo 29 puntos



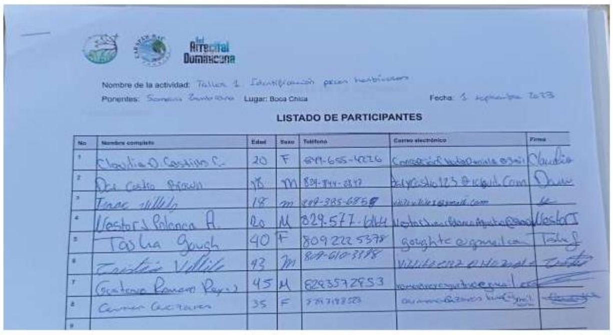
Lucy Cosme 19 puntos



Néstor Polanco 28 puntos

3. LISTADOS DE PARTICIPANTES EN TALLERES Y REUNIONES

Taller 1

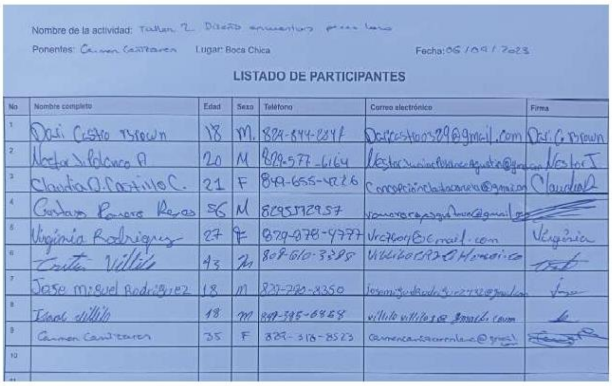


Nombre de la actividad: Taller 1. Identificación peces herbívoros
Ponentes: [illegible] Lugar: Boca Chica Fecha: 1 septiembre 2023

LISTADO DE PARTICIPANTES

No	Nombre completo	Edad	Sexo	Teléfono	Correo electrónico	Firma
1	Claudia D. Castillo C.	20	F	849-655-4226	[illegible]	[illegible]
2	Dai Castro Brown	18	M	829-844-8847	[illegible]	[illegible]
3	Isaac Villilo	18	M	829-385-6868	[illegible]	[illegible]
4	Nestor J. Polanco A.	20	M	829-577-6164	[illegible]	Nestor J
5	Tasha Gough	40	F	809 222 5378	goughtc@gmail.com	[illegible]
6	Cristian Villilo	43	M	809-610-3288	[illegible]	[illegible]
7	Gustavo Romero Reyes	45	M	8293572853	[illegible]	[illegible]
8	Carmen Castaren	35	F	[illegible]	[illegible]	[illegible]
9						

Taller 2

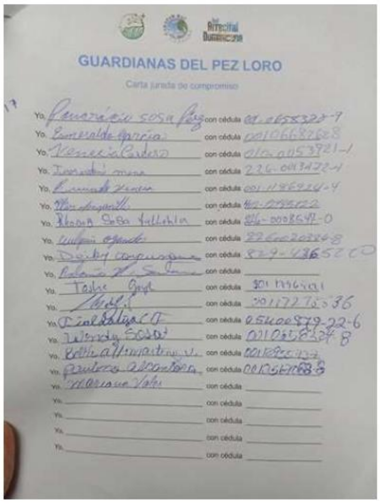


Nombre de la actividad: Taller 2. Diseño encuentros peces loro
Ponentes: Carmen Castaren Lugar: Boca Chica Fecha: 06/09/2023

LISTADO DE PARTICIPANTES

No	Nombre completo	Edad	Sexo	Teléfono	Correo electrónico	Firma
1	Dai Castro Brown	18	M	829-844-8847	[illegible]@gmail.com	Dai C. Brown
2	Nestor J. Polanco A.	20	M	829-577-6164	[illegible]	Nestor J
3	Claudia D. Castillo C.	21	F	849-655-4226	[illegible]	Claudia
4	Gustavo Romero Reyes	56	M	8293572857	[illegible]	[illegible]
5	Virginia Rodriguez	27	F	829-878-9777	[illegible]@hotmail.com	Virginia
6	Cristian Villilo	43	M	809-610-3288	[illegible]	[illegible]
7	Jose Miguel Rodriguez	18	M	829-720-8350	[illegible]	[illegible]
8	Isaac Villilo	18	M	829-385-6868	[illegible]	[illegible]
9	Carmen Castaren	35	F	829-318-8523	[illegible]@gmail	[illegible]
10						

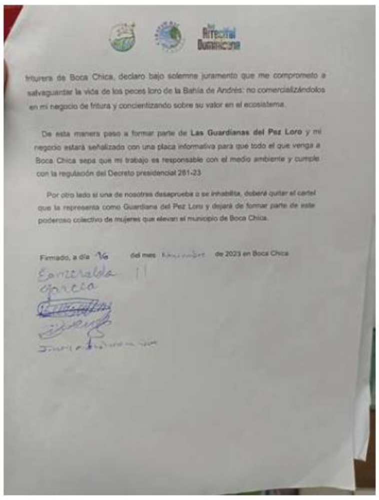
Encuentros con fritureras



GUARDIANAS DEL PEZ LORO

Carta jurada de compromiso

Yo, ______ con cédula ______ (lista de firmas manuscritas)



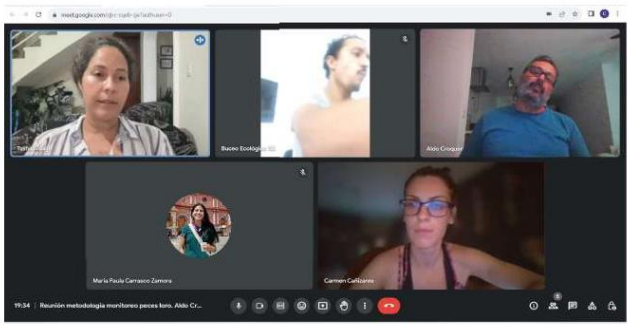
friturera de Boca Chica, declaro bajo solemne juramento que me comprometo a salvaguardar la vida de los peces loro de la Bahía de Andrés: no comercializándolos en mi negocio de fritura y concientizando sobre su valor en el ecosistema.

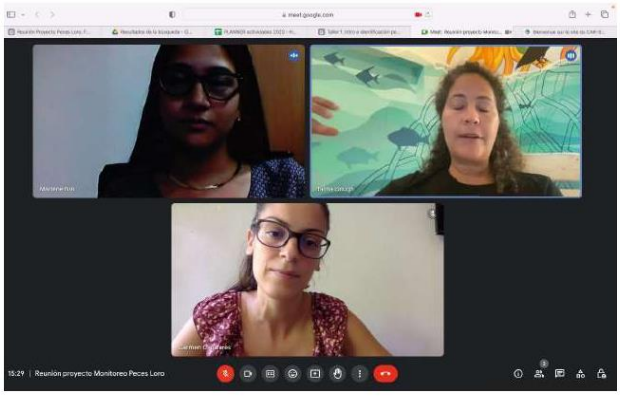
De esta manera paso a formar parte de **Las Guardianas del Pez Loro** y mi negocio estará señalizado con una placa informativa para que todo el que venga a Boca Chica sepa que mi trabajo es responsable con el medio ambiente y cumple con la regulación del Decreto presidencial 281-23

Por otro lado si una de nosotras desaprueba o se inhabilita, deberá quitar el cartel que la representa como Guardiana del Pez Loro y dejará de formar parte de este poderoso colectivo de mujeres que elevan el municipio de Boca Chica.

Firmado, a día 16 del mes [illegible] de 2023 en Boca Chica

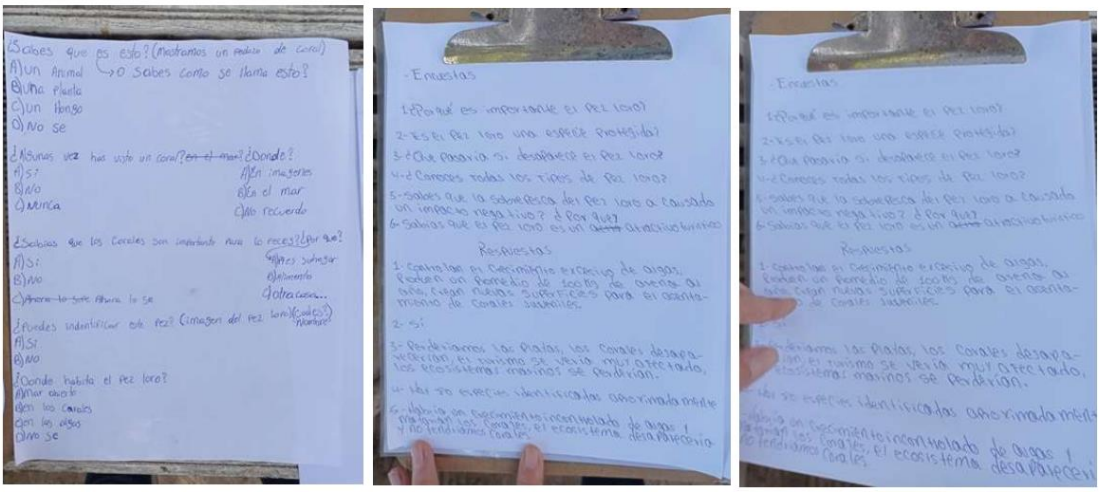
4. OTRAS REUNIONES VIRTUALES DE PLANIFICACIÓN





5. CERTIFICACIONES DE BUCEO PADI

6. DISEÑO DE ENCUESTAS EN EQUIPO



7. BASE DE DATOS DE LAS RESPUESTAS DE LAS ENCUESTAS

Num	Edad	Sexo	Estatus	Ocupación	Pregunta 1	Pregunta 2	Pregunta 3	Pregunta 4	Lugar pregunta 4	Pregunta 5	Pregunta 6	Pregunta 7	Pregunta 8	Pregunta 9
1	18	F	Visitante	-	d	a	c	no sabe	no sabe	c	c	c	d	a
2	18	F	Visitante	Salonista	b	a	a	800	D'Mancy	-	a	c	d	a
3	56	F	Local	Comunitaria	d, boca ya	a	c	150/lb	Pescaderia	c	a	c	a	a
4	50	M	Local	Deporte acuáti	a	a	d, vended	100/lb	Calles	c	b	c	b	a
5	55	M	visitante	-	c	a	a	850	-	b	b	a	e	b
6	37	F	turista	-	b	c	a	700	-	d	c	b	e	b
7	30	F	turista	-	b	c	a	800	-	d	a	b	e	b
8	21	F	visitante	-	a	a	a	950	-	b	a	c	b	a
9	17	M	local	vendedor amb	a	b	b	250/lb	fritura	d	b	a	e	b
10	25	F	local	camarera	b	a	a	700	-	b	a	c	a	a
11	25	M	visitante	-	c	c	a	800	restaurante	d	a	a	e	b
12	43	F	local	vendedora frit	a, b	a	b,c	600/lb	fritura	c	b	a	e	b
13	23	M	local	comunitario	c	a	b	no sabe	boca chica	b	a	c	d	a
14	50	M	local	pescador	d	b	d	-	-	c	a	a	b	b
15	34	M	local	-	a,b,c	a	b	450	playa	b	b	a	a	b
16	29	F	local	empleado	a,b,c	a	b,c	450	playa	c	b	a	a	b
17	21	M	local	-	b	c	b	-	-	c	b	a	a	b
18	37	F	local	friturera	a,b,c	a	b,c	300	pescaderia	b	a	a	a	b
19	22	M	local	-	b	a	c,d	500	pescaderia	c	b	c	a	b
20	40	M	visitante	-	b,c	a	a,b,c	500	playas	b	a	c	a	a
21	27	M	local	pescador	b,c	a	b,c	500	playa	b	b	a	a	b
22	37	M	local	vendedor	b,c	a	b	600	playa	c	a	c	a	a
23	23	M	local	comunitario	c	a	b	no sabe	boca chica	b	a	c	d	a
24	50	M	local	pescador	c	b	d	-	-	b	a	a	b	b
25	22	M	visitante	estudiante	a	c	c	1200	-	c	c	c	b	a
26	18	M	-	estudiante	d	c	c	1000	wala	c	c	a	e	a
27	40	M	local	ama de casa	c	a	b	800	fritura	c	c	c	a	a
28	23	F	visitante	estudiante	d	c	b	300	-	d	b	c	d	a
29	20	M	Visitante	estudiante	d	c	c	800	-	d	b	c	d	a
30	26	M	visitante	mercado?	a	c	a	1490	-	d	b	c	d	a
31	17	M	visitante	mercado?	a	c	a	1200	-	c	b	c	d	a
32	50	F	visitante	no trabaja	b	c	c	600	-	a	a	c	a	a
33	29	M	local	motorista	c	a	b	700	fritura	b	c	b	e	b
34	50	F	visitante	no trabaja	b	c	c	600	-	a	a	c	a	a
35	34	F	turista	doctora	a	b	a	1200	hamaca	b	b	c	b	a
36	23	F	visitante	-	c	a	a	500/lb	restaurante	b	a	c	a	a
37	21	M	local	visitante	b	c	c	400/lb	pescaderia	a	b	a	a	b
38	18	M	Local	deportista	c	c	b	300	fritura	c	c	a	b	a
39	19	M	local	deportista	b	b	b	400	fritura	a	b	b	a	a
40	26	M	local	deportista	c	a	b	300	fritura	b	c	a	a	a
41	20	M	local	deportista	c	a	a	500	restaurante	a	c	a	a	b
42	35	M	local	pescador	c	a	b	500	fritura	b	a	c	a	a
43	25	M	visitante	-	b	a	a	400	restaurante	a	a	c	a	a
44	36	M	visitante	vendedor de a	c	a	a	600	restaurante	c	b	c	a	a
62	19	M	local	deportista	c	a	b	400	fritura	c	b	c	b	a
46	21	M	local	deportista	b	c	b	500	fritura	c	c	b	a	a
47	62	M	local	vendedor/salv	b,c	a	b	300	fritura	d	a	c	a	b
48	62	F	local	vendedora	c	a	b	500	pescaderia	d	a	c	a	b
49	27	M	local	vendedor	b,d	b	b	200/lb	pescaderia	b	a	c	a,b	a
50	58	M	local	vendedor	b,c	a	b	300	fritura	b	a	c	a	b
51	29	M	visitante	músico	b	c	a	1000	juan dolio	d	b	no sabe	e	a
52	67	M	turista	no trabaja	a	b	a	-	-	b	a	-	a	a
53	28	F	visitante	músico	b	b,c	a	-	-	d	b	no sabe	a	a
54	40	F	local	no trabaja	a	b	a	-	-	c	a	c	a,b	a
55	29	M	local	guachiman	no come p	a	c	600	fritura	c	c	c	e	a
56	53	M	local	vendedor arte	c	a	a	-	-	b	a	c	a,b	b
57	44	M	local	centro buceo	b,c	a	c	350/lb	pescaderia	b	a	a	a,b	a

8. FUENTES DE VARIACIÓN DEL DISEÑO EXPERIMENTAL

Este diseño genera las siguientes fuentes de variación, los cuales se interpretan como se explica a continuación:

1) Factor 1. Variabilidad natural de las poblaciones de peces herbívoros a escala de 1 km.

2) Factor 2: Variabilidad natural de las poblaciones de peces herbívoros a escala de cientos de metros.

3) Factor 3: Variabilidad natural de las poblaciones de peces herbívoros a escala de años.
4) Factor 4: Magnitud de las diferencias en la abundancia de peces herbívoros dentro de cada año.

5) Interacción Factor 4 x Factor 1: variabilidad aleatoria en la magnitud de las diferencias en abundancia de peces herbívoros a escala de 1 km.

6) Interacción Factor 4 x Factor 2: variabilidad aleatoria en la magnitud de las diferencias en abundancia de peces herbívoros a escala de km.

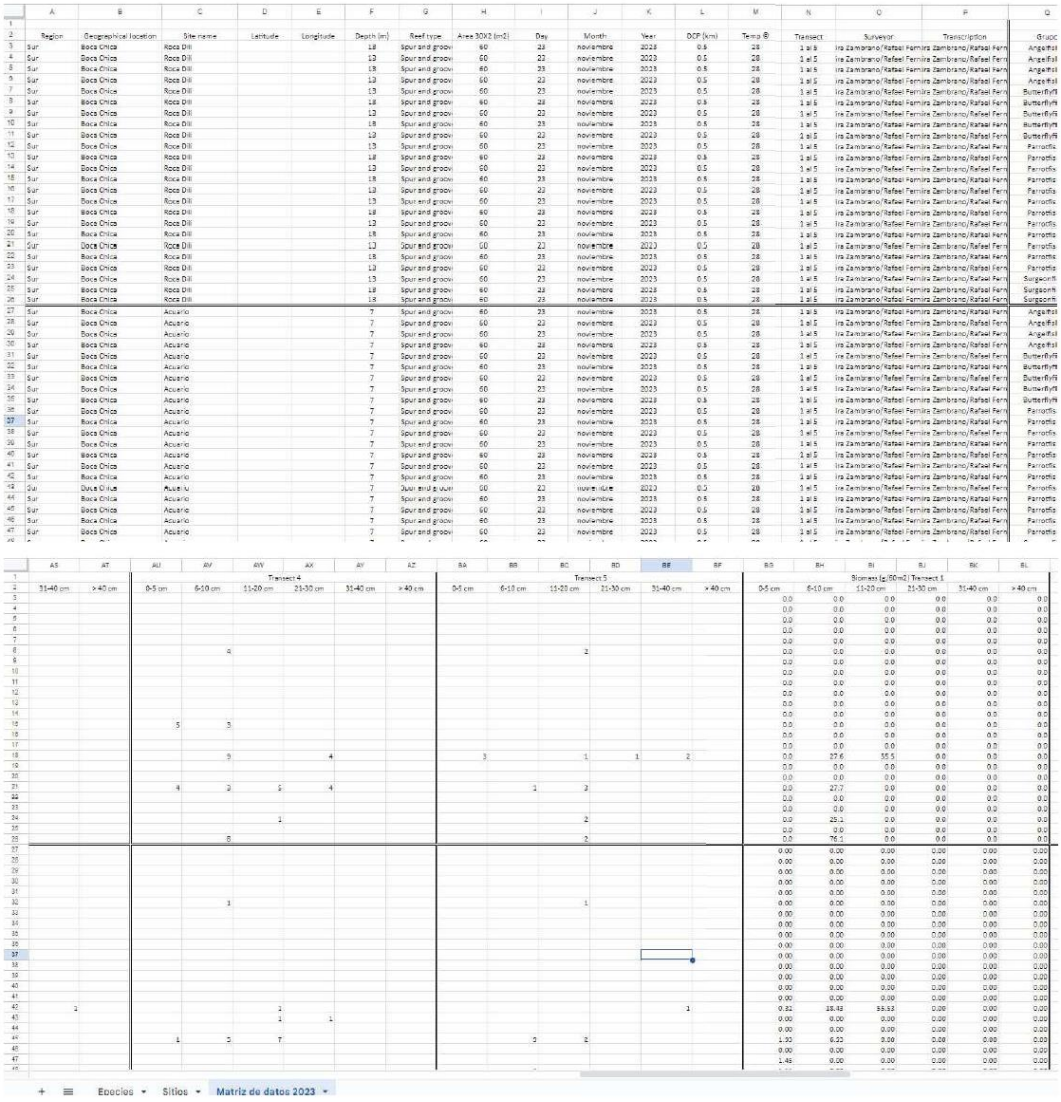
7) Interacción Factor 4 x Factor 3: variabilidad aleatoria en la magnitud de las diferencias en abundancia de peces herbívoros a escala de años.

8) Interacción Factor 4 x Factor 3 x Factor 1: variabilidad aleatoria en la magnitud de las diferencias en abundancia de peces herbívoros a escala de años a escala de 1 km.

9) Interacción Factor 4 x Factor 3 x Factor 2: variabilidad aleatoria en la magnitud de las diferencias en abundancia de peces herbívoros a escala de años a escala de cientos de metros.

10) Residual: varianza no explicada por ninguna de las fuentes de variación antes mencionadas.

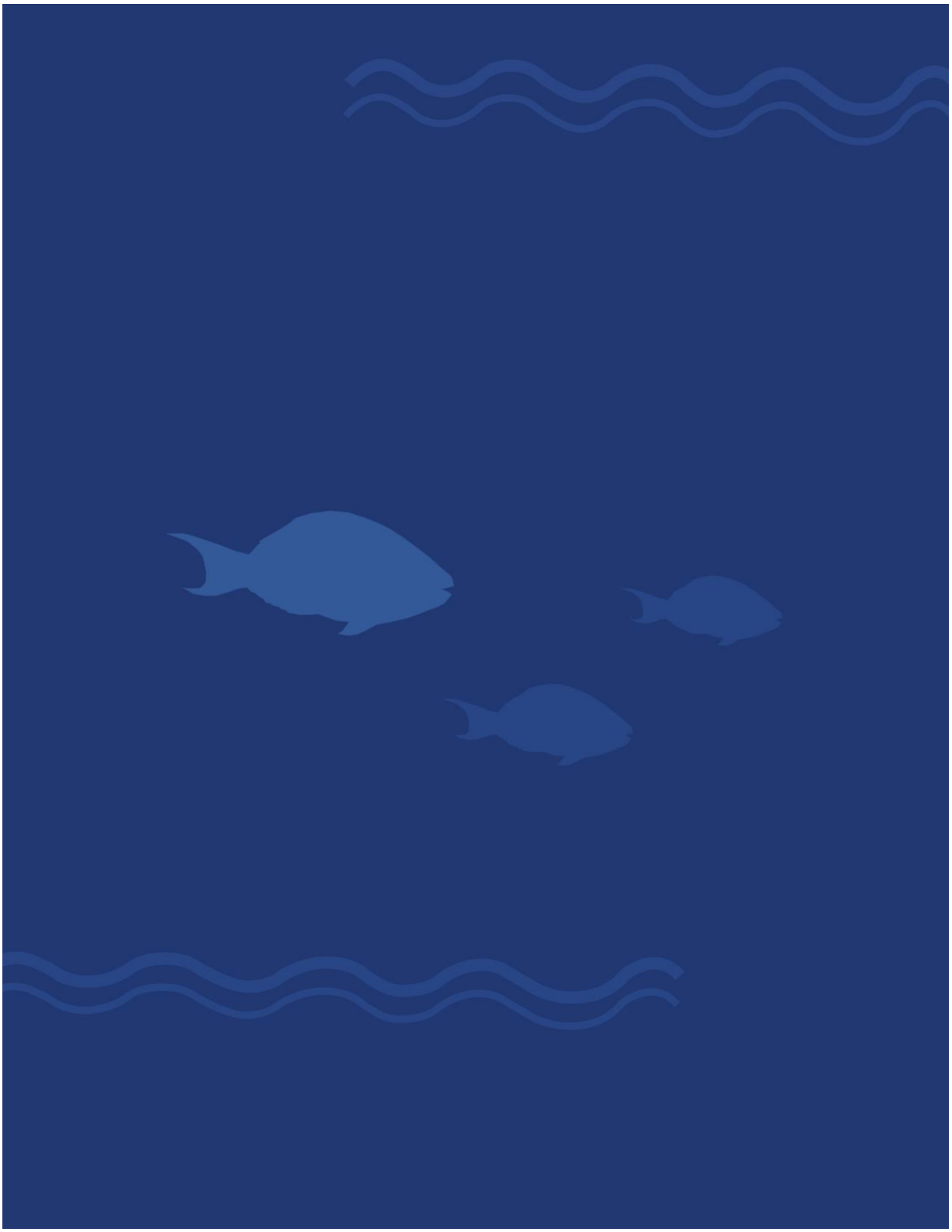
9. BASE DE DATOS DE LOS MONITOREOS DE PECES HERBÍVOROS



Matriz base de datos: https://docs.google.com/spreadsheets/d/1RjwR7knLySuwo0octzj-ahlOxTWVO7/edit#gid=301881899

La conservación eficiente de nuestro patrimonio natural requiere que se establezcan puentes sólidos entre la investigación científica y la gestión del medio ambiente

Jaime Rodríguez Estival



SPAW project reporting

1. Updated and accurate summary of participating protected area management plans

Of the 36 Marine Protected Area sites recognized under the SPAW Protocol which are part of the SPAW RAC network, 9 chose to participate in this project. For one site only – Parque Nacional de la Caleta – no management plan was available, and it was not possible to interview the manager.

For participating Marine Protected Areas, management plans were scanned for completeness based on standard elements (called 'categories' in the table below). These elements are common to the majority of management plans and can be reasonably expected to provide all information necessary to effectively guide management at a protected area site. Where standard definitions exist, these are indicated under 'WCPA definition' with a link to 'A standard lexicon of terms for area-based conservation' ver1.0 (Nick Salafsky et al 2024).

Category	Explanation	WCPA definition
Site	Name of protected area [site]	
Marine	Indication of whether the site includes marine component	
Terrestrial	Indication of whether the site includes terrestrial component	
Wetland	Indication of whether the site includes wetland component	
Established	Date the protected area was established	
Area (hectares)	Size of the protected area (hectares)	
Contact	Key contact for this project	
Plan status	Period of validity of the management plan (years)	
Page count	Length of the plan (pages)	
Stakeholder consultation	Stakeholder consultation included in the development of the plan (y/n)	
Weblink	Weblink to the management plan - if available	
Stakeholders	Identification of institutions, groups and individuals directly or indirectly affected by the protected area through resource use/access, site conservation activities and/or development	x
Pressures analysis	Identification of pressures, activities or events, caused or aggravated by humans, having a negative impact on or degrading one or more of the biodiversity values of the protected area. Pressures cause undesirable change to the site.	x
Issues	Identification of issues (potentially) constraining management, such as inadequate finance, enforcement, complex governance, multiple management authorities or lack of stakeholder engagement.	
Resources	Description of the financial, human, physical and information resources available to the protected area	
Vision	Vision statement designed to inspire, which articulates the outcome of successful site management	x
Geographic scope	Clearly defined boundaries (mapped) for the site with descriptions and justifications.	
Thematic scope	Clear articulation of the management focus for site management such as species management, tourism management etc	

Values	Description of biodiversity values describing the ecological systems and processes, habitats, communities and species, representing and encompassing the full array of biodiversity at the site. These are the features the protected area most wants to conserve	x
Strategies	Descriptions of high-level activities designed to achieve conservation for the site as a whole such as reducing the impact of invasive species, improving sustainable use (recreation, fishing etc)	x
Core tasks	Descriptions of core conservation management activities e.g. field work and maintenance, administration, income generation, provision of information and outreach, education, science, monitoring and law enforcement	
Objectives	SMART (**s**pecific, **m**easureable, **a**chievable, **r**elevant, **t**ime framed) activities detailing the steps needed to reach a desired outcome	x
Actions	Implementable steps to achieve SMART objectives	x
Resourcing of actions	Indication of staff, equipment and finance allocated to implement the management plan actions.	
Time planning	Indication of time planning	

Scoring

Each element of the management plan was scored based on:

3 – element was included in the plan in a valuable/usable form
2 – element was included but more detail was necessary for the information to be useful
1 – element was not included or there were significant gaps in the information

Detailed summaries of protected area management plans

Detailed summaries of protected area management plan scans are included below for the following protected area sites:

Belize	Hol Chan Marine Reserve
Bonaire, Dutch Caribbean	Bonaire National Marine Park
St Eustatius, Dutch Caribbean	Statia National Marine Park
Dominican Republic	Parque Nacional de los Haitises
Dominican Republic	Parque Nacional de la Caleta
Colombia	Santuario de Flora y Fauna Ciénaga Grande de Santa Marta
Colombia	Parque Natural Regional de los Humedales entre Los Rios León y Suriquí
Colombia	Regional Seaflower Marine Protected Area
St Vincent	Tobago Cays Marine Park

Belize: Hol Chan Marine Reserve

Marine	x	
Terrestrial		
Wetland		
Established	1987	
Area (hectares)	1800	
Contact	Emilie Gomez - Science Director	
Plan status	2019-2024	
Page count	103	
Stakeholder consultation	Yes	
Web link?	Web Link	
Stakeholders	*(Action for stakeholder mapping)*	2
Pressures analysis	x	3
Issues	x *(capacity gaps identified)*	2
Resources		1
Vision	x	3
Geographic scope	x	3
Thematic scope	x *(overall goal, objectives)*	2
Values	x	3
Strategies	x	3
Core tasks		1
Objectives		1
Actions	x	3
Resourcing of actions	[staff, equipment, training, other]	2
Time planning		1

Bonaire: Bonaire National Marine Park

Marine	x	
Terrestrial	x	
Wetland	x	
Established	1979	
Area (hectares)	2700	
Contact	*Judith Raming - BNMP Manager*	
Plan status	2022-2028	
Page count	195	
Stakeholder consultation	Y - extensive	
Web link?	Web Link	
Stakeholders	x	3
Pressures analysis	x	3
Issues	x	3
Resources	*(staff photos in Appendix)*	1
Vision	x	3
Geographic scope	x	3
Thematic scope	x	3
Values	x	3
Strategies	x	3
Core tasks	x	2
Objectives		1
Actions	x	3
Resourcing of actions		1
Time planning		1

St Eustatius: Statia National Marine Park

Marine	x	
Terrestrial		
Wetland		
Established	1988	
Area (hectares)	2750	
Contact	Erik Boman - STENAPA director	
Plan status	2021-2025	
Page count	55	
Stakeholder consultation	Y	
Web link?		
Stakeholders	x	3
Pressures analysis	x	3
Issues	x	3
Resources	x	3
Vision	x	3
Geographic scope	x	3
Thematic scope	x	3
Values	x	3
Strategies	x	3
Core tasks	x	2
Objectives		1
Actions	x	3
Resourcing of actions		1
Time planning	x (year)	3

Dominican Republic: Parque Nacional de los Haitises

Marine	x	
Terrestrial	x	
Wetland	x [mangrove, Cayes]	
Established	1968	
Area (hectares)	160,000	
Contact	Carlos Barriola Rodriquez Alejo	
Plan status	2012-2017 (draft)	
Page count	79	
Stakeholder consultation	Y	
Web link?		
Stakeholders	x	2
Pressures analysis	x	3
Issues	x	3
Resources	x	2
Vision	x	3
Geographic scope	x	3
Thematic scope	x	3
Values	x	3
Strategies	x	3
Core tasks		1
Objectives	x	3
Actions	x	3
Resourcing of actions	x estimated budget	2
Time planning	x (year)	3

Dominican Republic: Parque Nacional de la Caleta

Country	Dominican Republic
Site	La Caleta Underwater National Park
Marine	x
Terrestrial	
Wetland	
Established	1986
Area (hectares)	1200
Contact	Gilberto Avalo Tavarez
Plan status	*No plan available*
Page count	
Stakholder consultation	
Web link?	
	-
Stakeholders	
Pressures analysis	
Issues	
Resources	
Vision	
Geographic scope	
Thematic scope	
Values	
Strategies	
Core tasks	
Objectives	
Actions	
Resourcing of actions	
Time planning	

Colombia: Santuario de Flora y Fauna Ciénaga Grande de Santa Marta

Marine	x	
Terrestrial	x	
Wetland	x	
Established	1977	
Area (hectares)	26,810	
Contact	Alejandro Bastidas	
Plan status	2015-2019	
Page count	190	
Stakeholder consultation	not clear	
Web link?	Web Link	
Stakeholders	not clear	2
Pressures analysis	x	3
Issues	x [integrated]	2
Resources		1
Vision	*	2
Geographic scope	x	3
Thematic scope	* mission	2
Values	x	3
Strategies	x [management objective]	3
Core tasks	x [training and equipment]	2
Objectives	x	3
Actions	x activities and products	3
Resourcing of actions	x proposed budget	3
Time planning		1

Colombia: Parque Natural Regional de los Humedales entre Los Rios León y Suriquí

Marine	x	
Terrestrial	x	
Wetland	x	
Established	2009(11?)	
Area (hectares)	618,100	
Contact	Elizabeth Ortiz	
Plan status	2022-	
Page count	159	
Stakholder consultation	not clear	
Web link?	Web Link	
Stakeholders		*1*
Pressures analysis	x [focussed on disasters]	2
Issues		1
Resources		1
Vision		1
Geographic scope		2
Thematic scope	x [conservation objectives]	2
Values	x	3
Strategies	x [priorities]	3
Core tasks		1
Objectives		1
Actions	x [management strategies]	3
Resourcing of actions		1
Time planning		1

Colombia: Regional Seaflower Marine Protected Area

Marine	x	
Terrestrial	x [atolls]	
Wetland	x	
Established	2000	
Area (hectares)	6,500,000	
Contact		
Plan status	*Plan under review*	
Page count	500+ [multiple documents]	
Stakeholder consultation	not clear [extensive comms plan produced]	
Web link?	Web Link [SPAW datafile]	
Stakeholders	not clear [described]	2
Pressures analysis	Pressures described in detail [limited analysis]	3
Issues	Yes, within wider text	2
Resources	desired staffing only	2
Vision		
Geographic scope	x	3
Thematic scope	x	3
Values	x	3
Strategies	high level Goals? [annual, 3 year work plans]	2
Core tasks		1
Objectives		1
Actions		1
Resourcing of actions		1
Time planning		1

Trinidad and Togabo: Tobago Cays Marine Park

Marine	x	
Terrestrial	x	
Wetland	x	
Established	1997	
Area (hectares)	6600	
Contact	Marleya .K. Adams	
Plan status	2007-2009	
Page count	100	
Stakeholder consultation	Yes [separate process 2007]	
Web link?	Web Link	
Stakeholders	[accompanying document]	3
Pressures analysis	x	3
Issues	x [SWOT]	3
Resources	x	3
Vision		1
Geographic scope	x	3
Thematic scope	x [mission?, goals, objectives?]	2
Values		3
Strategies	x [Actions]	3
Core tasks	x [integrated]	2
Objectives		1
Actions	x	3
Resourcing of actions		1
Time planning		1

Summary of findings

The most complete management plans surveyed as part of this project are based to some extent on Conservation Action Planning principles with identification of conservation values and targets, threat analysis, stakeholder involvement and development of conservation strategies and objectives. Alternate terminology is often employed e.g management targets for conservation targets (CAP), biodiversity viability for conservation target viability (CAP).

There is general confusion about what is meant by various management planning terms including vision, mission, strategies, objectives, activities etc. This does not affect the value or effectiveness of the management plan to the site managers but makes it more difficult to discuss, advise, provide training and compare plans.

Development of standardized terminology for all management plan elements is recommended.

Management plan elements

Each element of the management plan was scored based on:

3 – element was included in the plan in a valuable/usable form
2 – element was included but more detail was necessary for the information to be useful
1 – element was not included or there were significant gaps in the information

The maximum possible score for any management plan element is therefore 27.

The highest scoring elements are:

- Identification of biodiversity value
- Geographic scope, thematic scope
- Pressure (threats) analysis
- Management strategies

The most frequently overlooked elements are those associated with the implementation of the management plan, namely:

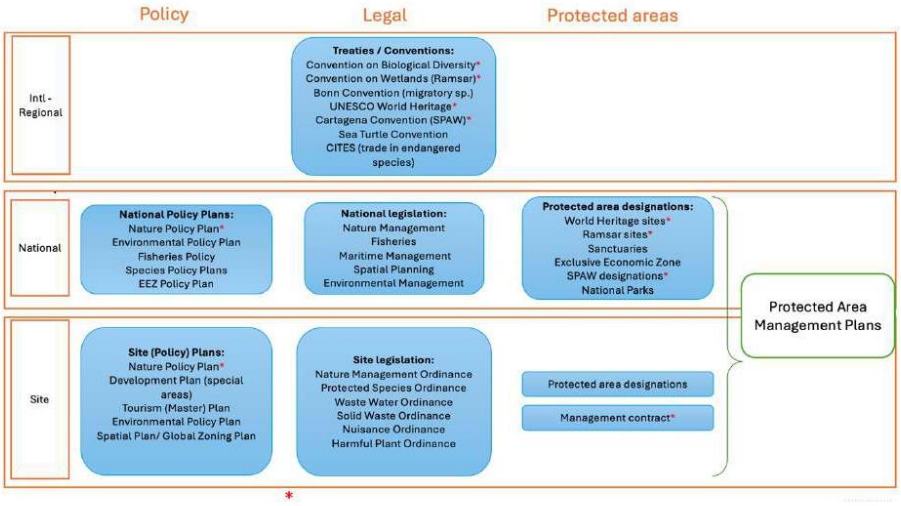
- Resource availability
- Core management tasks
- Objectives
- Time planning

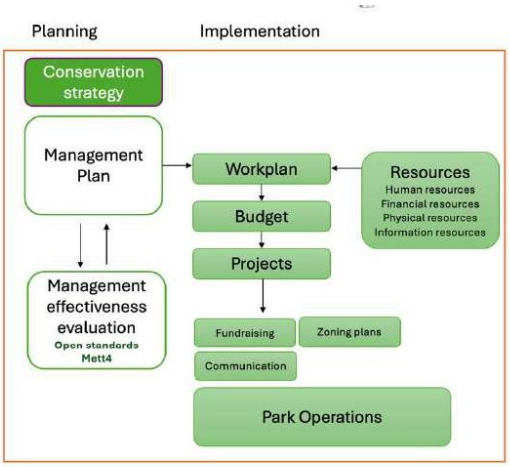
Stakeholders	18
Pressures analysis	23
Issues	19
Resources	14
Vision	16
Geographic scope	23
Thematic scope	20
Values	24
Strategies	23
Core tasks	12
Objectives	12
Actions	22
Resourcing of actions	12

SPAW project reporting

3 – Management Plan model and wording

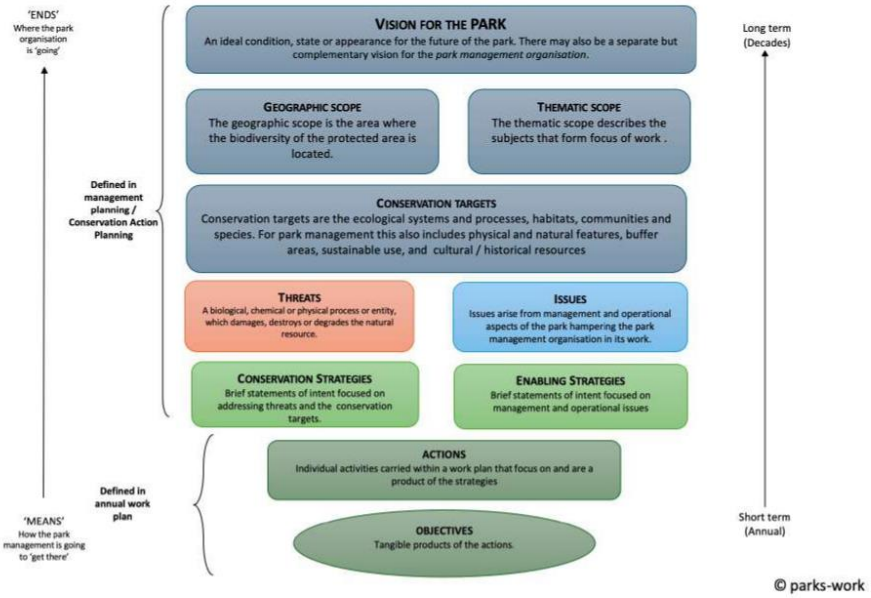
Management Plans are frequently required under management agreements and are a prerequisite for both National Park status and for recognition under the Cartagena Convention and Specially Protected Areas and Wildlife (SPAW) Protocol. They are an invaluable tool for managers and their staff and to guide management activities as well as helping to build credibility and confidence in the protected area management body. They should be used to guide conservation management and decision making as well as providing a framework for annual planning and budgeting, monitoring park progress and evaluating management effectiveness. In the table below an asterix (*) indicates where management plans are required.





Management plan model (template)

The following proposed management plan template ensures that all essential strategic elements at the site level are addressed. It is adapted from Conservation Action Planning and uses their terminology. In addition, it is recommended to include a substantial electronic appendix containing supporting documentation and information as an invaluable resource to managers and staff. Mendeley or another similar app can be used to archive scientific and grey literature.



Management Plan	As outlined above
Management Brief	Summary designed as a quick reference tool to guide day-to-day management.
Digital Appendix	The appendices and digital appendices provide access to a wealth of information relevant to the Marine Park management, science and conservation.

Management plan wording

Developing standardized lexicon with terminology for conservation management planning should be based on IUCN, CBD and CAP standards with clear explanations for each term. For an excellent example see: 'A standard lexicon of terms for area-based conservation' ver1.0 (Nick Salafsky et al 2024).

SPAW project reporting

4 – Assessment of management plans studied and recommendations and advice regarding updates

The SPAW Caribbean regional MPA network currently consists of 37 Marine Protected Area sites. A quick scan of their management plans, which are a requirement for membership, showed the status of the plans to be:

Status of management plan	#	%
Plan current and up to date	9	24
Plan under review	7	19
Plan out of date by up to 5 years	6	16
Plan out of date by more than 5 years	15	40
Total	37	

Of the 37 sites less than a quarter (9 sites) showed an interest in participating in this project despite multiple invitations from both the project leaders and representatives of the SPAW RAC.

These figures and the response to this project would seem to indicate that either there are significant barriers to the updating of management plans and/or that management plans are not considered useful tools by protected area managers and staff.

The table below gives an overview of the participating MPAs

Belize	Hol Chan Marine Reserve	2024
Bonaire	Bonaire National Marine Park	2028
St Eustatius	Statia National Marine Park	2025
DR	Parque Nacional de los Haitises	2017
DR	Parque Nacional de la Caleta	
Colombia	Santuario de Santa Marta	2012
Colombia	Parque National Los Rios León y Suriquí	2013
Colombia	Regional Seaflower Marine Park	
St Vincent	Tobago Cays Marine Park	2009

The status of their management plans conforms well in percentage terms to the network as a whole. It would therefore seem that these MPAs can be expected to be broadly representative of the network as a whole.

Status of management plan for participating MPAs	#	%
Plan current and up to date	3	33
Plan under review	2	22
Plan out of date by up to 5 years		
Plan out of date by more than 5 years	4	44
Total	9	

Detailed scans were made of management plans for the participating sites. Key elements were identified being both common to management plans, a requirement of SPAW and/or essential for the integrity of a protected area management plan. The aggregated results for each management plan element are shown on the right:

Elements:

- Vision
- Geographic scope
- Thematic scope
- Strategies
- Core tasks
- Objectives
- Actions
- Resources
    - Financial
    - HR
    - Physical
    - Information
- Biodiversity values+
- Stakeholders
- Threats/pressures
- Issues

Stakeholders	18
Pressures analysis	23
Issues	19
Resources	14
Vision	16
Geographic scope	23
Thematic scope	20
Values	24
Strategies	23
Core tasks	12
Objectives	12
Actions	22
Resourcing of actions	12
Time planning	12

The highest scoring elements were:

- Identification of biodiversity value
- Geographic scope, thematic scope
- Pressure (threats) analysis
- Management strategies

The lowest scoring elements were:

- Resource availability
- Core management tasks
- Objectives
- Time planning

This seems to indicate that the management plans are **strongest on strategy** and lacking when it comes to implementation. Interviews with protected area staff would tend to support this view.

One striking aspect of the management plan scan was that the most comprehensive and complete management plans were written by **external experts** and these management plans directly or indirectly made use of the Conservation Action Planning (**CAP**) language and methodology including identification of scope, values, targets, threat analysis, strategies and objectives.

There is considerable confusion over terminology. It is not always clear what is meant by management planning terms including particularly vision, mission, strategies, objectives, activities etc. Even 'management plans' are often referred to as strategic plans or management frameworks.

Whilst this does not affect the value or effectiveness of the management plan to the site managers it does make it more difficult to discuss, advise, provide training and tools and compare plans. One way of addressing this will be to provide standardized training, templates and materials with agreed terminology.

Through interview it became clear that participating protected area managers see the value of management plans and are keen to have good management plans for their sites which are current and meet international standards. Funding and access to expertise are significant barriers. To update their plans they need:

- Access to **funding** and **external experts**

- Strong assistance engaging with **stakeholder engagement** and participation in the management planning process.

Even when protected areas have up to date management plans, many are struggling to implement their plans and translate them into annual workplans and budgets and/or as a basis for project applications. For this training, coaching and easy to use templates are needed.

Summary recommendations

- Provide (access to) funding for protected areas that need to update their management plans. Lack of funding is a significant barrier
- Provide access to a pool of experts who can assist with writing/co-writing management plans and can provide support for the review and adaptation for plans which need to be updated
- External support is critical for stakeholder engagement and participation in the management planning process
- Agree on standard terminology for all elements of management planning
- Develop a standard management plan outline (template)
- Encourage the development of a short version of the management plan which can be used for implementation purposes and a summary which can be used for outreach and distributed to park staff and stakeholders
- Provide standardized training, templates and materials for the entire management planning process.

Documento

Memoria de los talleres realizados en el marco de la elaboración del "Plan de Acción para el manejo de la enfermedad de pérdida de tejido en el Archipiélago de San Andrés, Providencia y Santa Catalina

Elaborado por: Valeria Pizarro (PhD) – Perry Institute for Marine Science

Para la elaboración del Plan de Acción se organizaron cuatro talleres con usuarios claves en la isla de San Andrés entre los días 20 y 22 de noviembre (ver Anexo 1 para las agendas de cada taller). El primer taller, el día 20 de noviembre reunió a investigadores de la academia y otras organizaciones que han desarrollado proyectos en los arrecifes coralinos del archipiélago, el día 21 en la mañana asistieron pescadores artesanales y en la tarde operadores de buceo recreativo, y el 22 de noviembre fueron organizaciones institucionales. Todos los talleres fueron liderados y orientados por la Dra. Valeria Pizarro (Perry Institute for Marine Science – PIMS) y Carlos Orozco (Corporación para el Desarrollo Sostenible del Departamento de San Andrés, Providencia y Santa Catalina – CORALINA).

OBJETIVO

Generar los insumos para la formulación del Plan de Manejo para enfrentar la enfermedad y tener una hoja de ruta para proyectar su control, recuperación y/o restauración, enfocado en el Archipiélago de San Andrés, Providencia y Santa Catalina.

Al inicio de cada taller, los asistentes (presenciales y en línea) se presentaban y a continuación se hacían dos presentaciones a cargo de PIMS y CORALINA. En la primera se presentó el estado del arte de la enfermedad para el Caribe, y en la segunda las acciones que se han realizado en el Departamento Archipiélago (ver las presentaciones en Anexo 2):

Estado del arte de la enfermedad SCTLD

- Características de la enfermedad de pérdida de tejido – Inició en el 2014 en Florida (USA), afecta por lo menos a 34 especies de coral y ya afecta arrecifes de 30 países o territorios.
- Patógeno desconocido. Los últimos estudios han sugerido que la enfermedad es consecuencia de un virus que afecta la zooxantelas y eso genera que se de infección secundaria de origen bacteriana.
- Se transmite en el agua. En Las Bahamas se observó que se originó en el puerto y luego se dispersó a otros sitios. Esto también ha sido observado en otras áreas, lo cual sugiere que las aguas de lastre tienen un papel importante en la dispersión de los patógenos.
- No tiene relación con la temperatura. Esto implica que puede presentarse en cualquier época del año y también sugiere que no es una variación de la enfermedad Plaga Blanca, ya que esta última está asociada a aumentos de temperatura y adicionalmente no presenta múltiples lesiones.
- En la etapa de endemismo aun después de 7 años, a pesar de que la persistencia es baja aún hay colonias nuevas que se infectan.

- En Bahamas movieron corales y evaluaron el tiempo en el que fueron infectadas las diferentes especies.
- Plan para la enfermedad SCTLD debe ir pensado acompañado del blanqueamiento.

SCTLD en el Archipiélago

- Cuándo se observó por primera vez en el Archipiélago (2022) y como se ha propagado desde entonces. En San Andrés isla, en menos de un año ya se ha propagado por toda el área arrecifal
- Desde que se confirmó su presencia varias acciones se han realizado: convenio CORALINA-PIMS para aunar esfuerzos en la investigación y manejo de la enfermedad:
    - Se realizó un taller de capacitación en identificación y tratamiento
    - Se inició el tratamiento de colonias de coral liderado por la Fundación Blue Indigo
    - Se han escrito proyectos en conjunto y dos han sido aprobados, incluyendo el que financia estos talleres
- Resumen sobre el impacto de la enfermedad en las comunidades coralinas en San Andrés

Posteriormente, se repartió un tabla (Anexo 3) a cada participante y se explicó como completarla. Una vez completa, se realizó una discusión de cada punto en donde cada asistente dio sus aportes. A continuación se resumen los puntos más importantes mencionados en cada taller.

DIA 1: Sesión con academia y centros de investigadores

Participantes (presenciales y en línea, Anexo 4):
Adriana Santos – Universidad Nacional sede Caribe
Catalina Gómez – Universidad Nacional (estudiante doctorado)
Rocío García – Universidad del Magdalena
Silvia Sierra – Universidad del Magdalena
Maria Fernanda Maya – Blue Indigo Foundation
Juan Pablo Caldas – Conservación Internacional
Angy Acuna – Universidad Nacional

Julián Prato – Universidad Nacional sede Caribe
Elvira María Alvarado – Fundación Ecomares
Ma. Juliana Vanegas – MinAmbiente
Opal Bent - MinAmbiente
Alfredo Abril-Howard – CORALINA

Se identificó la necesidad de incrementar las áreas de monitoreo y los métodos usados para mejorar la calidad de los datos. Dentro de esto se mencionó el usar las herramientas de fotomosaicos en plots permanentes para áreas de aproximadamente 10 m^2 y en la medida de lo posible de uso de drones para áreas más grandes. Se sugiere que los monitoreos incluyan otros grupos además de corales, como por ejemplo peces y otros organismos bentónicos, y que se haga de manera continua y con mayor frecuencia. Colombia cuenta con un sistema de monitoreo de arrecifes coralino, liderado por INVEMAR (conocido como SIMAC), el cual debería incluir indicadores para la enfermedad SCTLD y abarcar más áreas.

En cuanto a la identificación de vacíos de información los asistentes dijeron que aunque era algo muy general, por la novedad de la enfermedad en el Archipiélago, aún no tenían claro todos los vacíos de información. Por lo que se sugiere comenzar a identificarlos, dentro de los que mencionaron están la identificación de colonias resistentes y posibles áreas refugio.

Para los centros de rescate para corales en tierra se mencionó la posibilidad de fortalecer las instituciones que tienen algún sistema en donde se tengan organismos marinos (acuarios públicos). Se discutieron las necesidades particulares para los centros de rescate de corales y aunque se considera importante, los costos asociados a su construcción y mantenimiento puede limitar su establecimiento.

La comunicación es un punto de mucha importancia y se mencionó la necesidad de desarrollar campañas que lleguen al público en general. Dentro de las estrategias mencionadas está uso de redes sociales y el trabajar en colaboración con centros de buceo, quienes tienen mayor contacto con usuarios de los arrecifes.

Debido a que la enfermedad de pérdida de tejido (SCTLD) se transmite en el agua y que se ha encontrado que el agua de lastre puede ser responsable de la propagación, se discutió sobre como involucrar a la DIMAR en esto y conocer qué se está haciendo a nivel local y nacional. Adicionalmente se mencionó el uso de sistemas de filtración con luz ultravioleta como una alternativa.

En cuanto al uso de antibiótico para el tratamiento y su costo se mencionó el buscar desde gobierno de alto nivel algún mecanismo (de pronto en el marco del tratado de libre comercio) para poder importar el antibiótico sobrepasando todos los limitantes de aduana.

Conclusiones:

- Se necesita el monitoreo que cubra más área y que sea a largo plazo.
- Se requieren indicadores de resultado.
- Ya hay bastantes capacidades en el país en diferentes aspectos, sin embargo, hay otras como el acuarismo marino que se debe reforzar.
- Importancia de las comunicaciones, especialmente en redes sociales enfocados en el Archipiélago.

- Necesidad de articular a la DIMAR, para que en el marco de la convención Marpol y de sus funciones, se puedan hacer acciones de manejo aguas de lastre, especialmente para el trafico entre la isla de San Andrés y Colombia continental.
- Hay vacíos en el marco legal. Para poder llenarlos se debe trabajar con MinAmbiente liderando este proceso.

DIA 2. Sesión con actores locales y usuarios del ecosistema

Sesión con pescadores:


Participantes (presenciales y en línea, Anexo 4):
Ricardo Bush – Pescador e instructor del SENA
Brayan de Martin – Cooperativa de pescadores
Juan Carlos Barrios – Cooperativa de pescadores
Tatiana Madrid – Sol Caribe
María Alejandra Pulido – Cooperativa pescadores
Ma. Juliana Vanegas – MinAmbiente
Opal Bent - MinAmbiente

Posterior a las presentaciones por parte de PIMS y CORALINA, y al completar la tabla se discutieron varios puntos, entre los cuales resaltó: que MinAmbiente y Minturismo se unan y pongan restricciones en la explotación de los recursos arrecifales, por ejemplo, si los operadores turísticos no cumplen con las condiciones expuestas por MinAmbiente se les pueden quitar los permisos de operación. Si se explota el recurso pues que se devuelve al medio ambiente. Establecer regulaciones no solo para los operadores sino para los usuarios. También puede ser como una especie de impuesto, medida de compensación.

Aumentar las capacitaciones a los jóvenes de la isla – Articulación con Mineducación. Se trataron temas principalmente de la necesidad de educación ambiental a pescadores, buzos e incluso a los niños para concientizar sobre las necesidades de conservación de los arrecifes de forma que también se protejan los recursos a futuro. Por ejemplo se tocaron temas como los problemas de los buzos y pescadores con los tiburones.

Adicionalmente, en la noche de ese día, se tuvo la oportunidad de volver a trabajar con un grupo de 25 pescadores que estaban tomando un curso de navegación (Anexo 4 – Formato de asistencia SENA).

Sesión con operadores de buceo:

Participantes (presenciales y en línea, Anexo 4):
Andrés Felipe Vinasco – Centro de buceo Sea Life
Juan David Gómez – Scuba San Andrés
Nelson Ramos – Divers Team
Jaime Andrés Vinasco – Centro de buceo Sea Life
Raul Castillo – Diving Fun
Gloria Banda – Banda Dive (Presidente de la Asociación de Centros de Buceo de San Andrés)
Ma. Juliana Vanegas – MinAmbiente

Se discutieron varios puntos dentro de los que se resaltó la responsabilidad de los centros de buceo y del buceo recreativo en aportar de regreso a los arrecifes coralinos. Por esto solicitan que se cuente con los centros de buceo para diferentes alternativas y que se tenga en cuenta la posibilidad de que cada centro de buceo adopte un arrecife. O que apoyen actividades que se realicen en ciertas zonas con lanchas, incluso con tanques.

Se resalta por parte de algunos centros de buceo, la importancia de algunas zonas, como es el sitio de buceo conocido como la Pirámide, debido al alto uso por parte de varios centros de buceo. Se recalca que como los centro de buceo pueden apoyar con logística, en especial para el tratamiento de colonias de coral afectadas por SCTLD, pero donde personal capacitado, como biólogos sean los que lo llevan a cabo.

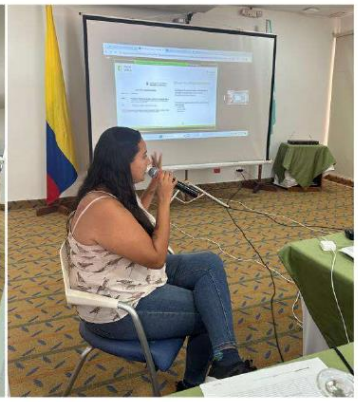
Se menciona que además de la información les gustaría saber como los buzos y centros de buceo pueden contribuir desde las zonas arrecifales en las que realizan sus actividades de buceo. Coralina menciona que la idea es involucrarlos en procesos de capacitación para que eventualmente sean ellos quienes podrán realizar la aplicación de los tratamientos, pero para esto deberán tener una serie de capacitaciones que incluye no solo lo del tratamiento sino también la identificación de especies, entre otros. Se identifica como factor clave la continuidad en los procesos y que se tenga en cuenta a este grupo (operadores de buceo) en todos los procesos posibles.

Conclusiones:

- Este es el primer paso para saber como va a ser la respuesta con la enfermedad
- Interés y posibilidad para hacer capacitaciones

- Continuación de los esfuerzos de restauración
- Se tienen que continuar las conversaciones para que cada centro de buceo pueda escoger un arrecife para "apadrinar"
- Se debe definir como hacer la parte público – privado
- Se debe encontrar la manera de mantener la comunicación y mantenerlos informados no solo de lo que se está haciendo, sino de los avances que se vayan dando

DIA 3. Sesión con instituciones públicas



Participantes (presenciales y en línea, Anexo 4):
Arne Britton – Coralina
Ormil Forbes – Secretaria de turismo
Wilmo Mercado – Capitanía de Puerto (Protección al medio marino), DIMAR
Jeanice Muñoz – Secretaría de Agricultura y pesca
Violeta Posada – PNN Old Providence Mc Bean Lagoon
Darson Archbold - PNN Old Providence Mc Bean Lagoon
Ma. Juliana Vanegas – MinAmbiente, DAMCRA
Opal Bent – MinAmbiente

En este taller se inició con las palabras de bienvenida por parte del director de Coralina, seguido por la presentación de los asistentes a la reunión. Posteriormente se realizó la presentación por parte de Valeria del contexto y estado actual de la enfermedad. Seguido a esto se continuaron con las presentaciones por parte de Coralina y MinAmbiente.

Dentro de las acciones que se identificaron está:

Secretaria de turismo, se tienen algunos territorios/propiedades que el gobierno local tiene (son de la SAE) que podrían ser utilizadas para las intervenciones. Por ejemplo podrían ser utilizadas para centros de rescate.

En cuanto a las aguas de lastre, la capitanía de puerto es el ente encargado de controlar esto, y para esto tienen ciertos procesos.

MinAmbiente mencionó las posibilidades de utilizar los incentivos para la conservación a través del decreto de PSA en vienes de uso público para hacer procesos de restauración pasiva mediante la reducción de los tensores y activa mediante la propagación coralina.

Coralina menciona que con ayuda de los proyectos que tienen se puede pensar en realizar un documento técnico que permita generar resoluciones para el control y el manejo de las Áreas Protegidas del Archipiélago.

MinAmbiente menciona que esto se puede hacer enmarcado en el proyecto FiWiRiif de Fondo acción el cual ya tiene como objetivo mejorar el manejo de la reserva.

Se menciona la necesidad de revisar la zonación dentro del AMP ya que debido a la degradación de los arrecifes, los sitios de uso de los principales actores pudieron haber variado. Coralina menciona que actualmente están en el proceso de consulta previa en Providencia en el proceso de los POMIUAC.

El llamado es poder trabajar interinstitucionalmente, con la gobernación (y todas sus secretarias), la Dimar, Parques Nacionales Naturales de Colombia y las autoridades ambientales de carácter local y nacional.

Conclusiones:

- Se requiere reforzar el control y vigilancia en el área protegida con el fin de reducir los tensores que aportan a la degradación arrecifal.
- Es necesario reforzar el marco legal enfocado en los ecosistemas marinos.
- Es importante articular los diferentes sectores (educación, agricultura, pesca, defensa) con el sector ambiente para el manejo integral de esta enfermedad.

Anexo 1. Agendas de los talleres realizados en el marco de la elaboración del Plan de Acción

Agenda 21 de noviembre- Sesión Academia/Investigadores

Hora	Tema	Responsable
8:30 AM	Bienvenida y presentación de la actividad	CORALINA
8:45 AM	Presentación de los asistentes	Todos
9:30 AM	Presentación SCTLD (Estado del arte en el Caribe)	PIMS
10:00 AM	Preguntas	Todos
10:15 AM	Break	
10:30 AM	SCTLD en el Archipiélago de San Andrés, Providencia y Santa Catalina	CORALINA
11:00 AM	Preguntas	Todos
11:15 AM	Plan de acción - academia - investigadores	CORALINA/PIMS
11:25 AM	Identificación de las necesidades de investigación en SCTLD	PIMS/CORALINA
12:30 PM	Almuerzo libre	
1:30 PM	Discusión y priorización de las necesidades de investigación en SCTLD	Todos
4:00 PM	Comentarios, conclusión y cierre	Todos

Agenda 21 de noviembre– Sesión actores y usuarios arrecifes: pescadores artesanales (AM)

Hora	Tema	Responsable
8:00 AM	Bienvenida y presentación de la actividad	CORALINA
8:15 AM	Presentación de los asistentes	Todos
8:45 AM	Presentación SCTLD (Estado del arte en el Caribe)	PIMS
9:15 AM	Preguntas	Todos
9:30 AM	SCTLD en el Archipiélago de San Andrés, Providencia y Santa Catalina	CORALINA
9:45 AM	Preguntas	Todos
10:00 AM	Break	
10:15 AM	Plan de acción - operadores turísticos - Identificación de las necesidades	CORALINA/PIMS
10:45 AM	Discusión y priorización de las necesidades	Todos
12:30 PM	Comentarios, conclusión y cierre	Todos

Agenda 21 noviembre - Sesión actores y usuarios arrecifes: operadores de buceo (PM)

Hora	Tema	Responsable
1:30 PM	Bienvenida y presentación de la actividad	CORALINA

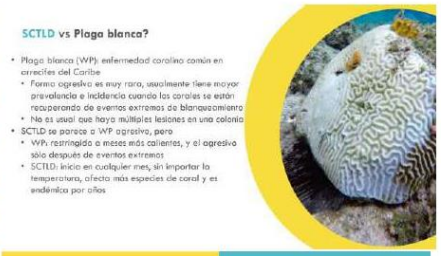
Hora	Tema	Responsable
1:45 PM	Presentación de los asistentes	Todos
2:15 PM	Presentación SCTLD (Estado del arte en el Caribe)	PIMS
2:45 PM	Preguntas	Todos
3:15 PM	SCTLD en el Archipiélago de San Andrés, Providencia y Santa Catalina	CORALINA
3:30 PM	Preguntas	Todos
3:45 PM	Break	
4:00 PM	Plan de acción - operadores turísticos - Identificación de las necesidades	CORALINA/PIMS
4:30 PM	Discusión y priorización de las necesidades	Todos
5:30 PM	Comentarios, conclusión y cierre	Todos

Agenda 22 noviembre– Sesión instituciones públicas

Hora	Tema	Responsable
8:30 AM	Bienvenida y presentación de la actividad	CORALINA
8:45 AM	Presentación de asistentes	Todos
9:30 AM	Presentación SCTLD (Estado del arte en el Caribe)	PIMS
10:00 AM	Preguntas	Todos
10:15 AM	Break	
10:30 AM	SCTLD en el Archipiélago de San Andrés, Providencia y Santa Catalina	CORALINA
11:00 AM	Preguntas	Todos
11:15 AM	Plan de acción MADS	CORALINA/PIMS
11:25 AM	Identificación de necesidades de investigación y articulación con políticas nacionales	PIMS/CORALINA
12:30 PM	Almuerzo libre	
1:30 PM	Discusión y priorización de las necesidades de investigación y políticas nacionales	Todos
4:00 PM	Comentarios, conclusión y cierre	Todos

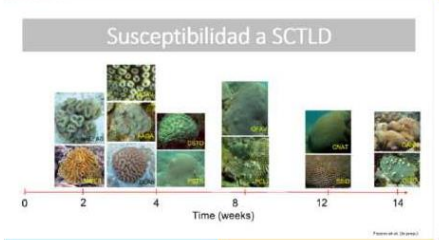
Anexo 2. Diapositivas de las presentaciones realizadas en los talleres: PIMS, CORALINA, MinAmbiente

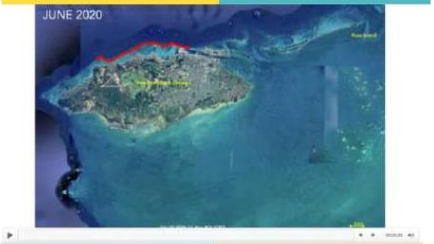

Porqué SCTLD es una amenaza?
• Infecta a aproximadamente a la mitad de las especies de coral
• Se dispersa rápidamente en el agua
• En la colonia
• Entre corales
• Entre arrecifes
• Altas tasas de infección
• Alta tasa de mortalidad
• Persistente

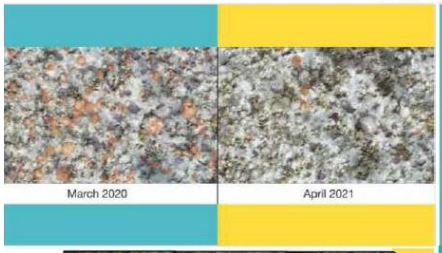

SCTLD vs Plaga blanca?
• Plaga blanca (WP): enfermedad coralina común en arrecifes del Caribe
• Forma agresiva es muy rara, usualmente tiene mayor prevalencia e incidencia cuando los corales se están recuperando de eventos extremos de blanqueamiento
• No es usual que haya múltiples lesiones en una colonia
• SCTLD se parece a WP agresivo, pero
• WP: restringido a meses más calientes, y el agresivo sólo después de eventos extremos
• SCTLD: inicio en cualquier mes, sin importar la temperatura, afecta más especies de coral y es endémica por años

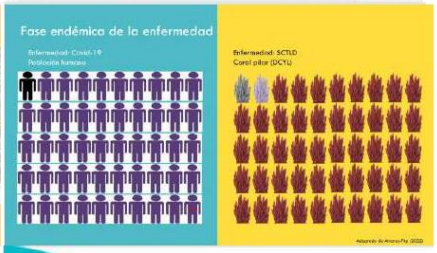

Etapas del brote de SCTLD en arrecifes de coral
Invasión
1 – 7 meses
Epidemia
3 meses - 1 año
Endemismo
1 – 7 años
Prevalencia de la enfermedad
Comunidad coralina

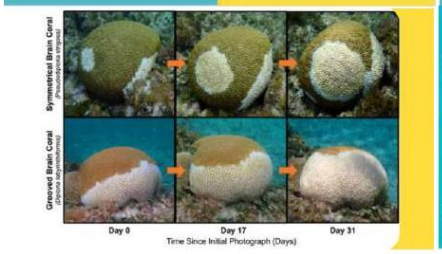

Susceptibilidad por especie
Dendrogyra cylindrus
Dichocoenia stokesii
Meandrina meandrites
Meandrina jacksoni
Eusmilia fastigiata
Diploria labyrinthiformis
Colpophyllia natans
Pseudodiploria strigosa
P. clivosa
ALTA
NULA


Susceptibilidad a SCTLD
0
2
4
8
12
14
Time (weeks)

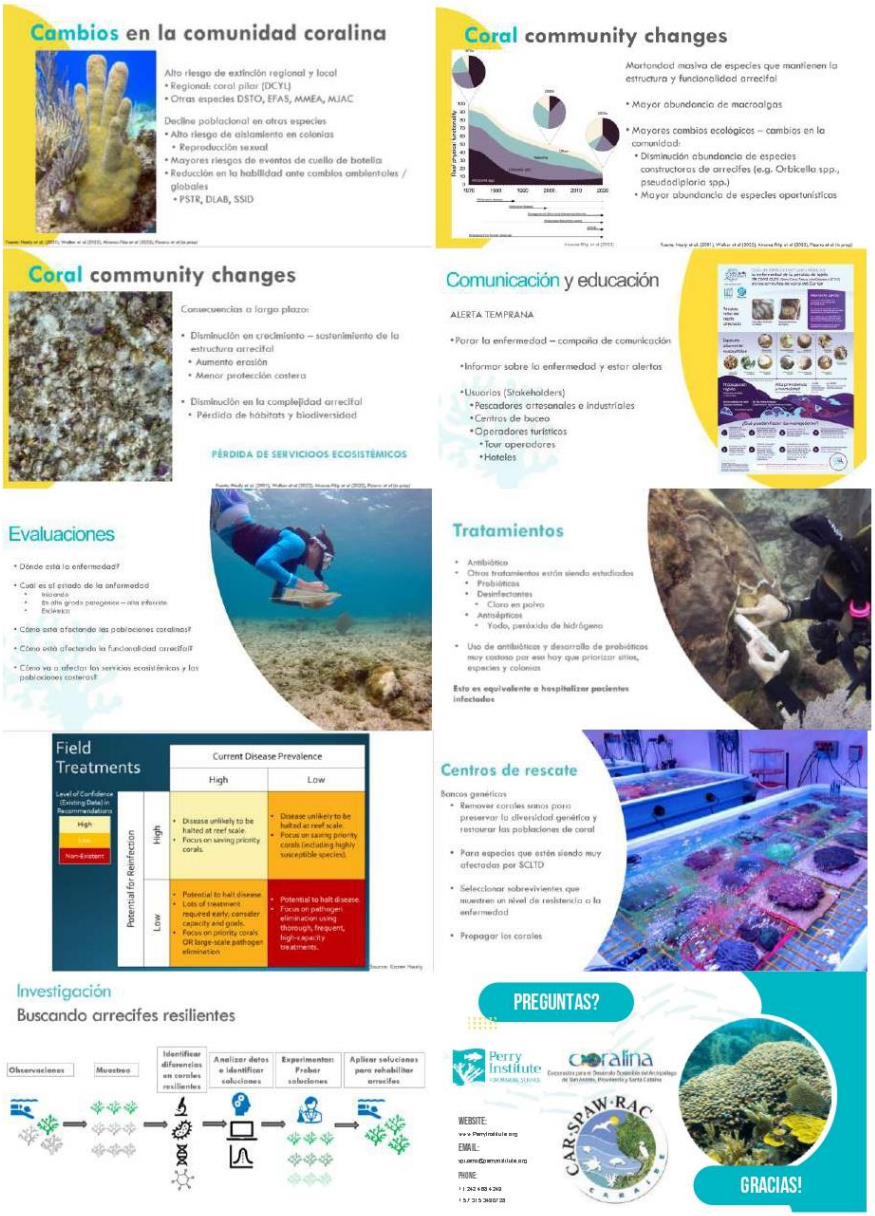

JUNE 2020

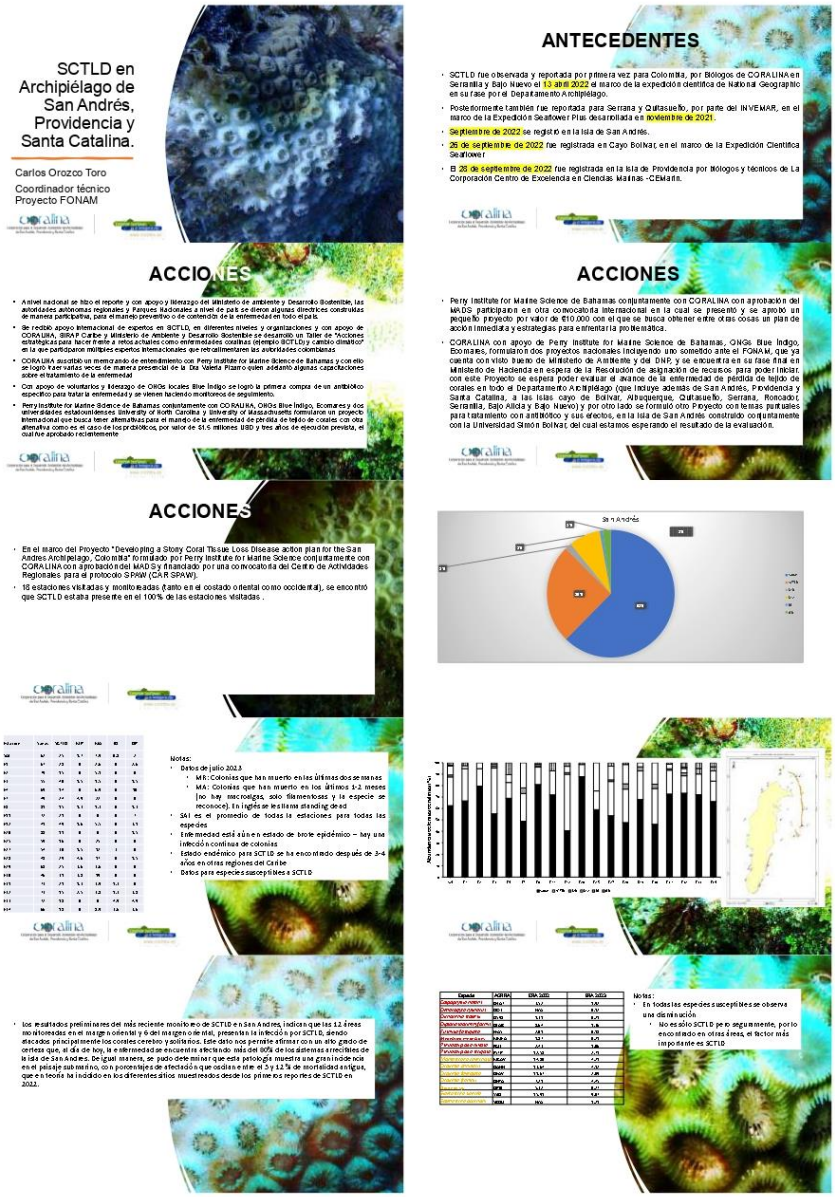

March 2020
April 2021

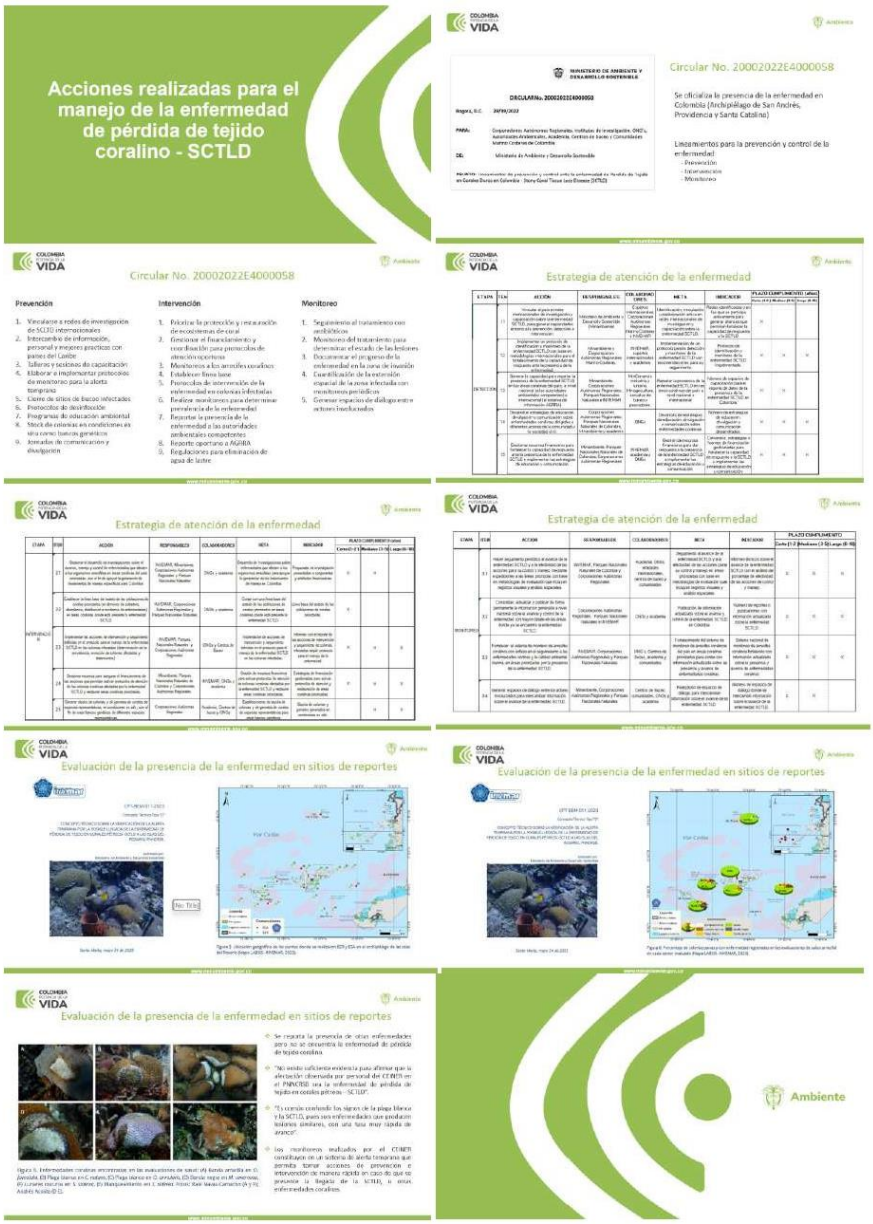

Fase endémica de la enfermedad
Enfermedad: Covid-19
Población humana
Enfermedad: SCTLD
Coral pilar (DCYL)


Symmetrical Brain Coral
Grooved Brain Coral
Day 0
Day 17
Day 31
Time Since Initial Photograph (Days)


SCTLD and coral mortality in The Bahamas
SEPTEMBER 2023


Cambios en la comunidad coralina
Alto riesgo de extinción regional y local
• Regional: coral pilar (DCYL)
• Otras especies DSTO, EFAS, MMEA, MJAC
Declive poblacional en otras especies
• Alto riesgo de aislamiento en colonias
• Reproducción sexual
• Mayores riesgos de eventos de cuello de botella
• Reducción en la habilidad ante cambios ambientales / globales
• PSTR, DLAB, SSID
Coral community changes
Mortandad masiva de especies que mantienen la estructura y funcionalidad arrecifal
• Mayor abundancia de macroalgas
• Mayores cambios ecológicos – cambios en la comunidad:
• Disminución abundancia de especies constructoras de arrecifes (e.g. Orbicella spp., pseudodiploria spp.)
• Mayor abundancia de especies oportunísticas
Coral community changes
Consecuencias a largo plazo:
• Disminución en crecimiento – sostenimiento de la estructura arrecifal
• Aumento erosión
• Menor protección costera
• Disminución en la complejidad arrecifal
• Pérdida de hábitats y biodiversidad
PÉRDIDA DE SERVICIOOS ECOSISTÉMICOS
Comunicación y educación
ALERTA TEMPRANA
•Parar la enfermedad – compaña de comunicación
•Informar sobre la enfermedad y estar alertas
•Usuarios (Stakeholders)
•Pescadores artesanales e industriales
•Centros de buceo
•Operadores turísticos
•Tour operadores
•Hoteles
Evaluaciones
• Dónde está la enfermedad?
• Cuál es el estado de la enfermedad
• Incipiente
• En alto grado patogénico – alta infección
• Endémico
• Cómo está afectando las poblaciones coralinas?
• Cómo está afectando la funcionalidad arrecifal?
• Cómo va a afectar los servicios ecosistémicos y las poblaciones costeras?
Tratamientos
• Antibiótico
• Otros tratamientos están siendo estudiados
• Probióticos
• Desinfectantes
• Cloro en polvo
• Antisépticos
• Yodo, peróxido de hidrógeno
• Uso de antibióticos y desarrollo de probióticos muy costoso por eso hay que priorizar sitios, especies y colonias
Esto es equivalente a hospitalizar pacientes infectados
Field Treatments
Current Disease Prevalence
High
Low
Level of Confidence (Existing Data in Recommendations)
High
Low
Non-Existent
Potential for Reinfection
High
Low
• Disease unlikely to be halted at reef scale
• Focus on saving priority corals
• Disease unlikely to be halted at reef scale
• Focus on saving priority corals (excluding highly susceptible species)
• Potential to halt disease
• Lots of treatment required early, consider capacity and goals.
• Focus on priority corals OR large-scale pathogen elimination
• Potential to halt disease.
• Focus on pathogen elimination using thorough, frequent, high-capacity treatments.
Centros de rescate
Bancos genéticos
• Remover corales sanos para preservar la diversidad genética y restaurar las poblaciones de coral
• Para especies que están siendo muy afectadas por SCLTD
• Seleccionar sobrevivientes que muestren un nivel de resistencia a la enfermedad
• Propagar los corales
Investigación
Buscando arrecifes resilientes
Observaciones
Muestreo
Identificar diferencias en corales resilientes
Analizar datos e identificar soluciones
Experimentar: Probar soluciones
Aplicar soluciones para rehabilitar arrecifes
PREGUNTAS?
Perry Institute
coralina
WEBSITE:
EMAIL:
PHONE:
CAR-SPAW-RAC
GRACIAS!


SCTLD en Archipiélago de San Andrés, Providencia y Santa Catalina.
Carlos Orozco Toro
Coordinador técnico Proyecto FONAM
ANTECEDENTES
SCTLD fue observada y reportada por primera vez para Colombia, por Biólogos de CORALINA en Serranilla y Bajo Nuevo el 13 abril 2022 el marco de la expedición científica de National Geographic en su fase por el Departamento Archipiélago.
Posteriormente también fue reportada para Serrana y Quitasueño, por parte del INVEMAR, en el marco de la Expedición Seaflower Plus desarrollada en noviembre de 2021.
Septiembre de 2022 se registró en la isla de San Andrés.
25 de septiembre de 2022 fue registrada en Cayo Bolívar, en el marco de la Expedición Científica Seaflower
El 28 de septiembre de 2022 fue registrada en la isla de Providencia por biólogos y técnicos de La Corporación Centro de Excelencia en Ciencias Marinas -CEMarin.
ACCIONES
Ante el nacional se hizo el reporte y con apoyo y liderazgo del Ministerio de Ambiente y Desarrollo Sostenible, las autoridades autónomas regionales y Parques Nacionales a nivel de país se dieron algunas directrices construidas de manera participativa, para el manejo preventivo o de contención de la enfermedad en todo el país.
Se recibió apoyo internacional de expertos en SCTLD, en diferentes niveles y organizaciones y con apoyo de CORALINA, SIRAP Caribe y Ministerio de Ambiente y Desarrollo Sostenible se desarrolló un Taller de "Acciones estratégicas para hacer frente a retos actuales como enfermedades costeras (ejemplo SCTLD) y cambio climático" en la que participaron múltiples expertos internacionales que retroalimentaron las autoridades colombianas
CORALINA suscribió un memorando de entendimiento con Perry Institute for Marine Science de Bahamas y con ello se logró traer varias veces de manera presencial de la Dra Valeria Pizarro quien impartió algunas capacitaciones sobre el tratamiento de la enfermedad
Con apoyo de voluntarios y liderazgo de ONGs locales Blue Indigo se logró la primera compra de un antibiótico específico para tratar la enfermedad y un viviero haciendo monitoreos de seguimiento.
Perry Institute for Marine Science de Bahamas conjuntamente con CORALINA, ONGs Blue Indigo, Ecomares y dos universidades estadounidenses University of North Carolina y University of Massachusetts formularon un proyecto internacional que busca tener alternativas para el manejo de la enfermedad de pérdida de tejido de corales con otra alternativa como es el caso de los probióticos, por valor de $1.5 millones USD y tres años de ejecución prevista, el cual fue aprobado recientemente
ACCIONES
Perry Institute for Marine Science de Bahamas conjuntamente con CORALINA con aprobación del MADS participaron en otra convocatoria internacional en la cual se presentó y se aprobó un pequeño proyecto por valor de €10.000 con el que se busca obtener entre otras cosas un plan de acción inmediata y estrategias para enfrentarla problemática.
CORALINA con apoyo de Perry Institute for Marine Science de Bahamas, ONGs Blue Indigo, Ecomares, formularon dos proyectos nacionales incluyendo uno sometido ante el FONAM, que ya cuenta con visto bueno de Ministerio de Ambiente y del DNP, y se encuentra en su fase final en Ministerio de Hacienda en espera de la Resolución de asignación de recursos para poder iniciar, con este Proyecto se espera poder evaluar el avance de la enfermedad de pérdida de tejido de corales en todo el Departamento Archipiélago (que incluye además de San Andrés, Providencia y Santa Catalina, a las islas cayo de Bolívar, Albuquerque, Quitasueño, Serrana, Roncador, Serranilla, Bajo Alicia y Bajo Nuevo) y por otro lado se formuló otro Proyecto con temas puntuales para tratamiento con antibiótico y sus efectos, en la isla de San Andres construido conjuntamente con la Universidad Simón Bolívar, del cual estamos esperando el resultado de la evaluación.
ACCIONES
En el marco del Proyecto "Developing a Stony Coral Tissue Loss Disease action plan for the San Andres Archipelago, Colombia" formulado por Perry Institute for Marine Science conjuntamente con CORALINA con aprobación del MADS y financiado por una convocatoria del Centro de Actividades Regionales para el protocolo SPAW (CAR SPAW).
18 estaciones visitadas y monitoreadas (tanto en el costado oriental como occidental), se encontró que SCTLD estaba presente en el 100% de las estaciones visitadas .
San Andrés
Notas:
Datos de julio 2023
MR: Colonias que han muerto en las últimas dos semanas
MA: Colonias que han muerto en los últimos 1-2 meses (no hay necrosigas, solo filamentosas y la especie se reconoce). En inglés se llama standing dead
SAI es el promedio de todas las estaciones para todas las especies
Enfermedad está aún en estado de brote epidémico – hay una infección continua de colonias
Estado endémico para SCTLD se ha encontrado después de 3-4 años en otras regiones del Caribe
Datos para especies susceptibles a SCTLD
los resultados preliminares del más reciente monitoreo de SCTLD en San Andres, indican que las 12 áreas monitoreadas en el margen oriental y 6 del margen occidental, presentan la infección por SCTLD, siendo afectados principalmente los corales cerebro y pétreos. Este dato nos permite afirmar con un alto grado de certeza que, al día de hoy, la enfermedad se encuentra afectando más del 80% de los arrecifes coralinos de la isla de San Andres. De igual manera, se pudo determinar que esta patología muestra una gran incidencia en el paisaje submarino, con porcentajes de afectación que oscilan entre el 3 y 12 % de mortalidad antigua, que en teoría ha incidido en los diferentes sitios muestreados desde los primeros reportes de SCTLD en 2022.
Notas:
En todas las especies susceptibles se observa una disminución
No es sólo SCTLD pero seguramente, por lo encontrado en otras áreas, el factor más importante es SCTLD

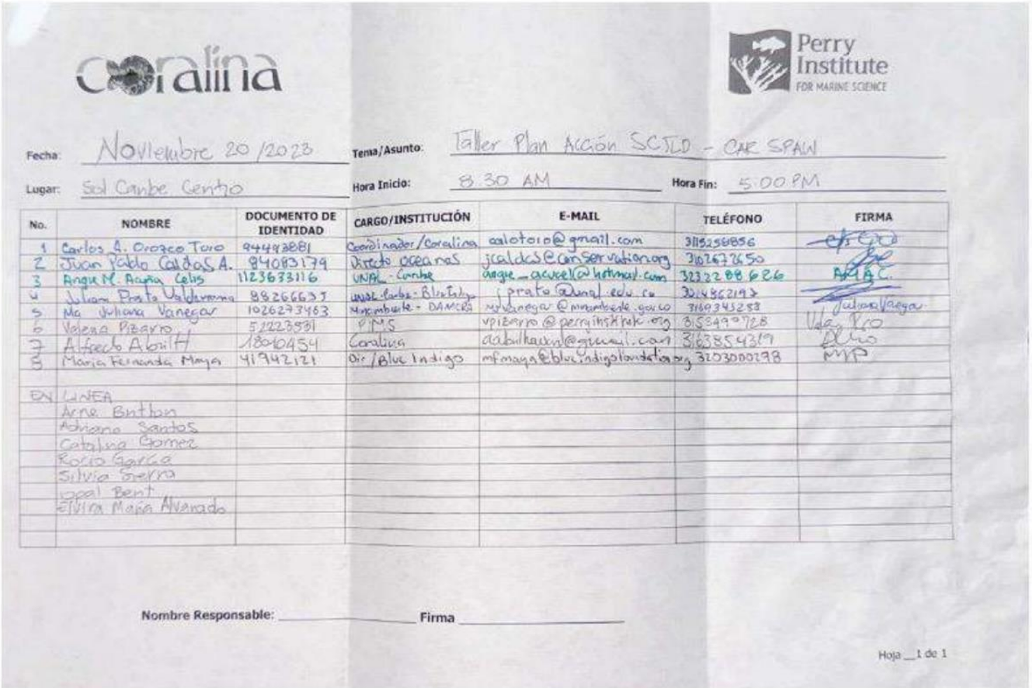

Acciones realizadas para el manejo de la enfermedad de pérdida de tejido coralino - SCTLD
COLOMBIA VIDA
Ambiente
Circular No. 20002022E4000058
Se oficializa la presencia de la enfermedad en Colombia (Archipiélago de San Andrés, Providencia y Santa Catalina)
Lineamientos para la prevención y control de la enfermedad
- Prevención
- Intervención
- Monitoreo
Prevención
Intervención
Monitoreo
Estrategia de atención de la enfermedad
Evaluación de la presencia de la enfermedad en sitios de reportes
Se reporta la presencia de otras enfermedades pero no se documenta la enfermedad de pérdida de tejido coralino
Ambiente

Anexo 3. Tabla de trabajo que se usó en los talleres realizado entre noviembre 20-22, 2023 con usuarios claves de los arrecifes del Archipiélago de San Andrés, Providencia y Santa Catalina.

Acciones por línea estratégica	¿Cuál es el tipo de urgencia para realizar las acciones?			¿En qué fecha se puede o debe obtener resultados de las acciones? (Plazo)			¿Cuál será mi rol o el rol de la institución que represento?			¿Que podría aportar usted o la institución que representa?	Observaciones adicionales
	Emergencia	Urgencia	Urgencia menor	Corto 2024 - 2025	Mediano 2026 - 2030	Largo + 2031	Líder	Responsable	Socio		
Línea estratégica: Monitoreo											
Monitoreo de la presencia y prevalencia de la enfermedad en los lugares donde ha sido reportada											
Monitoreo de la presencia de la enfermedad en los lugares del Archipiélago donde aún no se confirma su presencia											
Línea estratégica: Ciencia e Instituciones											
Evaluación a corto, mediano y largo plazo del efecto de la enfermedad SCTLD sobre las comunidades coralinas del Archipiélago											
Identificar vacíos de información y necesidades de investigación											
Realización de talleres y entrenamientos en monitoreo y tratamiento de la enfermedad											
Mejorar la calidad del hábitat de los arrecifes de coral y recuperar la función del ecosistema, a través de programas integrales de restauración coralina											
Creación de centros de rescate o bancos genéticos de corales											
Contar con la información actualizada sobre los nuevos tratamientos desarrollados para SCTLD que se estén implementando en la Región Caribe											
Línea estratégica: Comunicación											
Desarrollo de estrategias de comunicación nacional sobre la SCTLD											
Desarrollo de estrategias de divulgación enfocadas en las mejores prácticas (prevención de dispersión a nuevas áreas coralinas)											
Línea estratégica: Manejo											
Fortalecer el intercambio de conocimientos a través de la cooperación entre instituciones de carácter nacional e internacional											
Reducción y mitigación de otros factores de estrés que afecten la resiliencia coralina											

Mejores prácticas de manejo enfocados en las aguas de lastre											
Fortalecer los mecanismos de financiación enfocados a la atención de la enfermedad en el Archipiélago											
Implementación de medidas de intervención. - Aplicación de tratamiento con antibióticos											
Establecer un canal de comunicación y articulación con el Ministerio de Comercio, Industria y Turismo y organizaciones involucradas para facilitar acciones conjuntas											
Línea estratégica: Prevención en áreas donde SCTLD no se ha registrado											
Aumentar la capacidad en la detección, prevención e intervención de enfermedades coralinas											
¿Qué otras acciones puedo realizar para reducir los factores de estrés y la dispersión de la SCTLD?											

Anexo 4. Listas de asistencia de los talleres realizados entre noviembre 20 y 22.

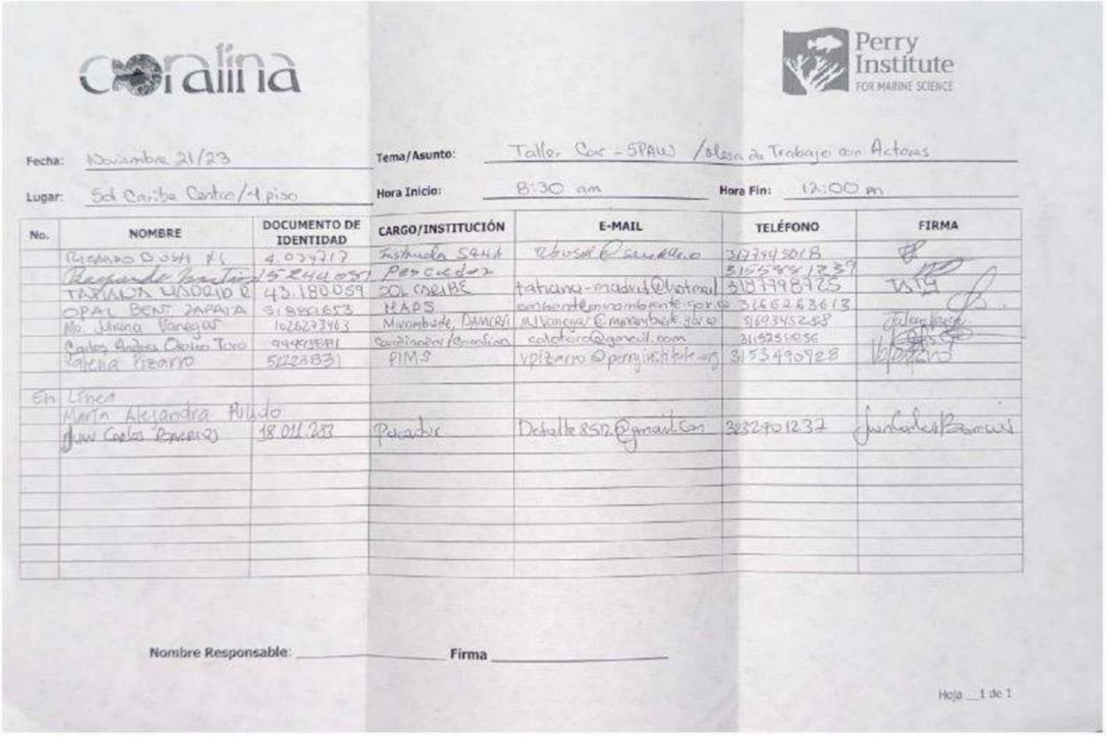

Coralina
Perry Institute FOR MARINE SCIENCE

Fecha: Noviembre 20/2023 Tema/Asunto: Taller Plan Acción SCTLD - CAR SPAW
Lugar: Sol Caribe Centro Hora Inicio: 8:30 AM Hora Fin: 5:00 PM

No.	NOMBRE	DOCUMENTO DE IDENTIDAD	CARGO/INSTITUCIÓN	E-MAIL	TELÉFONO	FIRMA
1	Carlos A. Orozco Toro	94443881	Coordinador/Coralina	calotoro@gmail.com	3115258856	[illegible]
2	Juan Pablo Caldas A.	94083179	Director océanos	jcaldas@conservation.org	3102673650	[illegible]
3	Angie M. Acuña Celis	1123633116	UNAL - Caribe	angie_acuel@hotmail.com	3232288626	AMAC.
4	Julian Prato Valderrama	88266637	UNAL Caribe - BlueIndigo	jprato@unal.edu.co	3014862197	[illegible]
5	Ma Juliana Vanegas	1026273463	Minambiente - DAMCRA	mjvanegas@minambiente.gov.co	3169343258	Juliana Vanegas
6	Valeria Pizarro	52223531	PIMS	vpizarro@perryinstitute.org	3153490728	Valeria Pizarro
7	Alfredo Abril H	18010454	Coralina	aabrilhoward@gmail.com	3163854319	[illegible]
8	María Fernanda Maya	41942121	Dir./Blue Indigo	mfmaya@blueindigofoundation.org	3203000298	MFP
EN LÍNEA						
	Arne Britton					
	Adriana Santos					
	Catalina Gomez					
	Rocio García					
	Silvia Sierra					
	Opal Bent					
	Elvira María Alvarado					

Nombre Responsable: ______ Firma ______

Hoja 1 de 1



Coralina | Perry Institute for Marine Science

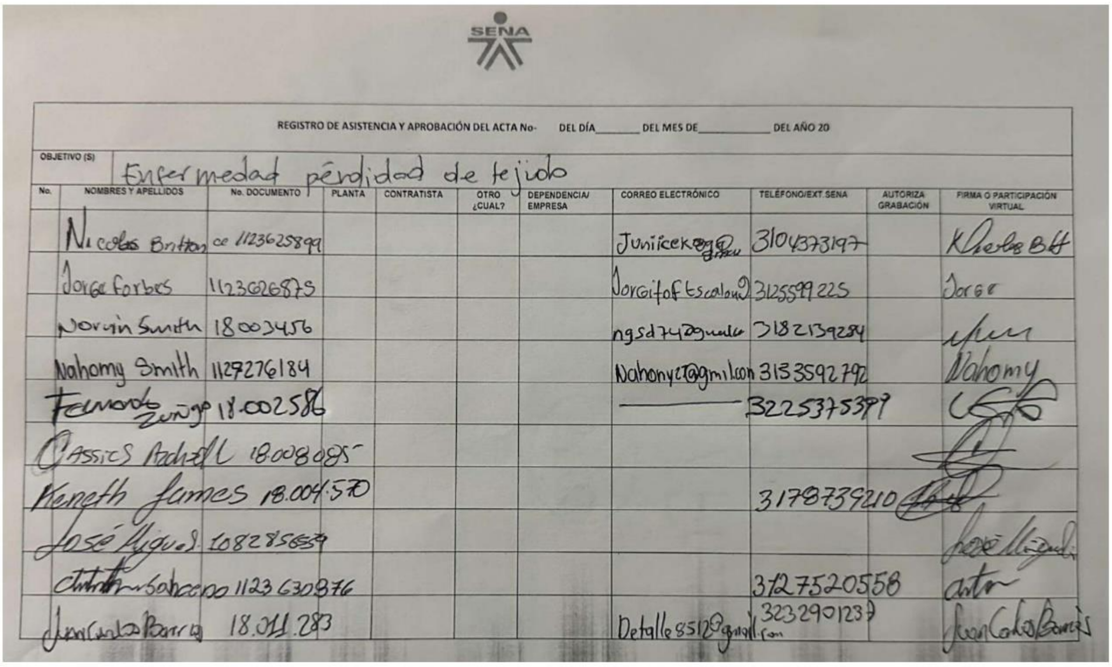
Fecha: Noviembre 21/23 | Tema/Asunto: Taller Car - SPAW / Mesa de Trabajo con Actores

Lugar: Sol Caribe Centro / 4 piso | Hora Inicio: 8:30 am | Hora Fin: 12:00 m

No.	NOMBRE	DOCUMENTO DE IDENTIDAD	CARGO/INSTITUCIÓN	E-MAIL	TELÉFONO	FIRMA
	Ricardo Bush [illegible]	4.034717	Instructor SENA	rbush@sena.edu.co	3127445018	
	[illegible]	15244051	Pescador		3155881239	
	Tatiana Madrid R	43.180059	Sol Caribe	tatiana-madrid@hotmail	3187798925	
	Opal Bent Zapata	51880653	MAPS	[illegible]	3166263613	
	Ma. Juliana Vanegas	1026273463	Mirambiente, DAMCRA	MJVanegas@mirambiente.gov.co	3169345288	
	Carlos Andrés Osorio Toro	94493881	Coordinador/Coralina	colotoro@gmail.com	3115255056	
	Valeria Pizarro	51223831	PIMS	vpizarro@perryinstitute.org	3153490928	
	En Línea					
	María Alejandra Pulido					
	Juan Carlos Barrios	18.011.283	Pescador	Detalle8512@gmail.com	3232901237	Juan Carlos Barrios

Nombre Responsable: ________ Firma ________

Hoja 1 de 1



SENA

REGISTRO DE ASISTENCIA Y APROBACIÓN DEL ACTA No- DEL DÍA ____ DEL MES DE ____ DEL AÑO 20

OBJETIVO (S): Enfermedad pérdida de tejido

No.	NOMBRES Y APELLIDOS	No. DOCUMENTO	PLANTA	CONTRATISTA	OTRO ¿CUAL?	DEPENDENCIA/ EMPRESA	CORREO ELECTRÓNICO	TELÉFONO/EXT. SENA	AUTORIZA GRABACIÓN	FIRMA O PARTICIPACIÓN VIRTUAL
	Nicolas Britton	cc 1123625899					Juniicek@[illegible]	3104373197		
	Jorge Forbes	1123626875					Jorgitof Escalona[illegible]	3125599225		Jorge
	Norvin Smith	18003456					ngsd74@gmail[illegible]	3182139284		
	Nahomy Smith	1127276184					Nahony@gmil.com	3133592792		Nahomy
	Fernando Zuñiga	18.002586					—	3225375399		
	Cassius Archbold	18008085								
	Keneth James	18.004.570						3178739210		
	José Miguel	1082856[illegible]								José Miguel
	[illegible] Saavedra	1123630876						3127520558		
	Juan Carlos Barrios	18.011.283					Detalle8512@gmail.com	3232901237		Juan Carlos Barrios

SENA

REGISTRO DE ASISTENCIA Y APROBACIÓN DEL ACTA No- DEL DÍA______ DEL MES DE__________ DEL AÑO 20

OBJETIVO (S) Charla enfermedad perdida de tejido

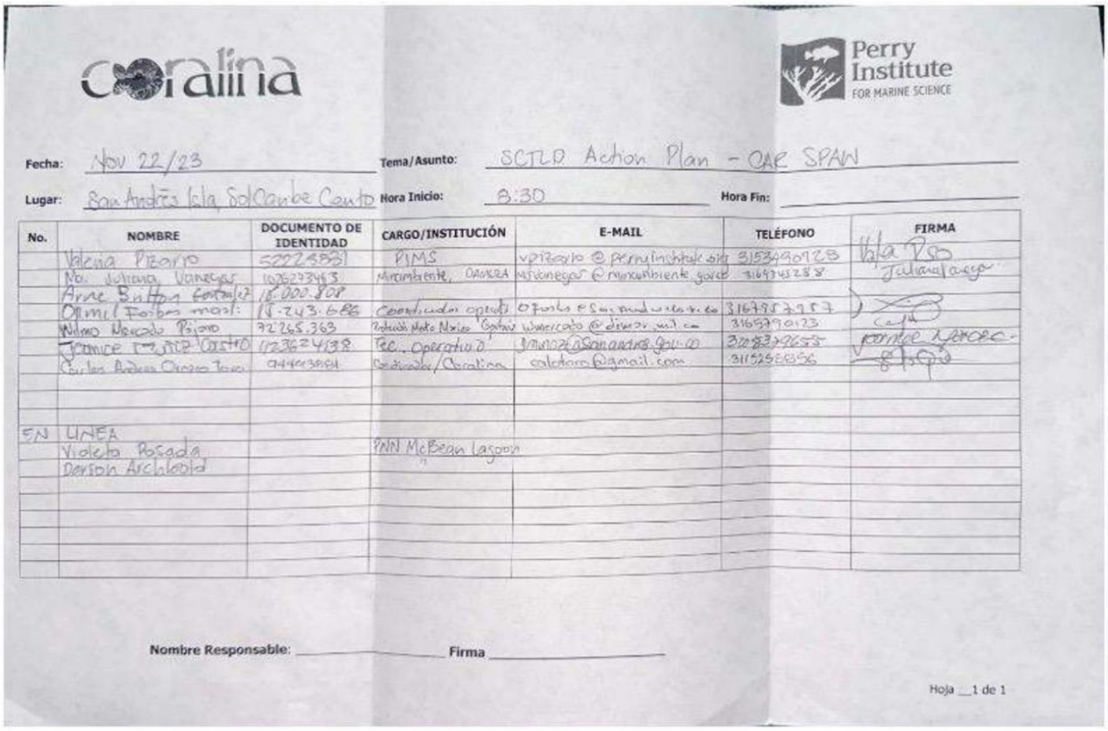
No.	NOMBRES Y APELLIDOS	No. DOCUMENTO	PLANTA	CONTRATISTA	OTRO ¿CUAL?	DEPENDENCIA EMPRESA	CORREO ELECTRÓNICO	TELÉFONO/EXT.SENA	AUTORIZA GRABACIÓN	FIRMA O PARTICIPACIÓN VIRTUAL
	Jeorge Corpos Hudgson	1049649431				independiente		3203573291	si	si
	Emmil williams	1123636870				independiente		3229068202	si	si
	William Osorio	1088242283				Policia		3123528333	si	si
	Adrian Ramirez	1123636693				Ind.		3183889483	SI	SI
	Nicolas Villegas G	1123620734				Self cargo Express		3183971698	Si	Si.
	Carlos A. Orozco	94493881			Expositor	Coralina	calotoro@gmail.com	3115238856	Si	[illegible]
	Quency Salcedo	1123.632787				muelle departamental	Quency salcedo @Gmail.com	3209130986	Si	Quency
	Joel Enrique	1123624661					Jowel myl(s) 2325@gm.com	3177011246	Si	[illegible]

SENA

REGISTRO DE ASISTENCIA Y APROBACIÓN DEL ACTA No- DEL DÍA______ DEL MES DE__________ DEL AÑO 20

OBJETIVO (S) Charla enfermedad perdida de tejido

No.	NOMBRES Y APELLIDOS	No. DOCUMENTO	PLANTA	CONTRATISTA	OTRO ¿CUAL?	DEPENDENCIA/ EMPRESA	CORREO ELECTRÓNICO	TELÉFONO/EXT.SENA	AUTORIZA GRABACIÓN	FIRMA O PARTICIPACIÓN VIRTUAL
	David L. Yepez	18011765	AD7				david-L-Yepes @Hotmail.com			[illegible]
	JOAB NEWBALL	1123638716					Joabnewball99@gmail.com			JOAB NEWBALL
	Jonatan Ramirez	1007299636					Jonatanramirez2840@gmail.com			[illegible]
	Victor zapata	18010423					victorino82@hotmail.com			V.zapata
	Diego Morales	1123625949					alexdimo2019@hotmail.com			[illegible]
	Sebastian Quiroga	1.123.624.604					Sebasskws@gmail.com			[illegible]
	Landy Pomare	1123629957					Landy_P@Yahoo.com			Landy P.
	Marfely Pomare	18012112					vpizarro@perryinstitute.org			Marfely
	Valeria Pietro	52223821								ValePo



Coraline

Perry Institute FOR MARINE SCIENCE

Fecha: Nov 22/23 Tema/Asunto: SCTLD Action Plan - CAR SPAW

Lugar: San Andrés Isla SolCaribe Centro Hora Inicio: 8:30 Hora Fin:

No.	NOMBRE	DOCUMENTO DE IDENTIDAD	CARGO/INSTITUCIÓN	E-MAIL	TELÉFONO	FIRMA
	Valeria Pizarro	52223881	PIMS	vpizarro@perryinstitute.org	3153490728	[illegible]
	Ma. Juliana Vanegas	1026273463	Minambiente, DAMCRA	mjvanegas@minambiente.gov.co	3169345288	[illegible]
	Arne Britton González	18.000.808				
	Omil Forbes [illegible]	18.243.686	Coordinador operat.	[illegible]	3167957757	[illegible]
	Wilmo Mercado Pájaro	72265.363	[illegible]	wmercado@dimar.mil.co	3165790123	[illegible]
	Jeanice Muñoz Castro	1123624138	Tec. operativo	jmunoz@sanandres.gov.co	3208379655	[illegible]
	Carlos Andrés Orozco Toro	[illegible]	Coordinador/Coralina	calotoro@gmail.com	3115258856	[illegible]
EN	LINEA					
	Violeta Posada		PNN McBean Lagoon			
	Dorson Archbold		"			

Nombre Responsable: ______ Firma ______

Hoja 1 de 1

SPAW • RAC

Call for proposals
Short-term Small Grants
- year 2023 –

Final report

Name of the organization: Studio Canek
Name of the project: HISTORIAS DESDE EL BORDE DEL MAR


Total budget of the project: $7000 EUR
SPAW-RAC grant: $7000 EUR
Timeframe for implementation: June 6, 2023 to July 31, 2024

This report is intended to provide information on the organization(s) involved, the project, the concerned species and sites, the threats to their conservation, the methodology developed within the framework of the project, its implementation, the objectives sought, the results obtained, and the perspectives for the future, in order to enlighten the Parties on the interest of such a project for the achievement of the objectives of the SPAW Protocol.

1. Your organization	
Name / Title	Studio Canek
Category (public entity, NGO, laboratory, private company, managers,...)	Private company
Is the organization already in contact with national or international networks? If yes, which ones?	Centro de Estudios Marinos (Honduras) Fondation Pour la Protection de la Biodiversite (Haiti) Haiti Climat (Haiti) Environmental Journalists Network (US)
Address	311-180 Lees Avenue, Ottawa Canada, K1S5J6
Phone number	+1 343 262 5356
Website	https://studiocanek.com
Email address	studiocanek@fastmail.fm
Legal representative (person designated in the legal status)	Conrad Fox
Phone number of the legal representative	+1 343 262 5356
Email address of the legal representative	cwzorro@fastmail.fm
Name of the person responsible for this project (if different from the legal representative)	As above
Phone number of the person responsible for this project	As above
Email address of the person responsible for this project	As above
Indicative annual budget of the organization	$60,000 USD
Staff means (number of staff members, volunteers... etc)	2
Preferred area for intervention (country(ies), region...)	Latin America and the Caribbean
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries: **Our local partner was the Centro de Estudios Marinos (CEM), a Honduran NGO that works to preserve coastal environments through environmental education, remediation such as garbage cleanup and mangrove planting, artisanal fishing and sustainable economic development. CEM works closely with a number of Honduran government agencies attached to the Ministry of the Environment. The organization act as communicator for the Refugio de la Vida Silvestre Cuyamel and comanagers of the Parque Nacional Marina Islas de la Bahia. (https://estudiosmarinos.org).**	

2. Your project	
Name of the project	---
Timeframe for implementation	*from June 6, 2023 to July 31, 2024* *Main stages:* *Development of Online course: Sept 1, 2023 to June 1. 2024* *Publication of Online course: June 1 to July 31, 2024* *Delivery of first radio workshop: June 6, 2024* *Delivery of second radio workshops: July 18 to July 23, 2024*
Targeted specie(s)	
Site(s) location	Communities around Mazca and La Ceiba Honduras, in or bordering the **Refugio de la Vida Silvestre Cuyamel** and **Parque Nacional Marina Islas de la Bahia.**
Major threats	Overpopulation along coastlines, growth of tourism, overfishing, plastic pollution
Methodology developed within the framework of this project	The project consisted of two distinct initiatives: 1) a series of in-person workshops on radio journalism, and 2) an online course in how to gather facts about endangered species and protected areas. Both used adult education methodologies drawn from the facilitator's past experience and training. We had originally planned to deliver the podcasting workshop online but we realized the subject matter was too far removed from the participants' experience, and the logistics were too complicated to make this feasible. In addition. We decided in-person delivery was necessary to put participants at ease. A facilitator travelled to Honduras twice to deliver in-person workshops. The first was a day-long session in the community library of Cuyamel, Honduras, with an attendance of approximately 35 people. Participants included almost the entire staff of CEM, a group of women from fishing families who act as local environmental promoters, staff from the municipality and a youth organization funded by the national government and UNICEF. The workshop was a dynamic, entirely hands-on experience, with very little lecturing or theory. Participants learnt to handle audio recorders, conduct interviews and edit sound, and were encouraged to relate what they learnt to their own experiences, whether as scientists, development experts or fishers. Much of the session was spent in the streets interviewing local people about environmental issues. The participants were then divided into groups and tasked with choosing an issue related to protected areas or endangered species, and with recording interviews on their own time. During the week of July 18th, 2024, the facilitator returned to Honduras and worked with each group individually to write and record a script and mix the audio into five ten-minute podcast episodes. The methodology was time consuming and highly-personalized, but we think it was responsible for the high levels of enthusiasm and committment we received from the participants. The methodology of the online course built on basic principles of elearning and curriculum design, with a focus on learners with little formal education in regions with low-bandwidth. The course features a simple, colorful design with topics broken down into manageable chunks and basic knowledge checks along the way. Each module begins with a video interview, conducted

	in a friendly, non-technical manner. Much of the material is reinforced with animated videos and interactive presentations.
Update on the implementation, progress and possible issues	We completed all the deliverables of this project within the time frame of this project: • Online course with 5 modules, and 3 to 5 hours of material about protected areas and endangered species in the Greater Caribbean • 22 participants were enrolled in the course, including environmental promoters, local residents of communities in protected areas, biologists and journalists • An in-person workshop in audio journalism that resulted in the production of 6 10-minute episodes about social issues and projects related to the protection of the environment and fisheries in the target regions
Objectives sought and/or results obtained	Through our online course, 22 people were made aware of the SPAW and the rôle of protected areas in the Greater Caribbean, and how to research information about these and endangered species. Approximately 35 people, all of whom work in the protection of natural protected areas on the coast of Honduras, received training in how to communicate about environmental issues and progress made to mitigate them.
How did the results and outcomes of your project have in the past contributed, are contribuing or will contribute in the future, to meet the needs of the agreements of your country to the SPAW Protocole ?	*(eg: Have the results (or progress) been, are they or will they be shared with the governmental administration charged of implementing the SPAW protocol? Have discussions with these services made it possible to work to the development or implementation of regulatory or conventional measures toward species or areas protected under SPAW?)* Centro de Estudios Marinos works closely with several agencies attached to the Ministry of the Environment. The podcast episodes will be distributed to them through their social network.
Outcomes and lessons learned	We learnt two important lessons : 1. The local partner is very important. Our original local partner lost interest in the project, possibly because coastal protection is not their core competency. We were very lucky to locate CEM as a replacement partner. They were thoroughly committed to their work and anxious to learn how to communicate it to the public and other practitioners. It was not until we visited them in person that we realized just how demanding their work is and why it requires specialists for a project such as ours. In future we would only work with partners with the specialization. 2. Teaching journalism and communication to people with little experience of formal education requires an in-person presence. Fortunately, our facilitator, Conrad Fox, has extensive experience with adult education in Latin America and was able to stimulate enthusiasm and committment from the participants. However, the process was costly and time-consuming and probably overly ambitious for such a small budget.
Perspectives, renewal, evolution of such a project	Centro de Estudios Marinos is one of the most active NGOs in marine conservation in Honduras. Many of the projects are unique and hold important lessons for other organizations working in the same field. The 6 podcasts episodes they have produced will allow them to share those lessons with other practitioners in the region. Furthermore, they have expressed a committment to continue producing podcasts about the issues

	they face, which can only help to further the spread of information about marine conservation. Despite their long experience with marine conservation, none of the participants were aware of the SPAW. Our online course helped fill that gap, and turn their attention to cross-border issues of conservation in the Greater Caribbean.
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries: **The online course and the podcast episodes were produced for our project and for use by our partner institution. With proper attribution we would be glad to share them with the SPAW and for the SPAW to distribute them as you see fit. We have attached details in the annex to this report.**	
Please annex any technical report, communication tools, pictures, maps etc you feel to be useful for the understanding of your project. Photos and audio are available at this dropbox folder. (Please contact Conrad Fox cwzorro@fastmail.fm if the link doesn't work). https://www.dropbox.com/scl/fo/uact5peu3lik8h05bne58/AAOphec3ev7-ic47W6_evpc?rlkey=0dpyteaypcmb6pag0hxujb6uz&st=2fc2k1au&dl=0	

3. Effective budget of your project (in Euros)			
Expenses		**Resources**	
Procurement	**Amount**	**Products**	**Amount**
Material		**Subsidies**	
Rentals		SPAW-RAC	
Insurance		Other…	
Documentation		Other…	
Communication		Other…	
Marketing		Other…	
External services	$3500 (Centro de Estudios Marinos)	Other…	
Bank services		**Product sales**	
Taxes		**Service sales**	
Staff costs		**Donations, legacy…**	
Staff salaries	$3500	**Subscription**	
Travel expenses		Other…	
Other staff costs		Other…	
Functioning / operational costs		Other…	
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:			

4. Assessment of the call for proposals	
How did you hear about this call?	I think it was LinkedIn, but I don't remember.
Were the terms of references for this call for proposals clear enought?	Yes.
Have you encoutered any difficulties regarding the preparation of your project, the submission process and then its implementation?	We were not familiar with the SPAW, nor the implementing agencies in our target country, so we weren't sure what was expected of us in terms of liasing with those agencies.
Were the discussions with SPAW-RAC helpful?	Yes, staff were very helpful, although I would have liked a phone call, just to get some context on the SPAW and put a face to email addresses!
How this grant has been beneficial for your organization, territory or country?	For Studio Canek, it has helped us take steps towards our long term goal of helping environmental organizations in Latin America develop innovative communication and education strategies. For our partner, Centro de Estudio Marinos, it has helped them create communication products that explain their activities to the public and other practitioners. For the local volunteer participants, it has given them pride in their work and a voice. It was personally very satisfying to write a radio script alongside local people, many with not much formal education, and seeing them realize how amazing their work is as soon as they put it into their own words.
What is your general impression on this call?	It is flexible and the requirements are not too onerous given the small sum. It was nice to feel we were free to work without having to constantly fill out forms. Staff were very responsive, especially when we had a problem with our original local partner. On the other hand, we didn't receive the first payment for months, and we thought at first your organization had disappeared!
Will you propose new projects to such a call?	Yes.
What would you suggest to improve such a call?	The SPAW website should have a bit of very very basic information about the purpose of the SPAW-RAC. It's a bit abstract and not clear what it is supposed to do in concrete terms. We did a lot of research for this project and turned up very interesting information about regional interconnections of species, threats, water currents etc. These should be highlighted. it would help grant-seekers and the public in understanding the SPAW.
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:	

5. Annexes
If you want to share with us some communication material (picture, map..) you are more than welcome

Historias desde el Border del Mar

ONLINE COURSE

Module	Expert Interview	Multimedia
Listas Rojas	Johan David Reyes Chavez *biologist, Ayuda en Accion*	• *Como navegar la lista roja del IUCN (*video) • User friendly database of SPAW species annexes
Espacios para Especies	Andrea Godoy Mendoza, *biologist, Parque Marino Roatan*	
Cruzando Fronteras	Gonzalo Cid, *International activities coordinator, National Marine Protected Areas Center, NOAA*	• *Un viaje por el Gran Caribe* Interactive story map of the SPAW protected areas • *La resiliencia del coral,* animated explainer video
El lado humano de la naturaleza	Sandra Cardenas, *Centro de Estudios Marinos*	• *El mangle y el ser humano*, animated explainer video
Periodismo en tu comunidad	Thelma Mejia Lopez, *periodista, TN5 Estelar, Proceso Digital*	• *La entrevista*, slide presentation

For a demonstration of the course, please visit:

https://studiocanek.com/spawproject
usuario (username): **guest**
contraseña (password): **studiocanek**

PODCAST EPISODES

The participants in our radio workshop produced 6 10-minute podcast episodes about the work of the Centro de Estudio Marinos with people living in or near coastal protected areas in Honduras. Each deals with a different issue related to conservation and sustainable development and contains lessons and ideas for other conservation practitioners in the area.

We have attached the episodes to this report. The SPAW is very welcome to distribute these episodes (we would be delighted in fact) through their online network. Please contact Conrad Fox (cwzorro@fastmail.fm) regarding publication, since we would like to coordinate publication schedules with our local partner as far as possible.

Episode	Subject matter	Producers
Pisto es Pisto	A recycling cooperative provides alternative income to single mothers while ridding Omoa of plastic garbage.	Sandra Cardenas, CEM Omoa
Club de Ahorros	Small savings and lending groups help provide financial security to fishing families. Some children are catching the entrepreneurial bug.	Javier Zuniga and Diego Carias, CEM Omoa
Al cuidado de la naturaleza	A local environmentalist talks to her neighbours about planting mangrove and enjoying the fruits of their work.	Digna Lopez, Estero Prieto
Musica Garifuna	The Afro-Honduran Garifuna culture is dying out, apace with the local fish population. A group of Garifuna play traditional music while recalling times of abundance.	Elena Alvarado Salina and Samanta Mejia, Mazca
Antes y despues	A fisherman recounts his journey from using destructive techniques to the artisanal techniques he uses today.	Belen Yanes, Vickey Chavez and Maria Fernanda Garcia, CEM Atlantida
Carrera de Cayucos	An unusual canoe race, where the inscription is charged in mangrove planted, and more than one competitor ends up in the water.	Conrad Fox

FILES

We have created a dropbox folder containing the episodes and photos. You can find it at this link:

https://www.dropbox.com/scl/fo/uact5peu3lik8h05bne58/AAOphec3ev7-ic47W6_evpc?rlkey=3k4jzinunuv8x0peuonosb85t&st=ttjoix01&dl=0

SPAW · RAC

Call for proposals
Short-term Small Grants
- year 2023 –

Final report

Name of the organization: **Sustainable Innovation Initiatives, Inc (SII)**
Name of the project: **A Custom App and Trainings for Responsive Wildlife Regulation in Trinidad and Tobago and the Wider Caribbean**
Insert a picture or a map
Total budget of the project: 8,000.00
SPAW-RAC grant: 7,000.00
Timeframe for implementation: 23/05/2023 to 15/12/2023

This report is intended to provide information on the organization(s) involved, the project, the concerned species and sites, the threats to their conservation, the methodology developed within the framework of the project, its implementation, the objectives sought, the results obtained, and the perspectives for the future, in order to enlighten the Parties on the interest of such a project for the achievement of the objectives of the SPAW Protocol.

1. Your organization	
Name / Title	Sustainable Innovation Initiatives, Inc (SII)
Category (public entity, NGO, laboratory, private company, managers,...)	Non-Governmental Organization (NGO)
Is the organization already in contact with national or international networks? If yes, which ones?	Nurture Nature Campaign Caribbean Wildlife Enforcement Network
Address	9735 SW 166 Terr, Miami Fl 33157
Phone number	+1 (239) 385-0120
Website	https://www.sii-inc.org/
Email address	info@sii-inc.org
Legal representative (person designated in the legal status)	Dr. Nigel Noriega
Phone number of the legal representative	+1 (503) 347-8226
Email address of the legal representative	nnoriega@sii-inc.org
Name of the person responsible for this project (if different from the legal representative)	Dr. Mark Gibson
Phone number of the person responsible for this project	+1 (202) 308-8993
Email address of the person responsible for this project	mgibson@sii-inc.org
Indicative annual budget of the organization	$25,000 USD
Staff means (number of staff members, volunteers... etc)	3
Preferred area for intervention (country(ies), region...)	The Wider Caribbean, with special focus on Trinidad and Tobago
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries: SII is the managing NGO of the Nurture Nature Campaign in Trinidad and Tobago and the facilitator for the Caribbean Wildlife Enforcement Network (CAR-WEN) Working Group.	

2. Your project	
Name of the project	A Custom App and Trainings for Responsive Wildlife Regulation in Trinidad and Tobago and the Wider Caribbean
Timeframe for implementation	*from* 23/05/2023 *to* 15/12/2023
Targeted specie(s)	Multiple, focusing on heavily traded species
Site(s) location	Trinidad and Tobago, Wider Caribbean
Major threats	Illegal Wildlife Trade
Methodology developed within the framework of this project	The project focused on developing a custom mobile app to aid in wildlife trade regulation, featuring a directory, species ID manual, and a resource library. Development followed open-source standards, ensuring the app was user-friendly and tailored to the needs of stakeholders in the Caribbean region. The methodology integrated Green Criminology, Responsive Regulation theory, and Diffusion of Innovations theory, guiding the app's design and implementation. A key component of the project involved conducting educational workshops: two online and two in-person sessions for training relevant communities, including Trinidad and Tobago game wardens and naturalists. A webinar was planned to share project experiences, facilitating knowledge transfer among a broader audience. An impact evaluation component was included to assess the project's effectiveness. The project's approach emphasized practical training and theoretical understanding to enhance wildlife regulation capabilities. The long-term goal was to create a scalable app that could be expanded for national and regional deployment in wildlife management efforts.
Update on the implementation, progress and possible issues	The development of the custom mobile app, central to the "A Custom AppDigital Toolkit and Trainings for Responsive Wildlife Regulation" project, has made significant headway. With its key features— a directory, species ID manual, and resource library—completed, the app is shaping up as a robust tool for wildlife regulation. However, certain planned components of the project have not been implemented as initially intended. The educational workshops, webinar, and crucially, the impact evaluation phase have been delayed. These elements were envisioned to complement the app by providing hands-on training and assessing the app's effectiveness in real-world scenarios. The delay in these activities is primarily attributed to administrative changes within the Trinidad and Tobago government. The review process initiated by the new Permanent Secretary of Agriculture, Land, and Fisheries has temporarily paused these specific project activities. This pause was necessary to ensure alignment with the new administrative directives and to secure the endorsement needed for the project's broader objectives. In response to these delays, our focus has shifted to further developing the app as a foundational tool for future wildlife management initiatives. This strategic pivot ensures that even in the absence of the workshops, webinar, and formal evaluation, the project still delivers a tangible and valuable output in the form of the app prototype.
Objectives sought and/or results obtained	The primary objective of the "A Custom AppDigital Toolkit and Trainings for Responsive Wildlife Regulation" project was to develop and deploy an innovative mobile application to enhance wildlife trade regulation in Trinidad and Tobago and the wider Caribbean region. This goal was set with the intention of providing a user-friendly, comprehensive digital tool that

	would facilitate the identification, tracking, and regulation of wildlife species. The project has successfully achieved a significant milestone in the development of the custom mobile app. Key features of the app, including a directory of wildlife species, a species identification guide, and a resource library, have been completed. This development phase has laid a robust foundation for the app's future deployment and use in wildlife regulation efforts. The planned educational workshops and webinar, intended to train relevant stakeholders in using the app and share project experiences, are yet to be conducted due to the unforeseen administrative delays. As such, the crucial phase of impact evaluation, which was to assess the app's effectiveness in real-world scenarios, has been postponed. This evaluation is vital to measure the app's utility and influence in improving wildlife regulation practices. In response to the delays, the project team has adapted its focus towards further refining the app. This shift ensures the project continues to contribute to wildlife management, despite the postponement of some activities.
How did the results and outcomes of your project have in the past contributed, are contribuing or will contribute in the future, to meet the needs of the agreements of your country to the SPAW Protocole ?	The project's development of a custom mobile app has been shared with key governmental entities in Trinidad and Tobago, particularly with officials like David Mahabir, Head of the Wildlife Section, aligning with SPAW Protocol implementation needs. Future plans include broader dissemination of the app's results to Trinidad and Tobago's governmental administration and the Caribbean Wildlife Enforcement Network (CAR-WEN). Collaborative discussions with the Ministry of Agriculture, Land, and Fisheries (MALF) and CAR-WEN focus on integrating the app with regulatory measures for species and areas under SPAW Protocol protection. The app's features, including a species ID manual and resource library, are tailored to support enforcement officers and policymakers in conservation strategies. The aspiration for regional distribution of the app post-training and evaluation phases will involve partnering with Caribbean governmental agencies. In summary, the project, through its app, is positioned to significantly enhance the implementation of SPAW Protocol measures, especially in identifying and protecting listed species.
Outcomes and lessons learned	The project "A Custom App and Trainings for Responsive Wildlife Regulation" has achieved notable outcomes. Foremost among these is the successful development of a prototype mobile app that integrates a directory, species ID manual, and resource library, essential for wildlife regulation in Trinidad and Tobago and potentially beneficial for the wider Caribbean region. The integration of Green Criminology, Responsive Regulation theory, and Diffusion of Innovations theory into the app's framework stands as a pioneering effort in merging theoretical principles with technological solutions in conservation. Additionally, the engagement with key stakeholders, including David Mahabir from Trinidad and Tobago's wildlife section, has not only provided valuable feedback but also affirmed the app's potential in supporting wildlife regulation.

	Throughout the project, several key lessons have been learned. The experience of navigating administrative changes highlighted the need for flexibility and adaptability in managing complex projects, especially those dependent on government collaborations. The delays encountered, specifically in conducting educational workshops, webinars, and impact evaluations, underscored the gap between potential impacts and actual realization when dependent upon government agencies with high turnover in leadership. These challenges also brought to light the significance of strategic partnerships, as collaborations with entities like MALF and CAR-WEN proved to be crucial in advancing the project's objectives. Despite the setbacks in certain aspects of the project, the development of the prototype app is a significant achievement, demonstrating the feasibility of creating specialized tools for conservation purposes. Looking forward, the project's experience has reinforced the importance of focusing on scalability in app development, with an aim towards broader regional deployment to amplify conservation efforts effectively.
Perspectives, renewal, evolution of such a project	The immediate focus is on finalizing the app's development, addressing the feedback received from key stakeholders, and preparing it for a broader rollout. This includes enhancing its features based on the specific needs and feedback of end-users such as wildlife wardens and conservationists. Additionally, the project aims to revisit and implement the educational workshops, webinars, and impact evaluations that were delayed. These components are critical for ensuring the effective use and understanding of the app among the target communities. Collaboration with regional entities like CAR-WEN will be intensified to integrate the app into broader wildlife management strategies and to gain endorsements that would facilitate its widespread adoption. Collaboration with regional entities like CAR-WEN will be intensified to integrate the app into broader wildlife management strategies and to gain endorsements that would facilitate its widespread adoption.
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:	
Please annex any technical report, communication tools, pictures, maps etc you feel to be useful for the understanding of your project.	

3. Effective budget of your project (in Euros)			
Expenses		**Resources**	
Procurement	**Amount**	**Products**	**Amount**
Material		**Subsidies**	
Rentals		SPAW-RAC	3,500
Insurance		Other...	
Documentation		Other...	
Communication		Other...	
Marketing		Other...	
External services	1,650.00	Other...	
Bank services		**Product sales**	
Taxes		**Service sales**	
Staff costs		**Donations, legacy...**	
Staff salaries	1,850.00	**Subscription**	
Travel expenses		Other...	
Other staff costs		Other...	
Functioning / operational costs		Other...	

Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:

This budget aligns with 50% execution of the project due to the challenges described in the prior section. Notably, we were able to secure a lower contracting rate with our AppSheet designer (from an estimated $5500 to $1,650), which allowe for more time to be spent on improving the app design and content. We additionally contributed in-kind staff time equivalent to 600.000.

4. Assessment of the call for proposals	
How did you hear about this call?	We learned about this call through our networks and partners who are actively engaged in Caribbean conservation and wildlife protection, including AWI, UNEP CEP, and the Nurture Nature Campaign
Were the terms of references for this call for proposals clear enough?	The terms of reference were sufficiently clear and provided a comprehensive understanding of the call's objectives, criteria, and expectations. They guided us effectively in aligning our project proposal with the call's goals.
Have you encountered any difficulties regarding the preparation of your project, the submission process and then its implementation?	The preparation and submission phases of the project were relatively smooth. However, we encountered challenges during implementation, primarily due to unforeseen administrative changes and the high turnover in government leadership, affecting project timelines and certain activities.
Were the discussions with SPAW-RAC helpful?	Discussions with SPAW-RAC were instrumental in providing clarity and guidance. Their insights and feedback were valuable in aligning our project more closely with the SPAW Protocol's objectives.
How this grant has been beneficial for your organization, territory or country?	This grant has been pivotal in advancing our organization's capabilities in wildlife management technology. It has enabled us to develop a significant tool that can impact wildlife regulation and conservation efforts within Trinidad and Tobago and potentially influence similar efforts across the Caribbean region.
What is your general impression on this call?	Our general impression of this call is highly positive. It represents a meaningful opportunity for organizations like ours to contribute to vital conservation efforts and to innovate in the field of environmental protection.
Will you propose new projects to such a call?	Given the positive experience and the alignment of our mission with the call's objectives, we are certainly inclined to propose new projects in future calls, especially those that build upon the work and learnings from our current project.
What would you suggest to improve such a call?	The guidance and responsiveness provided by SPAW-RAC during the call were commendable and greatly appreciated. An area for potential enhancement could be in providing more detailed examples or case studies of successfully implemented projects under similar calls. This could serve as a valuable resource for applicants to better understand the scope and impact of such projects, and to draw inspiration for their own proposals.
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:	

5. Annexes
If you want to share with us some communication material (picture, map..) you are more than welcome

Call for proposals
Short-term Small Grants
- year 2022 –

Final report

Name of the organization: The Ocean Foundation
Name of the project: Restoration of Acropora Corals in Guanahacabibes National Park to Enhance Climate Change Resilience
 

Total budget of the project: €45,229
SPAW-RAC grant: DEAL/CAR-SPAW
Timeframe for implementation: April 14-December 31, 2023

This report is intended to provide information on the organization(s) involved, the project, the concerned species and sites, the threats to their conservation, the methodology developed within the framework of the project, its implementation, the objectives sought, the results obtained, and the perspectives for the future, in order to enlighten the Parties on the interest of such a project for the achievement of the objectives of the SPAW Protocol.

1. Your organization	
Name / Title	The Ocean Foundation
Category (public entity, NGO, laboratory, private company, managers,...)	NGO
Is the organization already in contact with national or international networks? If yes, which ones?	Yes. UNESCO, UNEP, SPAW RAC, RedGolfo
Address	1320 19th Street, NW Suite 500 Washington, D.C. 20036, USA
Phone number	(202) 887-8996
Website	www.oceanfdn.org
Email address	info@oceanfdn.org
Legal representative (person designated in the legal status)	Mark J. Spalding, President and CEO
Phone number of the legal representative	(202) 887-8996
Email address of the legal representative	mspaldling@oceanfdn.org
Name of the person responsible for this project (if different from the legal representative)	Fernando Bretos Program Officer, Blue Resilience Initiative
Phone number of the person responsible for this project	(305)968-8457
Email address of the person responsible for this project	fbretos@oceanfdn.org
Indicative annual budget of the organization	$9,311,000 (USD)
Staff means (number of staff members, volunteers… etc)	30 employees
Preferred area for intervention (country(ies), region...)	Caribbean Sea, Mesoamerican Reef
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:	

2. Your project	
Name of the project	Restoration of Acropora Corals in Guanahacabibes National Park to Enhance Resilience against Climate Change
Timeframe for implementation	*from April 31st, 2023-December 31, 2023* *Main stages: Inception, Maintenance of nurseries, planting of fragments, sexual restoration of corals*
Targeted specie(s)	Acropora palmata, Acropora cervicornis
Site(s) location	Guanahacabibes National Park and UNESCO Biosphere Reserve, Cuba
Major threats	Climate change namely bleaching and coral diseases such as Stony Coral Tissue Loss Disease (SCTLD)
Methodology developed within the framework of this project	Fragmental restoration of corals (asexual), micro fragmentation (asexual) and larval propagation (sexual). The larval propagation technique is one conceived by SECORE International that ensures genetic diversity of corals. Over 20 Cuban scientists were trained by TOF in this technique as part of a Caribbean Biodiversity Fund grant in 2022.
Update on the implementation, progress and possible issues	Mass bleaching of corals in 2023 at PNG due to major marine heatwave. First documentation of SCTLD in Cuban waters in mid 2023.
Objectives sought and/or results obtained	Restoration of corals, maintenance of nurseries, recruitment and training of new volunteers, sexual restoration of corals
How did the results and outcomes of your project have in the past contributed, are contribuing or will contribute in the future, to meet the needs of the agreements of your country to the SPAW Protocole ?	*(eg: Have the results (or progress) been, are they or will they be shared with the governmental administration charged of implementing the SPAW protocol? Have discussions with these services made it possible to work to the development or implementation of regulatory or conventional measures toward species or areas protected under SPAW?)* Data was collected by scientists employed by Cuban marine research agencies such as CITMA and the Acuario Nacional de Cuba. All data was also shared with Cuban government agencies. This work was also conducted under permits issued by the Cuban government. As GNP is a SPAW designated MPA, we are pleased to share this data with the SPAW RAC for integration into the SPAW MPA network.
Outcomes and lessons learned	Bleaching has impacted Acropora corals more than most and unfortunately we saw massive bleaching and die off. However, we did collect spawn from bleached corals. We submitted a manuscript detailing this finding in the Bulletin of Marine Science, a peer reviewed publication in the United States.
Perspectives, renewal, evolution of such a project	This work is ongoing since 2018 and has expanded in reach since. While only asexual restoration was initially conducted, the project since 2022 has taken on sexual reproduction as well. We believe it is in the interest of SPAW RAC to continue funding this work as it is contributing to the climate resilience of the entire Guanahacabibes Peninsula. Sexually reproduced fragments are expected to survive longer than even naturally reproduced corals as evidenced by SECORE's work in Curacao, Mexico and Dominican Republic.
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:	

Please annex any technical report, communication tools, pictures, maps etc you feel to be useful for the understanding of your project. See attached

3. Effective budget of your project (in Euros)			
Expenses		**Resources**	
Procurement	**Amount**	**Products**	**Amount**
Material		**Subsidies**	
Rentals (charter research vessel, food and fuel)	29,199	SPAW-RAC	10000
Insurance		Caribbean Biodiversity Fund	23,299
Documentation		New York Charitable Trust	4500
Communication		Curtis and Edith Munson Foundation	7500
Marketing		Other...	
External services		Other...	
Bank services		**Product sales**	
Taxes		**Service sales**	
Staff costs		**Donations, legacy...**	
Staff salaries	11000	**Subscription**	
Travel expenses	600	Other...	
Other staff costs		Other...	
Functioning / operational costs	4500	Other...	
TOTALS	**45,299**		**45,299**
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:			

4. Assessment of the call for proposals	
How did you hear about this call?	Via Dorka Cobian of PNG
Were the terms of references for this call for proposals clear enough?	Yes
Have you encountered any difficulties regarding the preparation of your project, the submission process and then its implementation?	No
Were the discussions with SPAW-RAC helpful?	Yes, email exchange with Jo
How this grant has been beneficial for your organization, territory or country?	Yes. It has helped us manage our coral nurseries, expand restoration and help leverage other funding. In December 31st, our concept note to the Coral Research and Development Accelerator Program CORDAP to request $1.4M for future restoration activities at PNG was accepted.
What is your general impression on this call?	Not enough funding and would be more effective if it were multi year funding
Will you propose new projects to such a call?	Yes
What would you suggest to improve such a call?	
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:	

5. Annexes
If you want to share with us some communication material (picture, map..) you are more than welcome


TREASURE BEACH TURTLE GROUP
2023 Nesting Season
CAR-SPAW-RAC 2023 Small Grants Project Report
Drone Surveillance in Treasure Beach Sea Turtle Conservation

Project Report

December 2023

Drone Surveillance in Treasure Beach Sea Turtle Conservation

Prepared by:
Treasure Beach Turtle Group
Billy's Bay P.A., St. Elizabeth, Jamaica

for
the CAR-SPAW-RAC 2023 Small Scale Grant

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Introduction

Treasure Beach has been on the radar of Jamaica's national turtle conservation efforts for over a decade as a major turtle nesting hotspot. Despite regular monitoring activity since the Treasure Beach Turtle Group was established in 2012, only 20% of the 6-mile stretch of coast was covered due to limited funding to support community-powered volunteerism. Most recently we were able to improve our data collection methodology by implementing an offline data collection app but average coverage still remained a gap.

With several other examples of the use of drone technology in the wider sea turtle conservation community, SPAW has graciously funded the implementation of drone-based surveys for our 2023 nesting season. This report serves as a detail of the objectives, outcomes and limitations that arose during the nesting season and the relative contributions that drone technology has made to our foot patrols and how we may advance into future surveys with these lessons learned.

Nesting activity still continues at the time of the writing of this report and our final tallies of female turtles and hatchlings will be completed by February 2024.

Project Background

Objectives

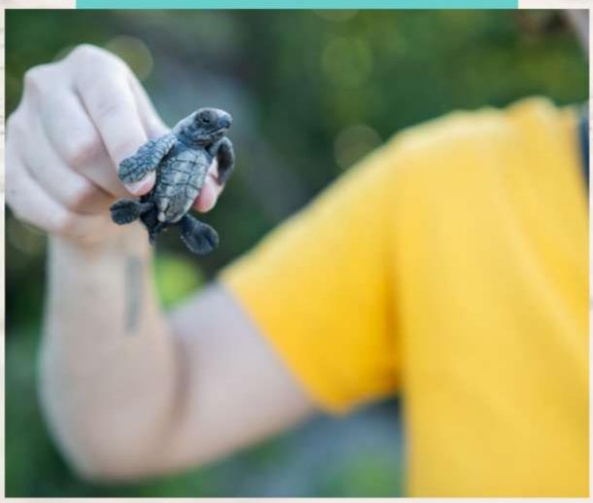
The intended project seeks to bolster current conservation efforts by reducing the effort in walking surveys by incorporating drone technology in the surveying, which can cover a larger area and access harder to reach areas in a fraction of the time it would require walking personnel. Drone surveying also supports our safety tool by identifying possible safety concerns along the beach before entering potentially unsafe situation.

Of the estimated 16-member survey team four persons will be trained to conduct drone surveying to bolster the ongoing walking survey during the same period.
Major outcomes anticipated are:

- Improved capacity for human resources.
- Improvement on the data being collected as large areas can be surveyed in short time spans.

Our Purpose

Our purpose is to create an environment in which our marine turtles can nest for the years to come. We want to educate the younger generation to continue conservation efforts into the future to prevent the extinction of marine turtles and develop a love for marine conservation.



Indicators

- Identification and number of all nesting and emerging turtles recorded during the 2023 season identified by Drone use.

Project Timeline

May 27, 2023

Pre-season meeting hosted at the Billy's Bay Natural History Museum, which is the headquarters of the Treasure Beach Turtle Group. This meeting involved the introduction of the team members and volunteers to each other as well as setting up the the data collection software on their devices for those who are new. The survey teams were also introduced to the working structure for the current period with the addition of the drone team to the existing Day and night teams. Team leaders were decided on and a WhatsApp group chat was made so we could keep the entire team updated on all activities.

June 1st, 2023

Official start of the nesting season for Treasure Beach turtle group. Team leaders meet with their respective members and perform on the job training of turtle handling. Drone team accompany the day Surveyors as they await the funding for the purchase and delivery of the drone.

June 19, 2023

Funding received and drones purchased

June 27, 2023 - end of season

Drone Team starts training and running surveys. Flight take place from the Natural History Museum and from Great Bay. The flight from the Natural History museum is broken into two parts the first flight (Fig.) is westward towards Parottee and the second (Fig.) is eastwardly towards Calabash Bay. During these flights sea turtle nesting activity and/or sea turtle tracks are looked for to guide area of focus for the day team.
At the same time the second drone pilot based in Great Bay flies their done in a westerly direction (Fig.) to Calabash bay. The three flights combined are able to capture the entire Treasure Beach coastline. These flights are done daily for the entire season. When tracks are identified the team goes to the area and do the required checks and record the data using the ODK app.

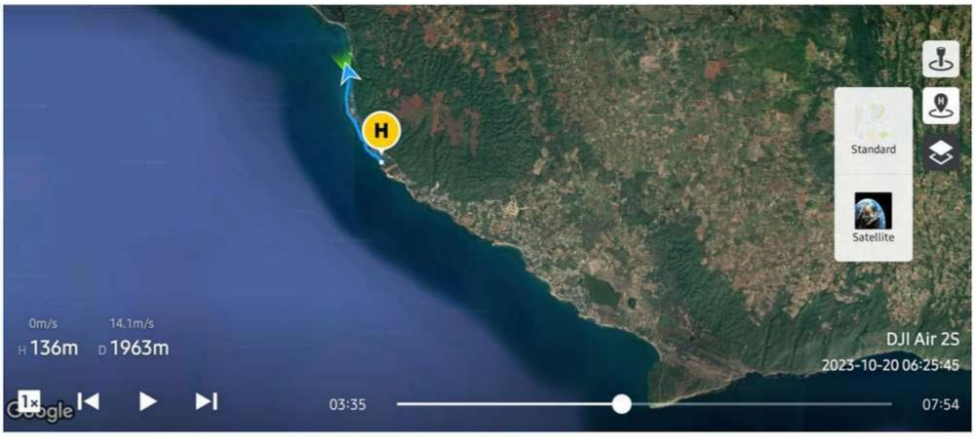


Fig 1. First flight from the Natural History Museum to Parottee using drone #1

Fig 2. Second flight from Natural History Museum to Calabash Bay using drone #1

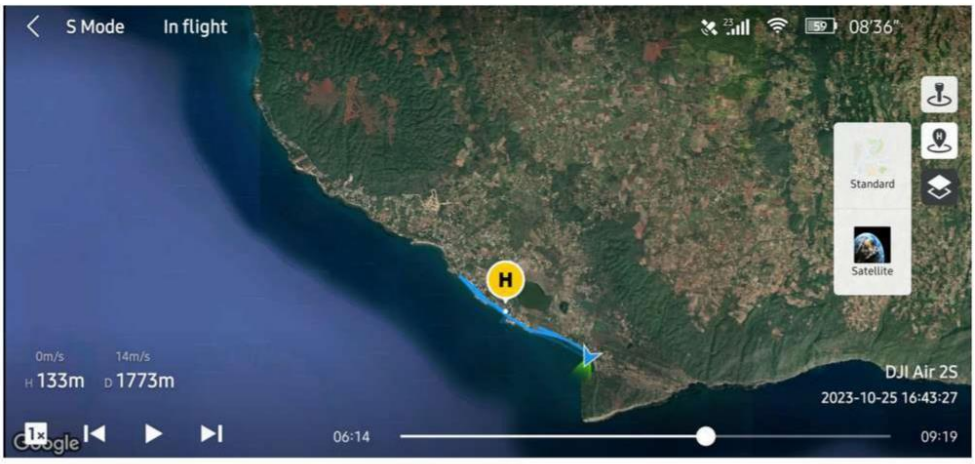
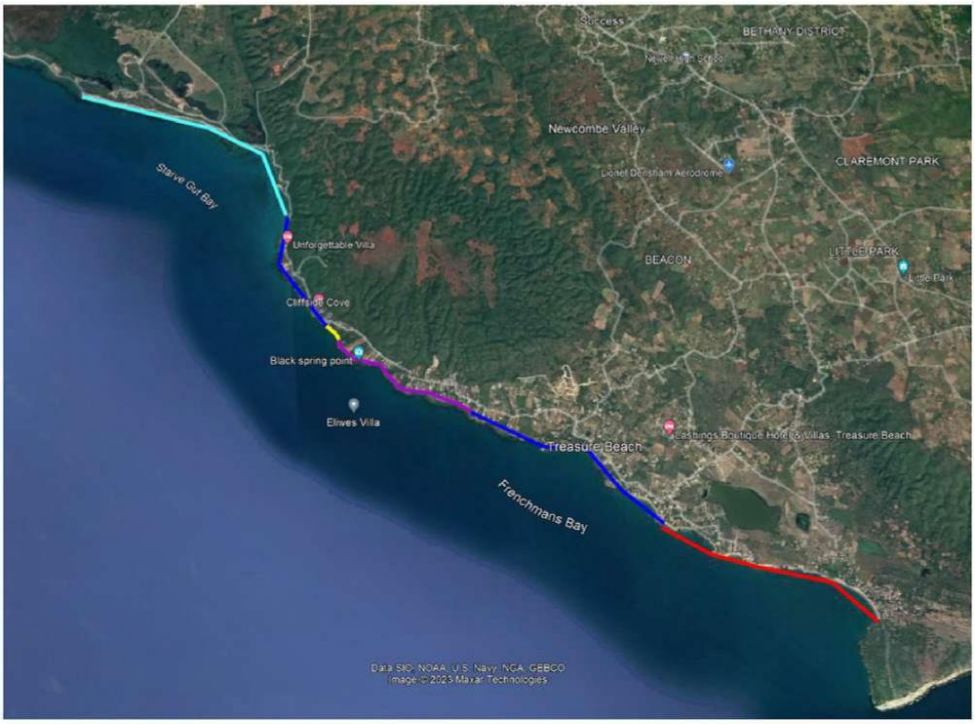


Fig 3. flight covering the Calabash Bay to Great Bay area using drone #2



KEY

Far end of Parottee very remote,

New areas monitored by drone #1 daily

Night survey location and part of day survey foot patrol location

Second part of the area where day patrols were able to take place

Great Bay survey area which is four kilometers in length and nesting activity infrequent

Fig 4. Treasure Beach flight and foot patrol zonation

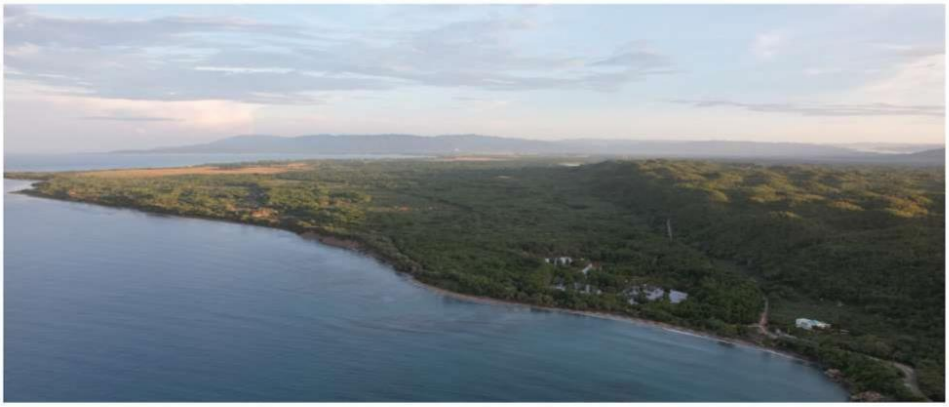


Fig 5. Far end of Parottee mainly accessible by boat thin strip of beach before swamp land

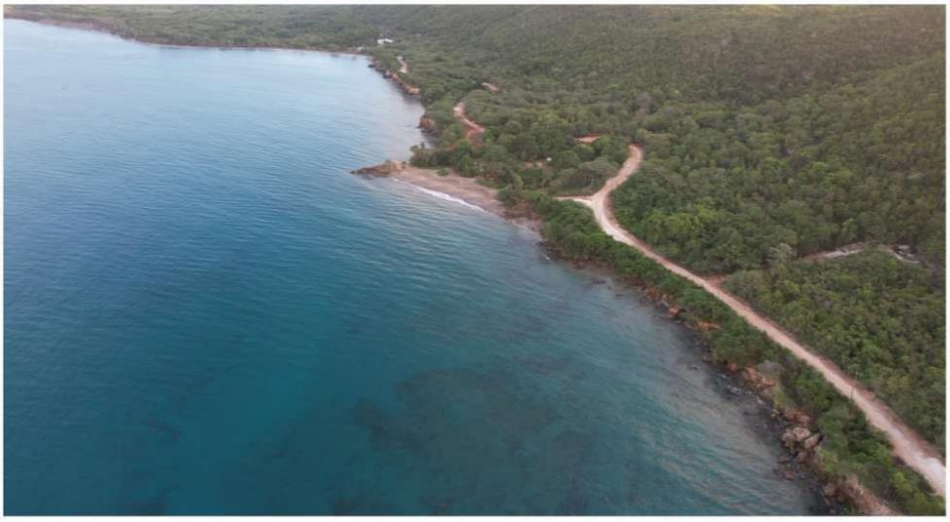


Fig 6. Fort Charles Beach

This year no nesting activity was recorded in the area Parottee. Daily monitoring was maintained through drone shot and then digitally zoomed in a post flight processing. Previously sporadically monitored by foot or from community reports.

Fig 7. Stroke Hole, western side of beach

Fig 8. Stroke Hole, eastern side of beach

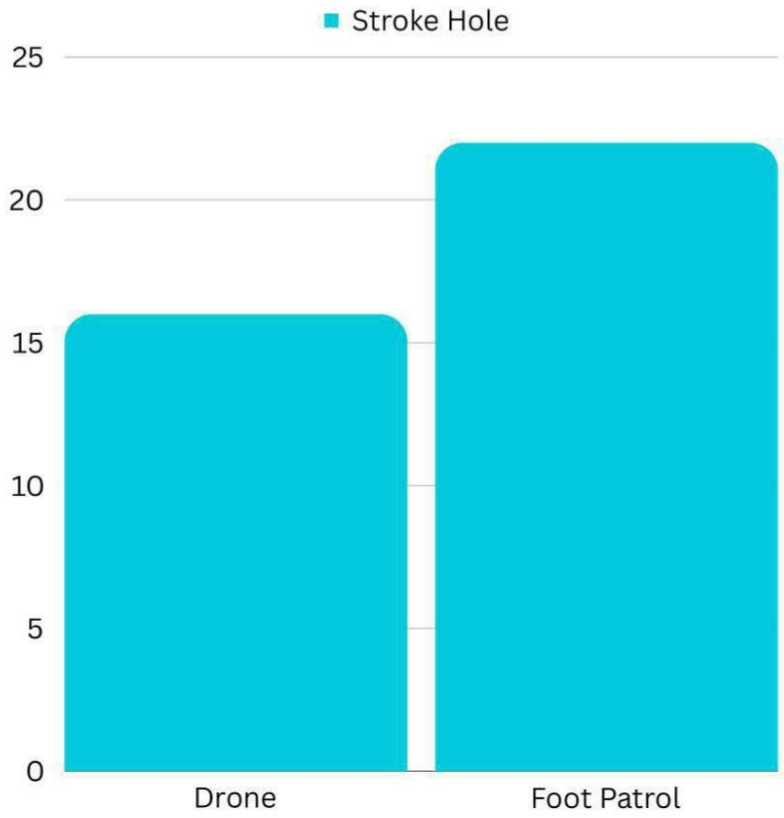


Chart 1. Comparison between drone spotted activity and foot patrol Stroke Hole

Drone monitoring allowed for significant improvements to data captured on this beach. After the first flight activity which was recorded and being investigated on the western end of the beach lead to significant nesting activity being observed under the trees of the Eastern side of the beach. This

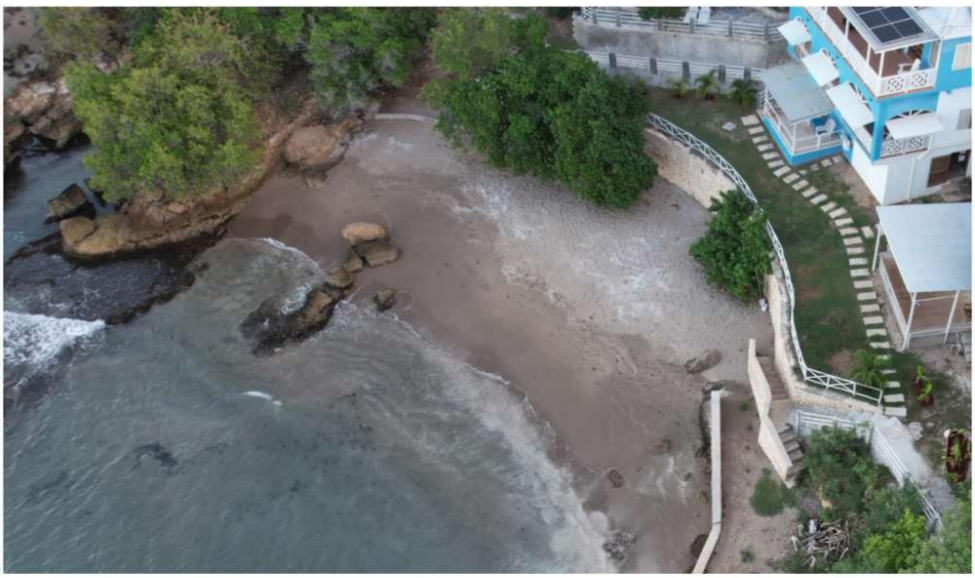


Fig 9. Josh's Beach

Josh's Beach is located in front a private residence with access to the beach only available by sea or when permission is granted by the owner. The ability of the drone to allow remote monitoring on the beach allows for the group to contact the owners of the property only when required. It is through drone surveying only on a daily basis the we were able to record thirteen nesting activates in this location.

Fig 10. Azar Beach

Azar is a very narrow beach which saw seven nesting attempts this year. Due to the nature of the beach tracks are quickly lost to high tides.

Fig 11. Harvey's Beach

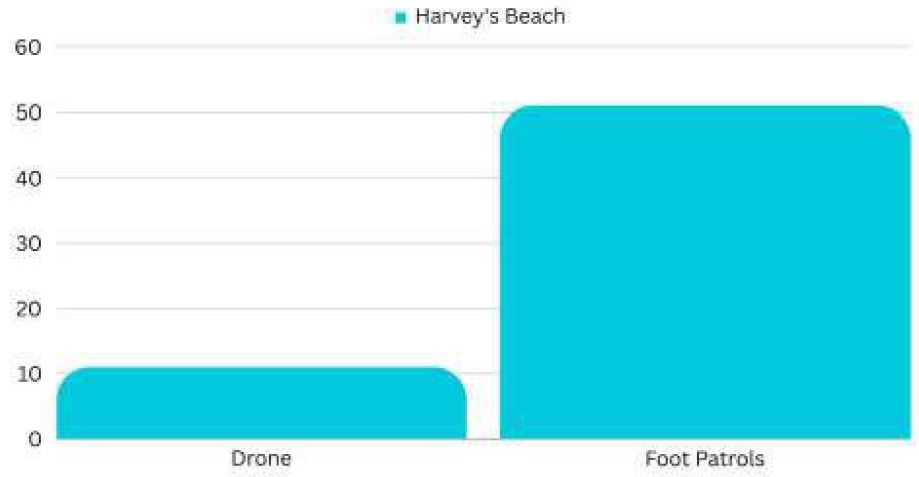


Chart 2. Comparison between drone spotted activity and foot patrol Harvey's Beach

Harvey's Beach is the main beach where night surveys are conducted on foot as it is that which the Treasure Beach Natural History museum is situated on. This Beach is on of four beaches where day time foot patrols are conducted. Night time foot patrol is highlighted as the most effective method of recording nesting at this location.

Fig 12. White Sands Beach

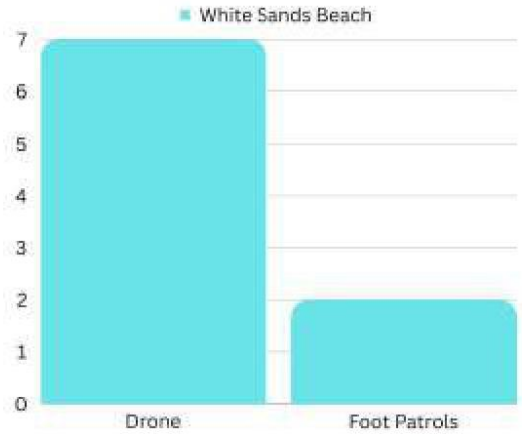


Chart 3. Comparison between drone spotted activity and foot patrol White Sands

White Sands is the second of the four beaches where day time foot patrols are conducted. Night time patrols are periodically done but due to the isolated nature of the area only when sufficient support is provided from the security forces or from community volunteers.

Fig 13. Black Springs Beach

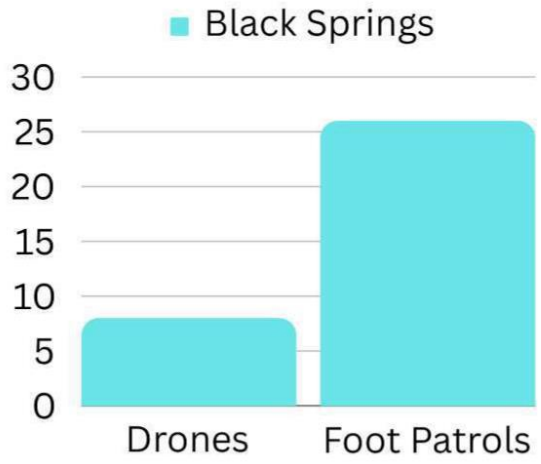


Chart 4. Comparison between drone spotted activity and foot patrol Black Springs

Black Springs beach is the third of the four beaches which comprises the day time survey area. This is another long area relatively isolated and dark, with significant nesting activity.

Fig 14. West most end of Billy's Bay beach

Fig 15. Main section of Billy's Bay beach

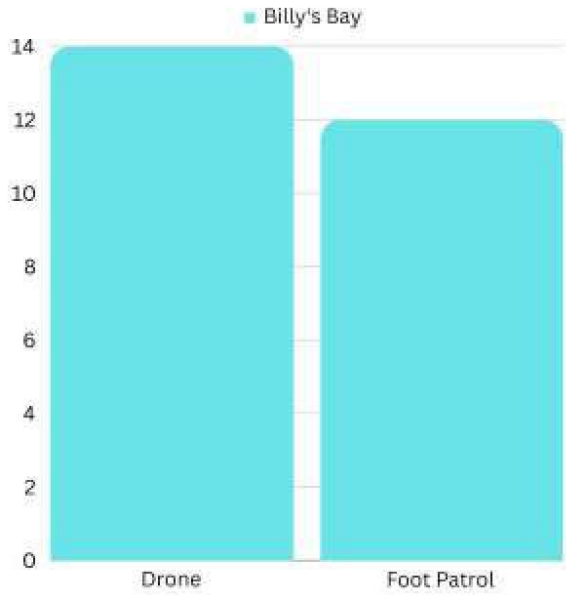


Chart 5. Comparison between drone spotted activity and foot patrol Billy's Bay

Billy's Bay is the fourth of our four beaches monitored by foot patrols in the day during our previous survey seasons. Though this area is more developed the beach side houses are mostly used as vacation homes or short term tourist villas, as such they are in various states of occupancy throughout the survey season with little to no activity at nights.

Fig 16. Section of beach between Billy's Bay and Frenchman currently only accessible by water.

Fig 17. Section of beach between Billy's Bay and Frenchman currently only accessible by water.

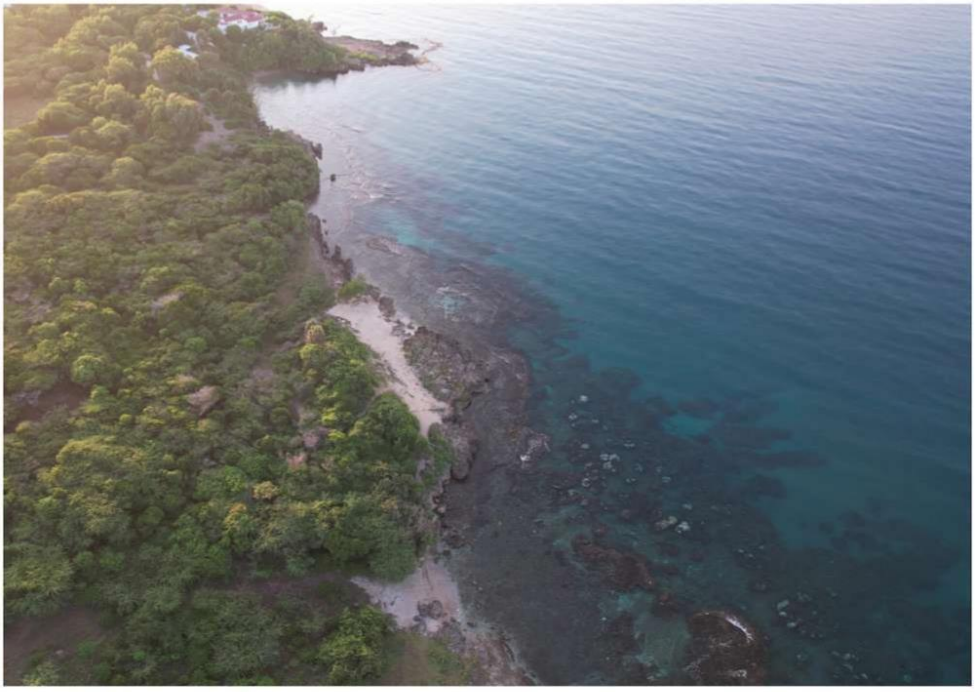


Fig 18. Section of beach between Billy's Bay and Frenchman currently only accessible by water.

The three areas highlighted in Figs. 16-18 are located between Billy's Bay and Frenchman's Bay Beach. While in prior years reports of turtle tracks were mentioned in conservations with community members, This year was the first time we were able to confirm the activities of turtle nesting through the use of the drone surveys with 11 nest recorded this survey season.

Fig 19. Frenchman Beach during drone flight

Fig 20. surveyors checking on nesting activity after drone flight at Frenchman Beach

Fig 21. Turtle activity at Frenchman Beach.

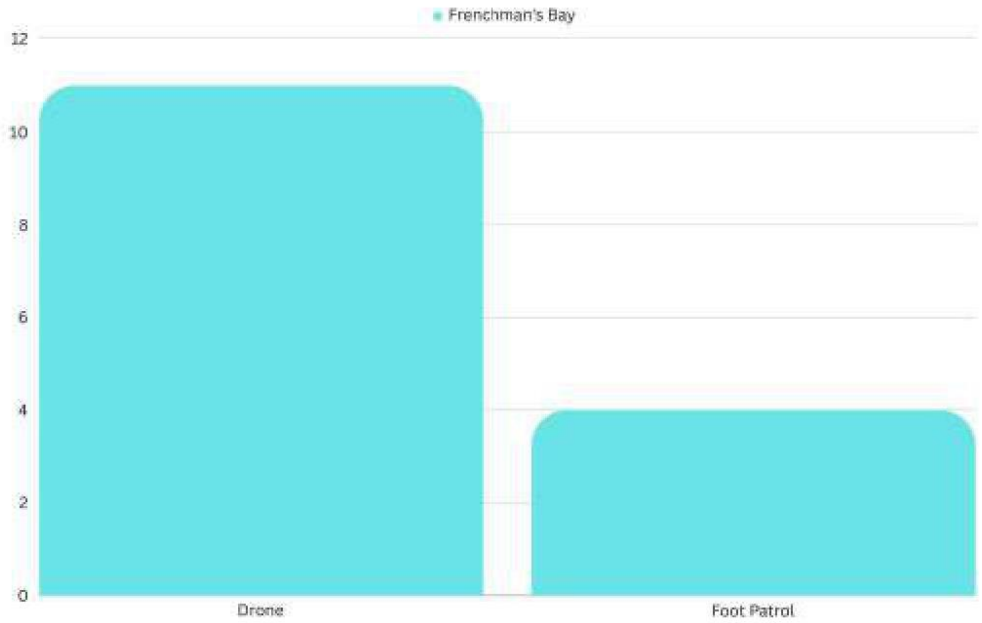


Chart 6. Comparison between drone spotted activity and foot patrol Frenchmans Bay

Fig 22. Area between Frenchman Beach and Calabash Bay Beach.

Fig 23. Calabash Bay Beach.

Fig 24. Section of Old Wharf Beach

Fig 25. Section of Old Wharf Beach

Fig 26. Survey area of Great bay, over 3km in length. This are has two small sandy coves and one large beach

Fig 27. Great Bay main Beach

Fig 28. Great Bay Sandy Cove #1

Fig 29. Great Bay Sandy Cove #2

Project Outcomes

The incorporation of drones into or sea turtle survey methodology has proven greatly beneficial to the effort of the group to monitor our large survey area as well as highlight new areas of heightened importance as was identified by the activities recorded at Stroke Hole, the area between Billy's Bay and Frenchman and the Frenchman Beach.
Drone surveying has better allowed the use of limited personnel to be more efficient in our work duties as well as our conservation efforts.

Areas such as Stroke hole, Frenchman and the area between Billy's Bay beach and Frenchman's bay highlight the impact drone surveys have had on our ability to monitor our area

As with last year majority of our nesting activity took place in the western side of our survey area from Stroke Hole to Billy's Bay. As we got to the more developed side of Treasure beach nesting activity got reduced.

Project Challenges

While we had high expectations to have an increase in the number of nests confirmed, especially from drone sightings of previously unsurveyed areas, we had unforeseen disruptions to the progress of our work. In July 2023, there was a jail break from a neighbouring town and soon after, there were increased reports of hold ups and robberies within the community. For the safety of our volunteers, we had to discontinue our night activities while we discussed safety support from the Pedro Banks Police Station.

Even after getting confirmation of increased police surveillance, we still maintained shorter night time survey periods and did daily drone flights in the early mornings.

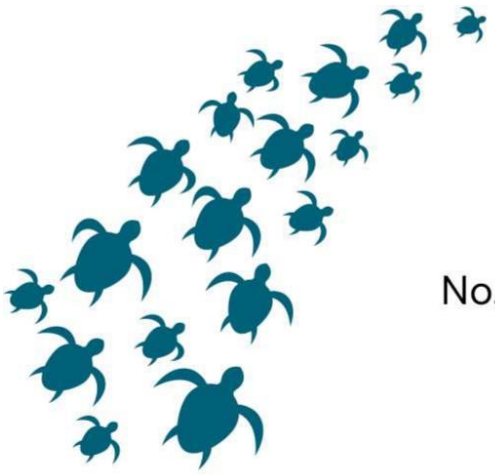
This year we saw significant beach erosion in areas that were previously stable as well as significant high tide activity especially in Azur, Frenchman's Bay, Calabash Bay and Great Bay.

Mongoose predation and dog attacks continue to be prevalent non-human pressures on nest maturation. We have been working with our oversight body NEPA to enforce legislature to reduce the incidence of dog attacks.

While there were several turtle tracks identified by drone flight, natural occurences are threatening turtles' ability to nest on some of these beaches.

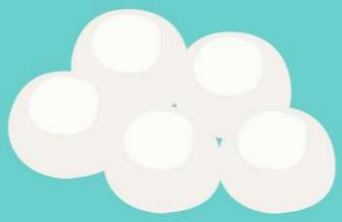
Table 1: Turtle track activity by foot and by drone in various bays of Treasure Beach

Bay	Number of Tracks by drone	Day team confirmed nest	Night Team confirmed nest	Location totals confirmed nest
Frenchman's Bay	11	4		4
Harvey's Beach	11	33	51	84
Stroke Hole	16	22		22
Black Spring	11	26		26
Azar	7	0		0
Billy's Bay	14	12		12
White Sand	7	2		5
Josh	13	5		5
Calabash Bay	1	1		1
Old Wharf	1	1		1
TOTAL No. of Tracks identified by drone	92	83	51	160
No. of Tracks in new areas	49	10	0	32



4213

No. of hatchlings released to sea



1090

Underdeveloped eggs

160

Nests

1

Twins

Conclusions

The use of drones have proven beneficial to our conservation efforts with significant activities being recorded on areas not consistently monitored in previous monitoring efforts.

While we were impacted by security issues the use of the drone also improved or ability to work safely and record the data as best as possible.

Drone surveys accounted for 57.5 percent of the nesting events recorded towards nesting and 48.8 percent of confirmed nest for the season.

Acknowledgements

The Treasure Beach Turtle Group extends thanks to the financial support of SPAW-RAC for our turtle conservation efforts for the 2023 Nesting Season.

The **writers** Camar Green-Clarke, Tanya Green, Deanna Rose, Ramone Cohen

Our **colleagues** from National Environmental and Planning Agency, Discovery Bay Marine Laboratory, Treasure Beach DMO, Mycomeditations

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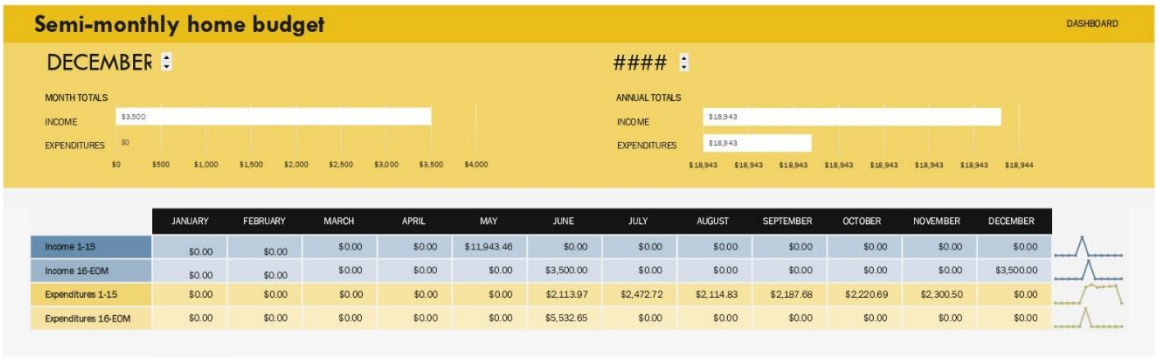


	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Income 1-15	$0.00	$0.00	$0.00	$0.00	$11,943.46	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Income 16-EOM	$0.00	$0.00	$0.00	$0.00	$0.00	$3,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3,500.00
Expenditures 1-15	$0.00	$0.00	$0.00	$0.00	$0.00	$2,113.97	$2,472.72	$2,114.83	$2,187.68	$2,220.69	$2,300.50	$0.00
Expenditures 16-EOM	$0.00	$0.00	$0.00	$0.00	$0.00	$5,532.65	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Semi-monthly home budget

INCOME & EXPENDITURES

INCOME

DATE	DESCRIPTION	AMOUNT
5/1/2023	Donation Turtle House	$ 1,100.00
5/1/2023	Donation Mycomeditation	$ 1,100.00
5/1/2023	Donation Tulips	$ 1,100.00
6/19/2023	SPAW-RAC	$ 3,500.00
12/30/2023	SPAW-RAC	$ 3,500.00
5/1/2023	Voluntary contribution	$ 8,643.46

EXPENDITURES

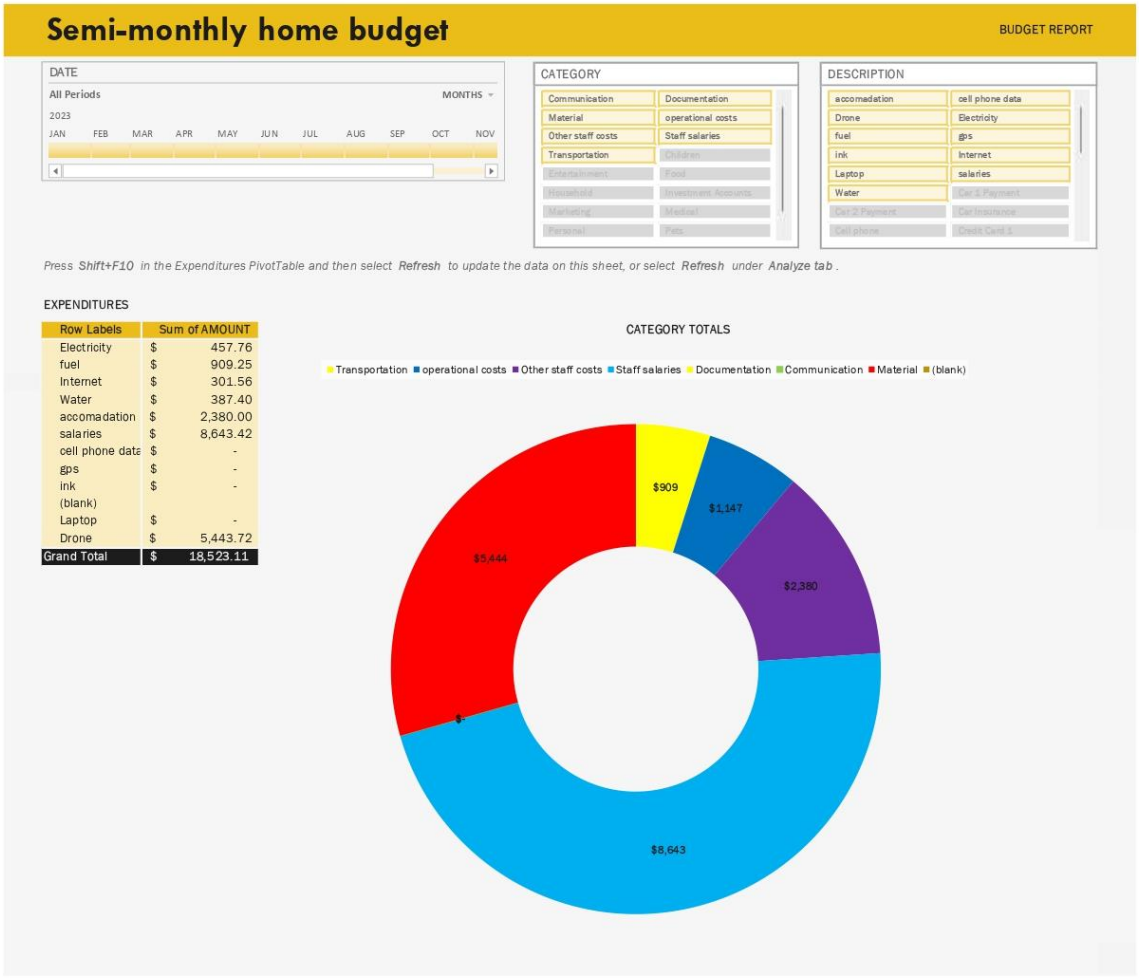
DATE	CATEGORY	DESCRIPTION	AMOUNT
6/1/2023	operational costs	Electricity	$ 95.46
6/1/2023	operational costs	Water	$ 51.58
6/1/2023	operational costs	Internet	$ 43.08
6/1/2023	Transportation	fuel	$ 143.28
6/1/2023	Staff salaries	salaries	$ 1,440.57
6/1/2023	Other staff costs	accomadation	$ 340.00
6/19/2023	operational costs	Bank fees	$ 88.93
6/19/2023	Material	Drone	$ 2,721.86
6/19/2023	Material	Drone	$ 2,721.86
7/1/2023	Staff salaries	salaries	$ 1,440.57
7/1/2023	Operational costs	Water	$ 42.15
7/1/2023	Other staff costs	accomadation	$ 340.00
7/1/2023	operational costs	Internet	$ 43.08
7/1/2023	operational costs	Electricity	$ 95.69
7/1/2023	Transportation	fuel	$ 171.23
7/1/2023	Other staff costs	accomadation	$ 340.00
8/1/2023	Staff salaries	salaries	$ 1,440.57
8/1/2023	operational costs	Water	$ 49.23
8/1/2023	operational costs	Internet	$ 43.08
8/1/2023	operational costs	Electricity	$ 84.61
8/1/2023	Transportation	fuel	$ 157.34
8/1/2023	Other staff costs	accomadation	$ 340.00
9/1/2023	Staff salaries	salaries	$ 1,440.57
9/1/2023	operational costs	Internet	$ 43.08
9/1/2023	operational costs	Electricity	$ 54.85
9/1/2023	operational costs	Water	$ 80.62
9/1/2023	Other staff costs	accomadation	$ 340.00
9/1/2023	Transportation	fuel	$ 228.56
10/1/2023	Staff salaries	salaries	$ 1,440.57
10/1/2023	Other staff costs	accomadation	$ 340.00
10/1/2023	operational costs	Internet	$ 43.08
10/1/2023	operational costs	Electricity	$ 174.80
10/1/2023	operational costs	Water	$ 63.51
10/1/2023	Transportation	fuel	$ 158.73
11/1/2023	Staff salaries	salaries	$ 1,440.57
11/1/2023	operational costs	Water	$ 151.31

INCOME

DATE	DESCRIPTION	AMOUNT

EXPENDITURES

DATE	CATEGORY	DESCRIPTION	AMOUNT
11/1/2023	operational costs	Electricity	$ 132.35
11/1/2023	operational costs	Internet	$ 43.08
11/1/2023	Transportation	fuel	$ 150.11
11/1/2023	operational costs	Internet	$ 43.08
11/1/2023	Other staff costs	accomadation	$ 340.00


Semi-monthly home budget
BUDGET REPORT
DATE
All Periods
MONTHS
2023
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV
CATEGORY
Communication
Documentation
Material
operational costs
Other staff costs
Staff salaries
Transportation
Children
Entertainment
Food
Household
Investment Accounts
Marketing
Medical
Personal
Pets
DESCRIPTION
accomadation
cell phone data
Drone
Electricity
fuel
gps
ink
Internet
Laptop
salaries
Water
Car 1 Payment
Car 2 Payment
Car Insurance
Cell phone
Credit Card 1
Press Shift+F10 in the Expenditures PivotTable and then select Refresh to update the data on this sheet, or select Refresh under Analyze tab .
EXPENDITURES
Row Labels
Sum of AMOUNT
Electricity $ 457.76
fuel $ 909.25
Internet $ 301.56
Water $ 387.40
accomadation $ 2,380.00
salaries $ 8,643.42
cell phone data $ -
gps $ -
ink $ -
(blank)
Laptop $ -
Drone $ 5,443.72
Grand Total $ 18,523.11
CATEGORY TOTALS
Transportation
operational costs
Other staff costs
Staff salaries
Documentation
Communication
Material
(blank)
$909
$1,147
$2,380
$8,643
$5,444
$-

Call for proposals
Short-term Small Grants
- year 2022 –

Final report

Name of the organization: Turtle Village Trust
Name of the project: National Sea Turtle Conservation Project

Total budget of the project: 10 000€
SPAW-RAC grant: 7 000€
Timeframe for implementation: 30/05/2023-30/09/2023

This report is intended to provide information on the organization(s) involved, the project, the concerned species and sites, the threats to their conservation, the methodology developed within the framework of the project, its implementation, the objectives sought, the results obtained, and the perspectives for the future, in order to enlighten the Parties on the interest of such a project for the achievement of the objectives of the SPAW Protocol.

1. Your organization	
Name / Title	Turtle Village Trust
Category (public entity, NGO, laboratory, private company, managers,...)	NGO
Is the organization already in contact with national or international networks? If yes, which ones?	
Address	LP138 Eastern Main Road, Valencia, Trinidad & Tobago, West Indies
Phone number	+18686678471
Website	www.turtlevillagetrust.org
Email address	info@turtlevillagetrust.org
Legal representative (person designated in the legal status)	Allan Bachan
Phone number of the legal representative	+18686800062
Email address of the legal representative	allan.bachan@turtlevillagetrust.org
Name of the person responsible for this project (if different from the legal representative)	Kathryn Audroing
Phone number of the person responsible for this project	+18683840126
Email address of the person responsible for this project	kathryn.audroing@turtlevillagetrust.org
Indicative annual budget of the organization	100,000 €
Staff means (number of staff members, volunteers... etc)	~400 volunteers
Preferred area for intervention (country(ies), region...)	Trinidad and Tobago
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:	

2. Your project	
Name of the project	National Sea Turtle Conservation Project
Timeframe for implementation	*from I_3_I_0_I0__I5__I2__I3__I to I_3_I_0_I_0_I_9_I_2_I_3_I* *Main stages:* Planning: Project proposal development, Application for grant funding, Focal point endorsement (April-May 2023) Preparation: Project Plan development, Engagement of community stakeholders, Detailed workplan development, Training of community data collectors (June 2023) Implementation: Data collection of nesting, hatching and nest excavations (June to October 2023) Reporting and close of project: (October to December 2023)
Targeted specie(s)	leatherback turtles, *Dermochelys coriacea*
Site(s) location	Grande Riviere, Trinidad
Major threats	Predation of hatchlings during daylight hours
Methodology developed within the framework of this project	Nest triangulations: or a sample of nests each month, data collectors counted the numbers of eggs laid in each clutch, recorded the exact nest location in reference to two fixed markers. Nest excavations: data collectors located triangulated nests, the nest contents were exhumed and the contents categorised. Hatchlings were released. Hatchling monitoring: data collectors patrolled the beach during daylight hours (1-6pm) documenting emergence activity and marked erupted nests for excavation. Hatchlings were placed in dark, round, moist containment until their release after sunset.
Update on the implementation, progress and possible issues	Data collection by the community for the project was implemented from 5th June to 11th October 2023. Funds were paid to community data collections in keeping with Memorandum of Agreement based on financial claims submitted. Analysis of the data and technical reporting are currently in progress. Reports are expected to be completed, shared with stakeholders for comment, finalised and disseminated for 15th December 2023.
Objectives sought and/or results obtained	Objectives: - to determine the success of egg development, emergence success and hatching emergence for nests laid on Grande Riviere during May to July 2023, - to protect hatchlings from predation or disorientation while crossing the Grande Riviere beach during daylight hours and - to report observed threats to hatching success and recommend mitigating measures. Results: - 16 community persons from Grande Riviere trained in methodology for nest triangulation, hatchling monitoring and nest excavation. - 15 (7 female, 8 male) unemployed community residents paid for data collection under the project - 40 nests triangulated at time of nesting - 102 days of nest eruptions recorded - 129 nest excavations completed - 37 676 hatchlings emerged and prevented from predation from 1

	June to 11 October 2023
How did the results and outcomes of your project have in the past contributed, are contribuing or will contribute in the future, to meet the needs of the agreements of your country to the SPAW Protocole ?	*(eg: Have the results (or progress) been, are they or will they be shared with the governmental administration charged of implementing the SPAW protocol? Have discussions with these services made it possible to work to the development or implementation of regulatory or conventional measures toward species or areas protected under SPAW?)* The results of the project and a technical report will be shared with the Conservator of Forests, Forestry Division who is the SPAW focal point for Trinidad and Tobago. The data is the first of its kind produced for the threatened species which is listed in Annex II, SPAW Protocol. The project improved the protection of the offspring of a threatened species which can improve its long-term conservation status. It allows for the recommendation of management measures which can be used to improve the conservation status of this threatened species.
Outcomes and lessons learned	Outcomes: - Primary school students from Grande Riviere community participated in the data collection - Approximately 700 persons (visitors) witnessed the project activities and were given educational talks on the project - The Grande Riviere Nature Tour Guide Association were able to generate revenue from paid tours Lessons learned: - Community embraced the project training and the hatchling protection. - Timing of the project needed to be adjusted to include late emerge dates in September and October. Some emergence occurred beyond the 70 day incubation period. Nest excavations were abandoned and then resumed for late emerging nests. - Nests laid in high density nesting areas were disturbed by other nesting females. These nests could not be accurately evaluated. - Need to improve consistency in data collection. The same data collectors should excavate the nests they have triangulated. - On rainy days and in very shaded areas, emergences occurred before 1pm monitoring. Unknown number of hatchlings were lost to predators at these times. - Additional persons needed during high emergence periods eg.rainy days. At least one person volunteered from the community each day to help in the project - Need for a protocol for the number of visitors to the beach during nest emergence and hatchling release activities. - Need to understand the measure of in-water predation by fish.
Perspectives, renewal, evolution of such a project	The project has value in reducing bird and dog predation, excavating and evaluating nest clutches, and educating visitors. The Grande Riviere community are interested in continuing these activities into the future. They are also interested in exploring the income generation potential of offering guided tours to visitors for hatchling releases. With small modification to the existing methodology and training, there is the potential for increased data collection and analysis on the sex ratios and

	the health of the hatchlings.
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:	
Please annex any technical report, communication tools, pictures, maps etc you feel to be useful for the understanding of your project.	

3. Effective budget of your project (in Euros)			
Expenses		**Resources**	
Procurement	**Amount**	**Products**	**Amount**
Material	335	**Subsidies**	
Rentals		SPAW-RAC	7000[2]
Insurance		Other...	
Documentation		Other...	
Communication		Other...	
Marketing		Other...	
External services		Other...	
Bank services	22[1]	**Product sales**	
Taxes		**Service sales**	
Staff costs		**Donations, legacy...** TVT/GRNTGA	2285
Staff salaries		**Subscription**	
Travel expenses		Other...	
Other staff costs		Other...	
Nest triangulations	1929		
Hatchling monitoring	4786		
Nest excavations	943		
Project coordination	943		
Functioning / operational costs		Other...	
TOTAL	**8957**	**TOTAL**	**9285**

Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:

[1] First wired transfer charge =11€. Expected charge for 2nd wire transfer of 11€ included.

[2] First disbursement of 3500€. Expected 2nd disbursement of 3500€ included.

4. Assessment of the call for proposals	
How did you hear about this call?	Social media
Were the terms of references for this call for proposals clear enought?	Yes
Have you encoutered any difficulties regarding the preparation of your project, the submission process and then its implementation?	Initial proposed start of May was not possible because the project commenced on 30th May.
Were the discussions with SPAW-RAC helpful?	Yes
How this grant has been beneficial for your organization, territory or country?	This grant allowed us to conduct information on the hatchling production for the first time. It allowed transfer of new skills to community for data collection required under the project.
What is your general impression on this call?	Excellent
Will you propose new projects to such a call?	Yes
What would you suggest to improve such a call?	Increased marketing of the call for proposal
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:	

5. Annexes
If you want to share with us some communication material (picture, map..) you are more than welcome

Field team conducting nest excavations to evaluate nest contents

Data collector recording morphometric data from a leatherback hatchling

Emergent leatherback hatchlings on their way to the sea

Field team conducting data collection while visitors look on

Data collectors taking information on hatchlings

Seabird predator hunting for hatchlings

School students learning about the project before assisting with data collection

Call for proposals
Short-term Small Grants
- year 20223 –

Final report

Name of the organization: Stichting Internos
Name of the project: Workshop TRN

Total budget of the project: $ 26.752,94 € 24.818
SPAW-RAC grant: € 7.000
Timeframe for implementation: May 30, 2023 - July 3, 2023

This report is intended to provide information on the organization(s) involved, the project, the concerned species and sites, the threats to their conservation, the methodology developed within the framework of the project, its implementation, the objectives sought, the results obtained, and the perspectives for the future, in order to enlighten the Parties on the interest of such a project for the achievement of the objectives of the SPAW Protocol.

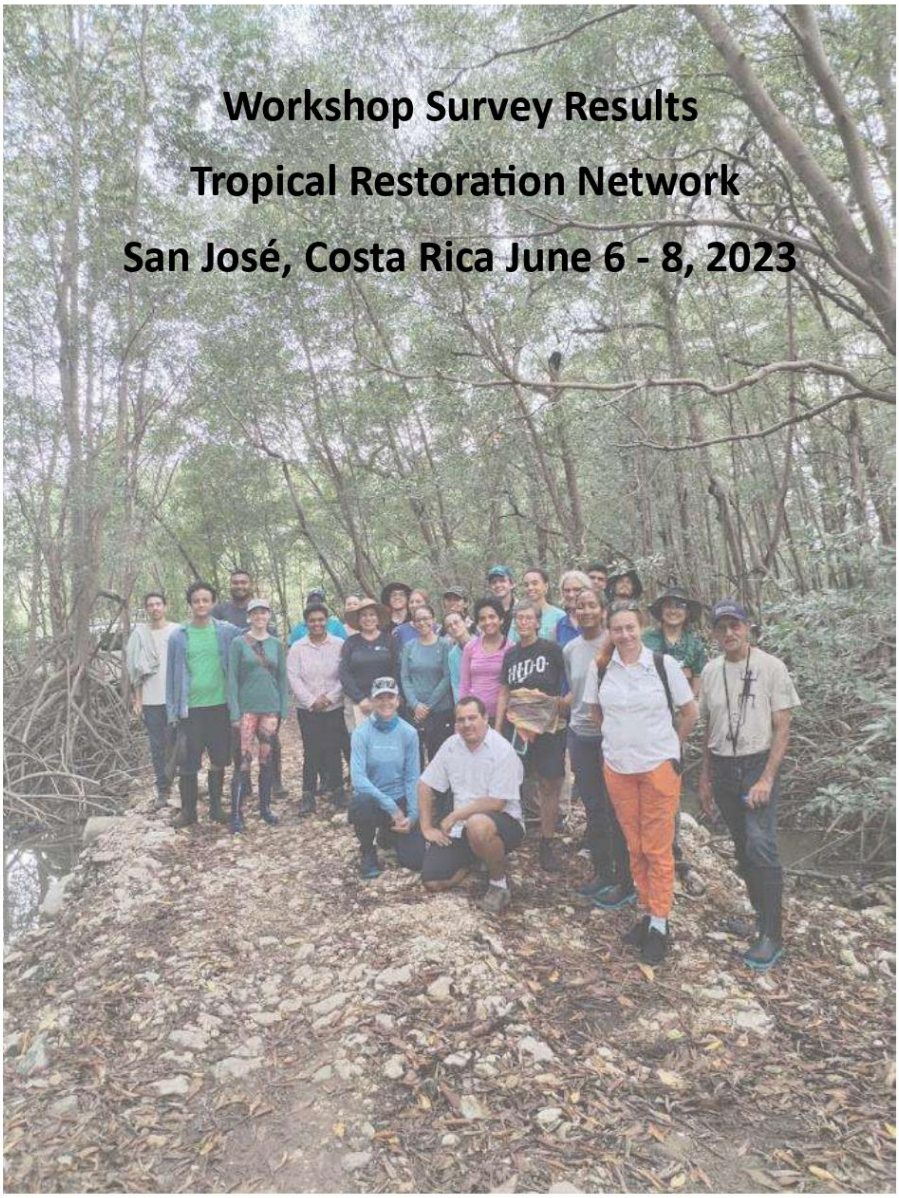
1. Your organization	
Name / Title	Internos
Category (public entity, NGO, laboratory, private company, managers,...)	NGO
Is the organization already in contact with national or international networks? If yes, which ones?	Dutch Caribbean Nature Alliance Nature Platform Bonaire (national) Mangrove Action Project
Address	Sabadeco Shores 5, Bonaire, Dutch Caribbean
Phone number	+599 7700290
Website	www.internosbonaire.org
Email address	sabine@mangrovemaniacs.bonaire; sabine@internosbonaire.org
Legal representative (person designated in the legal status)	M. Sabine Engel
Phone number of the legal representative	+599 7700290
Email address of the legal representative	see above
Name of the person responsible for this project (if different from the legal representative)	M. Sabine Engel - co responsible Jessica Johnson (info@coastal-dynamics.com) Jimena Samper Villareal (JIMENA.SAMPERVILLARREAL@ucr.ac.cr)
Phone number of the person responsible for this project	see above
Email address of the person responsible for this project	see above
Indicative annual budget of the organization	$ 80 - 100K
Staff means (number of staff members, volunteers... etc)	2 plus one contractor
Preferred area for intervention (country(ies), region...)	Caribbean Region
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries: Focus on coastal wetlands: management, restoration, science, outreach and regional collaboration	

2. Your project	
Name of the project	Workshop Tropical Restoration Network June 6 - 8, 2023 San José, Costa Rica
Timeframe for implementation	*from l30_lMay_l_2_l0__l2__l_3_l to l3__l_July_l_2_l_0_l2_l_3l* *Main stages: June 6 - 8, 2023*
Targeted specie(s)	Coastal habitats (mangroves and seagrasses and associated flora, fauna)
Site(s) location	Caribbean
Major threats	Climate change, development, degradation
Methodology developed within the framework of this project	Workshop
Update on the implementation, progress and possible issues	Finalized, preparing for post workshop activities, follow on webinar, training, capacity building and exchange
Objectives sought and/or results obtained	Have people accross region attend workshop - see attached (Technical Report CAR SPAW WORKSHOP TRN 2023
How did the results and outcomes of your project have in the past contributed, are contribuing or will contribute in the future, to meet the needs of the agreements of your country to the SPAW Protocole ?	All outcomes will be shared and will be available online. The focal points are ecosystems of attention to CAR SPAW. The workshop is a starting point for improving and increasing all work (eg. legal, policy, management, science, outreach) in relation to coastal habitats (mangroves and seagrasses) in the Caribbean Region)
Outcomes and lessons learned	The workshop was successful and we should not lose momentum
Perspectives, renewal, evolution of such a project	Plan workshops, webinars and training sessions across region, promote regional collaboration and exchange
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:	
Please annex any technical report, communication tools, pictures, maps etc you feel to be useful for the understanding of your project.	

3. Effective budget of your project (in Euros) $ 1 = € 0.93			
Expenses		**Resources**	
Procurement	**Amount**	**Products**	**Amount**
Material	881.03	**Subsidies**	
Rentals	372.00	SPAW-RAC	7000
Insurance		UCR	12752.16
Documentation		Internos	4568.50
Communication	4586.59	Coastal Dynamics	1674.00
Marketing		SINAC	325.50
External services	3612.12	Other...	
Bank services	58.75	**Product sales**	
Taxes		**Service sales**	
Staff costs		**Donations, legacy...**	
Staff salaries	8733.63	**Subscription**	
Travel expenses	8262.03	Other...	
Other staff costs		Other...	
Functioning / operational costs		Other...	
includes in kind	**26506.16**		**26506.16**
See financial report			
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:			

4. Assessment of the call for proposals	
How did you hear about this call?	Direct contact, LinkeIn
Were the terms of references for this call for proposals clear enought?	Yes
Have you encoutered any difficulties regarding the preparation of your project, the submission process and then its implementation?	Not really, not enough time to meet deadline (problem at our side)
Were the discussions with SPAW-RAC helpful?	Yes
How this grant has been beneficial for your organization, territory or country?	For our organization and the region, for coastal habitat restoration and for collaboration across region and organizations
What is your general impression on this call?	Clear call but the time between posting (March 14) and deadline (April 3) is very short. Response was quick.
Will you propose new projects to such a call?	Definitely
What would you suggest to improve such a call?	If it is recurring set a schedule
Additional contextualizing elements you wish to notify to SPAW-RAC or to the SPAW protocol signatory countries:	

5. Annexes
If you want to share with us some communication material (picture, map..) you are more than welcome



Survey Responses for CAR SPAW (Activity 011301MB0114)
Stichting Internos

Workshop Survey Results

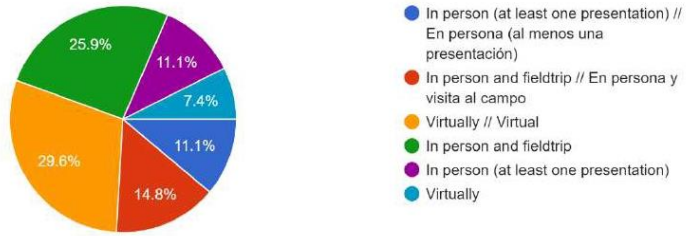
On June 6-8th, the Tropical Restoration Network (TRN) held its first international workshop at the University of Costa Rica in San Jose, Costa Rica. The first two days of the workshop consisted of hybrid presentations of both virtual and in person participants. Each presentation had live translations to both English and Spanish. In total, 47 people attended in person and 82 attended virtually. The participants came from 27 different countries (for complete information see attached Annex II of the Technical Report)

After the conference a survey was sent out to all participants to gather input on the both the perception, impact and work to improve such activities in the future. The survey was conducted via google form which was highlighted on the TRN social media, included in the TRN newsletter and sent out directly to each of the presenters.

Below includes a breakdown of these results. As the reader will see, all the responses for each question have been listed twice. Once was when the survey was first sent out (English only) and the second includes the Spanish translations. After each survey response, the explanation will combine these two for easier analysis:

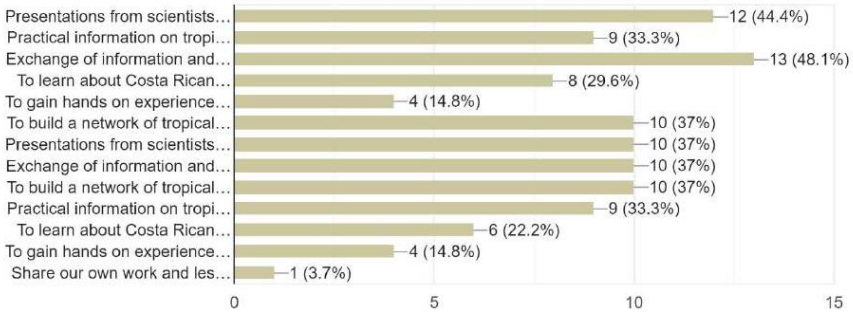
In total, 33.3% of the respondents were informed about the workshop through email, 22.2% informed through TRN social media, 11.1% through social media (not TRN) and 33.3% through other means, most likely through direct invitation.

How did you attend the workshop? // ¿Cómo participó en el taller?
27 responses



In total, 22.2% of respondents attended at least one presentation, 40.7% attended at least one presentation and the field trip and 37% attended virtually.

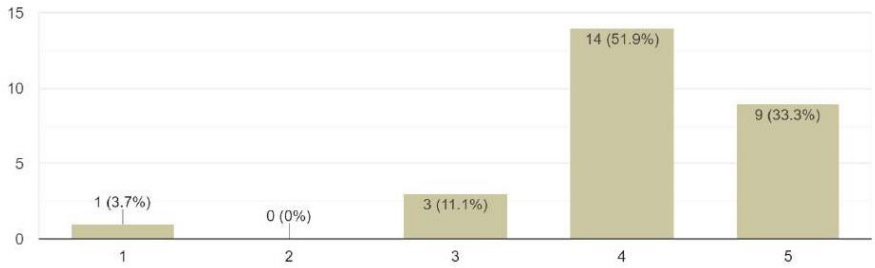
What did you expect from the workshop? // ¿Qué esperaba del taller?
27 responses



Combined results, top three have been put in bold:

Presentations from scientists on tropical habitat restoration: 81.4%
Practical information on tropical habitat restoration: 42.3%
Exchange of information and experiences from colleagues in the region: 85.1%
To learn bout Costa Rican coastal habitat restoration efforts: 35.6%
To gain hands on experience through field work: 29.6%
To build a network of tropical habitat restoration organizations/scientists/experts: 74%
Other: Share our own work and lessons learnt: 3.7%

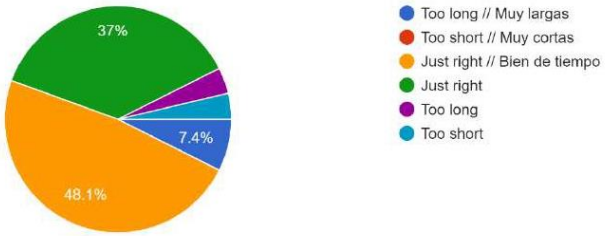
Did the workshop meet your expectations? // ¿El taller cumplió con sus expectativas?
27 responses



1 – Did not meet expectations, 5 – Exceeded expectations

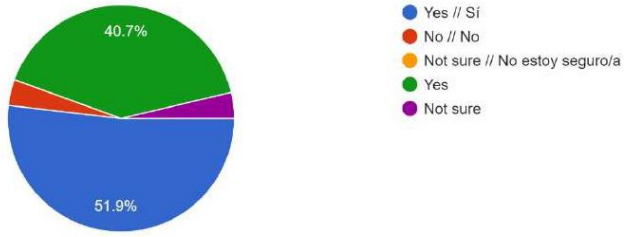
85.2% of respondents answered either 4 or 5, demonstrating that the workshop exceeded their expectations.

Did you feel the individual presentations were: // Le pareció que las presentaciones individuales fueron:
27 responses



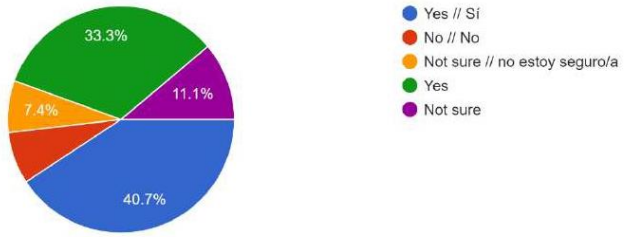
85.1% of respondents felt that the length of the presentations, 10 minutes per presentation, was appropriate.

Did you feel you had enough time to ask questions? // ¿Sintió que tuvo suficiente tiempo para hacer preguntas?
27 responses



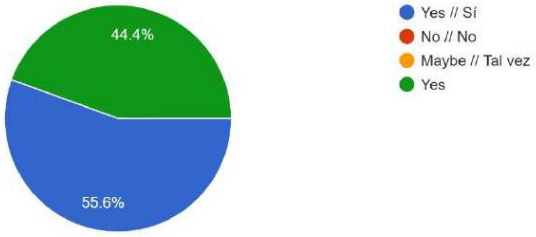
92.6% of respondents felt they had enough time to ask questions during the panel discussions.

Did you find the live translations to be helpful? // ¿Sintió que las traducciones en vivo fueron de utilidad?
27 responses

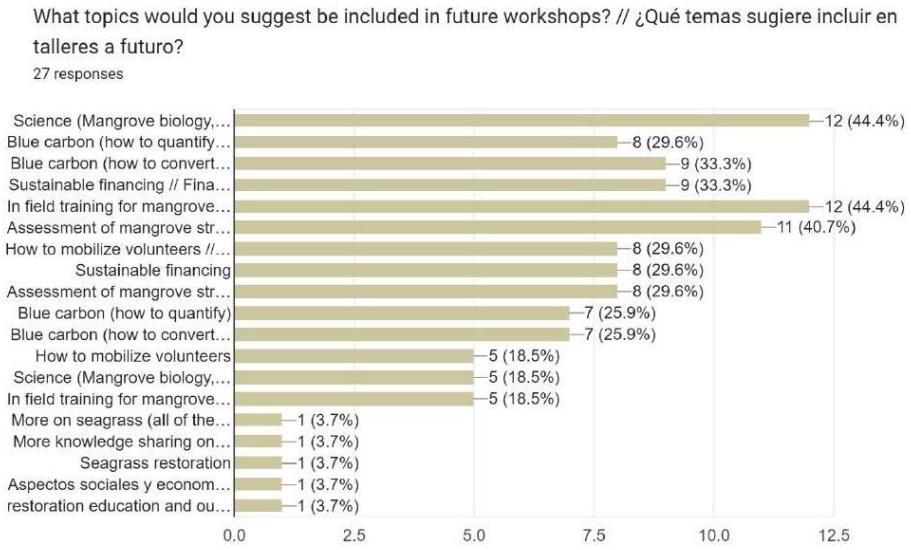


74% of respondents found the live translations (into English and Spanish) helpful. One of the respondents who answered “no” was a French speaking participant. In the future we will consider adding French translations.

Would you be interested in attending similar events such as the TRN Workshop in the future? // ¿Tendría interés en participar en eventos similares como el Taller TRN a futuro?
27 responses



100% of respondents would be interested in attending similar TRN events in the future.



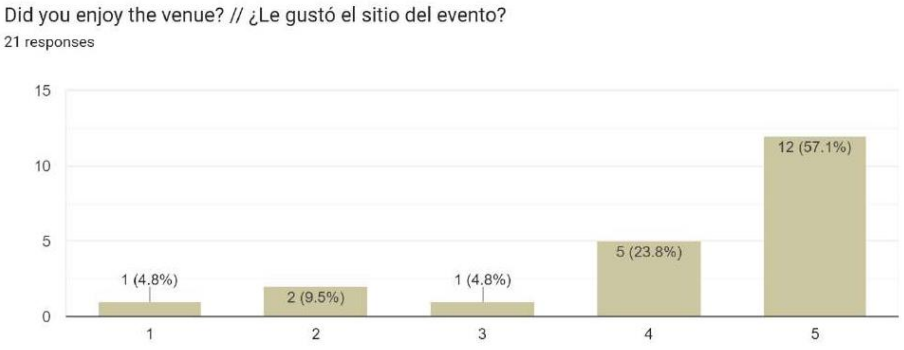
Combined results:

Science (Mangrove biology, ecology, biodiversity of mangrove restoration): 62.9%
Blue carbon (how to quantify): 55.5%
Blue carbon (how to convert the credits of your forest into financial support): 59.2%
Sustainable financing: 62.9%
In field training for mangrove restoration: 62.9%
Assessment of mangrove stressors (quantifying salinity, silt, toxic substances, hydrology, etc.): 59.2%
How to mobilize volunteers: 48.1%

Others:

- More on seagrass (all the above)
- More knowledge sharing on seagrass biology, ecology, biodiversity as well as seagrass restoration/rehabilitation techniques and field training.
- Seagrass restoration
- Social and economic aspects of restoration coastal ecosystems
- Restoration education and outreach; community engagement strategies

Questions for in person participants only

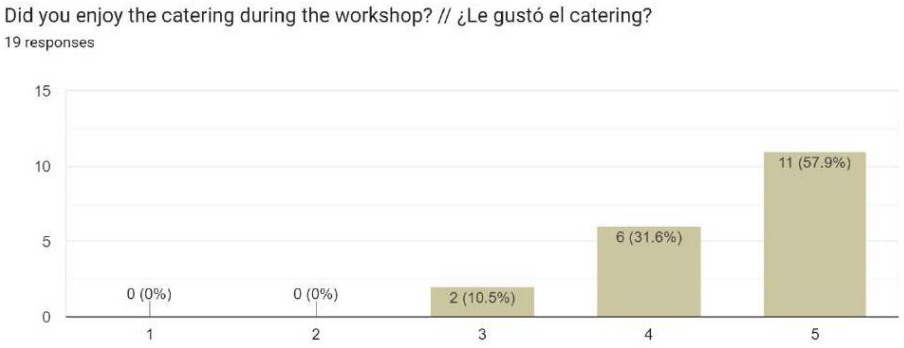


1- Did not enjoy the venue, 5- Enjoyed the venue

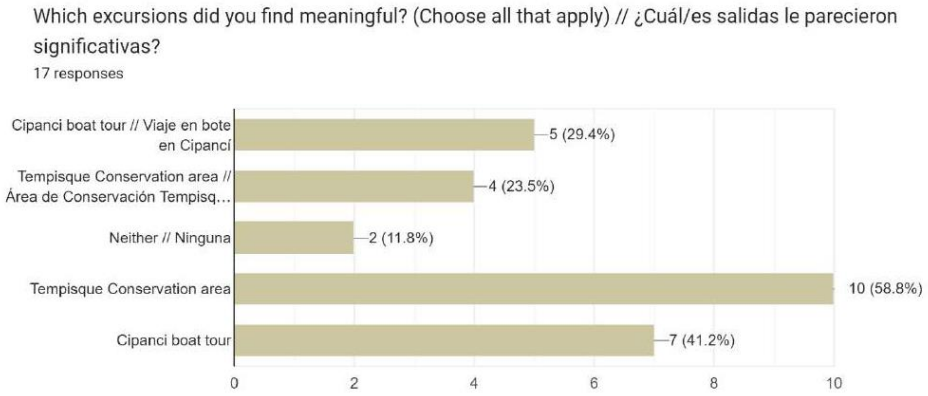
80.9% of respondents answered with a 4 or 5, showing that most enjoyed the venue.

1 – Disliked the accommodations, 5 – Loved the accommodations

All but one participant replied positively concerning the accommodations.

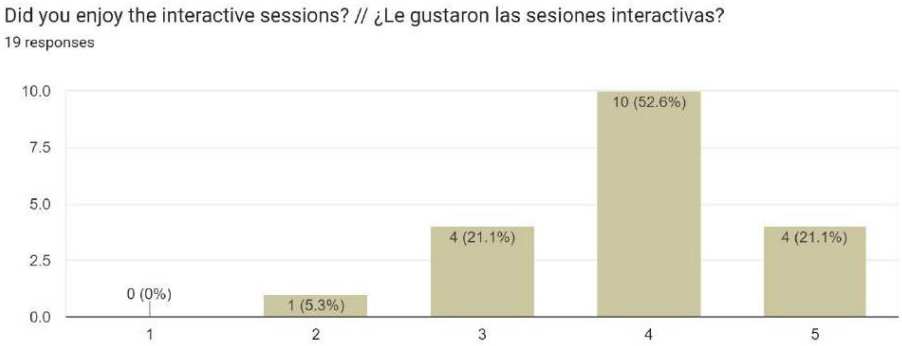


All participants responded positively regarding catering during the event.



70.6% of respondents found the Cipanci boat tour meaningful.
82.3% of respondents found the Tempisque Conservation area visit meaningful.
11.8% of respondents found neither meaningful.

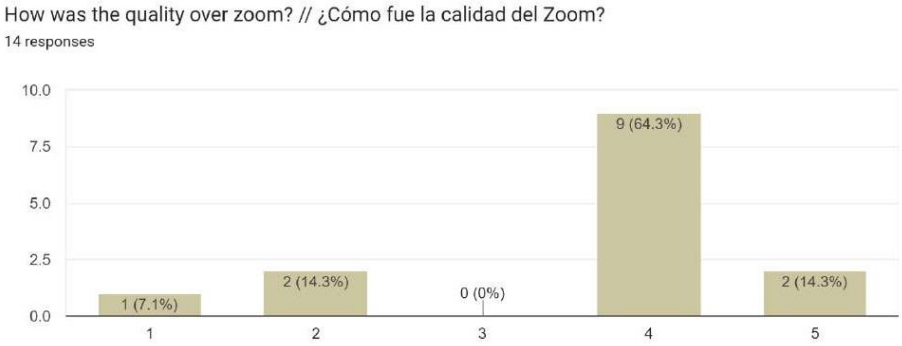
One of the respondents who answered no was actually a “virtual only” participant. The other individual was someone deeply involved in mangrove restoration in Costa Rica and was already very familiar with both of these sites.



1 – Not helpful, 5- Very helpful

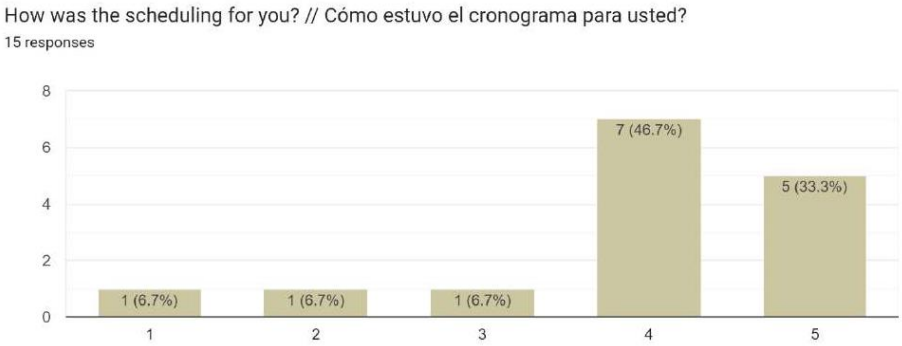
73.7% of respondents replied with 4 or 5, showing most found the interactive sessions helpful.

Questions for virtual participants only



1 - Poor, often had issues seeing or hearing, 5 - Fantastic, it was like I was there!

78.6% of respondents answered positively concerning zoom quality.



1- Delays in schedule meant I missed the presentations I wanted to see, 5 - I had no issues with the flexibility of the schedule

80% of respondents replied positively concerning scheduling during the workshop.

Other suggestions provided:

- I suggest that the delivery of certificates of participation in the event should not take so long.
- Allocate more time for field trip (ours was way overambitious) and provide participants with the necessary equipment (or advise them what is required before they travel(e.g. gum boots)
- The field trip was the best part! More structure to the working groups.
- Tight schedule and more interactive sessions
- Maybe consider a slightly longer workshop (4 days instead of 3) to have more time to present, exchange knowledge / experience, run workshops in small groups to identify needs challenges and explore solutions (e.g. table-tops), go in the field, etc.
- More field time
- I would like to have heard more about seagrass restoration in the workshop
- To share a spread sheet of contacts and names of participants for better networking after the workshop is over, to share slides of presentations upon request
- la cuenta de correo electronico utilizada para la comunicacion del taller no fue exitosa. No se recibían las comunicaciones en las cuentas de correos institucionales. Se recomienda utilizar una cuenta general como gmail por ejemplo. (Translation: The email account used for workshop communication was not successful. Communications were not received in institutional email accounts. It is recommended to use a general account such as gmail for example.)
- We need to have an automatic translation with all languages

- En futuros eventos divulgar por las universidades publicas para mayor participación (Translation: In future events, publicize public universities for greater participation)
- It was a really good workshop, I only gave a 4 because I could not attend in person making networking difficult-but I knew this would be problematic already.
- Me parece que faltó información anticipada sobre el lugar del taller, y detalles de logística. Hubieron personas que no sabían donde era el lugar o el itinerario virtual no les había llegado. Al correo principal en ocasiones se dejaban las dudas sin responder. Pero toda la organización de las ponencias estuvo muy bien y en tiempo, muy ordenado. (Translation: It seems to me that there was a lack of advance information about the location of the workshop and logistics details. There were people who did not know where the place was or the virtual itinerary had not reached them. Questions were sometimes left unanswered to the main email. But the entire organization of the presentations was very good and on time, very organized.)
- It would be nice that even virtually we could see the public present in the room. There are some devices called Owls (they are from Owl Labs) and they allow to see also the rest of the room. They are very nice! Besides that, all good from the virtual side! Thank you!
- I thought it was a well put together event and I am looking forward to seein ghow the network develops over time.
- More structure for the breakout groups and working sessions. More, and shorter talks so more topics can be covered. Some kind of icebreaker or activity to learn who is present in the room/on zoom.