

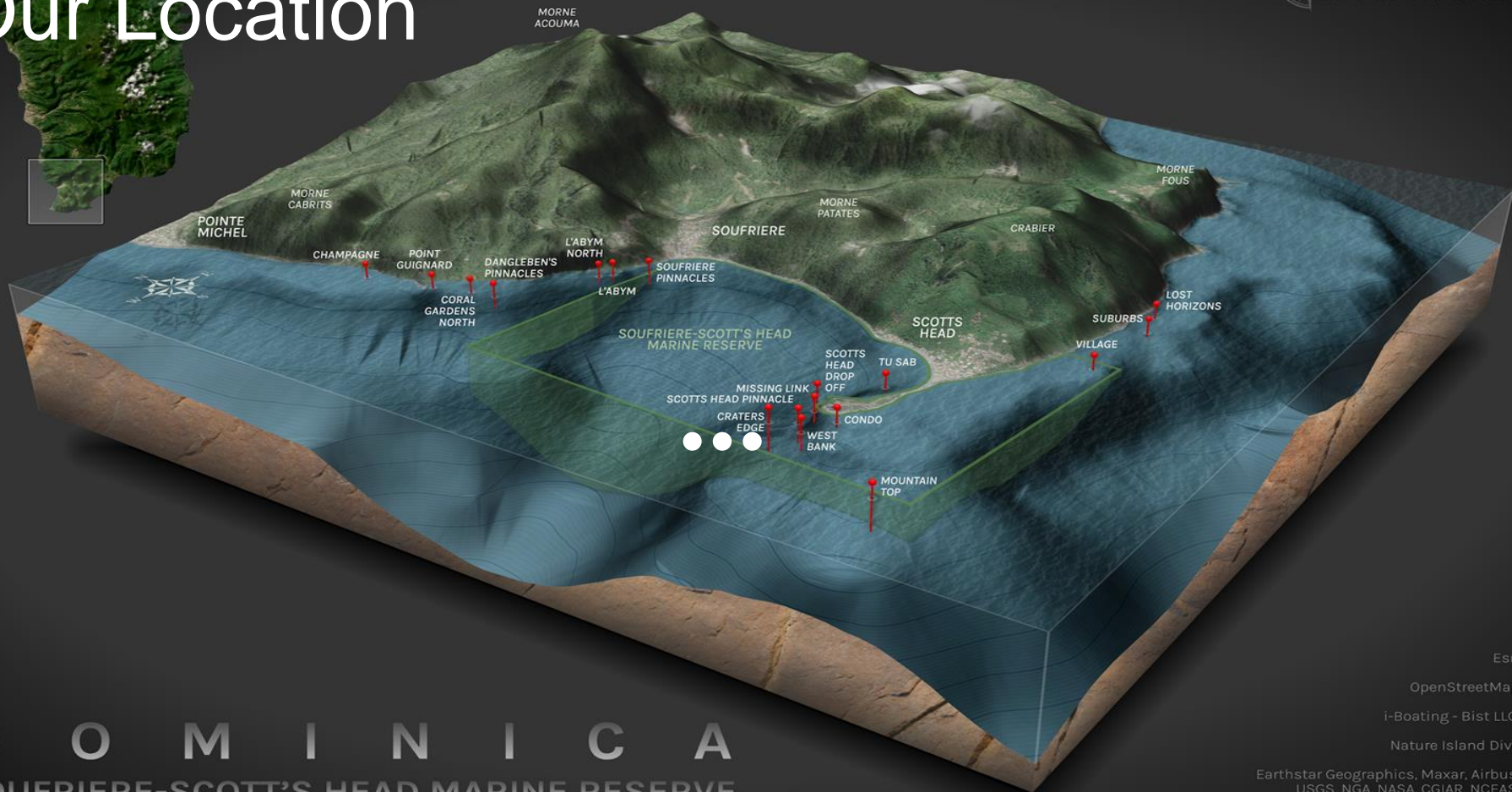
Costs and Challenges For EX Situ Systems In Small Island States

Dom̃inica



Our Location

PATHFINDER
GEOSPATIAL



D O M I N I C A
SOUFRIERE-SCOTT'S HEAD MARINE RESERVE

Esri

OpenStreetMap

i-Boating - Bist LLC.

Nature Island Dive

Earthstar Geographics, Maxar, Airbus,
USGS, NGA, NASA, CGIAR, NCEAS,
NLS, OS, NMA, Geodatastyrelsen,
GSA, GSI and the GIS User Community

Our Location



Why go to Ex Situ?

Original thinking in 2023

- Fragmentation - Outplanting
- Work with SCTL D survivors
- Assisted fertilization

Today

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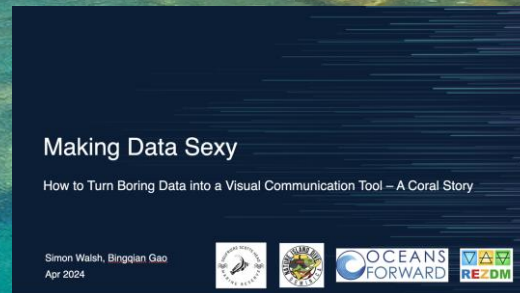
- Save as much diversity as we can from 2024 bleaching event

June 5th 2024. Ocean Temps 30C and first signs of paling in OFAV

Timeline

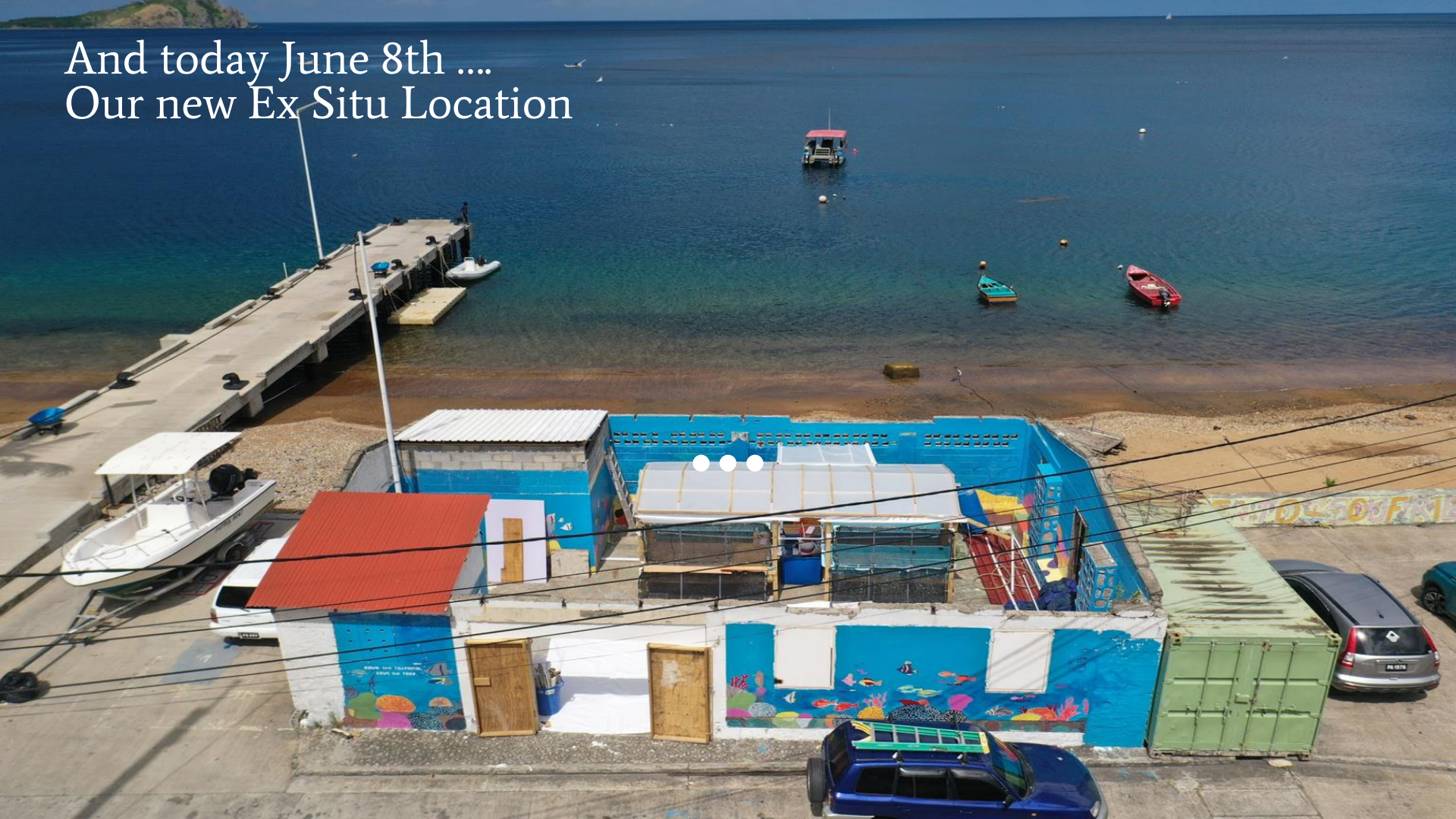
We made this presentation to many people including Government Officials
In April, 2024

Our last slide made this plea.....”Hopefully the data presented here will convince Government To lease us this building”





And today June 8th
Our new Ex Situ Location





Location Considerations

- Easy Access to clean Sea Water

This determines your ability to do frequent water changes and minimizing complex water chemistry

- Accessibility

Quick and easy access to the system for team members makes management easier.

- Protection from weather. Wind, Rain and Sun

Wind can rip up roofing and shading. Heavy rains dilutes salinity and makes daily chores challenging. Sun means much temperature management with chillers etc.

- Security

How much do you have to worry and safely and security of you system equipment and possible interference with the tanks.

Costs to consider

1. Ex Situ System parts
 - Tanks, pumps, Fittings, Sensors etc
1. Solar System or electrical costs
2. Shipping
3. Construction Costs,
 - Building
 - tank racks
 - Plumbing
 - Electrical

Ez Situ Total system parts

Tanks.

Main Water pumps.

Filtration. UV and Sediment

Sump Pumps. circulation. Tank, Air

Chiller

Testers. Temp/Salinity/ Light/ O2

Tubing/Controller/fittings

Covering. Tarps, plastic/shading

Total Costs: US\$15,000

Solar System. Challenges and Solutions

Challenge: Our building has no roof.

Solution: Install the entire System on Dive Shop across the road

Challenge: Large Pole needed to run heavy wire across the road

Solution: Get permission to use a downed pole from Hurricane Maria

Problem: All local electricity is 220v 50hz but all elements of our US Based systems are 110v 60 hz

Solution: Install both 110v and 220v Inverters on the solar system

Solar System costs inc installation: US\$23,000

Shipping

one of our hardest costs to predict ahead of time and a lot of stress worrying about it.

Duty: There is a huge variation in Dominica depending on materials and mood of the customs inspector

VAT: 15%.

Oceans Forward as an NGO working on turtles, whales and coral gets duty free concessions and VAT concessions on most items.

Shipping costs \$4200

Without these concessions from Government of Dominica none of these projects would have been possible.

Construction Costs

Dominica has EXTREMELY high construction costs.

Even if you get a building or property there is a lot of work to do for your new coral habitat.

- A roof for rain and light control and shading.
- Tank racks to support the roof and tanks
- Plumbing costs for intake, drain and circulation lines



Total Construction costs: US\$6000

Total Costs

Systems.

US\$15,000

Solar System costs inc installation:

US\$23,000

Shipping costs

US\$4200

Total Construction costs:

US\$6000

Total Cost to date

US\$48,000

Funding Sources

Private Donations from Divers

Sub Grant from Cordap

Greeting Card Sales

Rum Sales from Rosalie Distillery

Nature Island Dive



Rosalie Distillery Rum Bottles

Lessons Learned

1) Every location is unique and you HAVE to understand your local challenges!

Eg: In Ceiba, Puerto Rico (where we learned that this was all possible) their location is in the open and they do not have the local ambient heat that we have in our building.

So the chiller that worked in their environment

Although a great chiller might be unpowered for

Our hotter location.



Lessons Learned

2. Have a grasp of your local human resource skill sets and costs.

At The Dominica Coral Rescue Center we have 2 engineers, environmental and Structural.

So we are very good at building/designing and problem solving. A huge asset for building the system.

However we lack experience in operating the system so we have been testing for PAR, Temperatures, learning to operate the APEX monitoring system, trouble shooting equipment and other challenges.

Lessons Learned

3. Buy backups of ALL essential parts.

We decided to identify all components that if they failed it would cause a catastrophic collapse of the environment and therefore corals.

- Chiller.
- Main water pump for ocean pump and circulation.
- Sump Pump
- UV filter spare parts

Lessons Learned

4: Run a lot of tests!



How it looks today.



Thank you for listening and for all your support!

Boulder Town Dive Site 2022

