Building Capacity for Resilience on Florida's Coral Reef through Coral Rescue and Propagation

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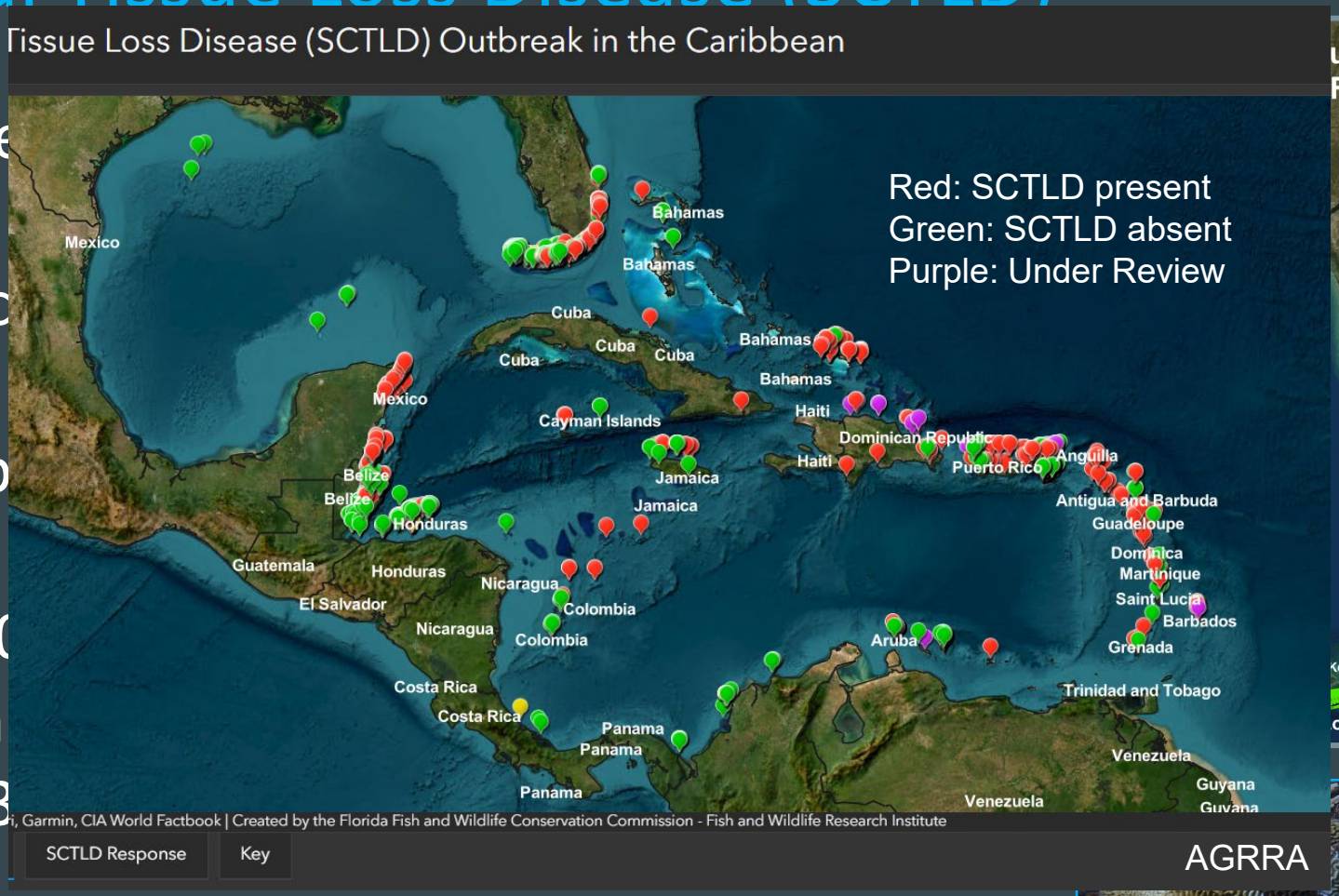
Coral Rescue

Stony Coral Tissue Loss Disease (SCTLD)

- First docume
  County
- FL prevalenc
  flare ups
- 34 susceptib
  species
- Estimated 8(
  live tissue in
- Spread to 33
  territories
- Losses affect benthic community structure and ecosystem function
  - Regional extirpation of species



Florida Coral Rescue Project

“Rescue” (collect and gene bank) healthy and surviving corals from SCTLD

- ***prevent*** them from becoming infected
- ***preserve*** genetic diversity
- ***propagate*** for future restoration

Holding

Long-term land-based holding Facilities

- AZA holding facilities

ASSOCIATION OF ZOOS & AQUARIUMS

- non-AZA holding facilities
  - universities, research facilities, non-profits
- Adding 3 new facilities in 2025

Partners


FLORIDA FISH AND WILDLIFE
CONSERVATION COMMISSION


NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE


NATIONAL MARINE SANCTUARIES


FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION


NATIONAL PARK SERVICE

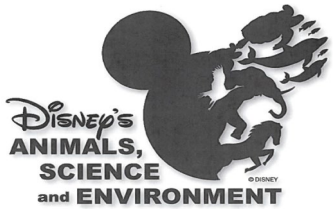

ASSOCIATION OF ZOOS & AQUARIUMS


Fish & Wildlife
FOUNDATION OF FLORIDA


National Fish and Wildlife Foundation


THE FLORIDA AQUARIUM


SeaWorld


Disney's ANIMALS, SCIENCE and ENVIRONMENT


FROST SCIENCE


UNIVERSITY OF MIAMI
ROSENSTIEL SCHOOL of MARINE, ATMOSPHERIC & EARTH SCIENCE


NASHVILLE ZOO
AT GRASSMERE


NOVA SOUTHEASTERN UNIVERSITY
NSU


TEXAS STATE AQUARIUM


FLORIDA CORAL RESCUE CENTER


ADVENTURE AQUARIUM


The Reef Institute


BUTTERFLY PAVILION


SEA LIFE
Orlando Aquarium


RIVERBANKS ZOO & GARDEN
columbia south carolina


SEA LIFE
LEGOLAND California Resort


OMAHA'S HENRY DOORLY ZOO & AQUARIUM


NATIONAL MISSISSIPPI RIVER MUSEUM & AQUARIUM
IN ASSOCIATION WITH THE SMITHSONIAN INSTITUTION


fort worth zoo


JENKINSON'S BOARDWALK


BLANK PARK ZOO


SEA LIFE
Michigan


MOTE MARINE LABORATORY


The Maritime Aquarium
AT NORWALK


COLUMBUS ZOO AND AQUARIUM


IOWA'S WILDEST ADVENTURE


GEORGIA AQUARIUM
NATIONAL AQUARIUM
BALTIMORE

Rescue by the Numbers

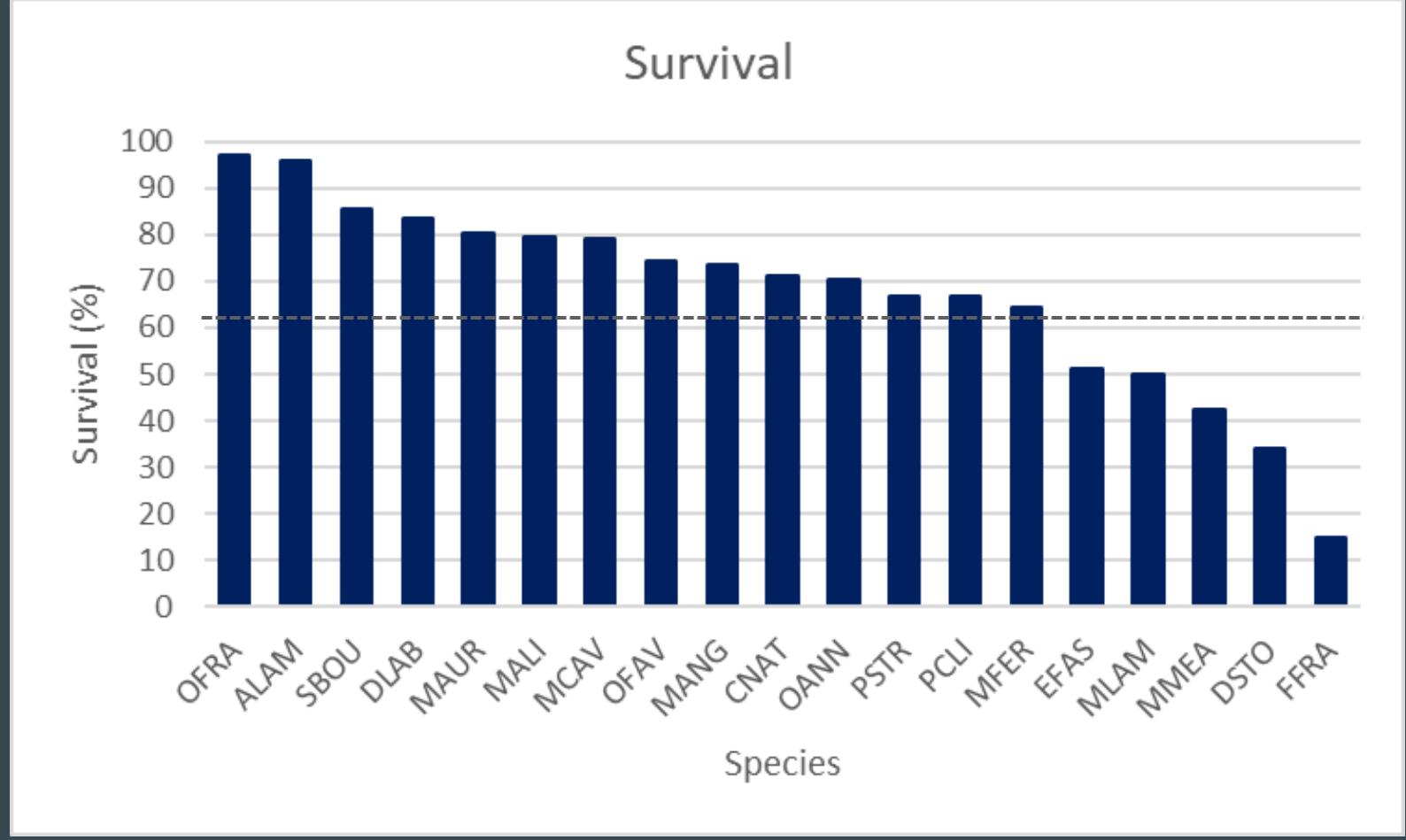
- 8 years (2018-present)
- 2359 corals under care
- 20 species
- 83 collection sites (Palm Beach County - Dry Tortugas)
- 22 day trips/ 7 cruises
- Continued collections via coastal construction project

Species Collected:

- *Agaricia lamarcki*
- *Colpophyllia natans*
- *Dendrogyra cylindrus**
- *Dichocoenia stokesi*
- *Diploria labyrinthiformis*
- *Eusmilia fastigiata*
- *Favia fragum*
- *Madracis auretenra*
- *Meandrina meandrites*
- *Montastraea cavernosa*
- *Mussa angulosa*
- *Mycetophyllia aliciae*
- *Mycetophyllia ferox**
- *Mycetophyllia lamarckiana*
- *Orbicella annularis**
- *Orbicella faveolata**
- *Orbicella franksi**
- *Pseudodiploria clivosa*
- *Pseudodiploria strigosa*
- *Solenastrea bournonii*

Survival

- Survival- 62.6%
- Lowest survival in Meandrinidae family (42.5%)
- No SCTLD observed under care
- Other sources of mortality: tissue peeling, slow chronic tissue loss, competition, predation, equipment failure



Advancements in Care

- Many species were new to land-based care
- Opportunity to learn
  - Lighting, water flow, maintenance animals, cleaning, feeding, reproductive cycles, spawning/settlement trends
  - Treatments

Treatment	Success (%)
Antibiotic	63.8
Dip	55.9
Supplements	49.0
Topical	70.0
Amputation	55.6
Total	57.4

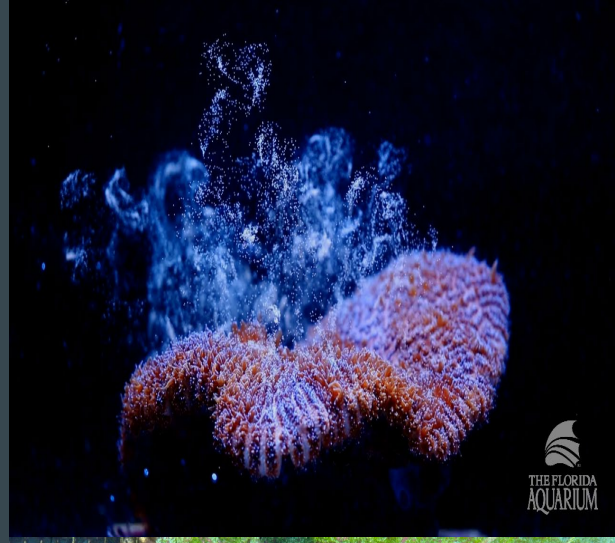


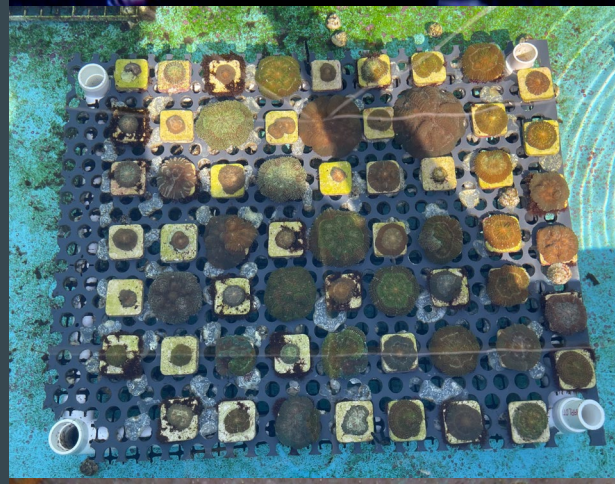
Genetics

	Steps in the Genetic Pipeline						
Species	Genotyping-by-Sequencing (GBS)	SNP Selection	Assay Development	Genotyping	Data in FWC Genet Registry	Breeding Plan Developed	# of Unique Genets Collected
ALAM	X						
CNAT A	X	X	X	X	Pending	X	67
CNAT B	X	X	X	X	Pending	X	126
DCYL	X	X	X	X	X	X	117
DLAB	X	X	X	X	X	X	208
DSTO	X	X					
EFAS	X	X					
FFRA	X						
MALI	X	X	X	Pending			
MANG	X	Pending					
MAUR	X						
MCAV	X	Pending					
MFER	X						
MLAM	X	X	X	X	Pending	Pending	87
MMEA	X	X	X	X	X	X	287
OANN	X	X	X	Pending			
OFAV	X	Pending					
OFRA	X	Pending					
PCLI	X	X	X	X	X	Pending	63
PSTR	X	X	X	X	X	X	282
SBOU	X						

Propagation and Rearing Success

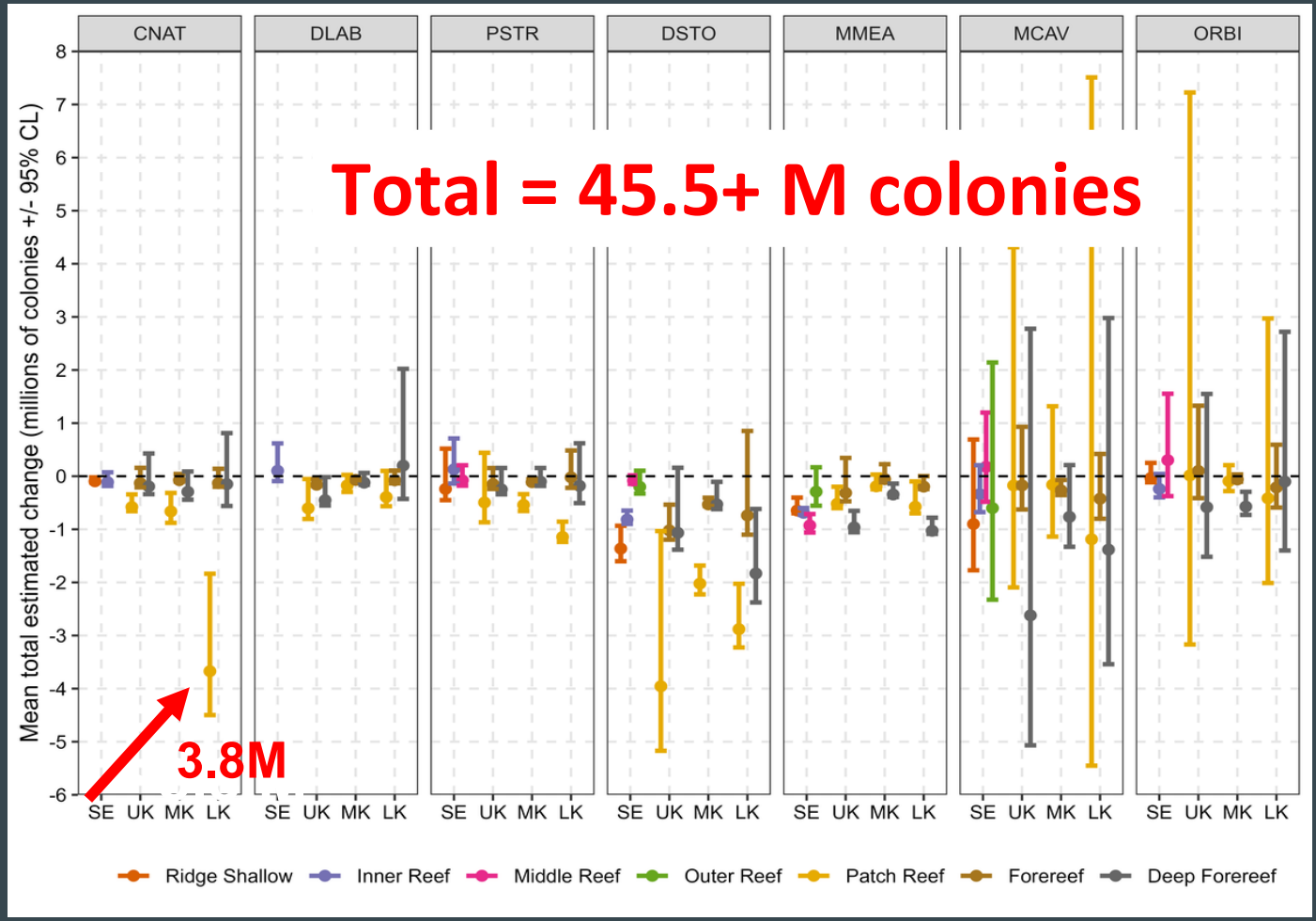
- Land-based spawning = 15 species
- Lab-assisted spawning = 8 species
  - Spawn during day
  - Assisted fertilization
- Production of larvae (2023 = +2.4M larvae)
  - 5 species (CNAT, DLAB, MCAV, OFAV, PSTR)
- Increase in settlement rates
- Successful grow-out to outplant size = 22k*





SCTLD losses

- Long-term monitoring datasets
  - CREMP, NCRMP, DRM
- Estimated pre-SCTLD densities for 7 Rescue species
- Modeled total losses post-SCTLD



Ruzicka et al., in prep

Propagation Needs

Species	Total Potential Losses
CNAT	6,093,628
DLAB	1,746,499
DSTO	17,039,245
MCAV	8,818,179
MMEA	6,737,555
ORBI	1,895,414
PSTR	3,181,450
Total:	45,511,970

Florida’s Coral Reef is estimated to support 71,000 jobs and generate $6.3B annually in sales and income

Propagation Capacity

corals needed
4,551,197

Current Propagation Capacity = 9%

FCR3 goals focus on expanding land-based propagation capacity in Florida

Scaling Up Propagation

- Funding
- Space and Infrastructure
- Skilled Workforce
- Population Recovery vs. Ecosystem Restoration
  - Herbivores, maintenance animals
  - Water quality/climate change

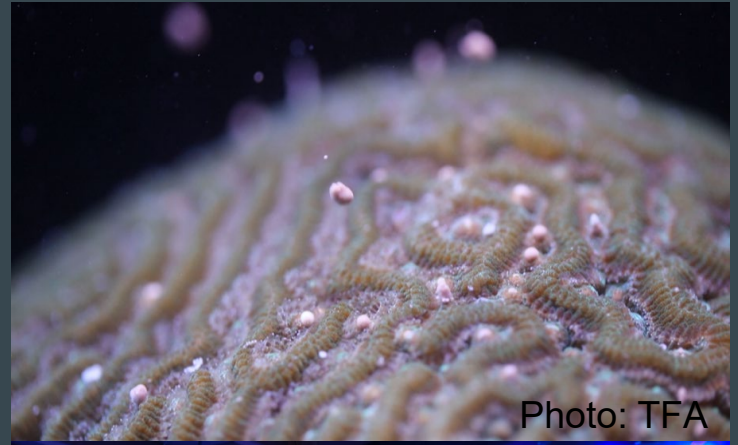


Photo: TFA


Photo: AZA


Photo: UF/TFA

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