

The Florida Senate
COMMITTEE MEETING EXPANDED AGENDA
ENVIRONMENT AND NATURAL RESOURCES
Senator Rodriguez, Chair
Senator Mayfield, Vice Chair

MEETING DATE: Tuesday, December 9, 2025
TIME: 3:30—5:30 p.m.
PLACE: *Toni Jennings Committee Room*, 110 Senate Building

MEMBERS: Senator Rodriguez, Chair; Senator Mayfield, Vice Chair; Senators Arrington, Avila, DiCeglie, Harrell, Polsky, and Smith

TAB	BILL NO. and INTRODUCER	BILL DESCRIPTION and SENATE COMMITTEE ACTIONS	COMMITTEE ACTION
1	Mote Marine Laboratory Presentation on Coral Reef Restoration		Presented
2	Keys Marine Laboratory Presentation on Coral Reef Restoration		Presented
3	Fish and Wildlife Conservation Commission Presentation on Coral Reef Restoration and Artificial Reefs		Presented
4	Department of Environmental Protection Presentation on Osborne Reef Restoration		Presented
5	Department of Environmental Protection Presentation on Biosolids		Presented
6	Sedron Technologies Presentation on the Indiantown Biosolids Facility		Presented
Other Related Meeting Documents			

Changing the Paradigm & Impact of Coral Restoration Science



Dr. Michael P. Crosby, et al.

President & CEO

www.mote.org

**Environment & Natural Resources Committee
Florida Senate**

December 9, 2025



William R. Mote
(1906-2000)



"For generations, we have been taking from the sea.
Now, it's time to start giving back."

—William R. Mote,
Mote benefactor and namesake



MOTE.ORG

36 RESEARCH UNITS LEADING DIVERSE MARINE SCIENCE AROUND THE WORLD

22 RESEARCH PROGRAMS

- | | |
|---|--|
|  Benthic Ecology Research Program |  Marine Biomedical Research Program |
|  Chemical & Physical Ecology Research Program |  Marine Immunology Research Program |
|  Coral Health & Disease Research Program |  Marine Molecular Microbiology Research Program |
|  Coral Reef Restoration Research Program |  Marine STEM Education Research Program |
|  Ecotoxicology Research Program |  Ocean Acidification Research Program |
|  Environmental Lab for Forensics (ELF) Research Program |  Ocean Technology Research Program |
|  Fisheries Ecology & Enhancement Research Program |  Phytoplankton Ecology Research Program |
|  Fisheries Habitat Ecology & Acoustics Research Program |  Sea Turtle Conservation Research Program |
|  Harmful Algal Bloom Mitigation & Ecology Research Program |  Seagrass Ecosystems Restoration Research Program |
|  Manatee Conservation Research Program |  Sharks & Rays Conservation Research Program |
|  Marine & Freshwater Aquaculture Research Program |  Stranding Investigations Research Program |

2 MOTE TECHNICAL PROGRAMS

-  Mote's Beach Conditions Reporting System (BCRS)
-  Mote's Sea Turtle & Marine Mammal Hospitals

1 MOTE-AFFILIATED PROGRAM

-  Sarasota Dolphin Research Program (SDRP)

11 CENTERS OF EXCELLENCE

- | | |
|--|---|
| <ul style="list-style-type: none"> • Alfred Goldstein Institute for Climate Change Studies • Center for Fisheries Electronic Monitoring at Mote (CFEMM) • Center for Research and Policy on Nanoplastic Pollution • Center for Shark Research • Florida Red Tide Mitigation & Technology Development Initiative • Mote Marine Laboratory's International Coral Gene Bank | <ul style="list-style-type: none"> • Louis Stokes Alliance for Minority Participation: Marine Science Laboratory Alliance Center of Excellence (MarSci-LACE) • Marine Policy Institute • Red Tide Institute • Seagrass Restoration Technology Development Initiative • U.S. Harmful Algal Bloom Control Technologies Incubator (HAB-CTI) |
|--|---|



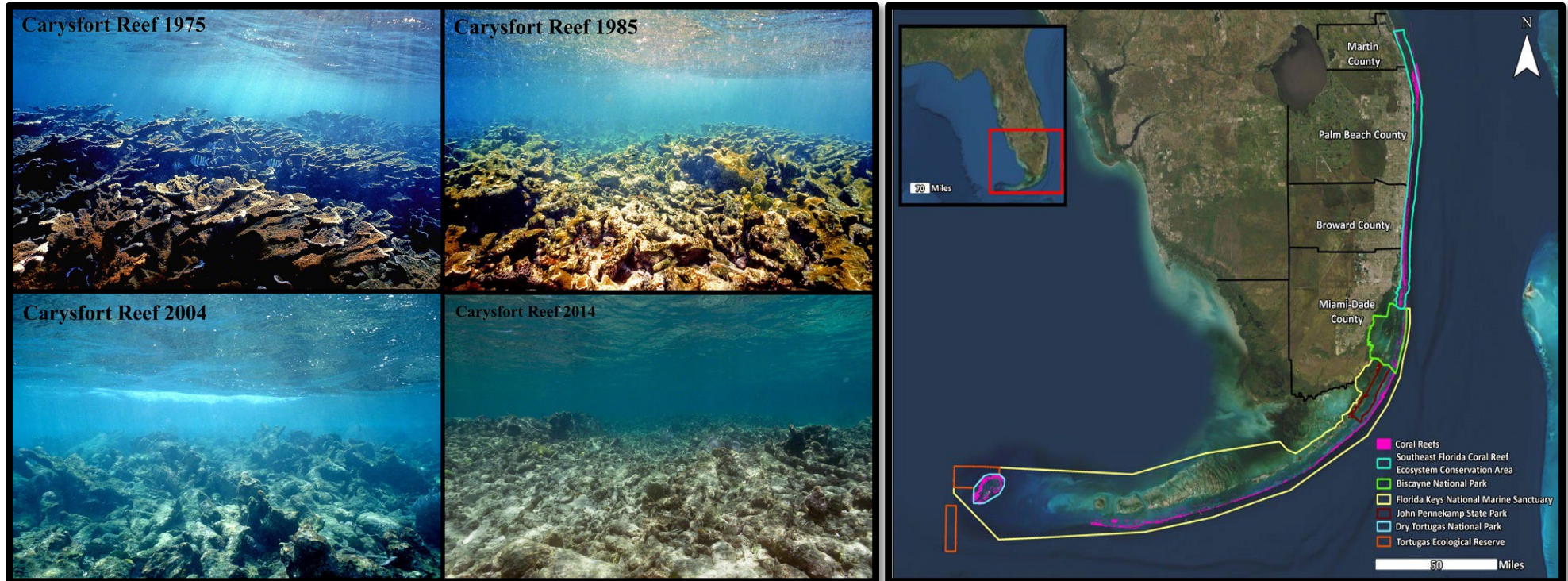


MARINE LABORATORY
& AQUARIUM

Mote Locations

'Dire outlook': scientists say Florida reefs have lost nearly 98% of coral

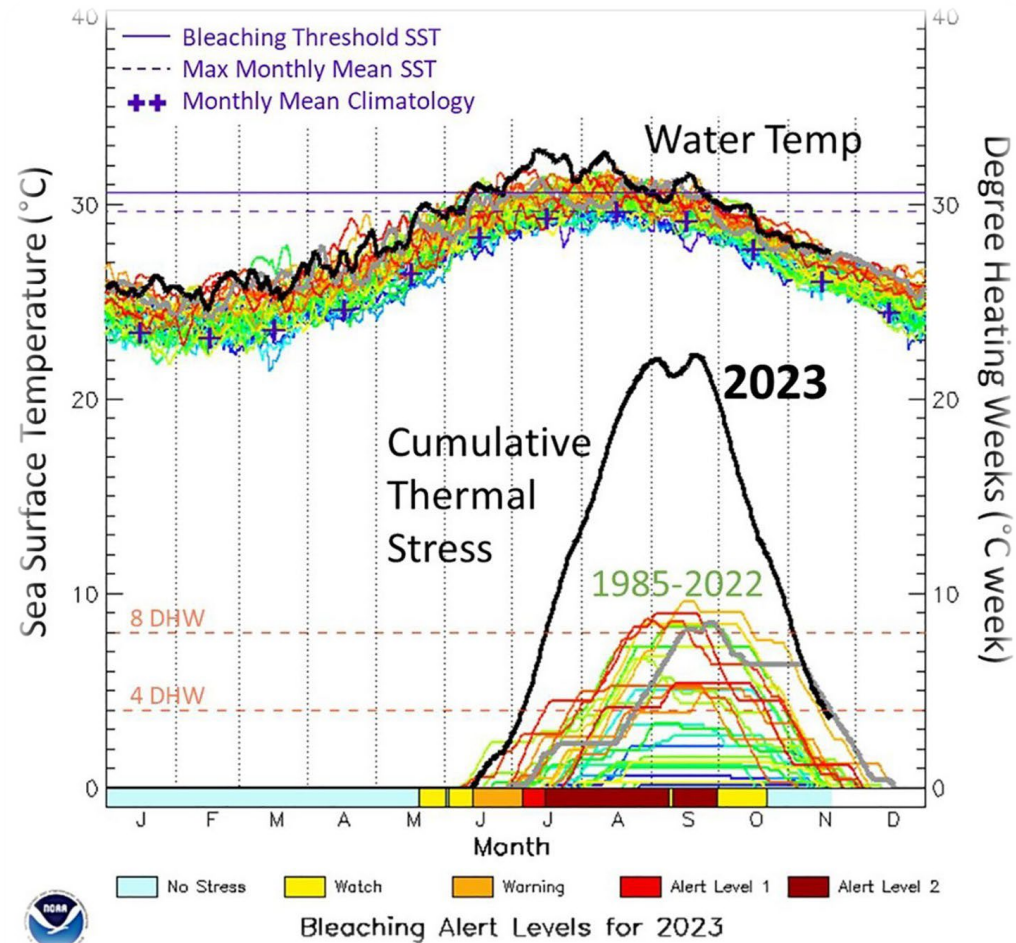
as little as 2% of original coral cover remains



Stony Coral Tissue Loss Disease Occurrence Across Florida's Coral Reef



AS OF MAY 2021, THE CORAL DISEASE OUTBREAK HAS BEEN FOUND THROUGHOUT FLORIDA'S CORAL REEF

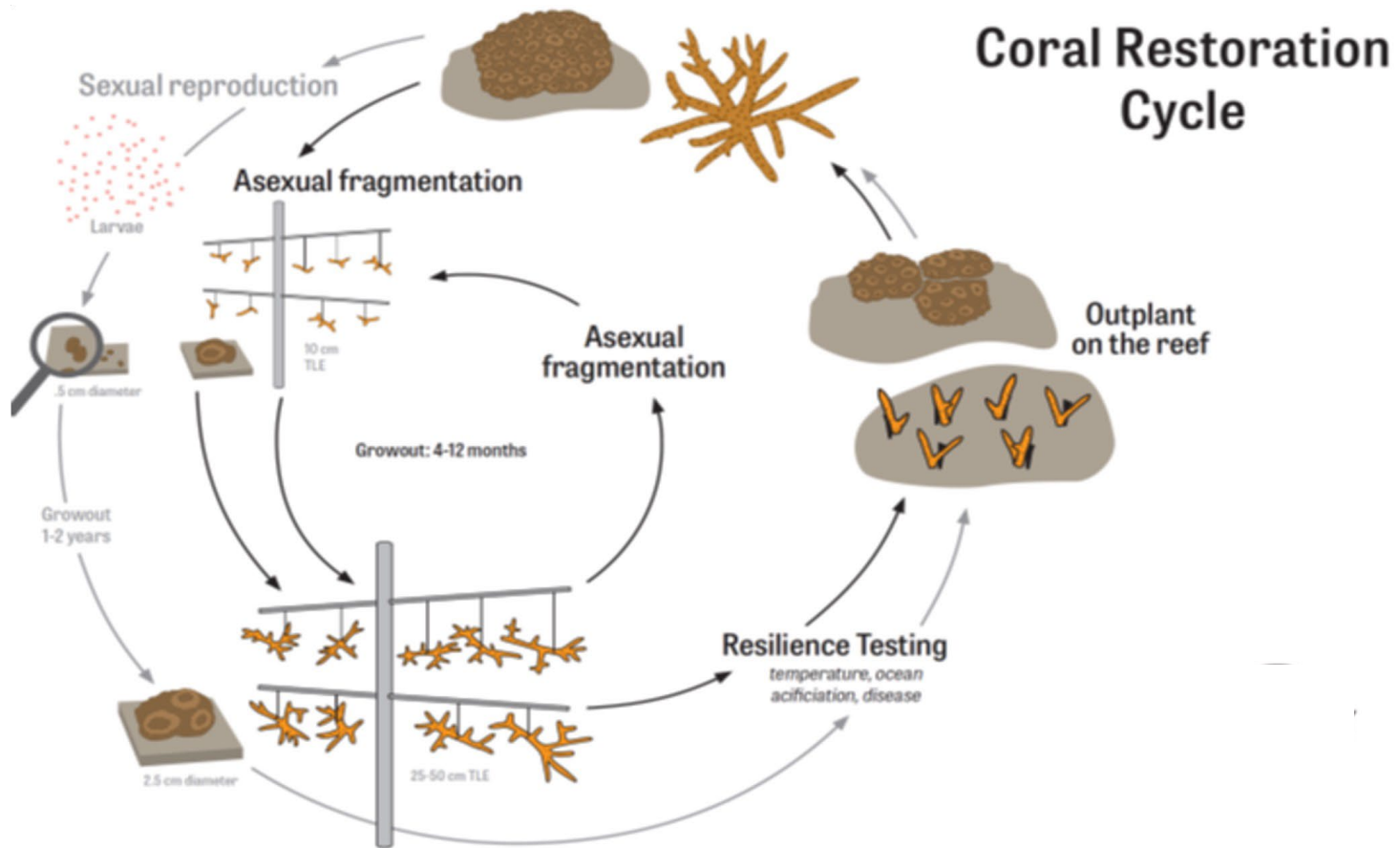


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**“We’re seeing 50- and 100-year-old corals that are dying.
You can’t replace a 50-year-old coral in a decade.”**



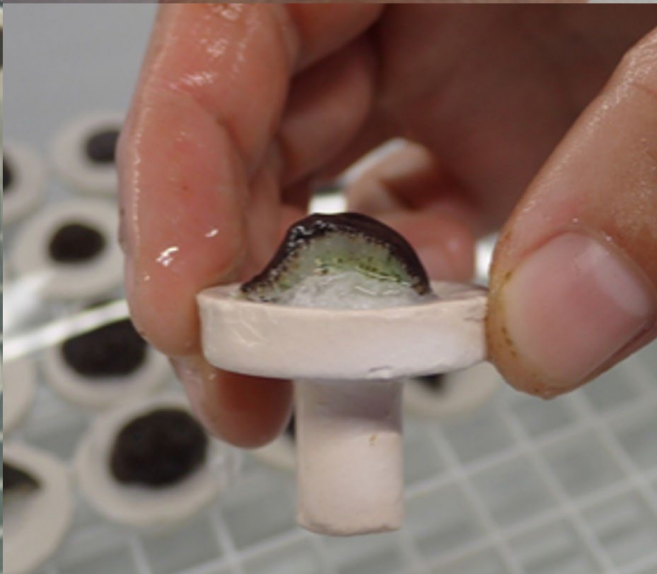
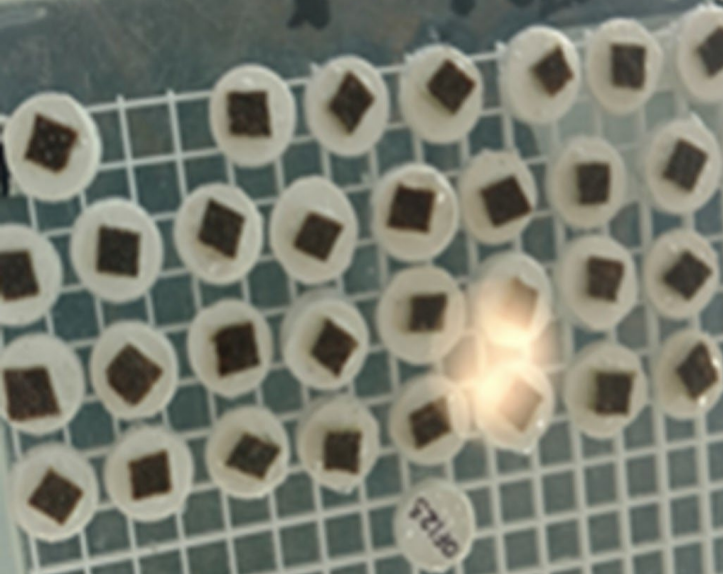
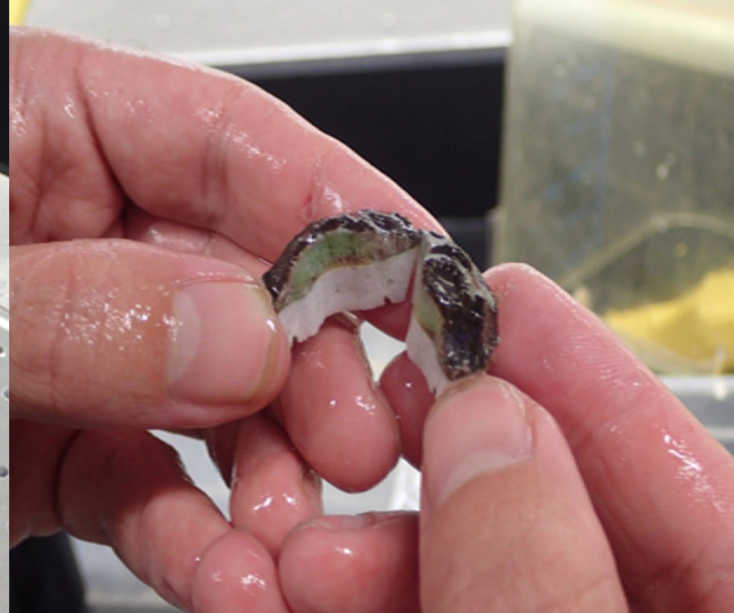
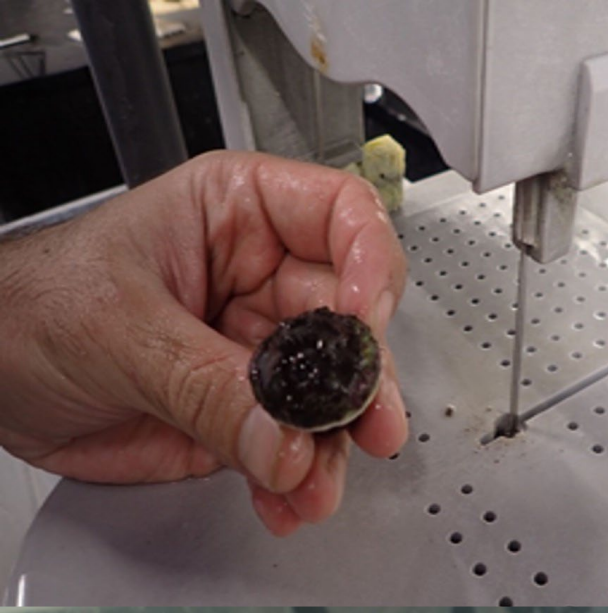
Mote's Resilient Reef Restoration Cycle



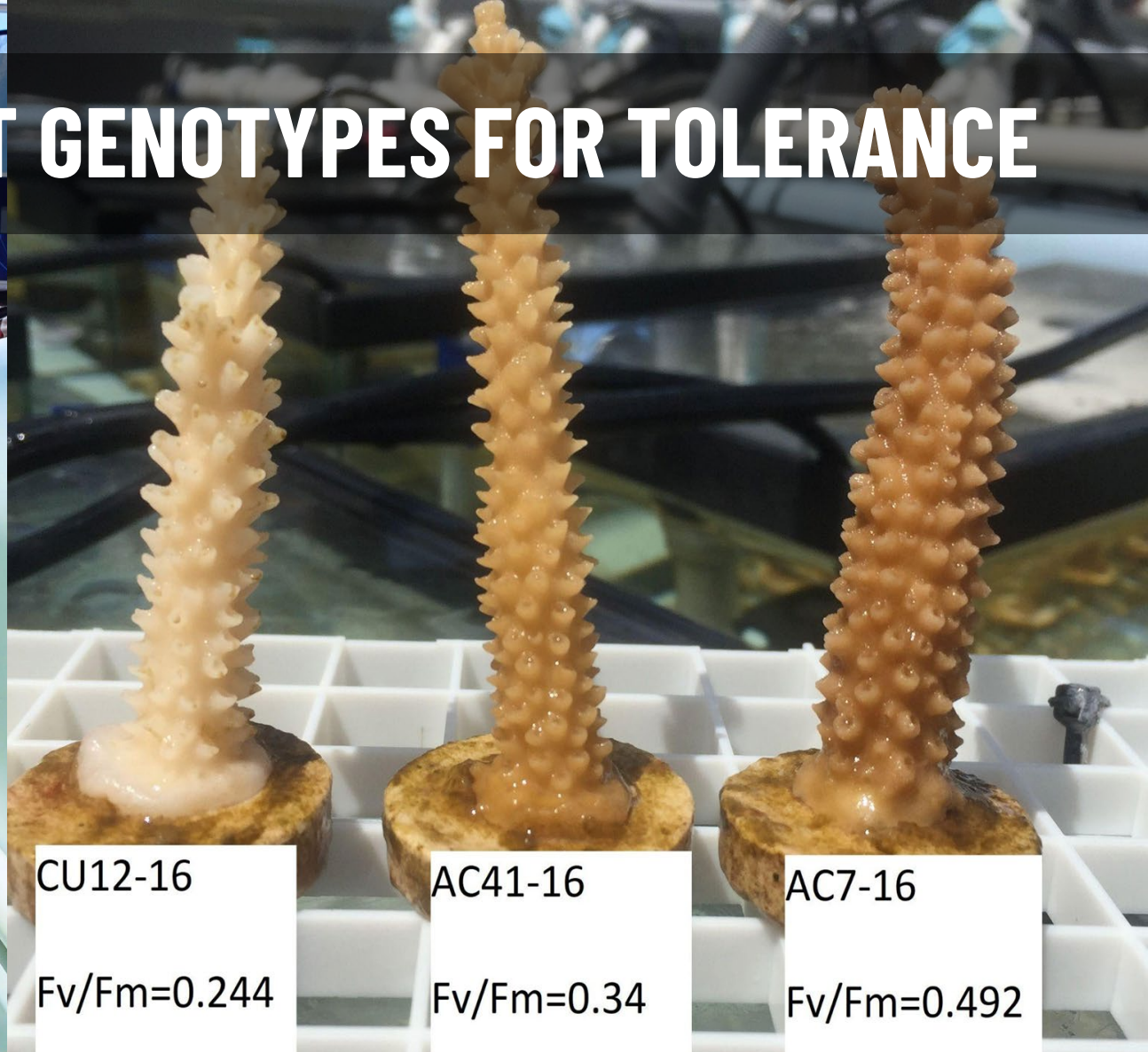
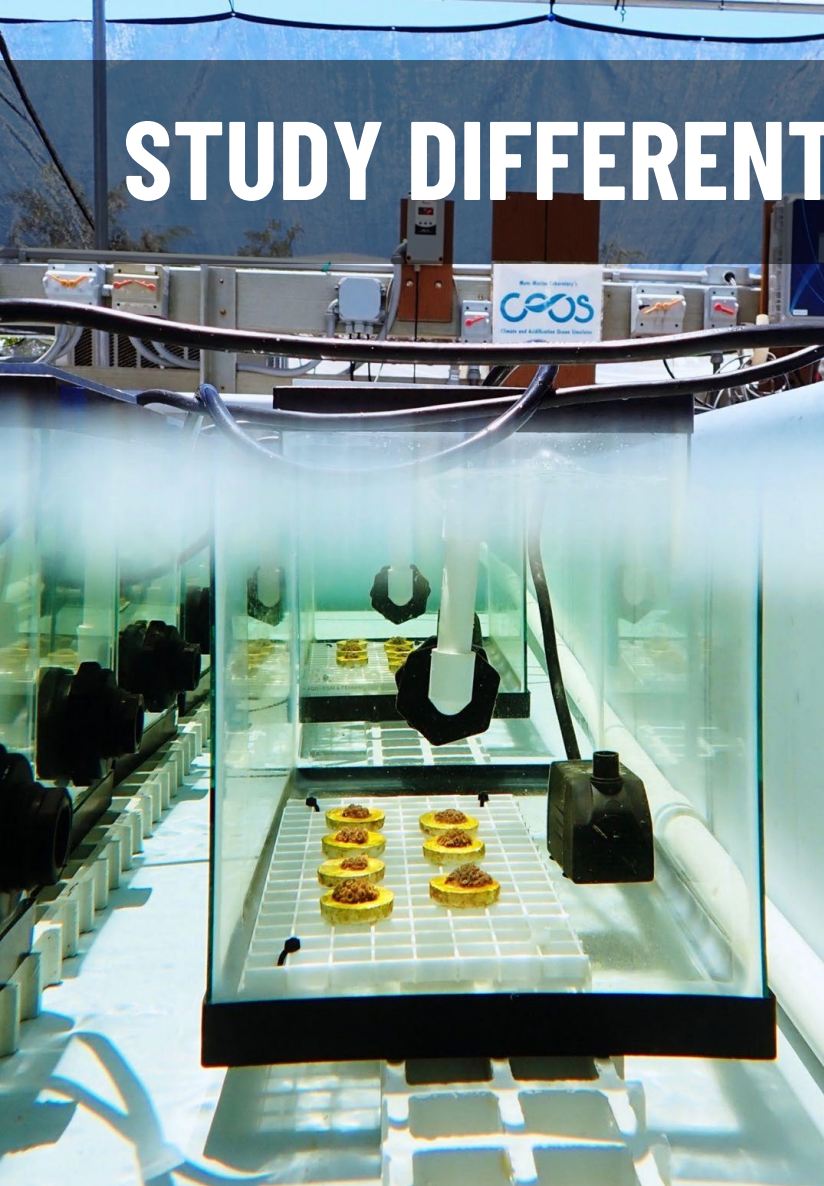
MICROFRAGMENTING & RESKINNING



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STUDY DIFFERENT GENOTYPES FOR TOLERANCE



CU12-16

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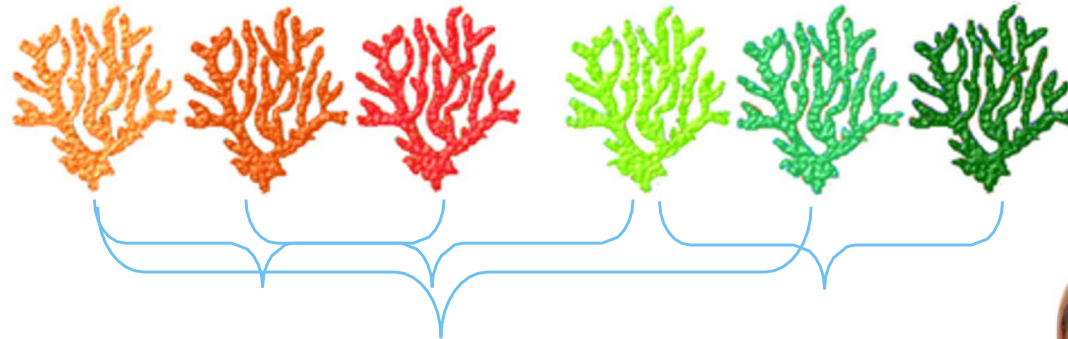
AC41-16

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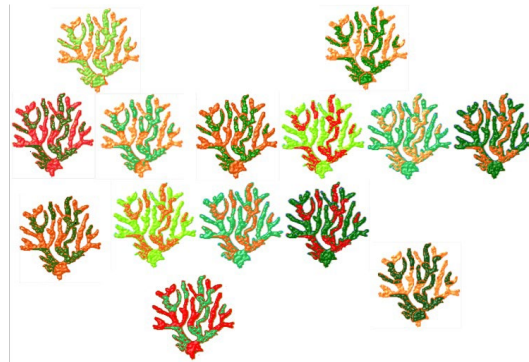
AC7-16

$F_v/F_m=0.492$

We Cross-Breed Coral Parents with Different Beneficial Traits



**Genetically diverse,
stress-tolerant
offspring with different
trait combinations
inherited from parents**



Dr. Erinn Muller



Combining Coral Resilience & Managed Breeding

MOTE.ORG



Mote's International Coral Gene Bank



Primary Goal: hold up to 50 diverse genotypes of all of Florida's endemic coral species in **triplicate**

Provide a safe-haven for corals on
the brink of extinction

Live banking and cryobanking

Use RFID technology to track in
perpetuity

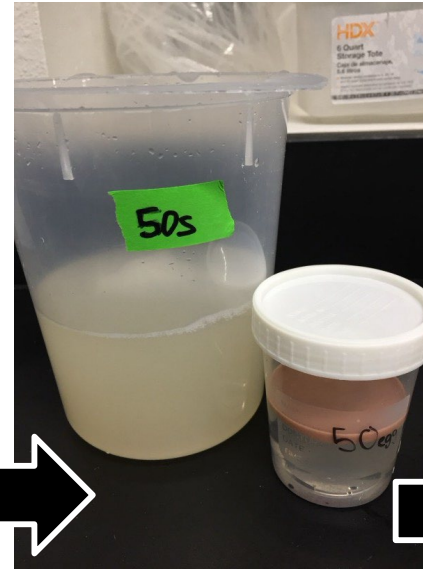


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Spawning



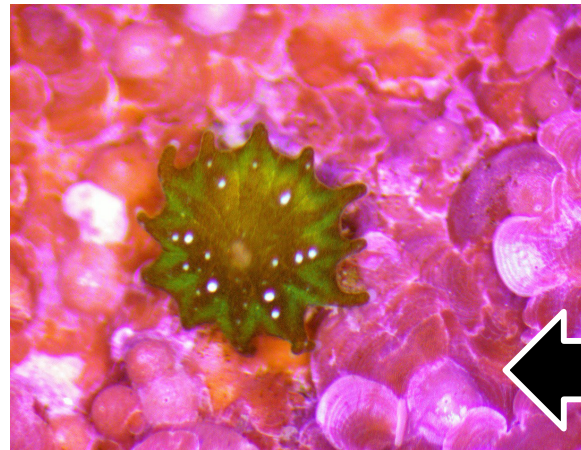
Fertilization



Larval Rearing



Recruit Grow-out



Symbiont Uptake



Settlement



The past two decades of coral restoration and dedicated Coral Gene Banking preserved the genetic diversity of Florida *Acropora* spp.

Received: 16 July 2024 | Revised: 20 June 2025 | Accepted: 19 August 2025

DOI: 10.1111/cobi.70168

Conservation Biology 

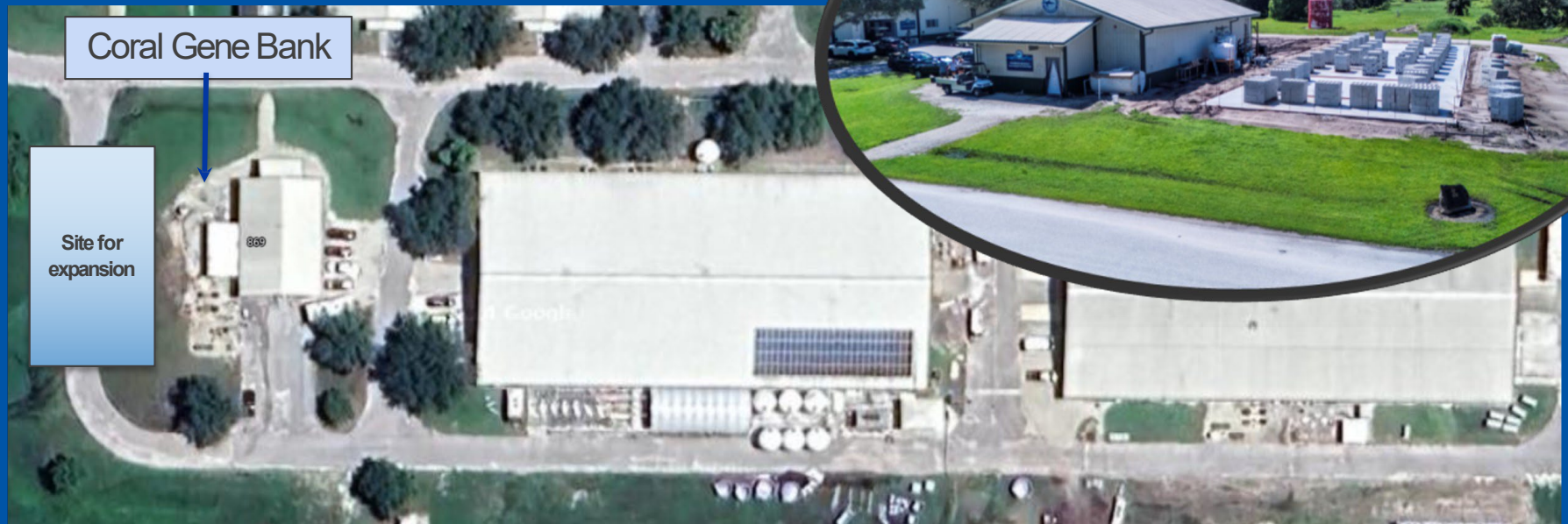
PRACTICE AND POLICY

Success of restoration strategies in preventing extirpation of 2 critically endangered coral species

Erinn M. Muller¹  | Mark C. Ladd²  | Richard Karp³  | Phanor H. Montoya-Maya⁴ |
Ilsa B. Kuffner⁵  | Andrew C. Baker³ | Erich Bartels⁶ | Amanda Bourque⁷  |
Abigail S. Clark⁸  | Nikkie Cox⁴ | Martine D'Alessandro³ | Ben Daughtry⁹ |
Beth Firchau¹⁰ | Leneita Fix¹¹ | David Gilliam¹²  | Dalton Hesley³  |
Cindy Lewis¹³  | Diego Lirman³  | Caitlin Lustic¹⁴ | Kevin Macauley¹⁵ |
Jennifer Moore¹⁶ | Ken Nedimyer¹⁵ | Keri O'Neil¹⁷ | Kristene T. Parsons¹⁸  |
Kylie M. Smith¹⁹ | Jason Spadaro⁶  | Bailey C. Thomasson⁴ | Joseph D. Unsworth³  |
David Vaughan²⁰ | Margaret W. Miller²¹ 

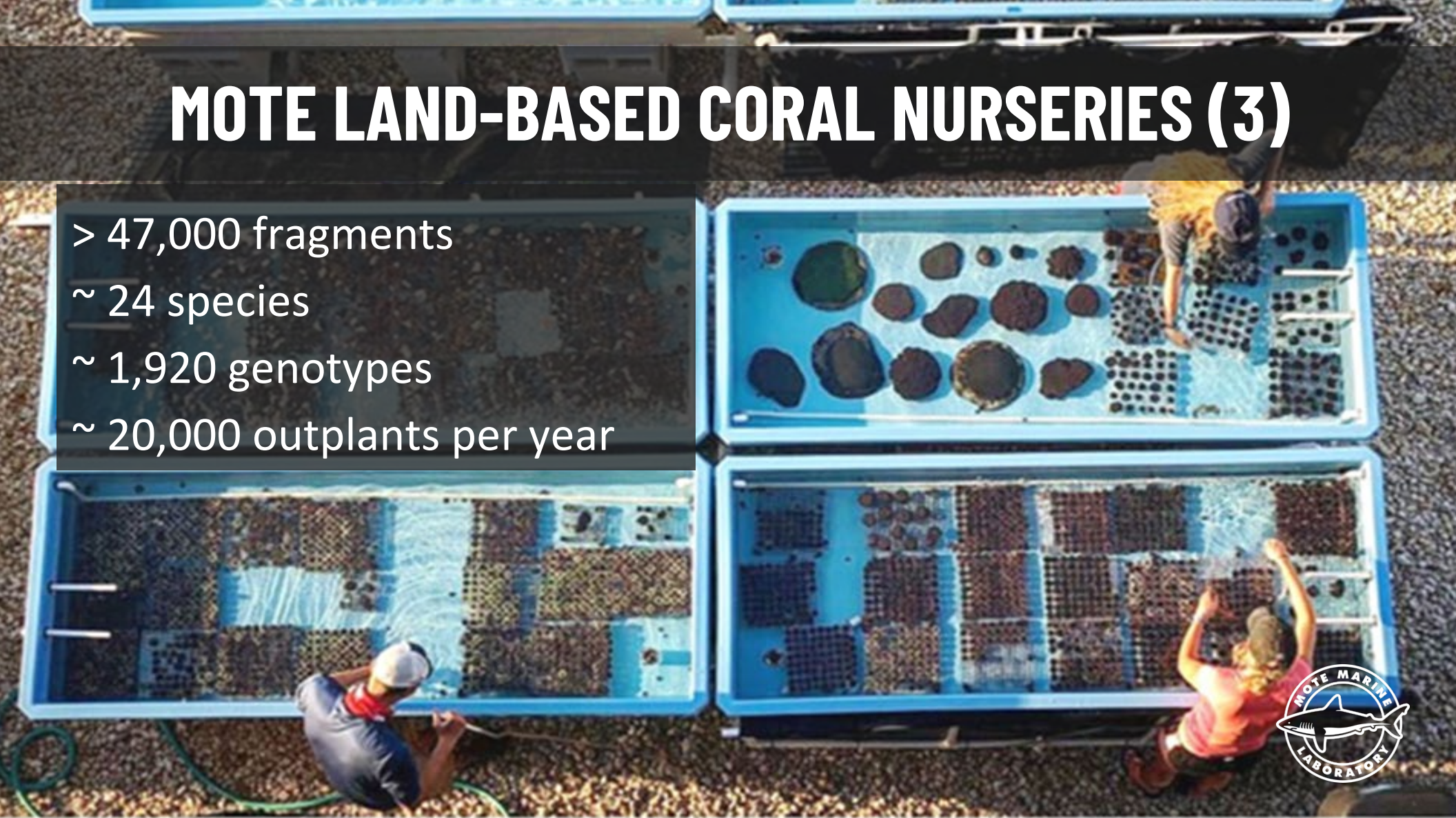
FCR3 Funding: Gene Bank expansion to support coral propagation

Double holding area to provide more space for recruit growout

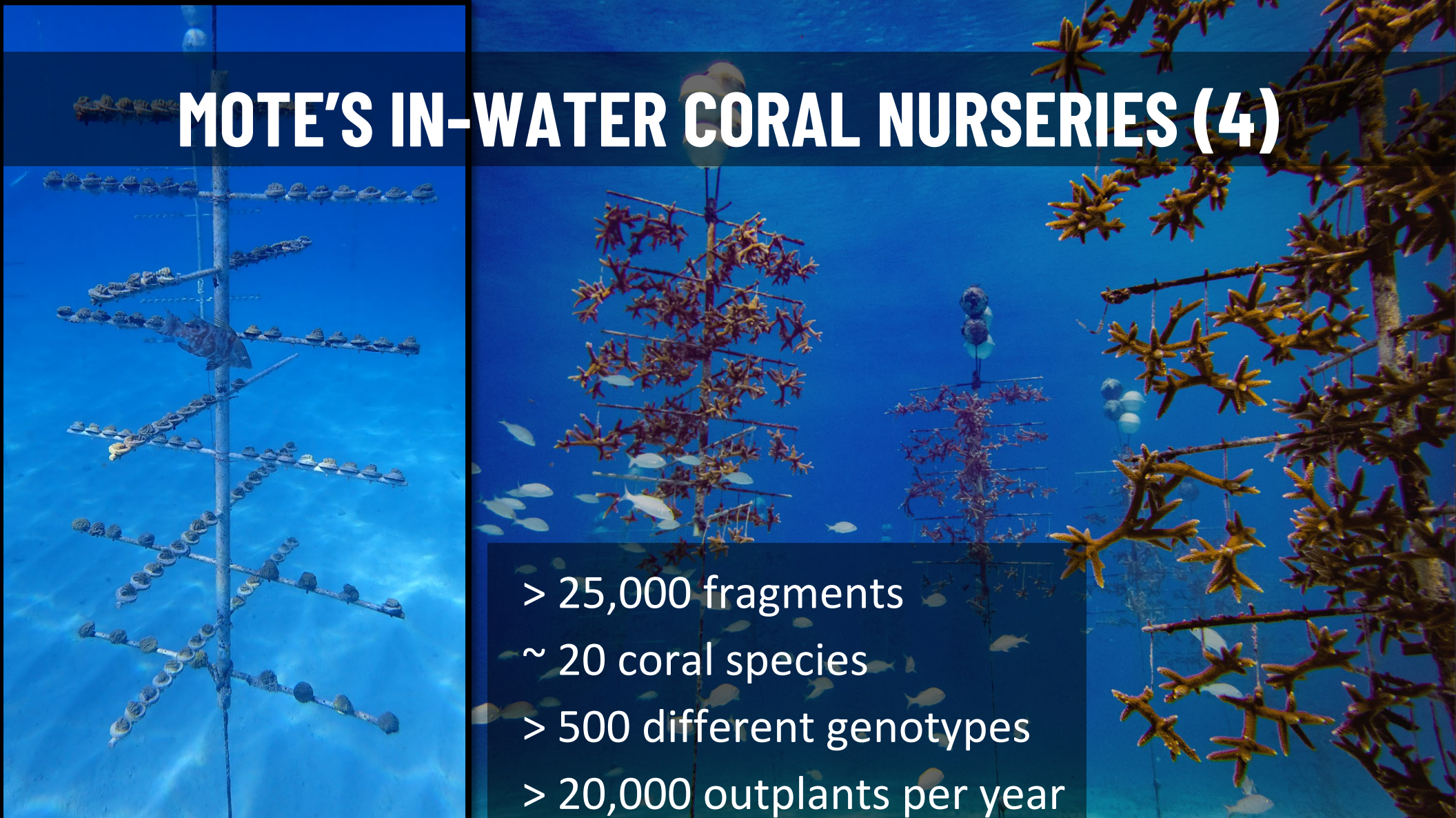


MOTE LAND-BASED CORAL NURSERIES (3)

> 47,000 fragments
~ 24 species
~ 1,920 genotypes
~ 20,000 outplants per year



MOTE'S IN-WATER CORAL NURSERIES (4)



- > 25,000 fragments
- ~ 20 coral species
- > 500 different genotypes
- > 20,000 outplants per year



Managed breeding to increase resiliency



**Parent Colony
1**

**Parent Colony
2**

**Resistant to
high water
temperatures**

**Resistant to
disease**

**A new generation of
resilient coral recruits**



Sexual recruits are 73% (elkhorn) and 33% (staghorn) more likely to survive compared with wild colonies (Keister et al. in prep)

Elkhorn recruits outplanted in 2022



Still alive and thriving today

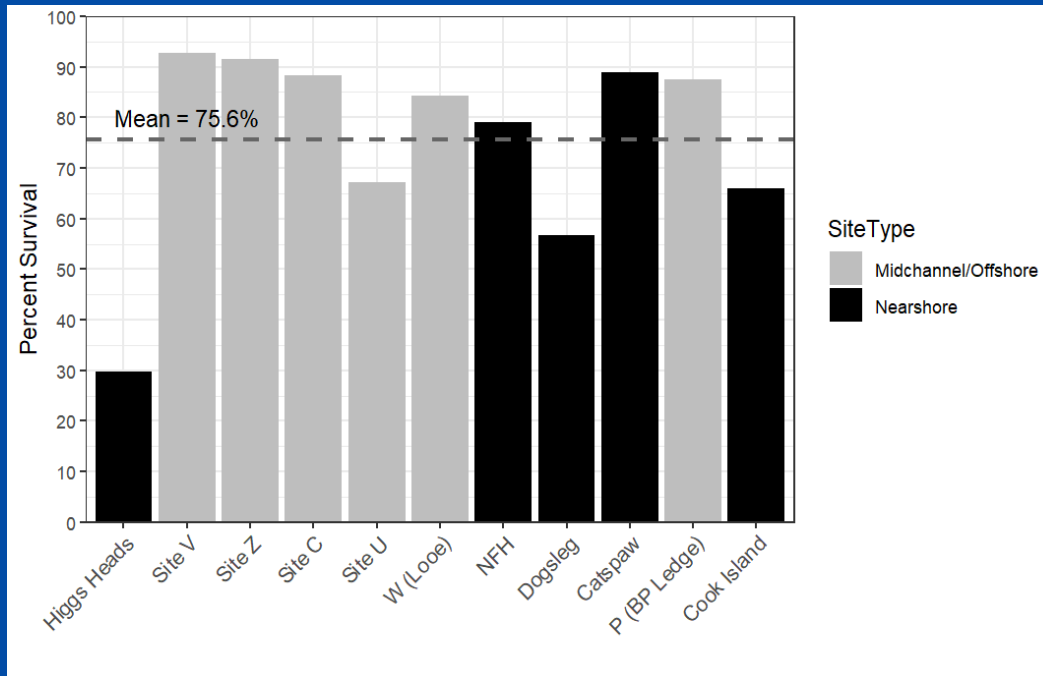
Staghorn recruit outplanted in 2020



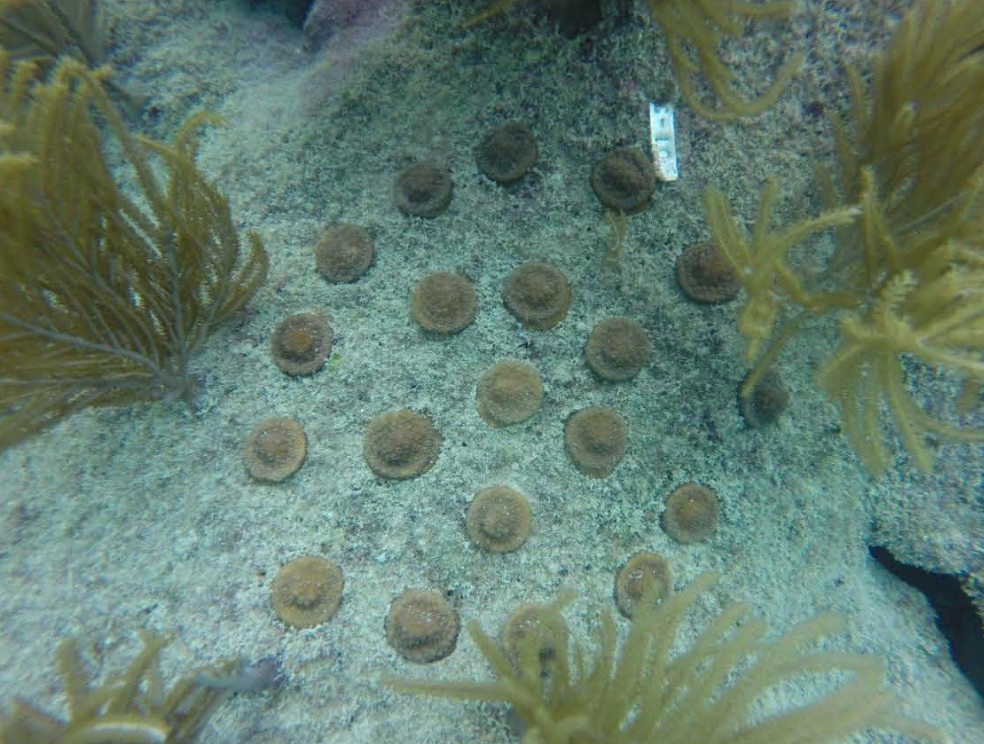
Still alive and thriving today



Over 75% of massive and brain corals survived 2023 event



20 Boulder Star Coral
fragments planted
in 2014



Fusing into a single
50 to 75 year-old size
colony in 2016



[First corals of any slow-growing massive or mounding species documented to sexually reproduce after being restored to the reef](#)

Restored Corals Spawn Hope for Reefs Worldwide

Novel technologies establish a new paradigm for global coral reef restoration, with in situ spawning of mature, environmentally resilient corals in five years instead of decades.

Hanna R. Koch, Erinn Muller, and Michael P. Crosby



THE CORAL LAZARUS EFFECT

It is indeed possible to
“bring back to life” a dead 50-year-old coral
in a matter of years via recent advancements.

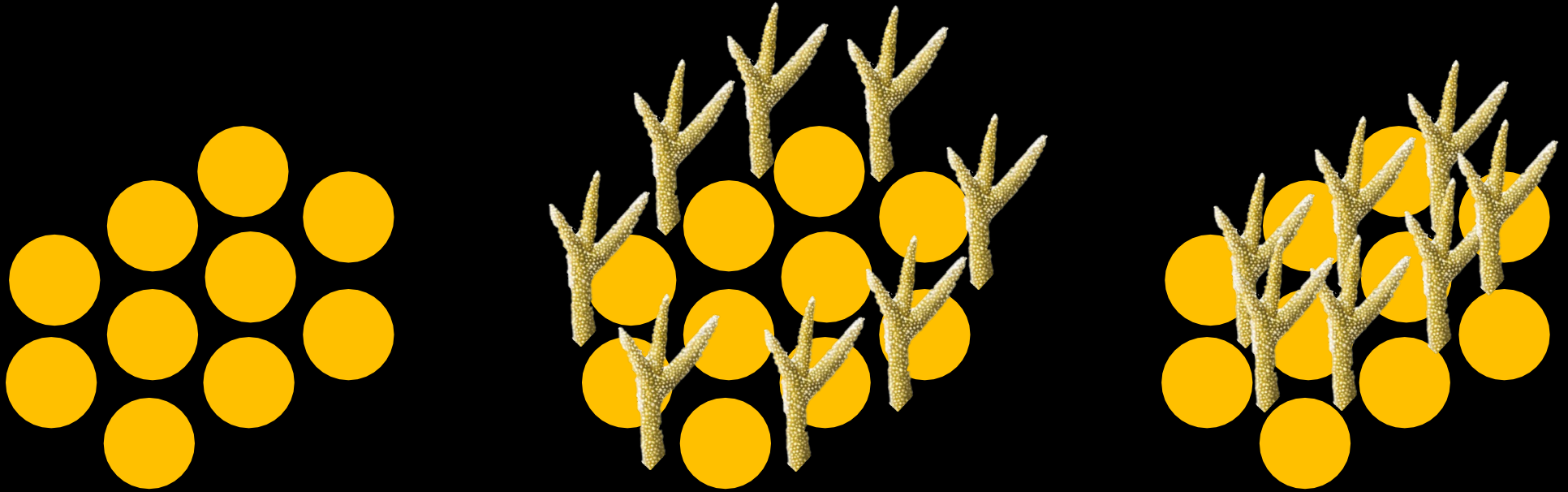


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Can corals be nurse species?: Capitalizing on coral morphology for predation mitigation



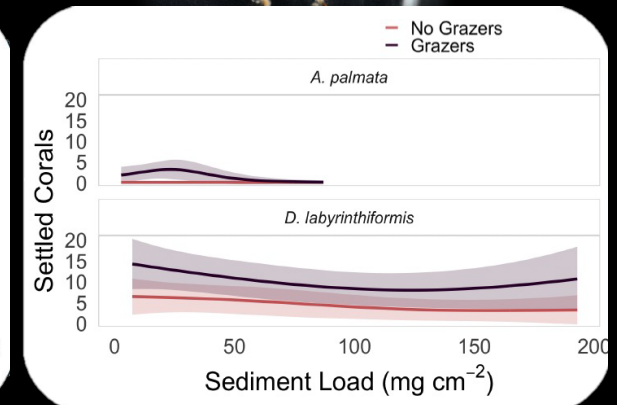
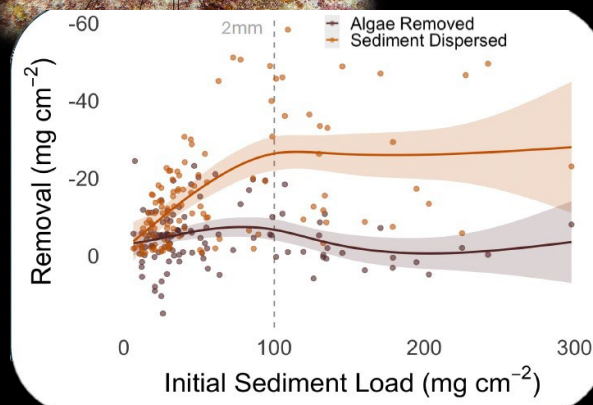
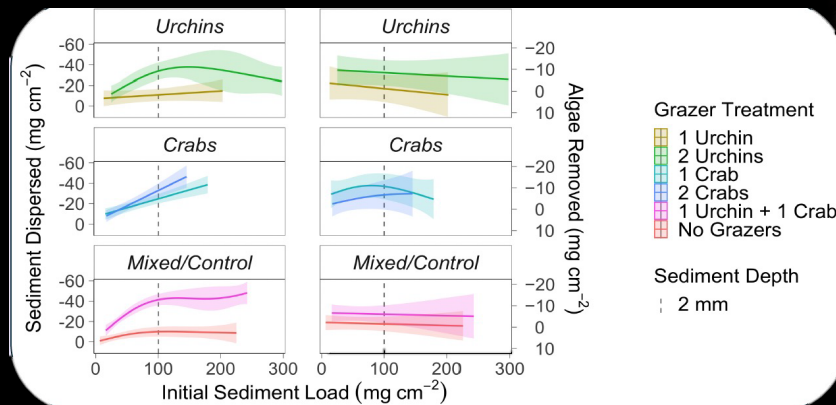
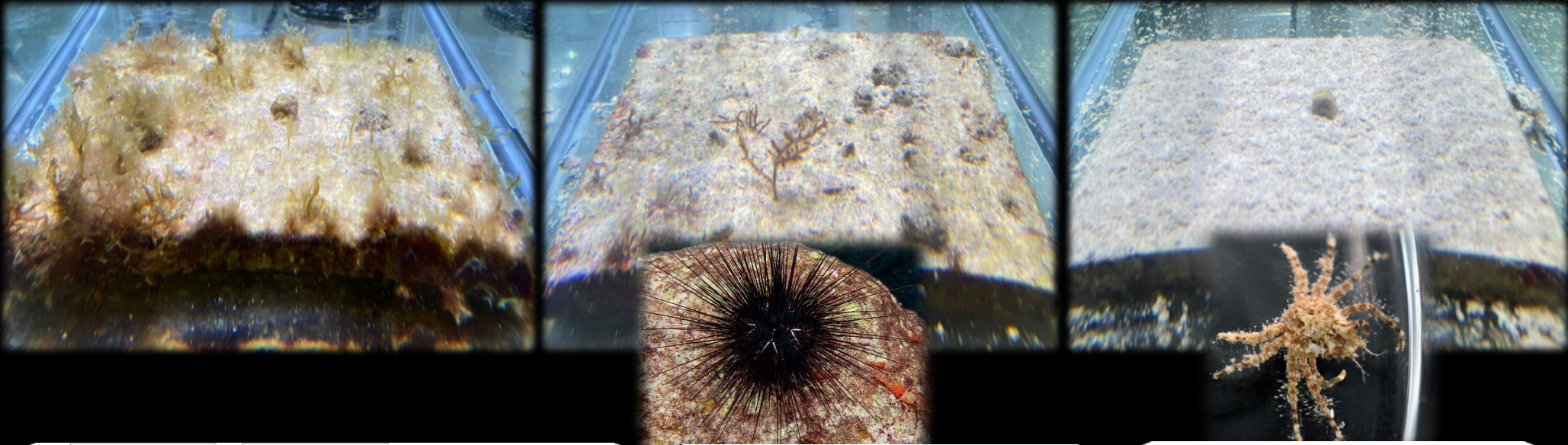


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Grazers enhance and facilitate coral recruitment

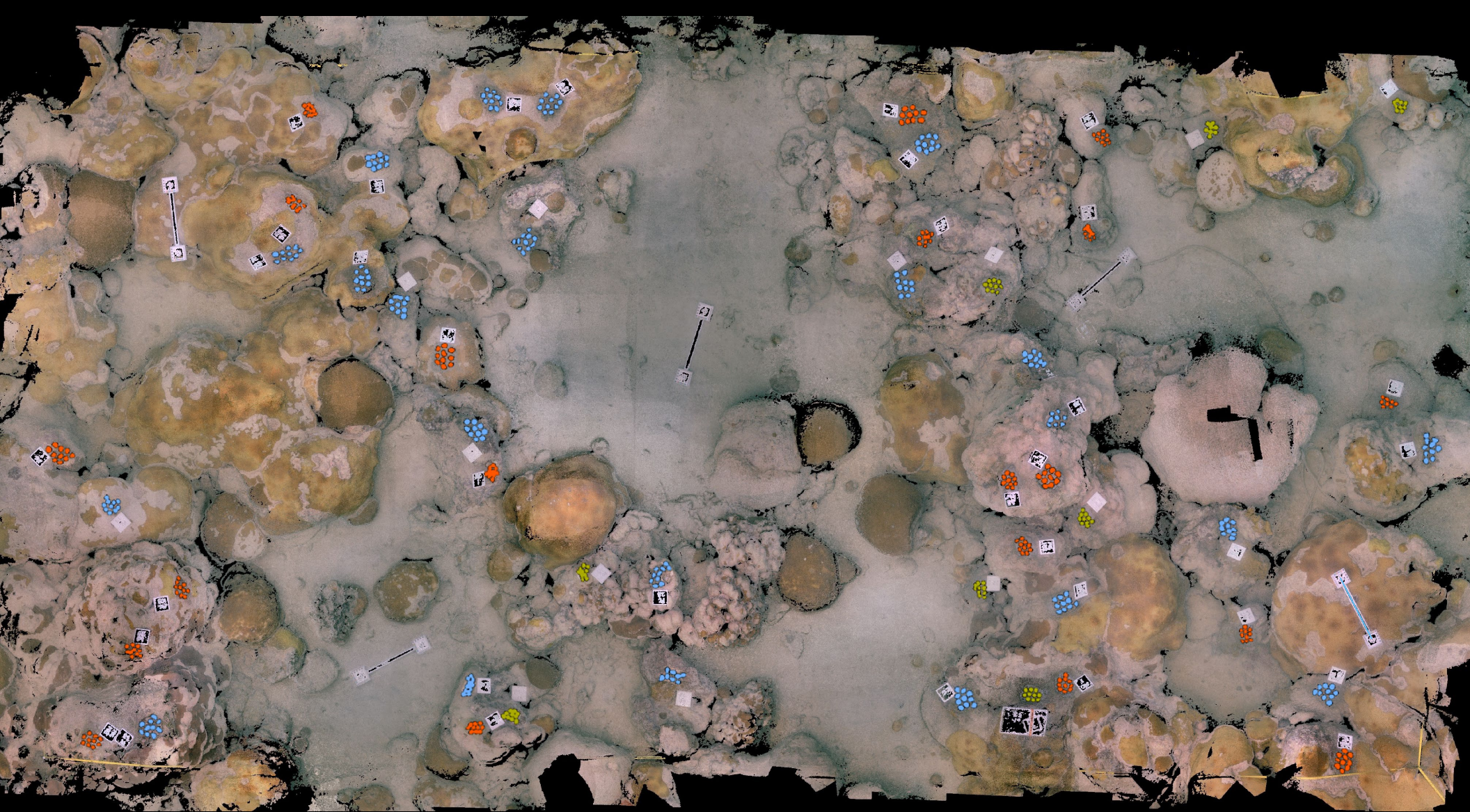


Cifers et al., *in prep.*

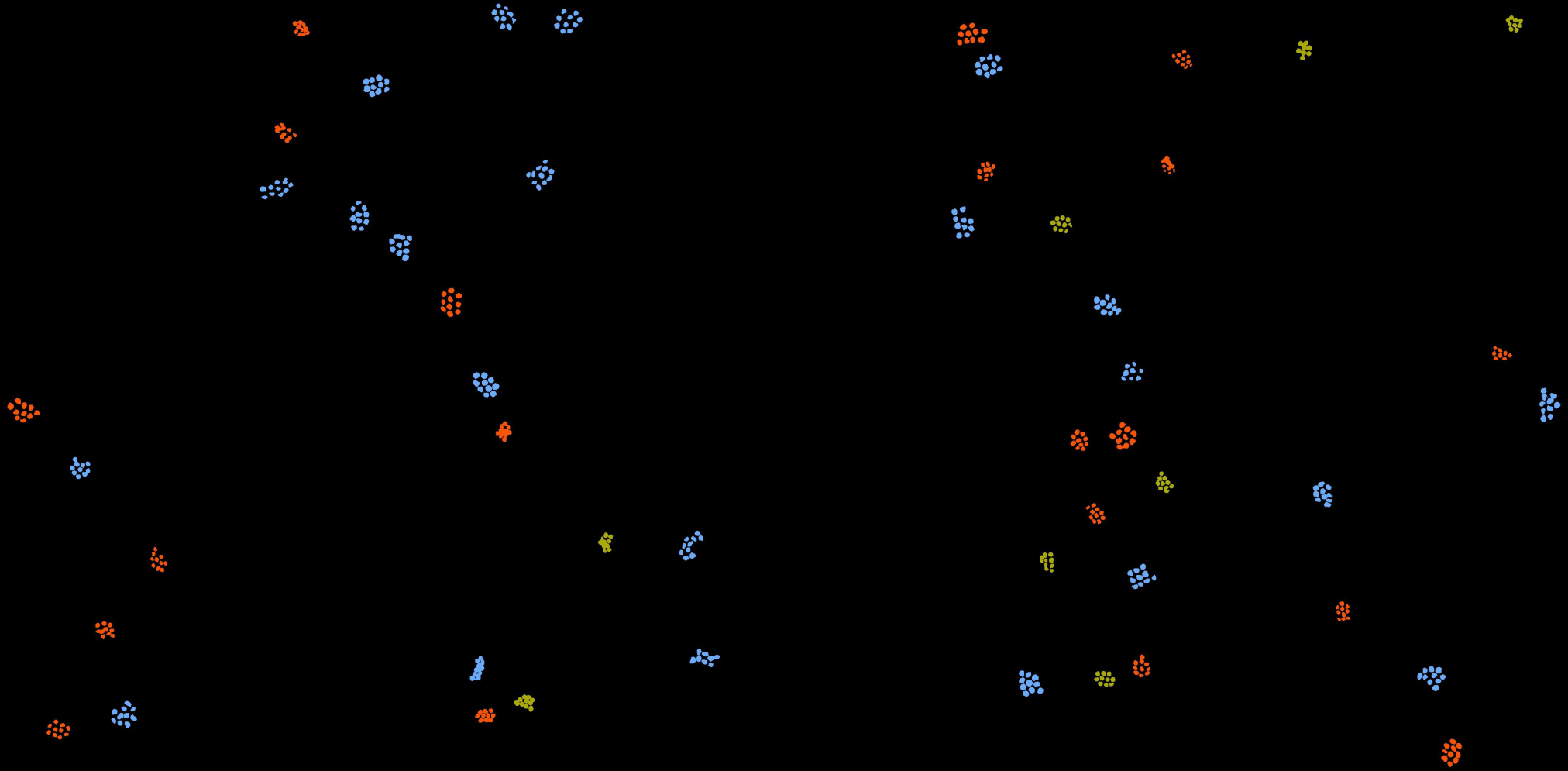
> 30,000 juvenile
crabs in 2025 w/
goal to produce
250,000 annually



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AI automation to track corals through time



Leveraging State of Florida Coral Funding Support

- Mote Coral Restoration Private Partnerships
 - Bud N' Marys Marina – Islamorada
 - Reefhouse Resort & Marina – Key Largo
- Florida State Parks and Mote – Coral Restoration and Education Collaborations
 - John Pennekamp Coral Reef State Park – Key Largo
 - John D. MacArthur Beach State Park – North Palm Beach
 - Bahia Honda State Park – Bahia Honda Key
- Protect Our Reefs License Plate – Mote Administered
- Mote synergizing philanthropic and competitive federal funds with state funding
- DEP Florida Coral Reef Restoration and Recovery Initiative
 - Assisting Strategic Infrastructure and Capacity Needs – Thank You!
 - Supportive of continued effective distribution of funds to the Florida partners





OUR STRATEGIC VISION:

FLORIDA KEYS CORAL DISEASE RESPONSE & RESTORATION INITIATIVE

- Utilize diverse genetic strains that demonstrate enhanced resiliency to increased water temperatures, decreased pH and coral disease,
- Include designs for multiyear monitoring to assess survival and ecosystem health,
- Restore at least 20 acres of coral reefs in the Florida Keys with over 1 million corals to achieve an approximate 30% coral cover in an area equivalent to one-third of the restorable area for the seven Iconic Reefs, and
- Add 4,800 ft² to Mote's International Coral Gene Bank that will allow for up to 25,000 additional sexual recruits each year while supporting approximately 4,000 unique genotypes to be available in perpetuity for ongoing and future research and restoration.



FCR3 Funding: Mote SEA STEM Workforce Training Lab – Coral Genetics




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Free Shipping on all orders in the continental United States. See Shipping Policy for Details



REEF RESTORATION



SCUBAPRO and Mote Marine Laboratory have partnered to combine leading science with a plan to scale reef restoration efforts.

Scubapro.johnsonoutdoors.com

MODEL FOR CORAL RESTORATION

Research Innovation + Volunteer Citizen Scientists





The Florida Senate

APPEARANCE RECORD

12/9/25

Meeting Date

Environment & Natural Resources

Committee

Deliver both copies of this form to
Senate professional staff conducting the meeting

Bill Number or Topic

Amendment Barcode (if applicable)

Name Dr. Michael Crosby

Phone 941 388-4443

Address 1600 Ken Thompson Parkway

Email mcrosby@mote.org

Street

Sarasota

City

FL

State

34236

Zip

Speaking: ☐ For ☐ Against ☐ Information

OR

Waive Speaking: ☐ In Support ☐ Against

PLEASE CHECK ONE OF THE FOLLOWING:

☒ I am appearing without
compensation or sponsorship.

☐ I am a registered lobbyist,
representing:

☐ I am not a lobbyist, but received
something of value for my appearance
(travel, meals, lodging, etc.),
sponsored by:

Mote Marine Laboratory

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S-001 (08/10/2021)

Florida Keys Marine Laboratory: Role in Coral Reef Restoration

**Senate Committee:
Environment & Natural Resources
December 9, 2025**

**Florida Institute of Oceanography
UNIVERSITY OF SOUTH FLORIDA**

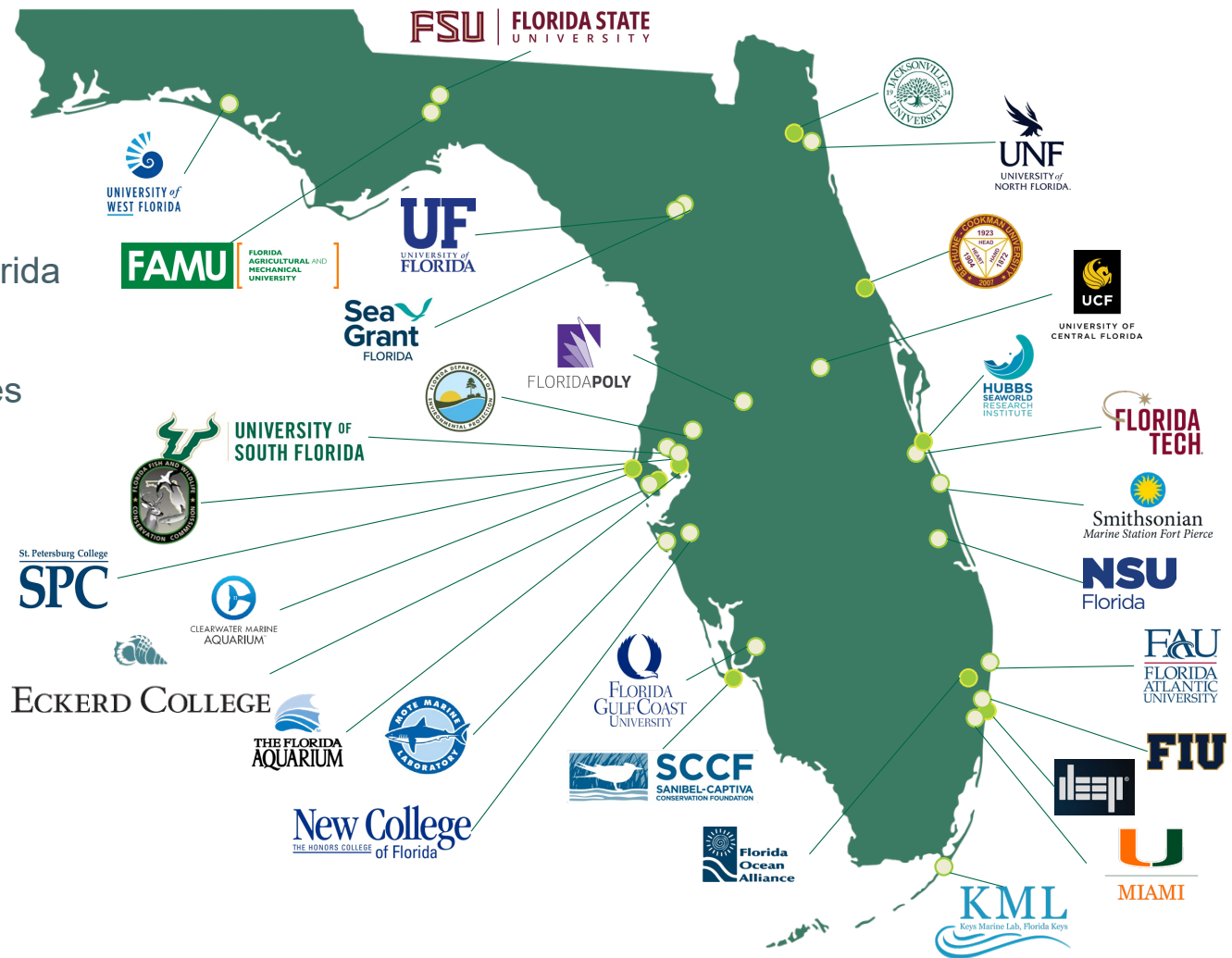


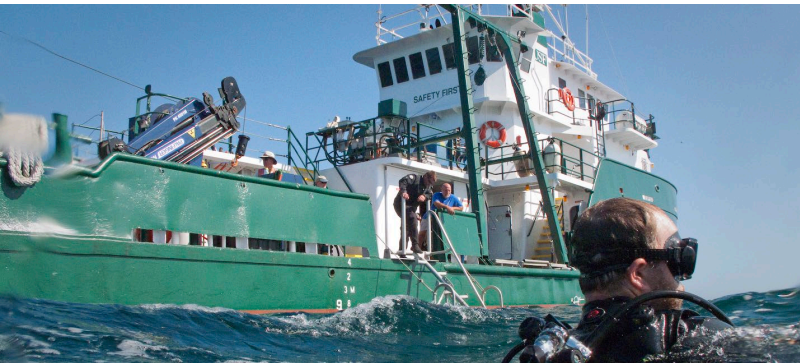
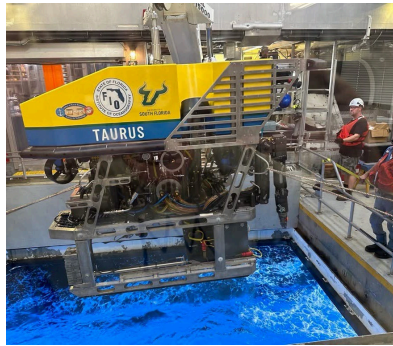
FIO Consortium Members

Institute of the University of South Florida

- 34-member Consortium
- Florida's publicly funded universities
- private colleges
- state agencies
- private industry members

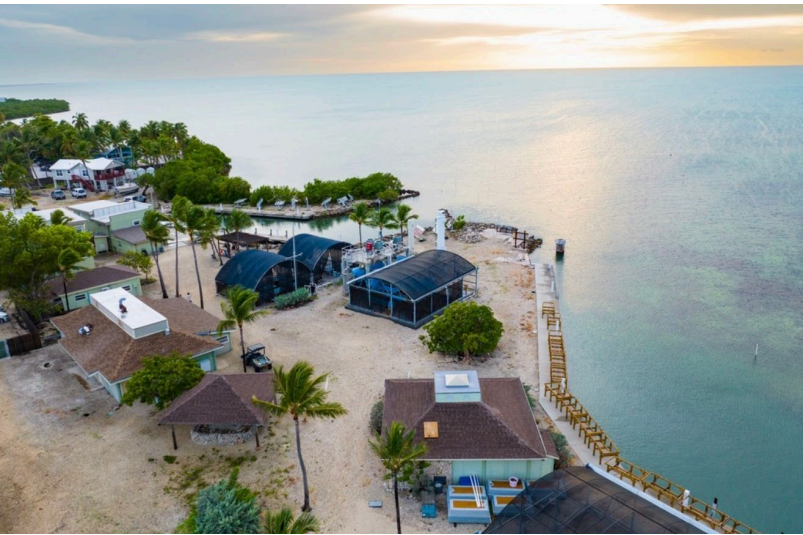
FIO operates the largest academic research vessel fleet in Florida.





FIO RESEARCH VESSELS & ROV

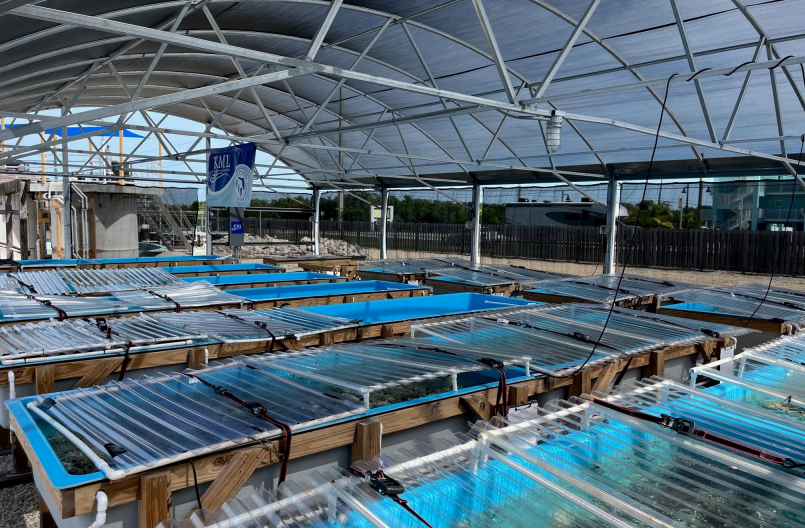
- R/V W.T. HOGARTH
 - 78-ft., 15 berths, 8-day endurance
- R/V WEATHERBIRD II
 - 115-ft., 20 berths, 12-day endurance
- R/V WESTERN FLYER
 - 117-ft. SWATH, 26 berths, 16-day endurance
- ROV TAURUS
 - 4000m deep-sea Remote Operated Vehicle



Florida Keys Marine Laboratory

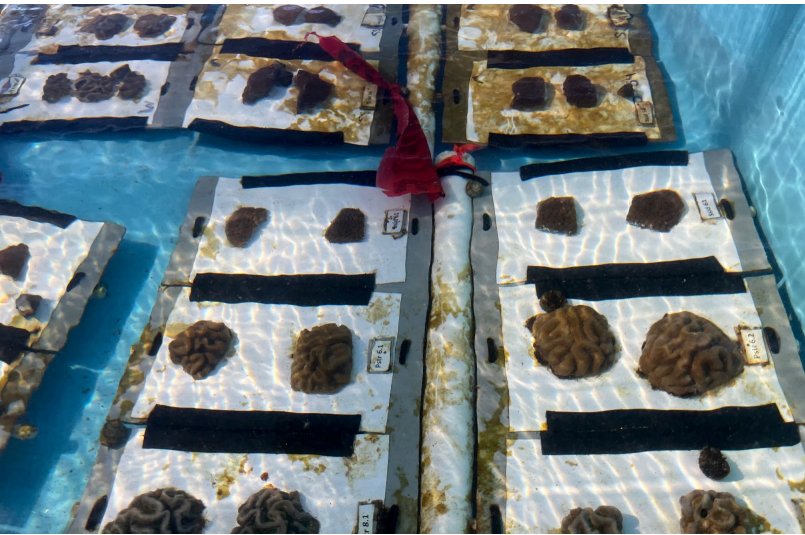
Full-service marine field station since 1992

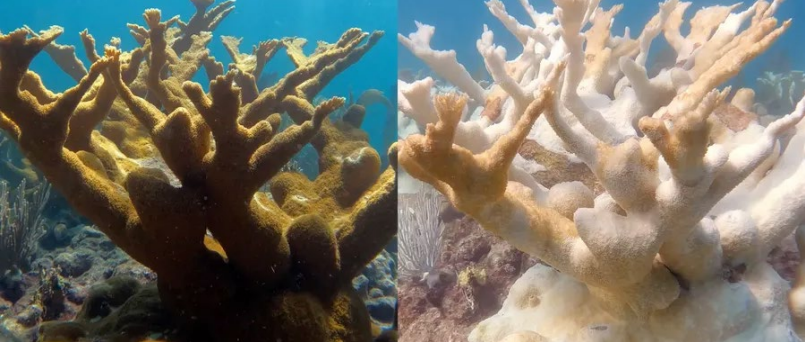
- Supporting research, restoration, & education
- 245 organizations
 - 42 states
 - 28 countries
- On-site temporary housing
- Captained vessels
- Classroom & laboratories
- Seawater systems – reef quality water



Coral Staging & Holding Facility

- Centralized hub in the Middle Keys
 - Land-based facility to offshore nurseries & reef
- Acclimate corals to reef water conditions
- Distribution hub for partners receiving corals





Coral Emergency Rescue & Response

2023 Coral Bleaching Emergency

- Reef temperatures up to 92°F mid-Jul
- Emergency coral rescue effort – local, state, & federal
 - Preserve critical genetic diversity
 - Preserve biomass for future restoration efforts
- KML Systems at 100% capacity, 5,000+ corals July-Dec
 - 6 organizations & agency partners



FLORIDA INSTITUTE OF OCEANOGRAPHY @ USF



UNIVERSITY of
SOUTH FLORIDA



Coral Propagation

Coral Spawning – sexual propagation

- Living genetic banks to preserve diversity
- Resilient parents selectively bred in captivity
 - Florida Aquarium is a key partner in production
- KML is essential to the production-to-reef pipeline



FLORIDA INSTITUTE OF OCEANOGRAPHY @ USF



UNIVERSITY of
SOUTH FLORIDA

Coral Propagation

Coral fragmenting – asexual propagation

- Nursery grown coral – ocean or land-based
- ‘Corals of Opportunity’ – tough survivors on the reef
- Produced >30,000 fragments at KML in the last year
 - Destined for NOAA Mission: Iconic Reefs restoration sites



Coral Grow-out

Short or Long-term

- Coral 'frags' and/or coral babies
- Care, husbandry, & feeding
- Aquaculture for reef grazers
 - Urchins & crabs



Coral Reef Research at KML

- Provide controlled land-based environment
- Thermal & disease tolerances
 - Manipulate water quality
- Disease treatments
- Best practices in care & husbandry
- Best practices in reef restoration



Coalition of Coral Restoration & Resiliency

KML

Keys Marine Lab, Florida Keys



Reef Renewal
USA



NATIONAL MARINE
SANCTUARIES
FLORIDA KEYS



THE FLORIDA
AQUARIUM



CORAL
RESTORATION
FOUNDATION

FLORIDA INSTITUTE OF OCEANOGRAPHY @ USF



UNIVERSITY of
SOUTH FLORIDA

Questions?



UNIVERSITY of
SOUTH FLORIDA

UNIVERSITY OF SOUTH FLORIDA

The Florida Senate

APPEARANCE RECORD

Deliver both copies of this form to
Senate professional staff conducting the meeting

Bill Number or Topic

Amendment Barcode (if applicable)

Meeting Date

12/9/2025

Committee

Env. & Natural Resources

Name

Michael Kahle

Phone

571-969-8768

Address

4389 50th PL S

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mpkahle@usf.edu

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City

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33711

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Speaking:

☐ For

☐ Against

☒ Information

OR

Waive Speaking:

☐ In Support

☐ Against

PLEASE CHECK ONE OF THE FOLLOWING:



I am appearing without
compensation or sponsorship.



I am a registered lobbyist,
representing:



I am not a lobbyist, but received
something of value for my appearance
(travel, meals, lodging, etc.),
sponsored by:

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S-001 (08/10/2021)

The Florida Senate

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12-9-2024

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Bill Number or Topic

Committee

Transportation & Infrastructure

Amendment Barcode (if applicable)

Name

Emmanuel Lewis

Phone

335-482-6400

Address

18450 Overseas Hwy

Email

emmanuel.lewis@flsenate.gov

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City

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State

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Zip

33907

Speaking:

☐

For

☐

Against

☒

Information

OR

Waive Speaking:

☐

In Support

☐

Against

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S-001 (08/10/2021)

Coral Reef Restoration and Artificial Reefs



Senate Environment and Natural Resources Committee

December 9, 2025

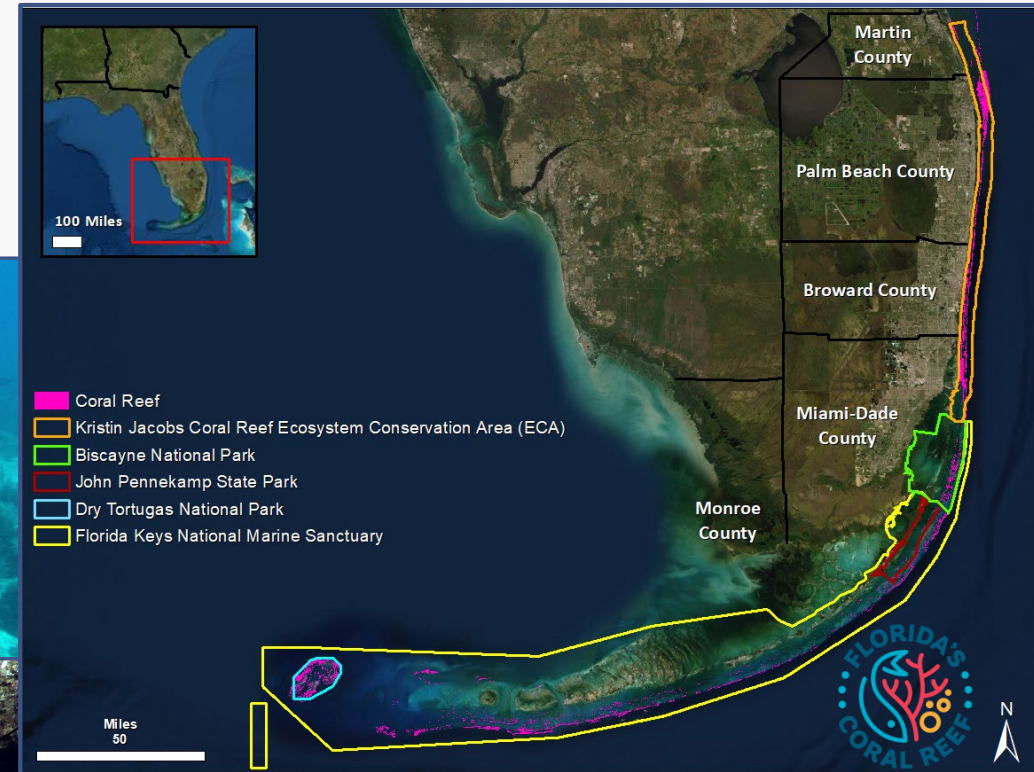
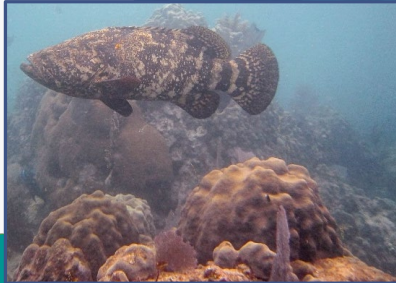
George Warthen, Chief Conservation Officer

Florida Fish and Wildlife Conservation Commission



Florida's Coral Reef (FCR)

- Critical habitat for fish and wildlife
- Generates over \$6 billion annually
- Supports more than 71,000 jobs annually



Status of Florida's Coral Reef

- Over 50% loss in coral cover across FCR in the last 25 years
 - Little to no natural recovery between disturbances

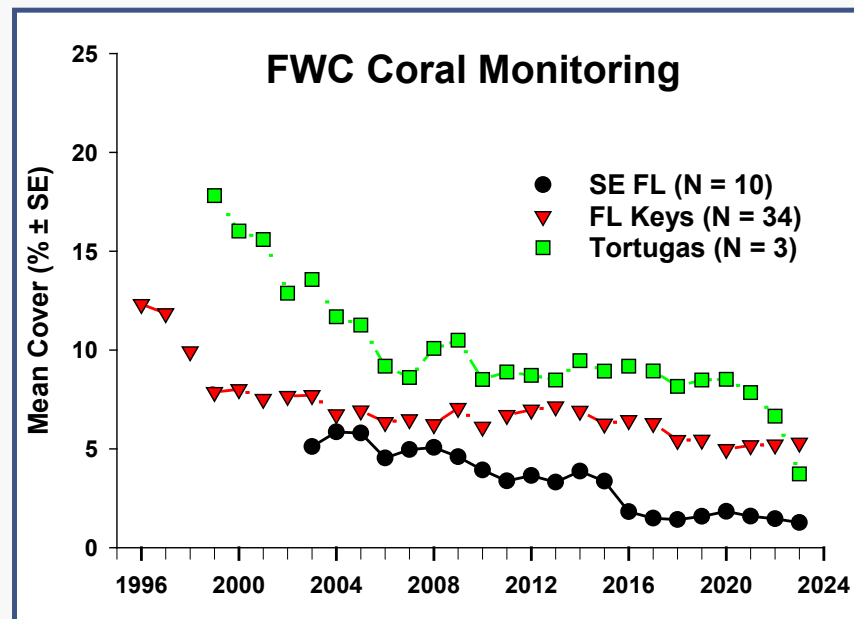
Two species now functionally extinct on FCR:



Pillar coral



Elkhorn coral



Florida's Coral Rescue

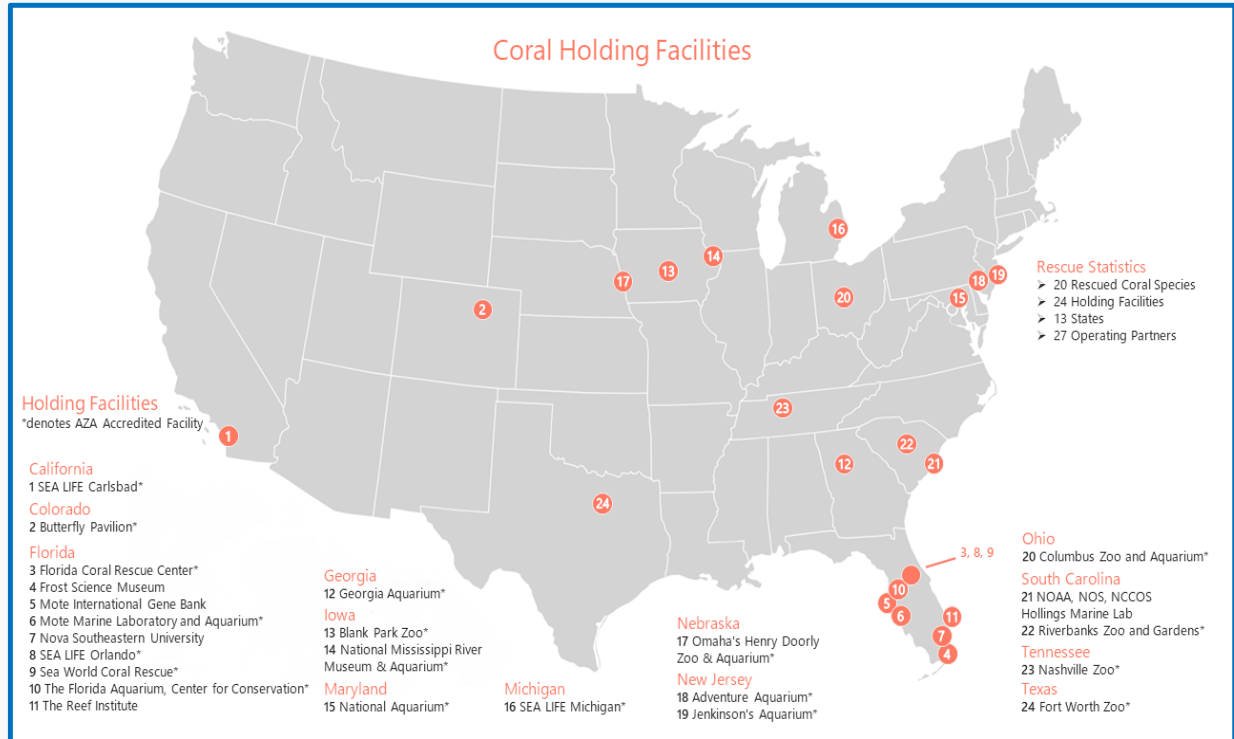
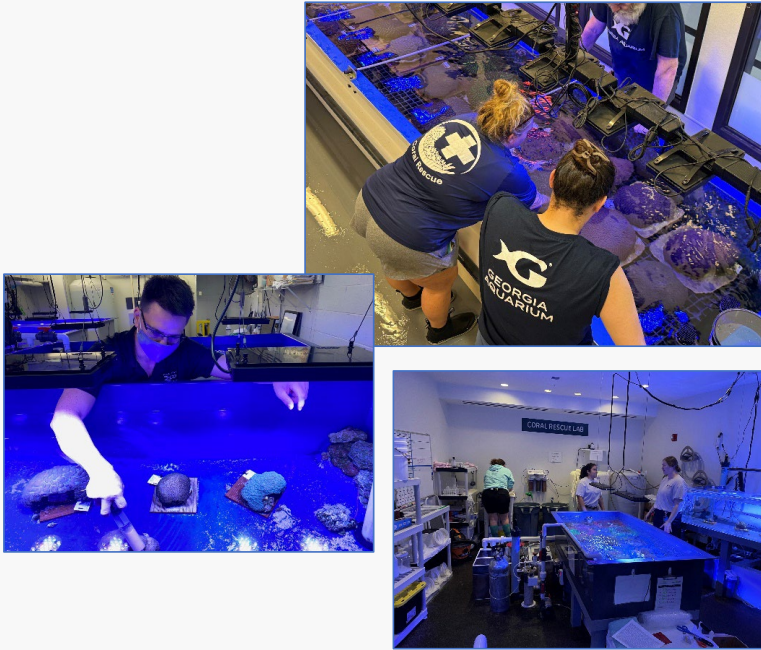
2018: FWC and the National Oceanic and Atmospheric Administration (NOAA) made the unprecedented decision to intervene in response to stony coral tissue loss disease

- Collected, or "rescued", representative corals to:
 - Prevent infection
 - Preserve genetic diversity
 - Propagate broodstock for future restoration



Coral Rescue Accomplishments

- 2,300 colonies from 20 different species under care at 25 facilities



Scaling-up Coral Propagation

Currently, five species are prioritized for immediate scale-up of propagation



GOAL: Propagate ~300,000 colonies to replace 1% of the colonies lost to stony coral tissue loss disease

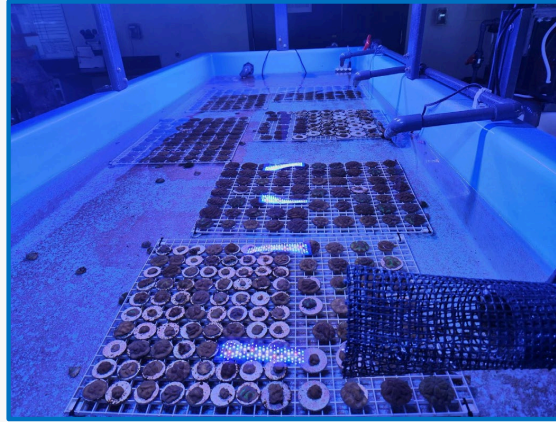
- Requires triple the amount of current tank space
- Total propagation cost ~\$30 million over 10 years

Investment in Florida's Coral Reef

FCR Restoration & Recovery Initiative (FCR3)

Create capacity to restore 25% of FCR by 2050

- \$19 million awarded by Florida Department of Environmental Protection in Fiscal Year (FY) 23/24 and FY 24/25
- \$9.5 million to be awarded in FY 25/26



PROTECTING  TOGETHER



FLORIDA'S CORAL REEF RESTORATION AND RECOVERY INITIATIVE GRANT PROGRAM

This grant program provides funding for academic and private partnerships to implement Florida's Coral Reef Restoration and Recovery Initiative to establish, expand and maintain in-state propagation and grow-out facilities; develop and implement strategies and site-specific restoration plans including curriculum for a trained workforce; and reinforce and expand restoration efforts across Florida's Coral Reef.



Strategic Restoration

FWC staff conduct research and provide expertise to ensure strategic planning utilizes science-based outcomes

- **Breeding plans** to optimize the genetic diversity of offspring
- **Restoration plans** to promote natural recovery
- **In-water nursery and coral outplanting protocols** to protect the health of reared and wild coral populations



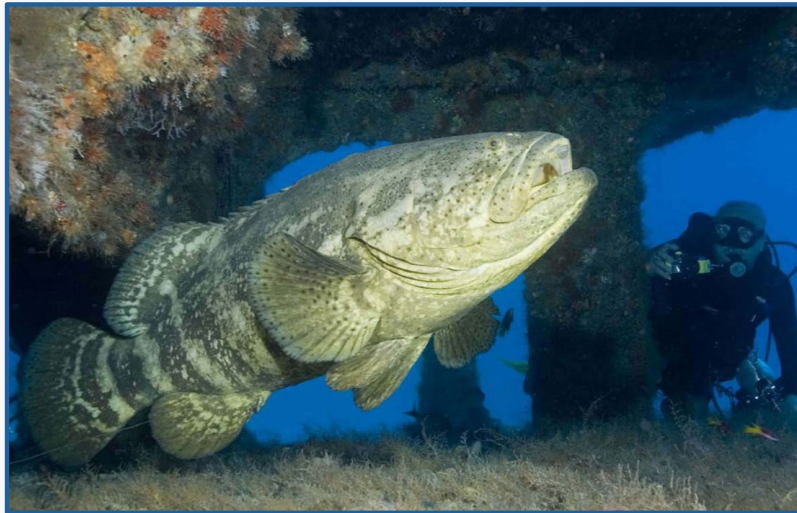
Artificial Reefs



- Florida has one of the most active artificial reef programs out of the 15 Gulf and Atlantic coastal states involved in artificial reef development
- The FWC Artificial Reef Program provides financial and technical assistance to key stakeholders to construct, monitor and assess artificial reefs

Artificial Reef Purpose

- Fish habitat
- Fishing enhancement
- Tourism and recreation



Artificial Reefs - Value to Florida

Economic output

- \$3.1 billion generated by fishing and diving activity

Jobs

- Over 39,000 jobs supported by Florida's artificial reefs

Accrued income

- \$1.3 billion earned by Floridians

State revenues

- \$250 million generated for Florida

Consumer surplus

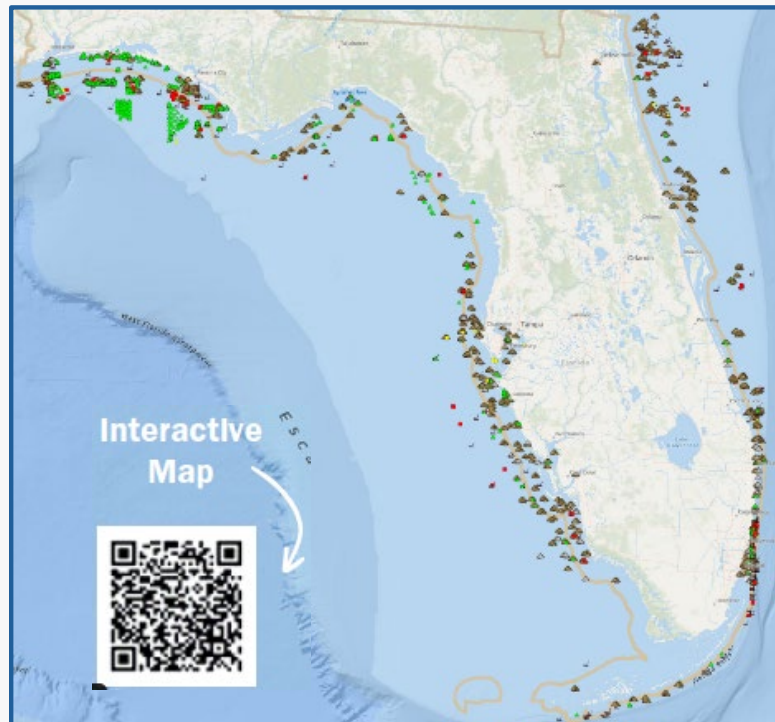
- Over \$700 million in use value provided to reef users



Statewide Artificial Reef Deployments

4,476 Locations Statewide

- Approximately 70-100 artificial reefs constructed annually in Florida
- Over 1.3 million tons of material, including boulders, concrete, modules, and culverts
- Over 561 vessels and barges



Artificial Reef Program Funding Sources

Federal Aid in Sport Fish Restoration

- Excise tax collected on fishing equipment, boats and fuel
- \$300,000 annually

Saltwater fishing license revenues

- \$300,000 annually

Local government funding

NGO funding

Special state appropriations

- \$15 million to Monroe county
- \$15 million Coastal Corridor funding to Fish & Wildlife Foundation of Florida



Artificial Reef Program Challenges

- Federally induced inflation in prior administration
- Lack of material staging areas limits many county deployments
- Limited pool of marine contractors willing to undertake small projects
- Permitting challenges (currently 1.5 - 2 years for federal permits)





Thank You

Legislative Affairs Director:

Jessica Melkun

Jessica.Melkun@MyFWC.com

850-487-3795



The Florida Senate

APPEARANCE RECORD

Deliver both copies of this form to
Senate professional staff conducting the meeting

12-9-25

Meeting Date

ENR

Committee

FWC Coral Presentation

Bill Number or Topic

Amendment Barcode (if applicable)

Name

George Warthen

Phone

850-487-3795

Address

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32399

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Speaking:

☐

For

☐

Against

☒

Information

OR

Waive Speaking:

☐

In Support

☐

Against

PLEASE CHECK ONE OF THE FOLLOWING:

☐

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compensation or sponsorship.

☒

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representing:

FWC

☐

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(travel, meals, lodging, etc.),
sponsored by:

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S-001 (08/10/2021)

OSBORNE REEF RESTORATION



John Truitt

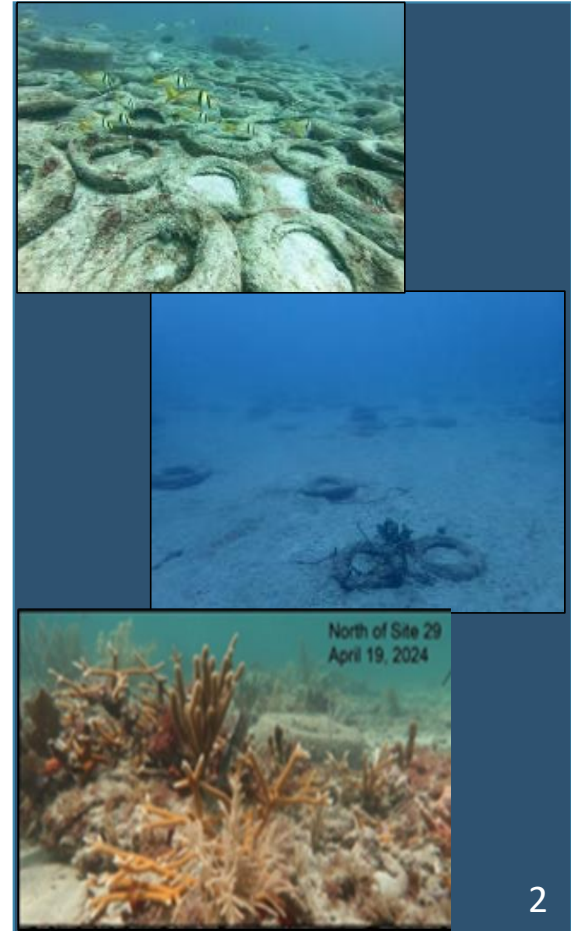
Deputy Secretary of Regulatory Programs
Florida Department of Environmental Protection
Senate Committee on Environment and Natural Resources
December 9, 2025



OSBORNE REEF RESTORATION

In the 1970s, over one million used tires were deployed off the coast of Broward County predominantly between two coral reef tracts for fishery enhancement purposes.

Since the early 2000s, the state and its partners have embarked on restoration efforts to remove tires from the Osborne Tire Reef to prevent future detrimental impacts. As of October 2025, over half a million tires have been removed.





OSBORNE REEF RESTORATION

The most recent tire survey was conducted in 2024.

- The pink outline represents the original permitted tire abatement area.
- Green dots represent the extent of detected tires.
- Pink shaded areas are aggregate primary reef patches.
- Orange shading represents aggregate patches of reef.
- Brown shading represents pavement areas.
- Lime green shading is the ridge of the reef.
- Tan shading represents unconsolidated sediment or sandy bottom areas.

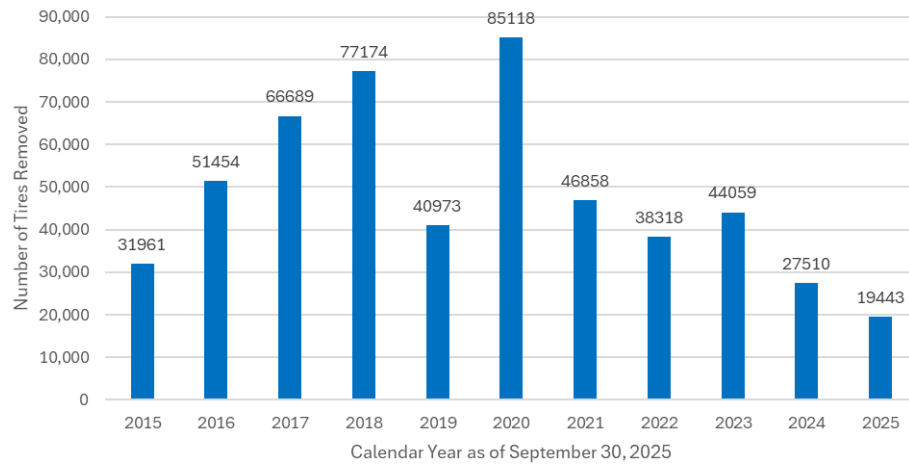
The majority of the tires are located in the sandy bottom areas, and as you extend away from the abatement permit area, the concentration of tires becomes less dense.



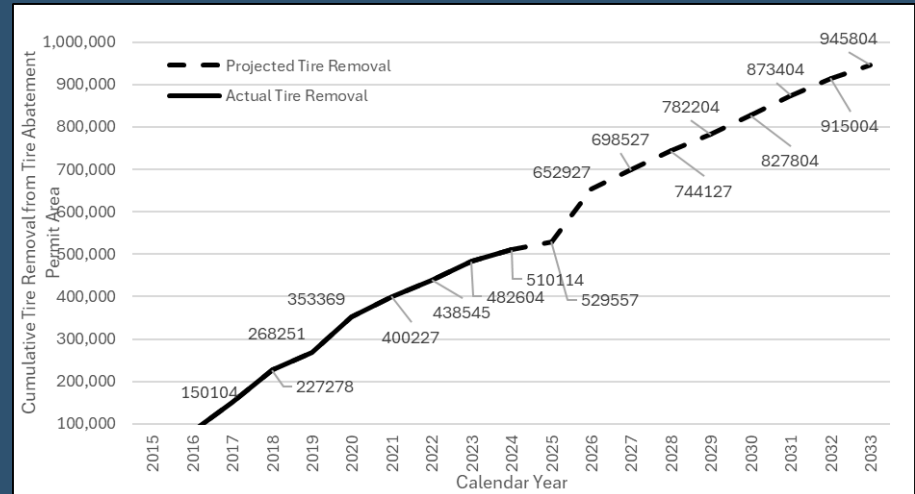


OSBORNE REEF RESTORATION

Annual Quantity of Tires Removed



Annual Tire Removal Rates and Future Projections





OSBORNE REEF RESTORATION

The 2023 Legislature enacted the Restoration of Osborne Reef Act and required the Department of Environmental Protection (DEP) to prepare a Status Report on tire removal efforts and develop a Restoration Plan.

These reports, available on the DEP's website, detail the status of the Osborne Tire Reef, tire removal progress, completed restoration efforts, and plans to expand tire removal and conduct biological restoration activities.





THANK YOU

For any questions contact:
Alex Cronin, Legislative Affairs Director
Alex.Cronin@FloridaDEP.gov
850-245-2092

The Florida Senate

APPEARANCE RECORD

12/9/25

Meeting Date

Deliver both copies of this form to
Senate professional staff conducting the meeting

Bill Number or Topic

S Environment and Natural Resources

Committee

Amendment Barcode (if applicable)

Name John Truitt

Phone 850-245-2092

Address 3900 Commonwealth Blvd

Email alex.cronin@FloridaDPI.gov

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FL

32399

City

State

Zip

Speaking: ☐ For ☐ Against ☒ Information

OR

Waive Speaking: ☐ In Support ☐ Against

PLEASE CHECK ONE OF THE FOLLOWING:

☐ I am appearing without
compensation or sponsorship.

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representing:
FL Dept. of
Environmental Protection

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S-001 (08/10/2021)



BIOSOLIDS UPDATE

John Truitt

Deputy Secretary of Regulatory Programs
Florida Department of Environmental Protection
Senate Committee on Environment and Natural Resources
December 9, 2025



BIOSOLIDS RULEMAKING OVERVIEW

- Biosolids rulemaking for Chapter 62-640, Florida Administrative Code, began in 2019 following recommendations made by the Biosolids Technical Advisory Committee.
 - Minimize migration of nutrients that impair water bodies.
 - Permit-based site-specific conditions and water quality monitoring requirements.
- The initial rulemaking was modified to ultimately address provisions in the Clean Waterways Act of 2020, Senate Bill (SB) 712, which established biosolids management requirements in section 403.0855, Florida Statutes.
- House Bill (HB) 1309 signed by the Governor on June 21, 2021.
 - Ratified the proposed biosolids rule.
 - Rule became effective June 21, 2021.



MOST IMPACTFUL RULE REVISIONS

- Nutrient Management Plans (NMPs) required limitations for phosphorus (P) based application rates, in addition to nitrogen (N) based rates for each zone.
- In addition to biosolids land applications rate limitations from NMPs, Septage application rates were set to lower, fixed rate limits (i.e., 40,000, 30,000, or 12,000 gallons per acre per year, depending on the site characteristics).
- Groundwater monitoring criteria was expanded.
- Surface water monitoring required for sites within 1,000 feet of a surface water.



IMPLEMENTATION

- The Florida Department of Environmental Protection (DEP) revised biosolids site permits in early 2022 to require the submittal of minor permit revisions to incorporate updated NMPs that would meet the requirements of the revised rule.
- Many sites have ultimately discontinued land application of biosolids.
- By the end of 2024, 58 biosolids sites remained and are subject to the revised rules.
- DEP has 48 sites that are under approved NMPs or under schedules to fully meet their revised NMP requirements.
- DEP is working with an additional 10 sites to ensure all remaining biosolids sites are in full compliance with their revised NMP reductions.



RESULTS

- Since 2018, the number of permitted sites has decreased from approximately 120 to 58, with 18 of these being septage “only” sites.
- Production of Class AA biosolids fertilizer products has increased in Florida.
- Landfilling has increased moderately – many landfills do not take biosolids.
- Reductions in biosolids land application sites expected to continue in the future.



BIOSOLIDS QUANTITY CHANGES SINCE 2021

Activity	2021 Quantity	2024 Quantity	Trend
Land Application of Class B Biosolids	96,000 dry tons	41,000 dry tons	Decreasing by ~57%
Distribution and Marketing of Class AA Biosolids Products	228,000 dry tons	327,000 dry tons	Increasing by ~43%
Landfill	61,000 dry tons	93,000 dry tons	Increasing by ~52%



NUMBER OF LAND APPLICATION SITES SINCE RULEMAKING BEGAN IN 2018

Type of Site	Number in 2018	Number in 2024	Trend
Biosolids Site	75	45	Decreasing by ~40%
Septage Site	45	18	Decreasing by ~60%
Total	120	58	Decreasing by ~52%



THANK YOU

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Alex Cronin, Legislative Affairs Director
Alex.Cronin@FloridaDEP.gov
850-245-2092

The Florida Senate

APPEARANCE RECORD

12/9/25

Meeting Date

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Bill Number or Topic

S Environment and Natural Resources

Committee

Amendment Barcode (if applicable)

Name John Truitt

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Speaking: ☐ For ☐ Against ☒ Information

OR

Waive Speaking: ☐ In Support ☐ Against

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FL Dept. of Environmental Protection

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S-001 (08/10/2021)

The Florida Senate

APPEARANCE RECORD

Deliver both copies of this form to
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BIO SOLIDS - DEP

Bill Number or Topic

12/9/25

Meeting Date

ENV & NATURAL RESOURCES

Committee

Amendment Barcode (if applicable)

Name

ROXANNE GROOVER

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813-504-8340

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Speaking:

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For

☐

Against

☒

Information

OR

Waive Speaking:

☐

In Support

☐

Against

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S-001 (08/10/2021)

VARCOR™ System

info@sedron.com



SEDRON®
TECHNOLOGIES

SEDRON BACKGROUND

CONFIDENTIAL
INFORMATION



SEDRON[®]
TECHNOLOGIES



Peter Janicki
CEO & Founder



- ✓ Founded 1993
- ✓ Aerospace Parts
- ✓ Advanced Composites
- ✓ Complex Tooling
- ✓ 5-Axis CNC Machining
- ✓ 2,000 Employees



ORION CREW MODULE



JOINT STRIKE FIGHTER



- ✓ Founded 2014
- ✓ Water & Sanitation
- ✓ >300 Employees



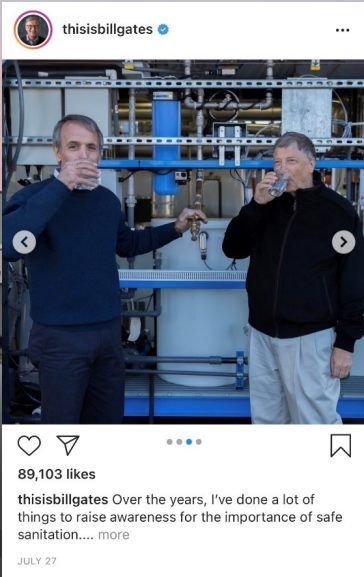
JANICKI OMNI PROCESSOR



VARCOR SYSTEM



FIRELIGHT TOILET



Ongoing
Commitment
to Innovation



Our executive team has collectively developed, built, and operated 50+ facilities worth >\$100B (1/2)



Peter Janicki

Chief Executive Officer

35+ years experience in executive leadership

Founded, scaled, and operate \$400M+ engineering business



Sara VanTassel

Chief of Staff

15+ years experience in operational leadership

Prev. R&D Lead @ Janicki Industries



Stanley Janicki

Chief Commercial Officer

10+ years experience in engineering & operations

Columbia Business School MBA



Matt Parsons

Chief Operations Officer

25+ years experience in operations management

Prev. VP of EHS & Ops @ Cargill



Mackenzie Reider

Chief People Officer

10+ years experience in engineering

Prev. Head of HR @ Janicki Industries



Geoff Trukenbrod

Chief Financial Officer

25+ years experience in finance & operations

Prev. CFO @ LanzaTech, COO & CFO @ Aginity



Our executive team has collectively developed, built, and operated 50+ facilities worth >\$100B (2/2)



Dennis Bourgeois

VP of Manufacturing

20+ years experience in construction & operations
Prev. Director of Operations & Supply Chain



Warren Heartwood

VP of Engineering

10+ years experience in mechanical & civil engineering
Prev. VP of Product Development



Mike Formaini

VP of HSE

40+ years experience in safety & environment
Prev. Director of EHS @ Duquesne Light Company,
Site EHS Leader @ GE



Dave Galey

VP of Project Delivery

15+ years experience in capital projects
Prev. Sr. Project Director @ Ørsted, Startup Manager @ ExxonMobil



Dave Schneider

VP of Development – Municipal Biosolids

25+ years experience in water, energy, waste infra
Prev. VP of Biz Dev @ Inframark, VP of Dev @ Veolia



SEDRON®
TECHNOLOGIES

STRONG ENGINEERING TEAM



CONFIDENTIAL
INFORMATION

Source: Company Management

THE VARCOR™ SYSTEM

CONFIDENTIAL
INFORMATION



SEDRON®
TECHNOLOGIES

VARCOR™ SYSTEM

A COMPLETE, HOLISTIC LIQUID WASTE HANDLING SYSTEM

- ✓ Combined dewatering and drying
- ✓ Solids recovery for beneficial use
- ✓ Very clean steam stripped condensate



The wastewater treatment industry is facing unprecedented challenges

Physical space & capacity

Nutrient management

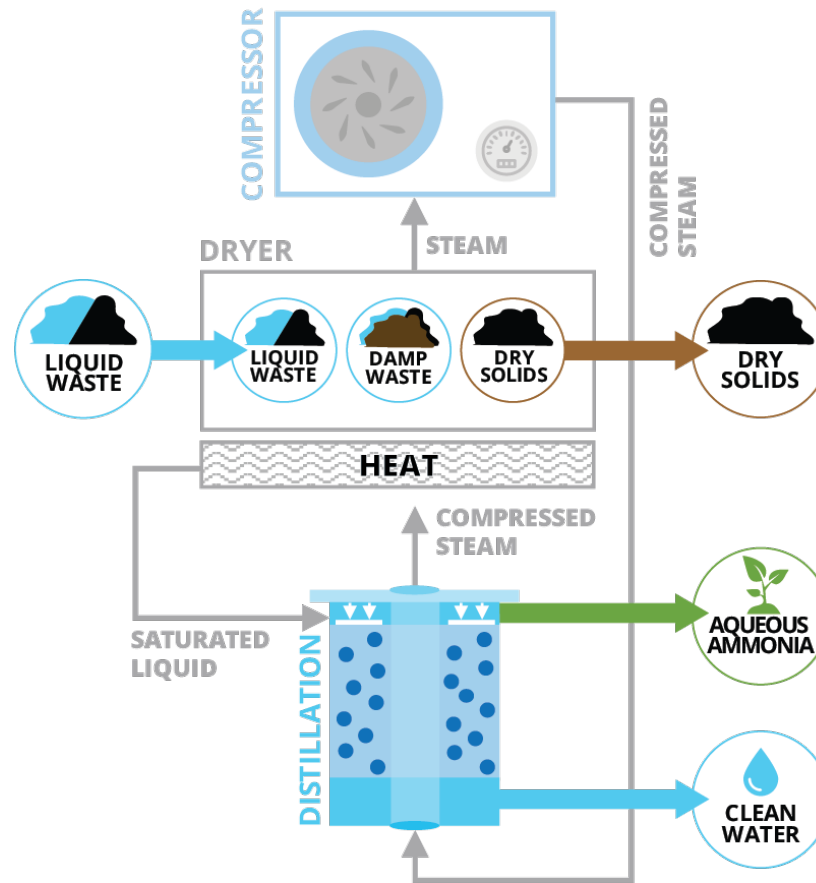
Contaminants

Disposal options & costs



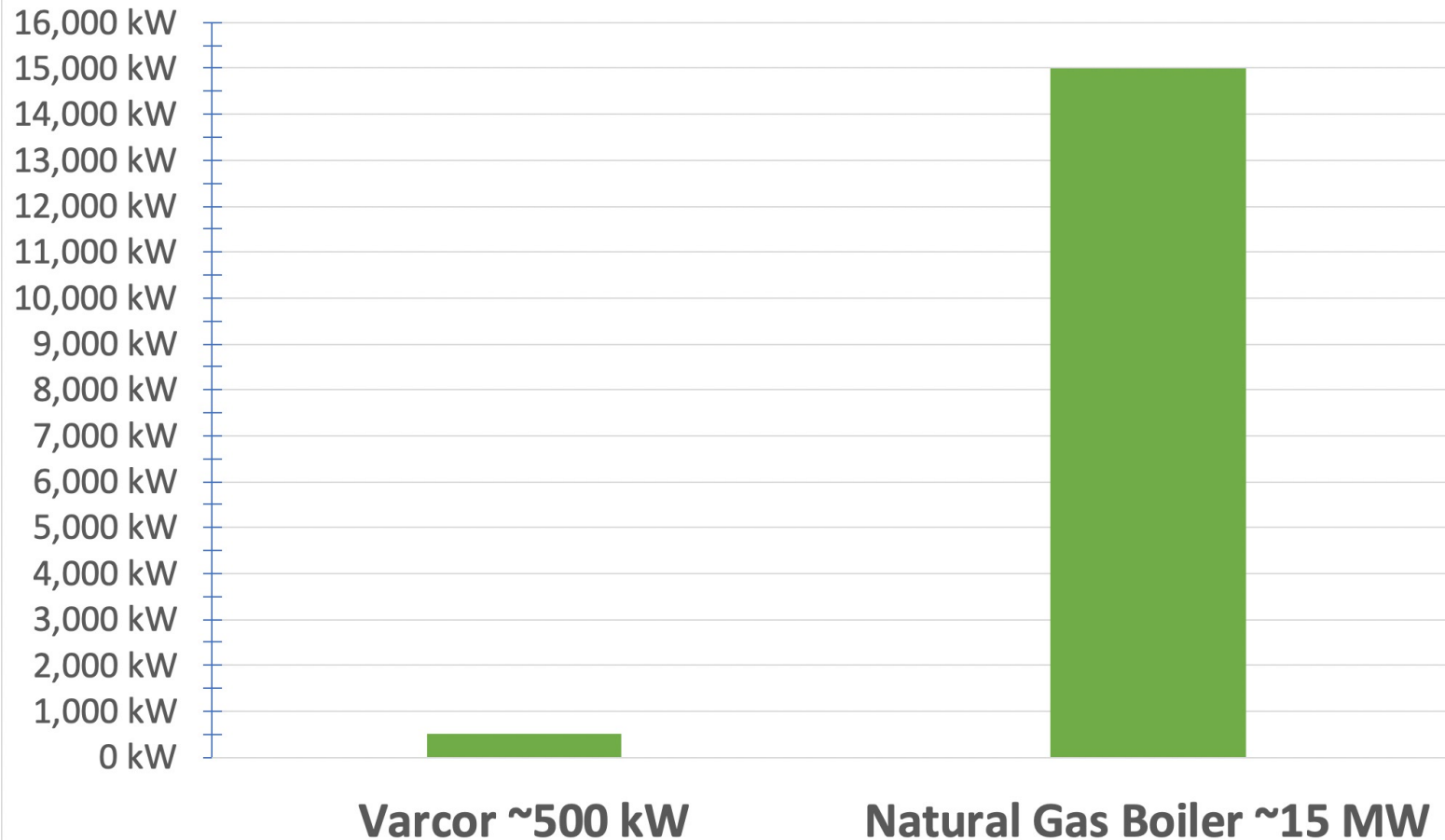
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The Varcor® utilizes long-established engineering principles for highly efficient solid-liquid separation



VARCOR™ Energy Input vs Traditional Methods

Energy Required to Evaporate 370 Litres / Minute of Water



The separated and recovered co-products are highly valuable and simple to process

COMPONENT IN SLURRY	BOILING POINT >100°C?	END PRODUCT
AMMONIA	NO	DISTILLATE
WATER	NO	CLEAN WATER
P ₂ O ₅	YES	DRY SOLIDS <i>(Class A or above, >60-90% dry, pathogen-free)</i>
K ₂ O	YES	
ORGANIC NITROGEN	YES	
ORGANIC CARBON	YES	



SEDRON
TECHNOLOGIES

Example Sites

CONFIDENTIAL
INFORMATION



SEDRON[®]
TECHNOLOGIES

VARCOR™ SYSTEM

4,000 Cow Dairy

Indiana

Operational
Since 2020

~40,000,000
gallons per year
of capacity

~10,000 sq-ft
building



VARCOR™ SYSTEM

Major Rum Distillery

US Virgin Islands

Operational Since
2022

Available for
additional trials in
2023

1,400 gallons / day
of capacity





SEDRON[®]
TECHNOLOGIES

VARCOR™ SYSTEM

Regional Septage /
Biosolids Processing
Facility

Seattle Washington

Currently
Operational

~40,000,000 gallons
per year of capacity

~10,000 sq-ft
building

EPA 503 Class A EQ
Biosolids Permit



VARCOR™ SYSTEM

20,000 Cow Dairy

Indiana

Operational Q1 of
2024

~200,000,000
gallons per year of
capacity



Organic Ammonium-Nitrate Liquid Fertilizer

Organic high Nitrogen product

- ✓ OMRI Certified
- ✓ CDFA Certified
- ✓ LGMA Compliant
- ✓ 7-0-0, 10-0-0 & 20-0-0
- ✓ pH: 7







VARCOR™ SYSTEM

12,000 Cow Dairy
Wisconsin

Operational Q4 of
2025

~140,000,000
gallons per year of
capacity





Florida Project Being Built

CONFIDENTIAL
INFORMATION



SEDRON[®]
TECHNOLOGIES

SEATTLE PROJECT

- ✓ Class B disposal
- ✓ Lower costs than land-application
- ✓ Zero tax-payer investment
- ✓ Tremendous private sector investment
- ✓ Regional high paying jobs



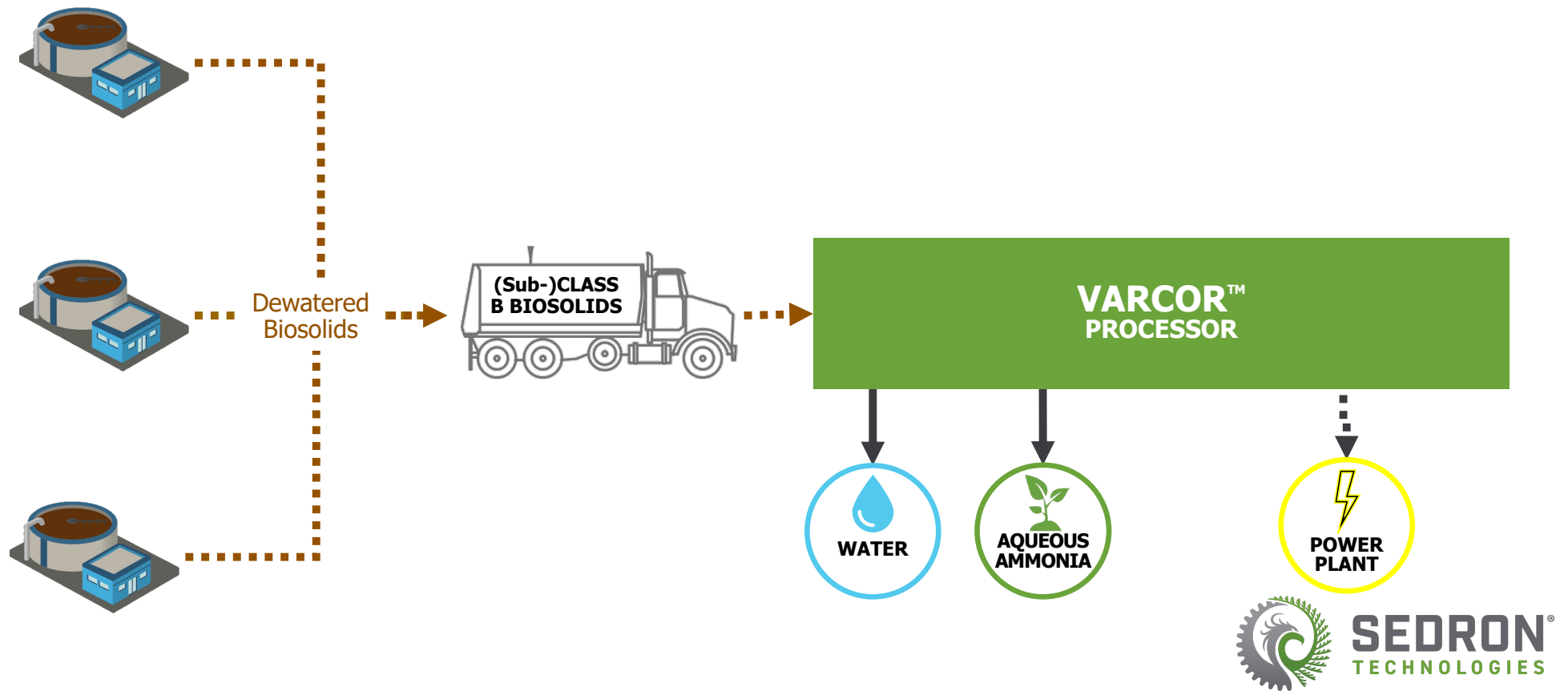
Copy the Seattle project – but in Florida!

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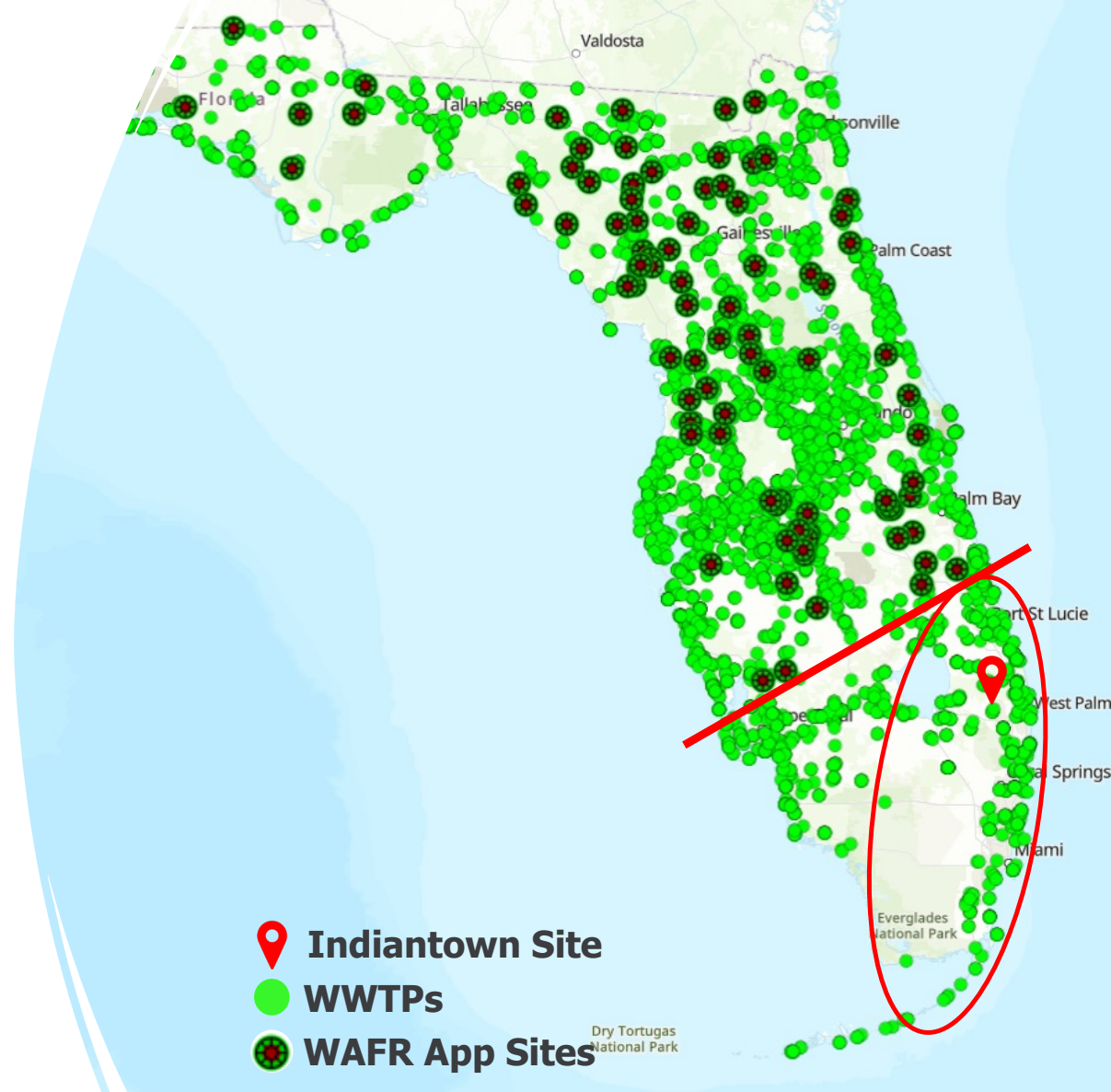
SEDRON®
TECHNOLOGIES

1 Regional model



Why Indiantown?

- Population 9M+ in South Florida
- No land application sites south of Lake Okeechobee
- Reduced landfill capacity
- Reduced biosolids land application rates
- Number of viable disposal options for septage haulers declining rapidly



THANK YOU!



SEDRON[®]
TECHNOLOGIES

The Florida Senate

APPEARANCE RECORD

Dec. 9, 2025

Meeting Date

Enviro. + Natural Res.

Committee

Deliver both copies of this form to
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Sedron - Biosolids

Bill Number or Topic

Amendment Barcode (if applicable)

Name Kloee Ciuperger

Phone 561-379-9907

Address _____
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Email kloee@gallopavollc.com

City

State

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Speaking: ☐ For ☐ Against ☒ Information

OR

Waive Speaking: ☐ In Support ☐ Against

PLEASE CHECK ONE OF THE FOLLOWING:

☐ I am appearing without
compensation or sponsorship.

☒ I am a registered lobbyist,
representing:

Sedron
Technologies

☐ I am not a lobbyist, but received
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S-001 (08/10/2021)

The Florida Senate

APPEARANCE RECORD

SEDRON PRES.

Bill Number or Topic

12/9/25

Meeting Date

ENV & NATURAL RESOURCES

Committee

Deliver both copies of this form to
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Amendment Barcode (if applicable)

Name

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Speaking:

☐

For

☐

Against

☒

Information

OR

Waive Speaking:

☐

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☐

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S-001 (08/10/2021)

CourtSmart Tag Report

Room: SB 110 **Case No.:** **Type:**
Caption: Senate Environment and Natural Resources Committee **Judge:**

Started: **12/9/2025 3:31:35 PM**
Ends: **12/9/2025 5:07:03 PM** **Length: 01:35:29**

3:31:38 PM Chair Mayfield calls meeting to order
3:31:43 PM Roll call
3:31:52 PM Quorum announced
3:32:20 PM Senator Arrington is excused
3:32:26 PM Pledge of Allegiance
3:32:37 PM Chair Mayfield with opening remarks
3:33:21 PM Tab 1, Mote Marine Laboratory Presentation on Coral Reef Restoration
3:33:37 PM Dr. Michael Crosby, President and CEO, Mote Marine Laboratory
3:53:08 PM Chair Rodriguez
3:53:37 PM Senator DiCeglie
3:54:02 PM Senator Harrell
3:54:57 PM Dr, Michael Crosby
3:55:54 PM Chair Rodriguez
3:56:23 PM Tab 2, Keys Marine Laboratory Presentation on Coral Reef Restoration
3:56:45 PM Captain Mike Kahle, Director, Florida Institute of Oceanography
3:59:31 PM Dr. Cynthia Lewis, Keys Marine Lab Director and Associate Director of the Florida Institute of Oceanography
4:08:24 PM Chair Rodriguez
4:08:30 PM Senator Smith
4:09:46 PM Dr. Cynthia Lewis
4:12:23 PM Senator Harrell
4:13:05 PM Dr. Cynthia Lewis
4:13:34 PM Chair Rodriguez
4:14:01 PM Tab 3, Fish and Wildlife Conservation Commission Presentation on Coral Reef Restoration and Artificial Reefs
4:14:21 PM Mr. George Warthen, Chief Conservation Officer, FWC
4:24:08 PM Chair Rodriguez
4:24:12 PM Senator Mayfield
4:24:27 PM Mr. George Warthen
4:25:00 PM Senator Mayfield
4:25:20 PM Mr. George Warthen
4:25:56 PM Chair Rodriguez
4:26:00 PM Senator Harrell
4:26:21 PM Mr. George Warthen
4:27:14 PM Senator Harrell
4:27:41 PM Mr. George Warthen
4:28:27 PM Senator Avila
4:29:19 PM Chair Rodriguez
4:29:24 PM Senator Avila
4:30:19 PM Mr. George Warthen
4:30:45 PM Chair Rodriguez
4:31:17 PM Tab 4, Department of Environmental Protection Presentation on Osborne Reef

Restoration

4:31:50 PM Mr. John Truitt, Deputy Secretary of Regulatory Programs
4:38:15 PM Chair Rodriguez
4:38:18 PM Senator Avila
4:38:57 PM Mr. John Truitt
4:39:35 PM Senator Avila
4:40:34 PM Mr. John Truitt
4:40:40 PM Senator Avila
4:41:01 PM Mr. John Truitt
4:41:26 PM Chair Rodriguez
4:41:45 PM Tab 5, Department of Environmental Protection Presentation on Biosolids
4:42:02 PM Mr. John Truitt, Deputy Secretary of Regulatory Programs
4:50:34 PM Chair Rodriguez
4:50:42 PM Senator Smith
4:50:57 PM Mr. John Truitt
4:51:50 PM Senator Smith
4:52:01 PM Mr. John Truitt
4:52:42 PM Senator Harrell
4:53:49 PM Mr. John Truitt
4:54:40 PM Senator Harrell
4:54:40 PM Senator Harrell
4:54:41 PM Chair Rodriguez
4:55:28 PM Ms. Roxanne Groover
4:56:32 PM Chair Rodriguez
4:57:03 PM Tab 6, Sedron Technologies Presentation on the Indiantown Biosolids Facility
4:57:26 PM Ms. Kloe Ciuperger, Government Relations Consultant
5:05:16 PM Chair Rodriguez
5:05:30 PM Senator Harrell
5:06:11 PM Chair Rodriguez
5:06:31 PM Ms. Roxanne Groover
5:06:37 PM Chair Rodriguez
5:06:46 PM Senator Polsky moves to adjourn
5:06:49 PM No objection
5:06:53 PM Meeting adjourned



Florida Senate

Kristen Arrington

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Vice Chair of
Commerce & Tourism
Committee

Appropriations
Committee on
Agriculture,
Environment, and
General Government

Appropriations
Committee on
Transportation,
Tourism, and Economic
Development

Environment and
Natural Resources

Fiscal Policy

Governmental
Oversight and
Accountability

Transportation

December 8, 2025

The Honorable Ana Maria Rodriguez
410 Senate Building
404 South Monroe Street
Tallahassee, FL 32399-1100

Dear Chair Rodriguez,

I am respectfully requesting to be excused from the upcoming Environment and Natural Resources Committee meeting on December 9th at 3:30pm.

Thank you for your consideration. Please do not hesitate to reach out should you have any questions.

Respectfully,

Senator Kristen Arrington

CC: Ellen Rogers, Staff Director
Kim Bonn, Committee Administrative Assistant