NATURE-BASED SOLUTIONS WORKSHOP & GROUNDTRUTHING ACTIVITIES REPORT

PLACENCIA, BELIZE
February 2024
#StrongCoastsBelize
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April 2024

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About Strong Coasts:
Strong Coasts is an NSF funded international research project focusing on quantifying the benefits of conserving and restoring mangrove and coral reef ecosystems, particularly in relation to flooding and erosion risks. By modeling flood hazards and ecosystem services across scenarios, Strong Coasts provides data, tools, and education resources to inform policies and actions for building resilient coastlines.
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Executive Summary

On February 2nd and 3rd, 2024, 14 members of the Placencia Peninsula community gathered for a collaborative workshop to provide feedback on maps related to coastal and marine habitat health, marine recreation, and anthropogenic stressors.

Hosted by the Natural Capital Project at Stanford University, this two-part workshop was part of the Strong Coasts Coastlines and People (CoPE) project which studies Nature-Based Solutions to flooding and erosion risks.

On February 2nd, 4th and 5th, 2024 members of the CoPE team, including Belizean partnering organization Fragments of Hope Ltd., and Placencia Peninsula community residents visited Laughing Bird Caye National Park (LBCNP), the Placencia Lagoon, and the South Stann Creek River. The University of South Florida hosted these activities to learn together about the given locations while also supporting research needs of members of the team. At LBCNP, a media team from the Natural Capital Project was able to capture footage of their work in Belize. The lagoon visit facilitated the “groundtruthing” of mangrove presence needed to improve satellite mapping. Going along the coast to the mouth of the South Stann Creek River with members of FoH, the Placencia Village Council, and the Placencia Tour Guides Association, development and various infrastructures to reduce erosion were discussed as was the need for more information on what’s happening upriver.

This workshop and activities report continues the Strong Coasts CoPE practice of community collectively working to care for the threatened nature so central to health, livelihoods, and heritage along the peninsula.
Workshop & Activities At a Glance

21 Attendees

5 Organizations

5 Participatory Activities

20 Hours of Collaboration and Exchange
PARTICIPATORY MAPPING WORKSHOP WITH THE PLACENCIA TOUR GUIDES ASSOCIATION & FRAGMENTS OF HOPE
PLACENCIA, BELIZE
FEBRUARY 2-3, 2024

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On February 2nd, 2024, 13 members of the Placencia Peninsula community gathered for a collaborative workshop to provide feedback on maps of anthropogenic stressors (e.g., dredging, coastal development) and coral and mangrove habitat health. On February 3rd, 2024, 13 members of the Placencia Peninsula community gathered for a collaborative workshop to provide feedback on maps showing drivers of visitation (wildlife hotspots, beaches) and mapped marine areas where local and foreign visitors recreate, including activities like bait fishing and snorkeling, and areas of concerns due to increased shoreline erosion and coastal development.

The workshop was hosted by the Natural Capital Project at Stanford University and is part of the Strong Coasts Coastlines and People (CoPE) project which studies Nature-Based Solutions to flooding and erosion risks. Strong Coasts is an international collaboration of universities and organizations funded by the U.S. National Science Foundation to study nature-based solutions to climate-related risks.

Planning began in December 2023 with the Placencia Tour Guide Association (PTGA) leaders to help shape the agenda, the invite list, and to help ensure physical and social inclusivity. The participatory mapping questions were developed by the Natural Capital Project team and revised by the PTGA leaders to address topics around the health of targeted habitat for Nature-Based Solutions, human activities that support or harm those habitats, and the benefits these habitats provide to people in terms of recreation and fishing.

We are grateful to all the participants who came together to share their knowledge related to status, benefits provided by mangroves and coral reefs, and challenges emerging with coastal development and climate change around the Placencia Peninsula. Their ongoing enthusiasm and insights will help guide future efforts to care for and protect the Placencia Peninsula's coastline. This report summarizes the key takeaways from a workshop focused on building an equitable and resilient path forward.
Workshop Agenda

Day 1 @ Merl’s Cafe
- Welcoming remarks & project introduction
- Healthy and degraded corals and mangroves
- Existing human activities that impact these habitats and people
- Existing human activities that benefit these habitats and people

Day 2 @ Big Beck’s Harbor View
- Introduction of the Recreation & Tourism InVEST model
- Local and foreign marine recreation areas & drivers (wildlife, beaches, snorkeling sites, bait fishing)
- Beach access, erosion, and potential drivers of change
- Closing Remarks
The Strong Coasts Project focuses on Equitable solutions with nature and people. Coastal zones provide key services to coastal communities like those on the Placencia Peninsula, and surrounding areas like Independence and Monkey River, but also carry significant risks from the land and ocean like threats from waves, all of which are increasing with climate change. Protecting and restoring ecosystems like coral reefs and mangroves, can help mitigate these threats while also supporting local economies and societal resilience.

We explore risks and benefits to communities in Miami, US Virgin Islands, and Belize, where replenishing coral reef and mangrove ecosystems has been piloted and can be scaled as Nature-based Solutions.
We focus on ecosystem services, or the many different kinds of benefits that people get from nature. We try to help understand how those benefits change under different scenarios. The kinds of things that we expect to produce include user friendly tools that people can test the impact of those different scenarios.

Nature-Based Solutions reduce coastal risk and provide other benefits to people like habitat for biodiversity, like draw for tourists, like fisheries, like water purification, and climate mitigation through carbon storage and sequestration. We will model how different scenarios of Nature-Based Solutions, for example conservation or restoration, provide different levels of those benefits. This will help inform choices about where it might make the most sense to invest time, energy, and funding in those conservation and restoration activities.

Who benefits from Nature-Based Solutions is also important. What communities, which demographics, which groups of people should we think about as we think about those benefits, which of those services matter to people, and what kinds of metrics matter to people? Workshops like these will help to answer those questions, and direct our work going forward.
Day 1: ACTIVITIES & INSIGHTS

Each workshop took place from 5 to 8 pm so participants could join after work. The format of each day consisted of a short presentation and a participatory mapping exercise guided with questions.

On day 1, the first part of the workshop focused on coral reef and mangrove habitat health and distribution. We asked:

- Are there corals or mangroves missing from these maps?
- Do the coral and mangroves health map match your on the ground assessment?
- Are there corals or mangroves that do not exist anymore and should be erased from the current habitat maps?
- Where did corals or mangroves previously exist?

The second part of the workshop focused on the anthropogenic activities that can benefit or stress corals and mangroves habitat health:

- Based on the current coastal development and dredging map layers, are those current or are there other places?
- What are the human activities that are impacting corals and mangroves? Where are they ongoing?
- Where are the restoration efforts for corals and/or mangroves?
- Where are restoration or conservation efforts most needed? Why?
Participatory Mapping

Laminated maps of modeled health of corals and mangroves with colored markers were used to capture people’s local knowledge of the health of those habitats and how are they changing around the peninsula. The coral spatial extent is a combination of the Healthy Reefs for Healthy People 2021 and 2020 Fragments of Hope maps. The spatial extent of the mangrove map represents 2019 (Cissell et al. 2021).

The areas described as healthy, degraded, or cleared mangroves on the map were revised to reflect recent changes to mangroves.

The mapping exercise revealed where human activities associated with coastal development and dredging impact corals and mangroves.

**OUTPUTS:**

Spatial GIS data representing:
- Maps of healthy and degraded corals and mangroves
- Maps of existing human activities that impact these habitats
- Maps of existing human activities that benefit these habitats
DAY 1 OUTPUT: MANGROVES WITH HUMAN ACTIVITIES

Legend
- Dredging
- Mangrove - Cleared 1980-2024
- Mangrove – Healthy
- Mangrove – Degraded
- Development
- Land Area
DAY 1 OUTPUT: CORALS WITH HUMAN ACTIVITIES
On day 2, the first part of the workshop focused on where and why local and foreign visitors recreate. To gain insights into how people benefit from coastal and marine ecosystems, we asked:

- Map out areas that are used primarily by locals and/or foreign tourists.
- Where are beaches accessible or prohibited or restricted (due to erosion or land ownership)?
- The pink circles represent wildlife areas, are those accurate? Are there additional areas that should be on this map as well?
- What areas are of concern to you with growing tourism?
What draws people to Placencia?

Maps on tables were used to capture where people observed foreign visitors and where residents recreate around the peninsula and what draws them to those places.

Participatory Mapping

Social media platforms, like Flickr (see map above) can yield information about where people take photos (Photo-user days) and identify ‘hotspots’. However, more information is needed to understand those spatial patterns.

Laminated maps and colored markers on tables were used to capture people’s perspective and observations of how tourism and recreation occur around the peninsula.

The ‘marine recreation area’ on the laminated map was revised to reflect areas where marine-based tourism and local recreation activities are occurring.
Management resources and coral restoration could benefit cayes which play a very important role for residents and foreign visitors.

OUTPUTS:

Spatial GIS data representing:

- Map of areas used by different types of tourists & local communities
- Map of where marine recreation occurs around the Placencia Peninsula
- Map of beach access & wildlife
DAY 2 OUTPUT: RECREATION AND TOURISM LOCATION AND DRIVERS
At the close of the workshop, attendees were asked to provide their honest feedback on the two nights of activities. Specifically, they were asked to share things that they did and did not like, as well as any ideas to improve future sessions.

Several themes emerged from participant responses. Participants appreciated the respect the research team had for local knowledge and expressed that much of the information collected would not have been possible to find through other sources. People also enjoyed the participatory mapping activities - finding them to be engaging and insightful. It was noted that fitting more than two maps into each night was tiring.

In providing suggestions for future work, numerous individuals found the participant number to be low. While they recognize that the entire peninsula cannot be included, they did feel we could try to achieve representation from more villages than just Placencia and individuals from more diverse backgrounds.

Our participants repeatedly noted how eager they are to be included in updates throughout the data analysis process and receive results from the workshop. Dissemination is something that the Strong Coasts CoPe is committed to doing, continuing traditions of members of our team who have worked in Placencia.
SECTION 2

WORKSHOP INSIGHTS

“I think it’d be good to include folks from other villages”

“... Scale and Inclusion

I loved it all, I like you guys choosing locals to get knowledge – that’s needed. If you come back again and don’t call, I’ll be pissed.”

“... Respect for Local Knowledge

It will be good to see feedback in the near future that we can use and share with everyone

“... Dissemination

“I liked how it bring us together, sharing knowledge about sea and tourism. Even I learned something”

“... Knowledge Exchange
GROUND TRUTHING FOR SATELLITE MAPS
FEBRUARY 3RD, 2024

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Section 3

Mangrove ground truthing around the Placencia Lagoon

Our CoPe team spent the day in and around the Placencia Lagoon, checking to see whether mangroves were present at specific locations based on satellite derived images. Claudia Baron-Aguilar, a University of South Florida graduate student in marine science, is helping to quantify mangrove change over time in the area. She will use the information collected to improve the identification of mangroves in the satellite images that she is using. Dale Godfrey and Victor Faux from Fragments of Hope worked with her from the Placencia Caye all the way up to the north of the lagoon. They also checked locations used by Abigail Garbutt in 2023 for a study on mangroves for the Southern Environmental Association. Three students from the Stann Creek Ecumenical Junior College also assisted as a part of their volunteer school requirements.
EXCURSION TO SOUTH STANN CREEK RIVER
FEBRUARY 5TH, 2024

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Section 4

Excursion to South Stann Creek River

Warren Garbutt, Chairman of the Placencia Village Council, captained Sunseeker along the Placencia Peninsula to the mouth of the South Stann Creek river. Known by many residents as one of the main sources of sand for the peninsula, this “go along” demystified what was happening along the coastline for those on the boat - persons from the Placencia Tour Guide Association, Fragments of Hope Ltd, and the University of South Florida. Some persons on the boat had attempted this in June 2023, but rough waves ended that trip at Malula’s in Seine Bight.

Many persons shared that the mouth of the river seemed small. The boat was too large to go up the river, so Victor Faux droned the area for us.
Excursion to South Stann Creek River

Photo by Victor Faux
Returning to Placencia from the South Stann Creek River

Photo by Victor Faux
Returning to Placencia from the South Stann Creek River

Erosion was happening north of the peninsula where development along the shore was not evident from the boat. Once we hit Riversdale and made our way back down the peninsula, we saw the development and the structures being built to protect properties or expand shorelines. Freshly cleared areas were compared with recent Facebook posts from realtors to get an idea of the scale of things to come. Persons were moving sand from the beach to fill properties as we passed by. Seawalls, riprap, groins, frayed sandbags, rocks, and many other interventions outnumbered the few vegetated areas. Beachfronts had become rock walls with steps to get into the water. While the Placencia Marina still stood out because of its size, the number of interventions north of it were noted.
PLACENCIA PENINSULA
FEBRUARY 5TH, 2024
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PLACENCIA PENINSULA
FEBRUARY 5TH, 2024

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• All participants who spent time with us during the workshop and associated activities.
• The Placencia Tour Guides Association, especially Vice President Harry Neal for being the main contact for organizing the participatory workshop. Other board members, Gilly Garbutt (President), Mariko Wallen (Secretary), Akeem Tejada (Treasurer), Torrie Vernon, and Darrel Lozano for meeting with us to plan the workshops.
• Tara Westby for managing logistics.
• Fragments of Hope, especially Natasha Gibson, Victor Faux, Dale Godfrey for participating in the workshop and/or activities and Lisa Carne for advice on activities.
• The Placencia Village Council, especially Warren Garbutt for participating in the workshops and captaining the excursion to the South Stann Creek River.
• The Southern Environmental Association for supporting our visit to Laughing Bird Caye National Park.
• Tiffany Westby and Merl’s Cafe staff for hosting us.
• Sheldon Lopez and Bick Beck’s Harbor View staff for hosting us.
• The Bohemian, Finger Foodz and Malula’s for hosting us.
# PARTICIPANTS

Nature-Based Solutions Workshop

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<td>Akeem</td>
<td>Tejeda</td>
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<td>Claudia</td>
<td>Baron Aguilar</td>
<td>University of South Florida (USF)</td>
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<td>Dale</td>
<td>Godfrey</td>
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<td>Maya</td>
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<td>Monique</td>
<td>Vernon</td>
<td>Mr. Goby+Friends Recycling (Friday workshop only)</td>
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<td>Natasha</td>
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<td>Zelma</td>
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STRONG COASTS

Participating Research Organizations: