



...bridging communities upstream and downstream to improve nitrogen management

# Implications for Water Security in the Caribbean

Maya Trotz, Ph.D.

Professor, Civil & Environmental Engineering, University of South Florida



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“Blue Economy” \$\$

Nitrogen  
Management



Marine Conservation  
Community

Water Sector Investments Needed

# Blue Economy



## ESTABLISHED INDUSTRIES



Capture fisheries



Shipping/Ports



Shipbuilding



Offshore oil/gas



Marine construction



Marine and  
coastal tourism



Marine  
Transport



Marine business  
services



Marine  
R & D



Dredging

## EMERGING INDUSTRIES



Marine  
aquaculture



Offshore wind  
energy



Ocean renewable  
energy



Marine seabed  
mining



Safety &  
surveillance



Marine  
biotechnology



High-tech marine  
services



**Ridge to Reef**  
**Land to Sea**  
**Fresh to Salt Water**

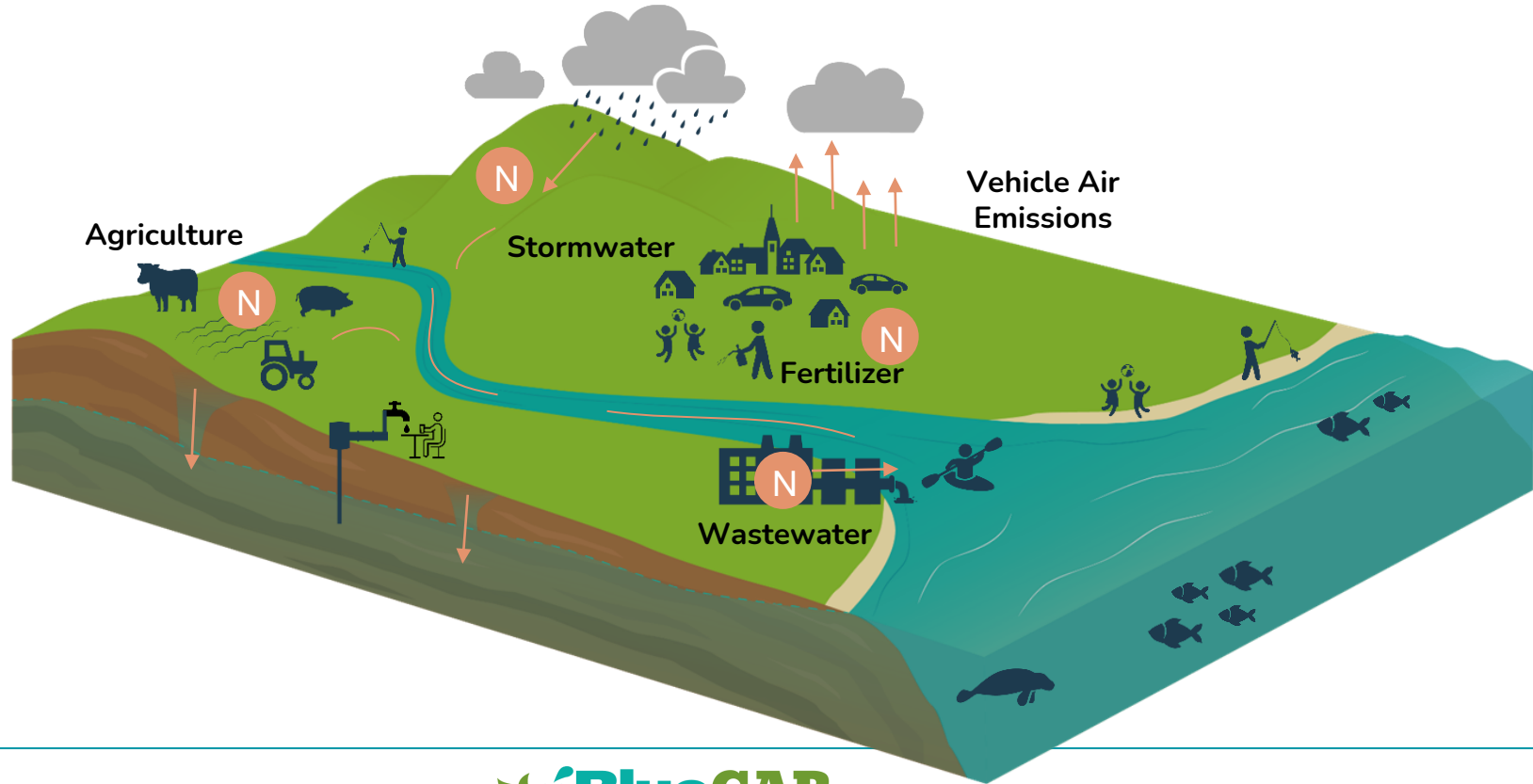
# Blue Economy

Working definition

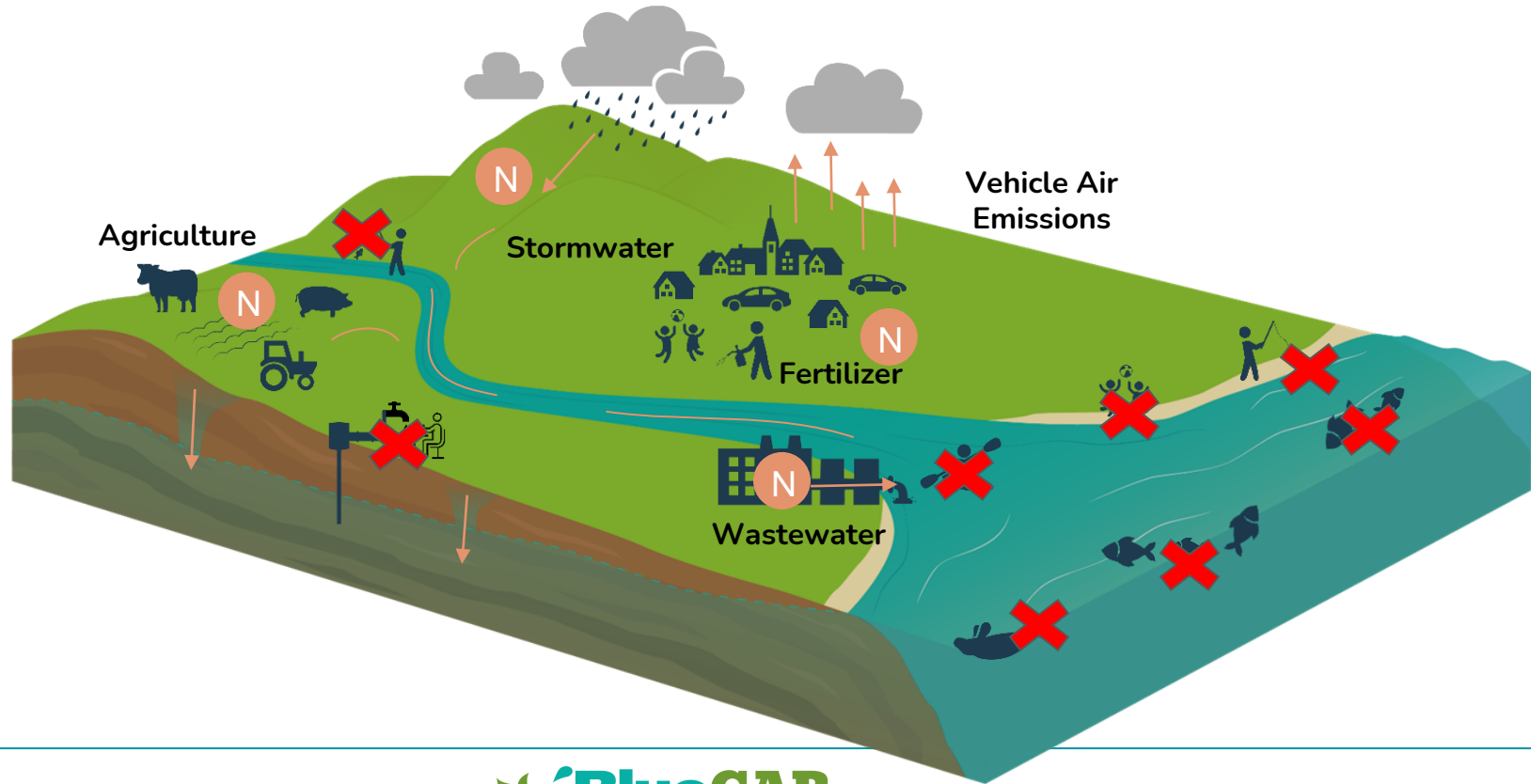
The sustainable and equitable use of **all water resources** for economic growth, improved livelihoods, and jobs while managing ecosystem health.

Nitrogen as a connector

# Why?



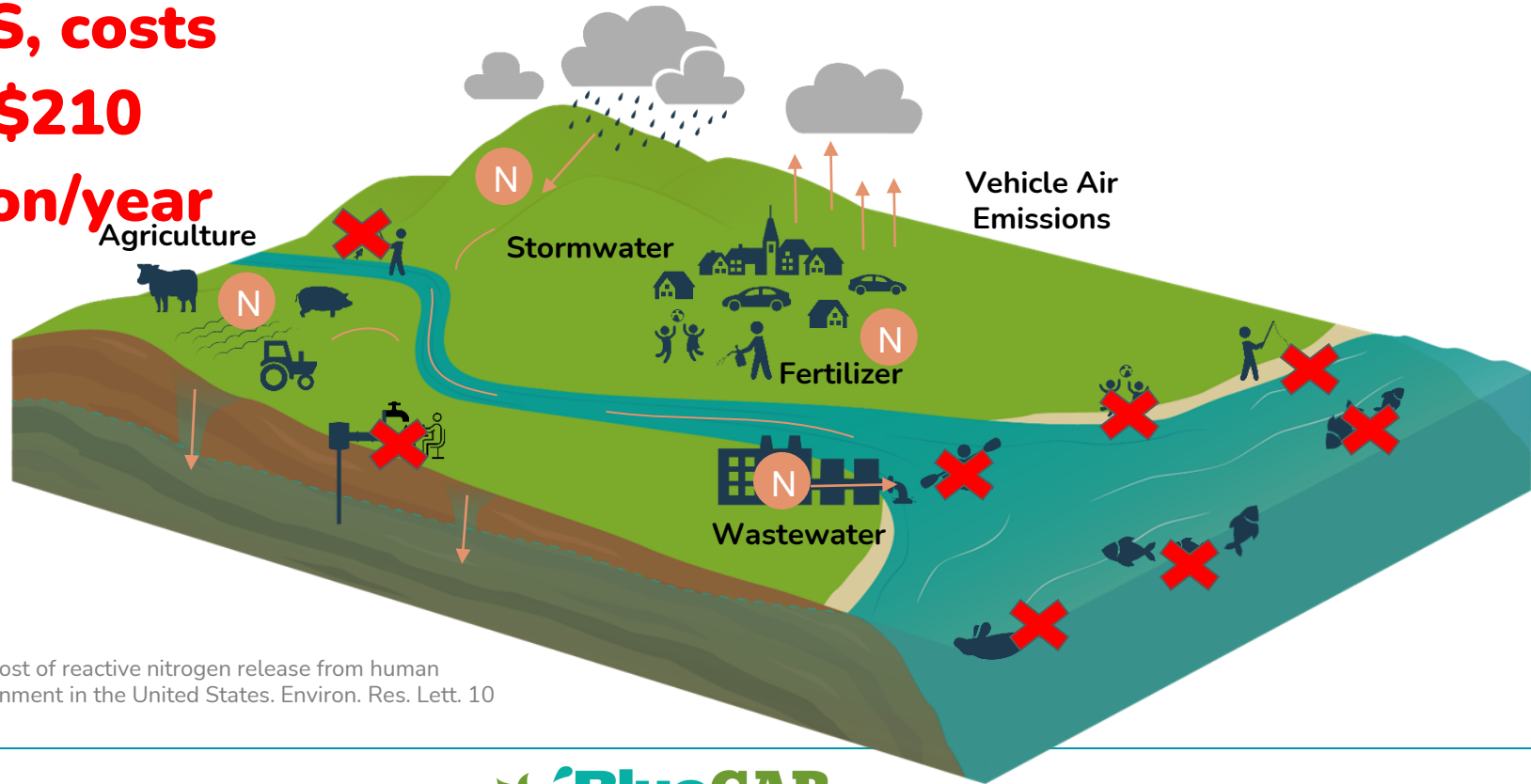
# Nitrogen pollution degrades water quality





# Nitrogen pollution compromises the Blue Economy

**In US, costs  
~ \$210  
billion/year**



Sabota et al. (2015) Cost of reactive nitrogen release from human activities to the environment in the United States. Environ. Res. Lett. 10 (2015) 025006.



NSF's Convergence Accelerator



UN Resolution on Sustainable Nitrogen Management (UNEP/EA.5/Res.2)

**Accelerate actions to  
significantly reduce nitrogen waste globally  
by 2030 and beyond.**



...bridging communities upstream and downstream  
to improve nitrogen management



[www.bluegap.org](http://www.bluegap.org)



People driven, storytelling database

## Humanize Nitrogen Pollution to Catalyze Action

Data driven, web-based platform







- Humanize the challenges of and solutions to N pollution
- Connect people and communities
- 3 pilot watersheds

Stories

Data

Action

Mississippi River Watershed

Tampa Bay Watershed

Salt River Watershed  
in St. Croix, U.S. Virgin Islands



# VALUE PROPOSITION

We empower  
communities impacted  
by nitrogen pollution

Mississippi River  
Watershed

Tampa Bay  
Watershed

Salt River Watershed  
in St. Croix, U.S. Virgin Islands



Seth Watkins  
Pinhook Farms



V. Fixmer-Oraiz  
Astig Planning



Walter Smith  
Tampa Sierra  
Club



Hillary Van Dyke  
Green Book  
of Tampa

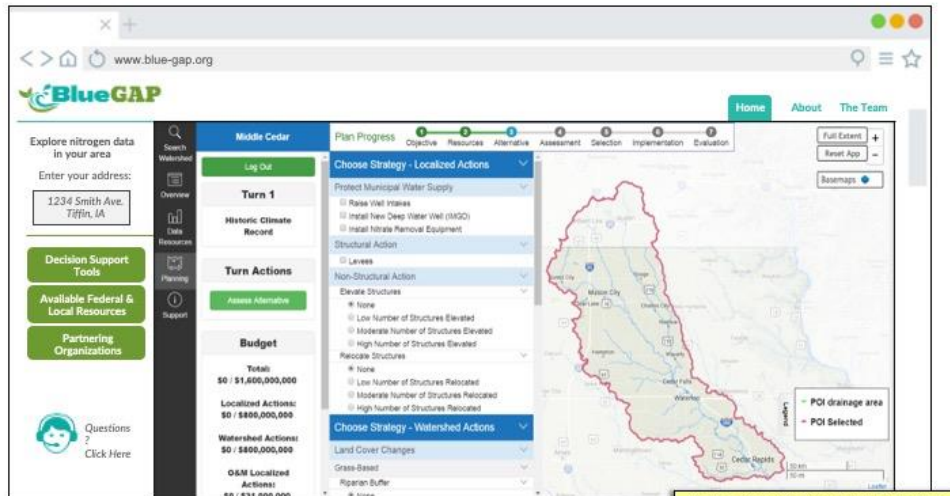


Kelcie Troutman  
USVI East End  
Marine Park



J. Cumberbatch  
ASCE  
Salt River

# Blue Green Action Platform



The screenshot displays the Blue GAP website's interface for exploring nitrogen data. The top navigation bar includes links for Home, About, and The Team. The main content area is titled "Explore nitrogen data in your area" and features a search bar with the address "1234 Smith Ave, Tiffin, IA". Below the search bar are buttons for "Decision Support Tools", "Available Federal & Local Resources", and "Partnering Organizations". The interface is divided into several sections: "Middie Cedar" with a "Log Out" button, "Turn 1" with a "Historic Climate Record" button, "Turn Actions" with an "Assess Alternatives" button, and a "Budget" section showing a total of \$0 / \$1,600,000,000. The "Choose Strategy - Localized Actions" section lists various actions like "Protect Municipal Water Supply" and "Raise Wet Inlets". The "Choose Strategy - Watershed Actions" section lists actions like "Land Cover Changes" and "Grass-Based Riparian Buffer". A map on the right shows the "POI drainage area" and "POI Selected".

Participatory Decision Support System



Explore nitrogen data  
in your area

Enter your address:

Walter Smith  
Sierra Club, Tampa Bay



Walter hosts the Sunday Forum every Sunday on WMNF public radio. As a Tampa native and civil engineer he's vested in improving the health and livelihoods of frontline communities. He leads a Toxic Bus Tour, and organizes environmental justice forums that bring the Tampa Bay community together, raising awareness on emerging issues of concern, like nitrogen pollution. He hosts educational events at the Walter L. Smith Sr. library, named after his father, a former President of Florida A & M University.

Listen to Walter's Story





## Maya Burke Tampa Bay Estuary Program (TBEP)



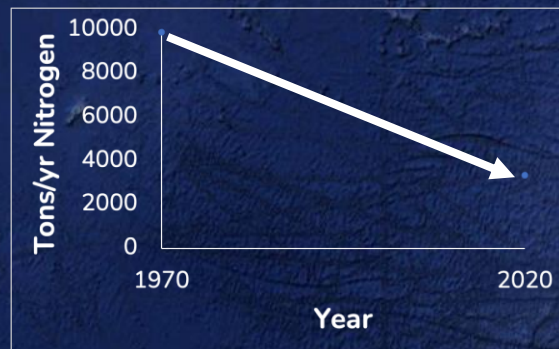
Maya is from Tampa Bay, Florida. She is proud to work with public and private entities who are reducing nitrogen pollution into the Tampa Bay Estuary. These include Mosaic, one of the largest fertilizer companies in the world. Reduced nitrogen loads have improved water quality, mainly from treatment of wastewater and industrial effluent. Degraded seagrass beds have recovered to 1950s levels, providing a healthy habitat for fish, and food for manatees. Grants are now available for communities to address nitrogen pollution from stormwater runoff and vehicle air emissions, the leading sources of nitrogen pollution to Tampa Bay today.

### Listen to Maya's Story



## BlueGAP ACADEMY

- Pilot in Tampa Bay
- Target frontline communities
- Test Platform prototype



Tampa Bay  
Watershed





# OUTREACH

- Media
  - BIMS Bites and factsheets
- Social Networks
  - Alliance - Nitrogen Champions
- Outreach Initiatives
  - Academy - Watershed-scale training



# Outreach

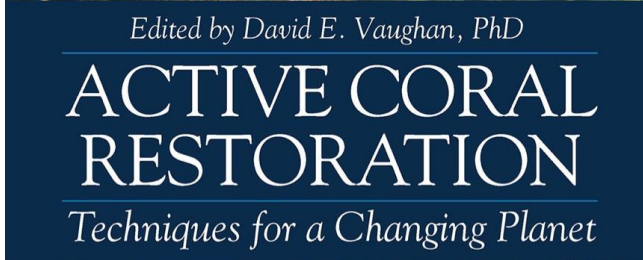
- Short documentary
- Diverse perspectives
- Inclusive and accessible content
- Creative products around environmental history around questions of watersheds and communities





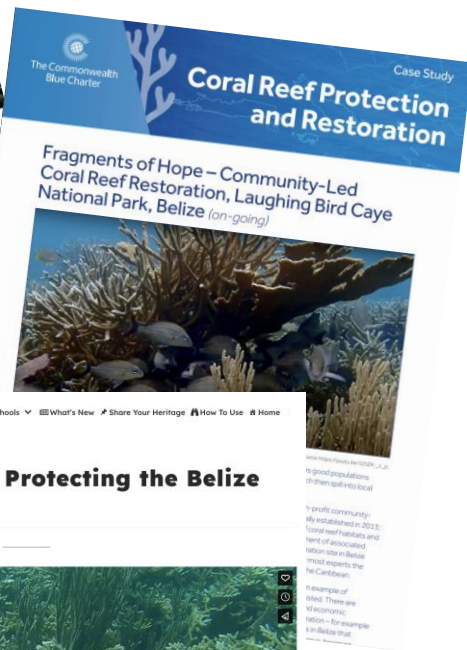
# Allyship with Conservation Organizations





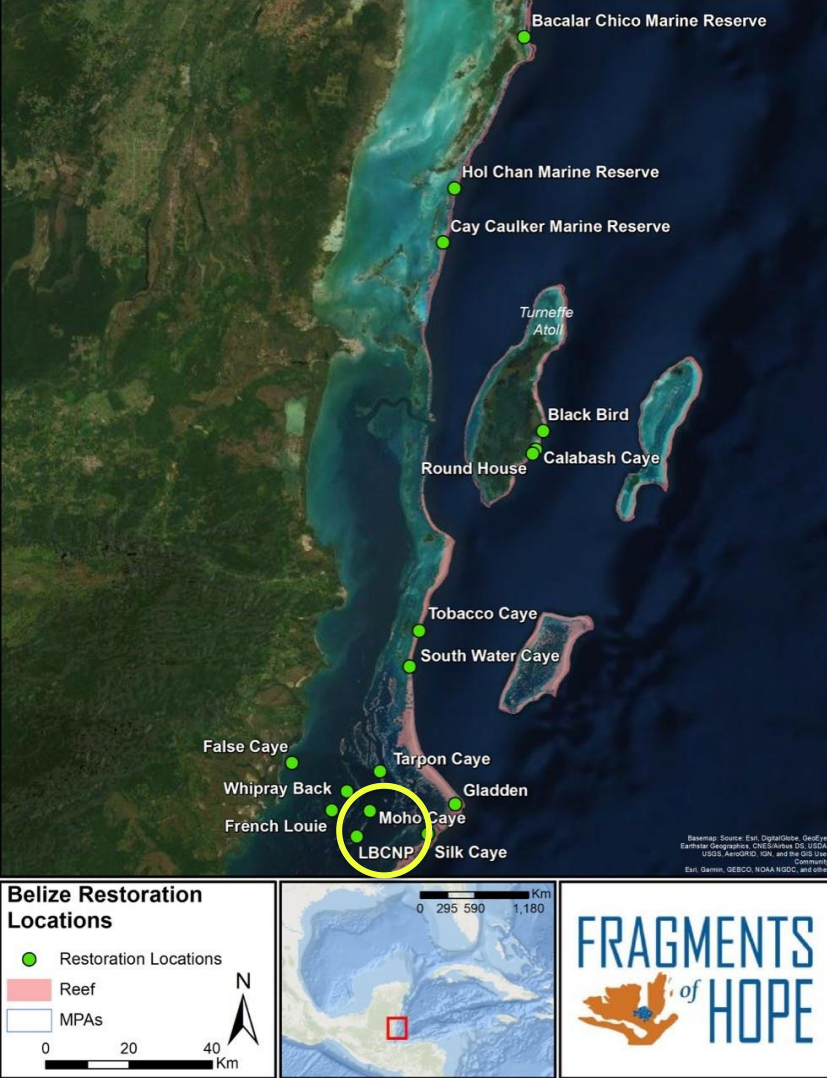
# ACTIVE CORAL RESTORATION

## Techniques for a Changing Planet



# Fragments of Hope

- Began work in 2006 at Laughing Bird Caye National Park (LBCNP)
- Scaled up 2010, 2015, 2016, 2020
- Mapped extant acroporids
- > 160,000 outplanted corals
- Multiple genets in proximity & documented spawning
- Long term monitoring growth, survival, thermal tolerance





Platform: DRONE

Sensor: DIGITAL

Data Obtained: Coral species coverage



Platform: SWIMMER  
Sensor: Digital  
Data Obtained:  
Temporal Photos/  
Time series photos

Subsite 13

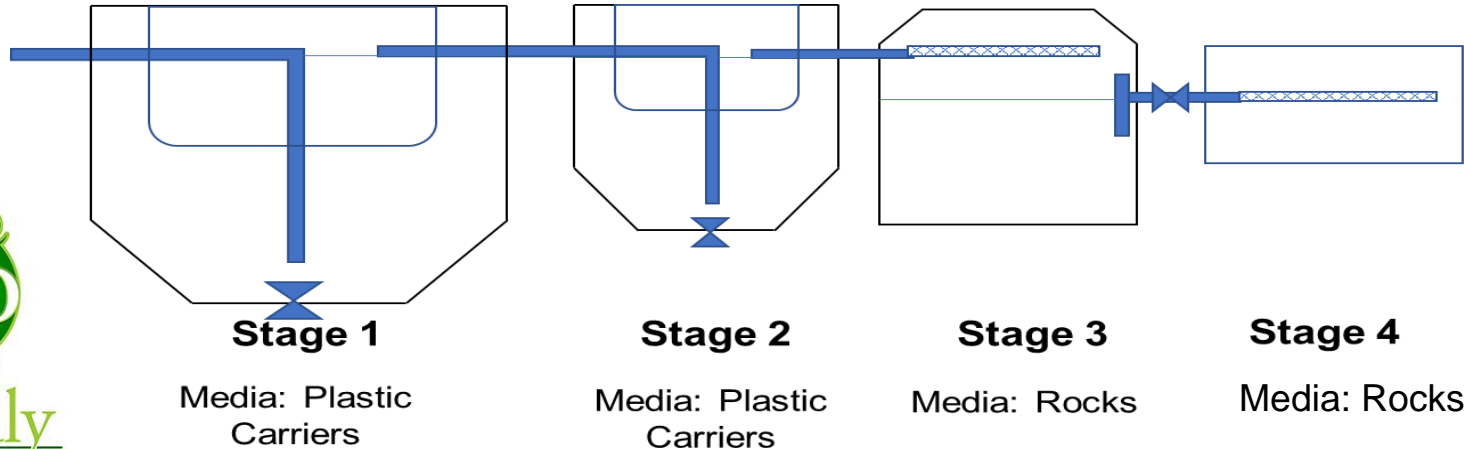








# Laughing Bird Caye National Park Wastewater Treatment System



November 2022



The Government of Belize wants to lift the moratorium against the exploration and exploitation of offshore oil...

**WITHOUT YOUR APPROVAL!**

**SIGN THE PETITION**

**#AskBelizeFirst**





# Large-scale CoPe: Reducing Climate Risks with Equitable Nature-based Solutions: Engaging Communities on Reef-Lined Coasts



UNIVERSITY OF  
SOUTH FLORIDA



FRAGMENTS  
of HOPE

Build on Community Partner Initiatives



ECU



UNIVERSITY  
OF MIAMI

UC SANTA CRUZ

Stanford  
University

BOSTON  
UNIVERSITY

# Colonial Legacies & Caribbean Landscapes



<https://youtu.be/8rdL9VDR-68>

CONCERT

WED 14TH DECEMBER

STARTING@  
**7:30PM**

HOSTED BY  
**RICHARD TRUMPET**

*Supporting Cast*  
MARCUS BRAVEBOY  
PROPHET BENJAMIN  
RICHARDE PAN BEREAX  
FIREBALL  
GYAZETTE  
AND MORE

Artiste/singer/songwriter  
**COLLIS DURANTY**

**\$100 CONTRIBUTION AT THE DOOR**

Open your eyes up and give the  
earth a chance to smile again

Collis Duranty  
Earth Song





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**Thank You! Maya Trotz, [matrotz@usf.edu](mailto:matrotz@usf.edu).**