



# Florida Artificial Reef Updates: Program Overview, Deployment Summaries, Recent Trends

Presented by Keith Mille, Biological Administrator  
FWC Division of Marine Fisheries Management,  
Artificial Reef Program  
October 15, 2024



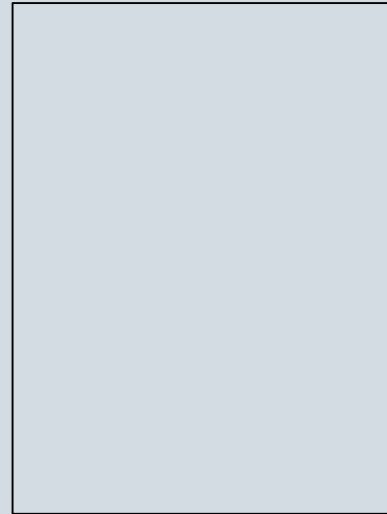
# FWC Artificial Reef Program Staff



**Keith Mille**  
Program Administrator



**Carolyn Kalinowski**  
Fisheries Biologist IV  
Grant Manager (SFR)



**Vacant**  
Fisheries Biologist IV  
Grant Manager (SFR)



**Eli Myron**  
Fisheries Biologist III  
Grant Manager (NRDA)

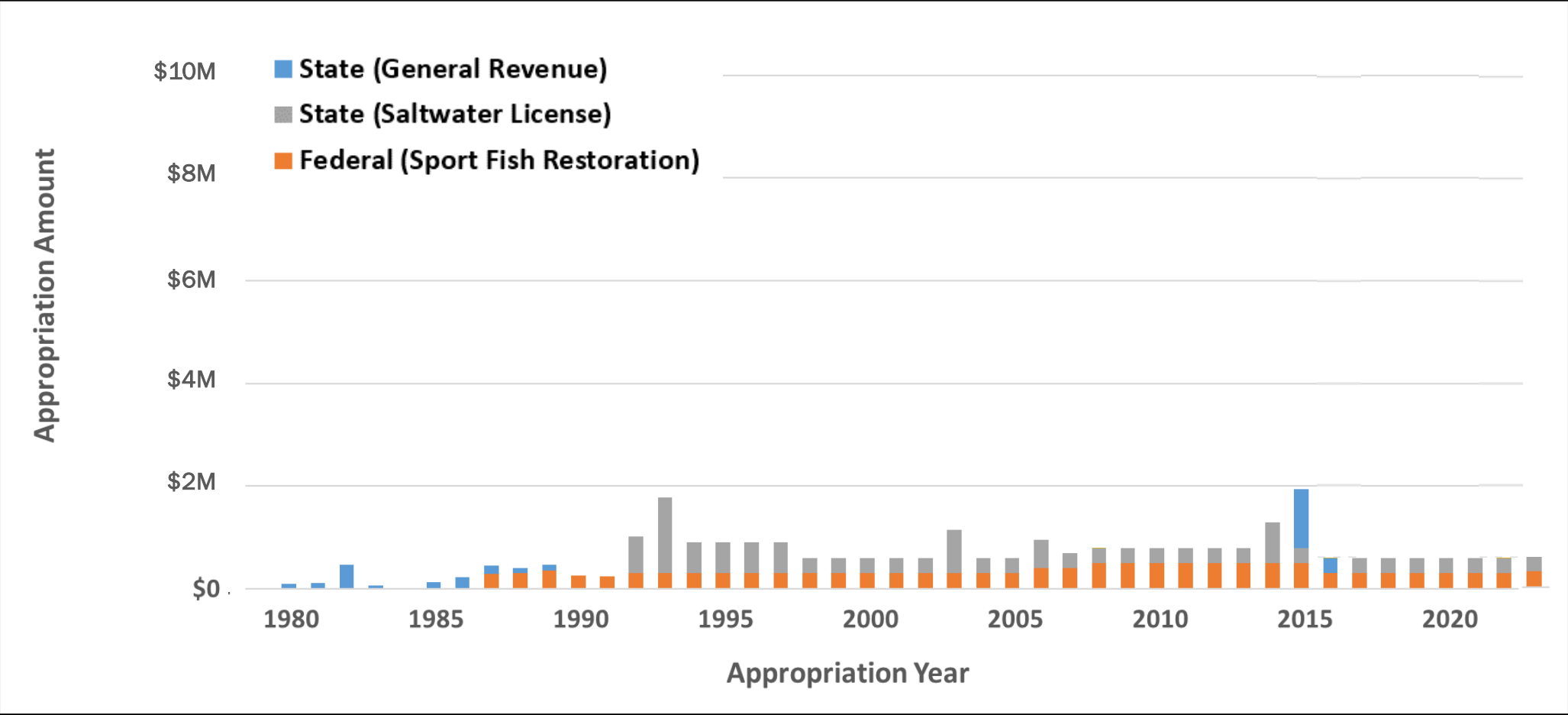


# International Updates

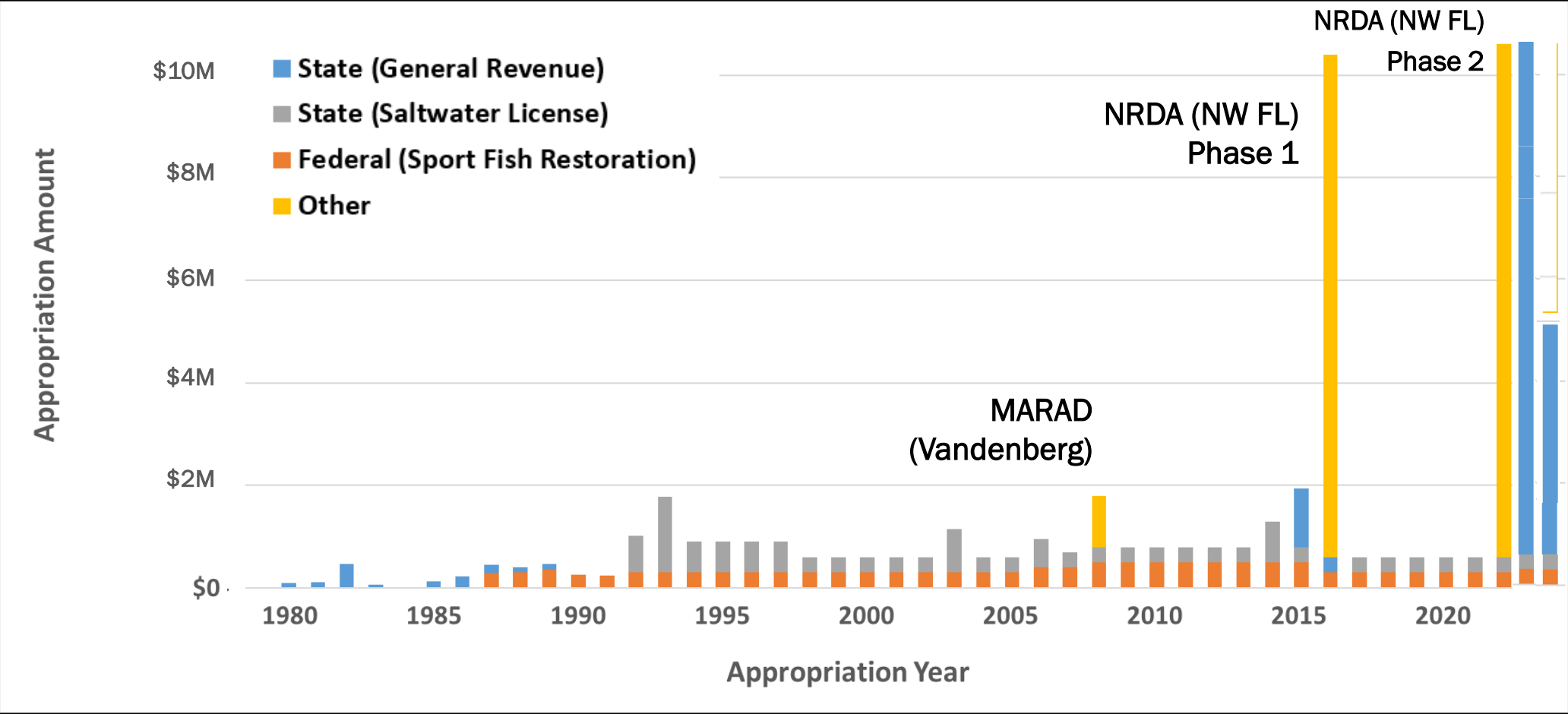
- 12th International Conference on Artificial Reef and Related Aquatic Habitats (CARAH)
  - March 9-14, 2024, Santa Marta, Colombia tentative
  - Host: Oscar Delgadillo Garzón (MoAm S.A.S.)



# FWC Grant-in-Aid Funding

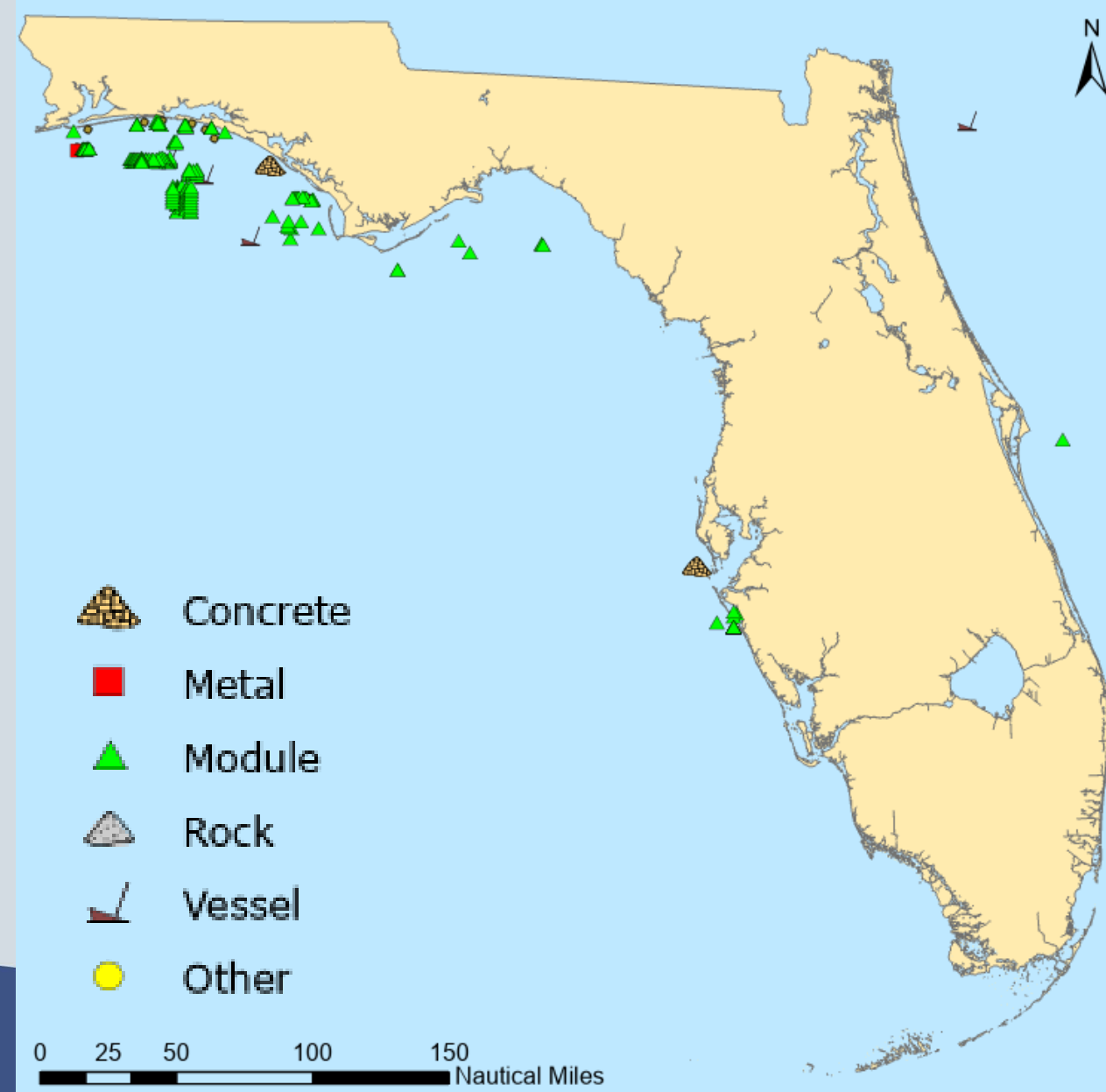


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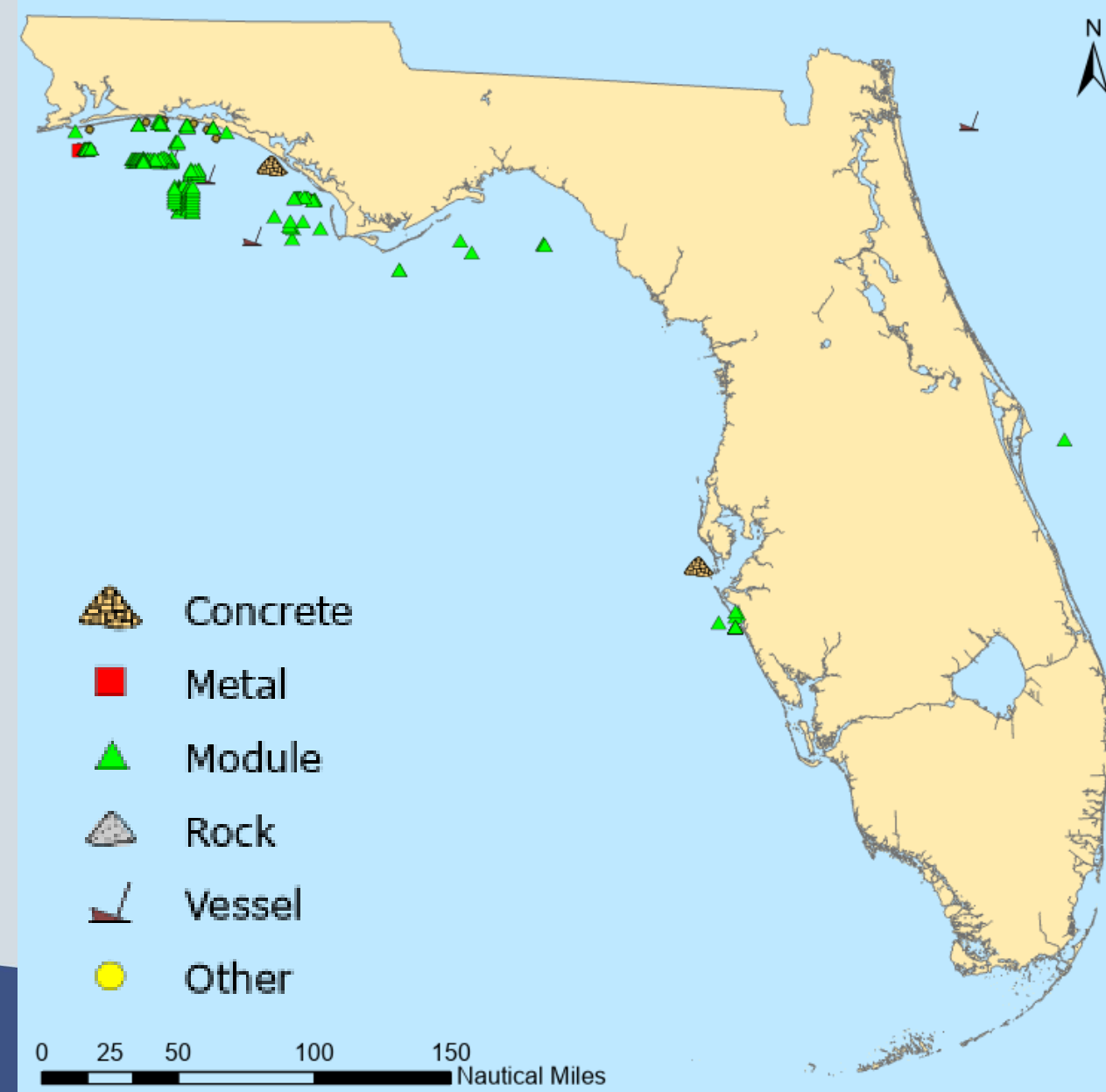
# 1-Year Summary: Sept 2023 – Sept 2024

- 229 Patch Reefs



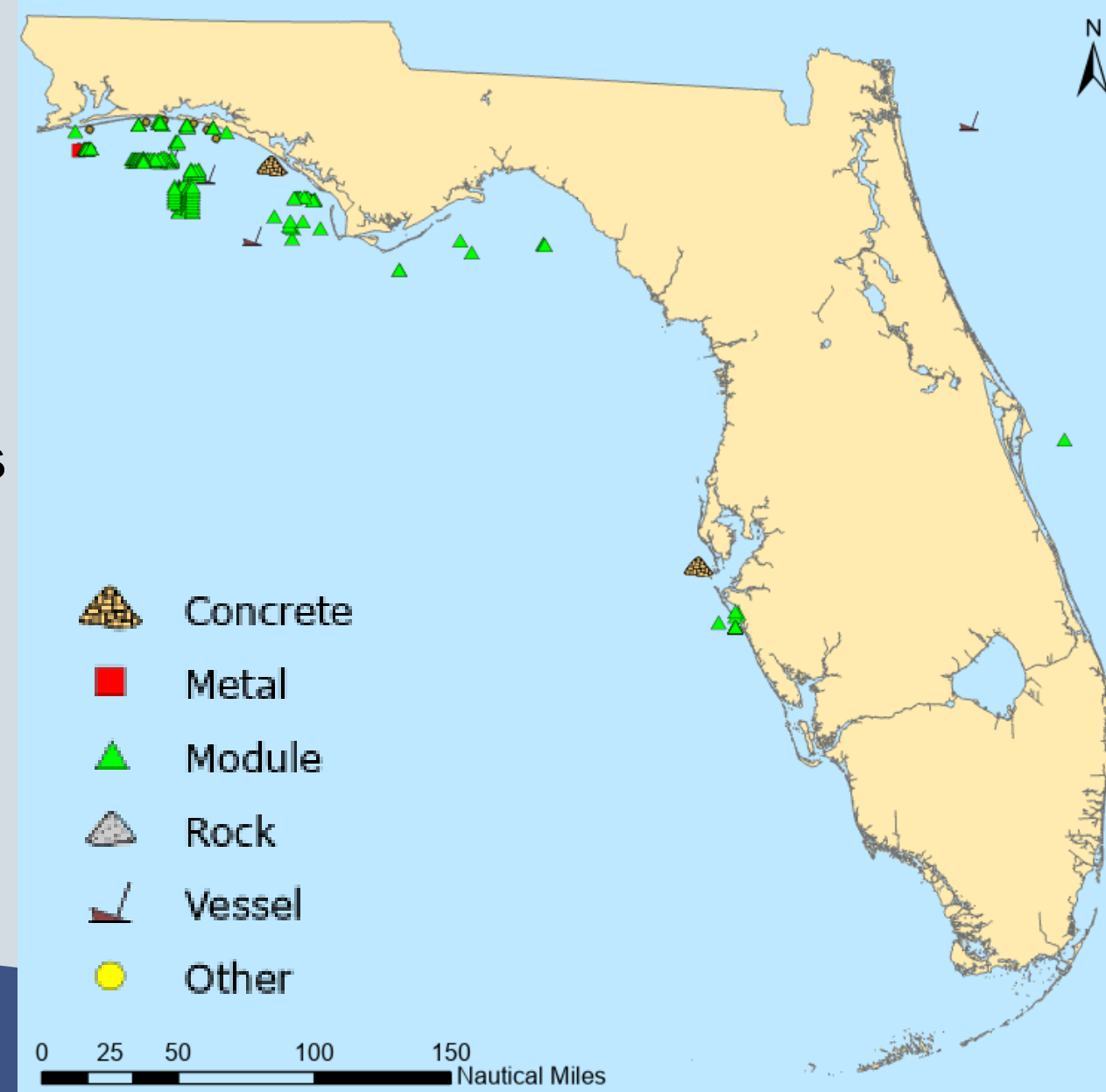
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- 229 Patch Reefs
  - Modules: 214
  - Concrete: 10
  - Vessel/barge: 4
  - Metal: 1



# 1-Year Summary: Sept 2023 – Sept 2024

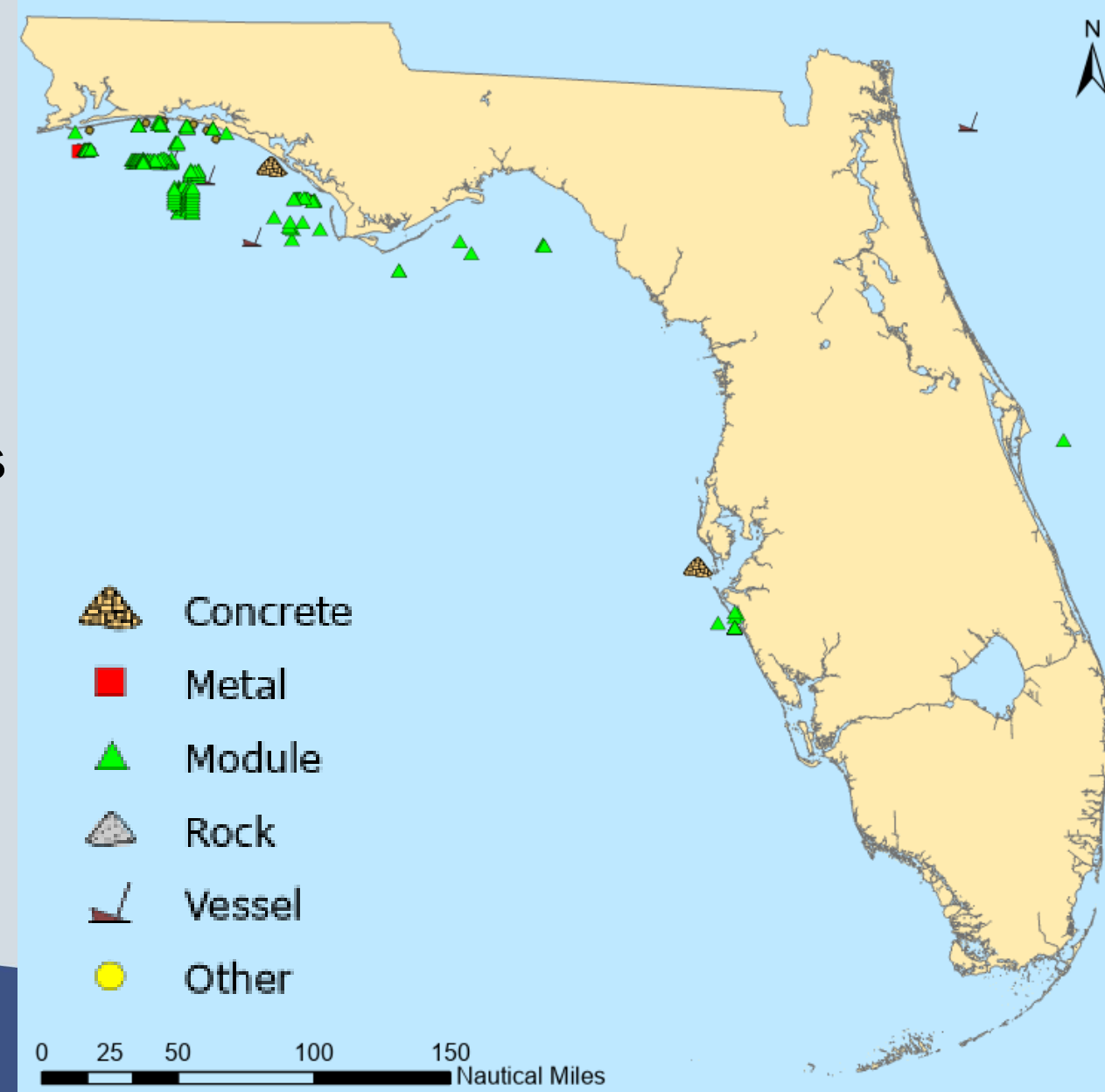
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- 137 Federal Waters, 92 State Waters





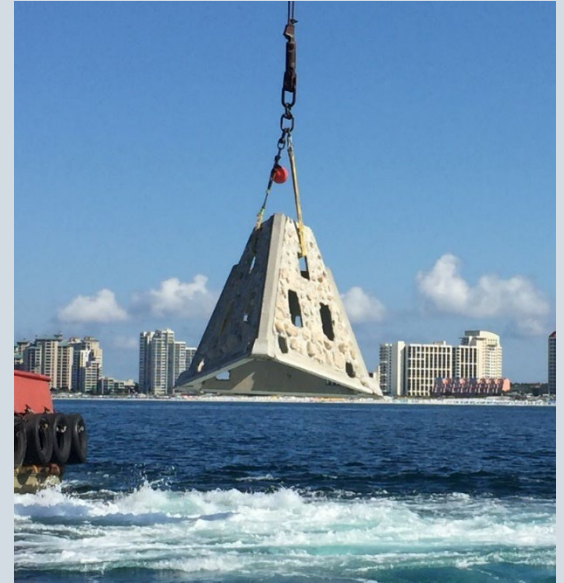
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- 137 Federal Waters, 92 State Waters
- 227 Gulf, 2 Atlantic



# NRDA Artificial Reef Project (\$20.3M)

- 2015: \$10.5M appropriated for Artificial Reef Construction
  - Limited to State waters
  - Only modules permitted
- 2021: \$9.8M appropriated for Artificial Reef Construction
  - State and Federal waters
  - Modules, secondary-use concrete, and boulders permitted
- Intent: Create new recreational fishing opportunities in state waters to offset losses that occurred as a result of Deepwater Horizon Oil Spill



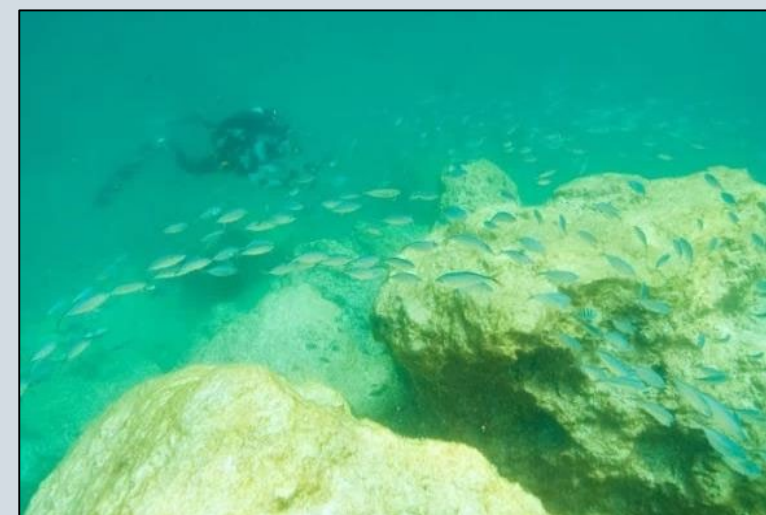
# 24 Vessels & Barges Deployed since 2021



County	Deployment Name	Description	Tons	Area (ft2)	Depth (ft)	Relief (ft)	Cost	Date
Bay	El Dorado	144' Aluminum Vessel	216	4,000	103	41	\$35,815	05/03/2019
Duval	Jimmy Dales Reef	Steel Tugboat (110' x 30')	311	3,300	90	30	unk	10/05/2021
Duval	Greater Jax Kingfish	Steel Sailboat (100' x 30')			90	25	unk	10/05/2021
Manatee	Jim's Gift	120' Steel barge - CCA	250	5400	33	7	unk	06/19/2020
Okaloosa	S/V DYLAN	61 ft steel sailboat	26	824	119	12	unk	09/10/2020
Okaloosa	USAF Big Dawg	USAF training vessel (93'x32'x35')	158	1,120	104	35	unk	05/07/2021
Okaloosa	M/V Brannon	Steel military cat (65'Lx20'X14)	30	1,400	119	14	unk	07/29/2021
Okaloosa	M/V Miss Joann	64' x 21' x 35' steel hull tugboat	50		119	35	unk	03/02/2022
Okaloosa	M/V Miss Nellie	3-deck towboat 62' (63'x22'x29')	54	20,097	116	30	unk	08/23/2022
Okaloosa	S/V Cordonazo	Steel hull sailboat	30	603	113	11	unk	09/07/2022
Okaloosa	R/V MANTA	180' Steel hulled research vessel	298	6,840	111	52	unk	01/15/2023
Okaloosa	R/V DOLPHIN	192' Steel hulled research vessel	297	7,661	122	51	unk	03/15/2023
Okaloosa	RMS CYCLOPS	105' Steel hulled vessel	66	2,520	72	27	unk	04/18/2023
Okaloosa	RMS ATLANTIS	125' X 26' X 35' Steel hulled vessel	58	3,250	80	35	unk	06/29/2023
Pinellas	Clw Barge	Steel Barge (50' x 30' x 16' tall)	50	1500	40	15	unk	04/24/2019
St. Lucie	CCA - Curtis Bostick	180 ft. freighter 325 tons concrete	589		102	40	\$153,000	07/10/2019
St. Lucie	Blake Charron Reef	Steel tugboat (85' x 30' x 42')		2,550	155	42	\$85,000	09/25/2021
St. Lucie	The Aftersome Reef	418ft Steel hopper barge	2,688	31,350	175	28	unk	12/1/2021
St. Lucie	Capt. Patrick Price	Steel Yacht 98' (98'x18'X30')	117	1,764	185	20	unk	05/15/2022
St. Lucie	Daymaker Charters	Steel Tour Boat 85' (85'x30'x35')	54	44,625	102	35	unk	05/16/2022

# Deployment Trends

- More placement of reefs within state waters
  - Ease of access
  - Snorkel/kayak reefs
  - Desire for locations with less stringent regulations (e.g. red snapper)
- Species-specific and more focused ecological considerations
  - Deepwater “Reef Darts”



# Deployment Trends

- March 2024, Navarre Beach



## The Plastic Navy of Navarre

Private group · 1.2K members



+ Invite



Hookcraft

1d · 🌐

The last few days have been well worth the wait. We had a good run in the fall, a really dead winter, and then the tuna sho... See more

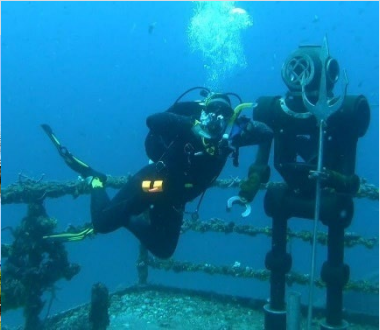


# Deployment Trends

- Artform and Memorial Reefs



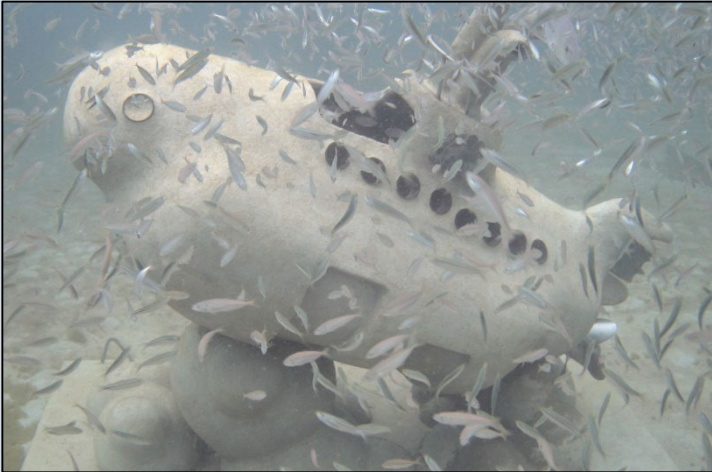
M/V Lady Luck “Steel Robot” (Lauderdale-By-The-Sea, 2023)



Circle of Hero’s (Pinellas 2019)



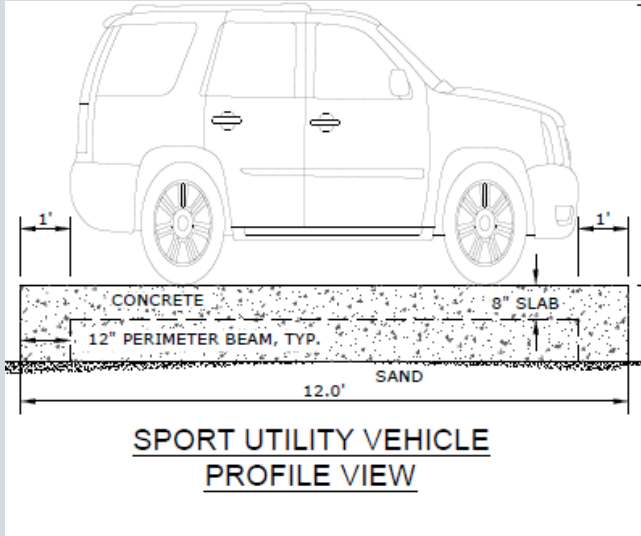
1000 Mermaids (Palm Beach, 2019)



Underwater Art Museum (Grayton Beach, 2018 & annually)



M/V Manta “Christ of the Gulf” (Destin, 2023)



Reefline Cars (Miami, pending)



# Deployment Trends

- Mitigation and Living Shorelines/Protection Reefs



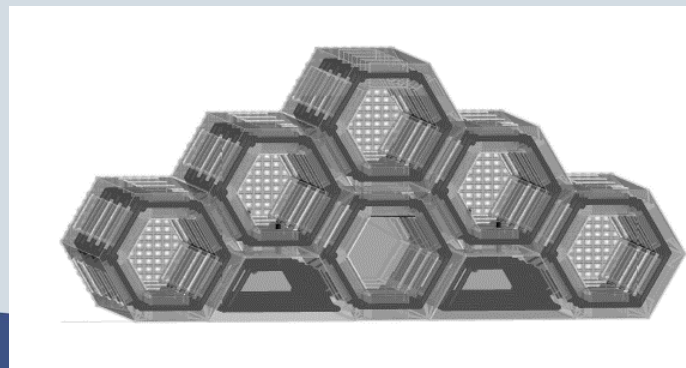
Lauderdale-by-the-Sea Mitigation  
(4,000 modules, 2021-present)



Reef Innovations Living Seawall units  
(Palmetto, 2016)



Kind Design Living Seawalls  
(Miami Beach, 2024)



Miami U-Link "Seahive" units  
(Miami Beach, 2023)



Wahoo Bay Living Shoreline  
(Pompano, 2023)



# Deployment Trends



- March 2024, Destin





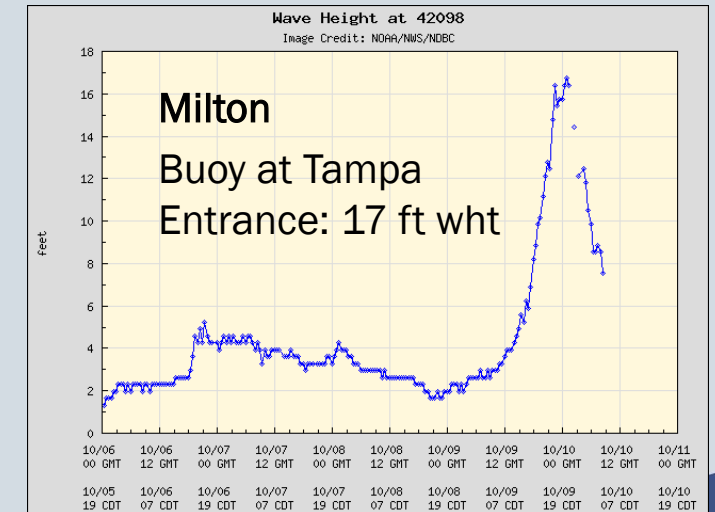
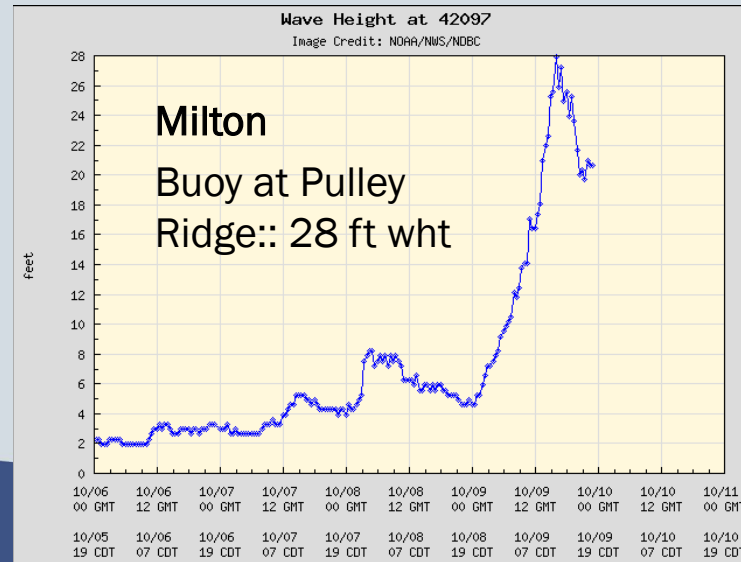
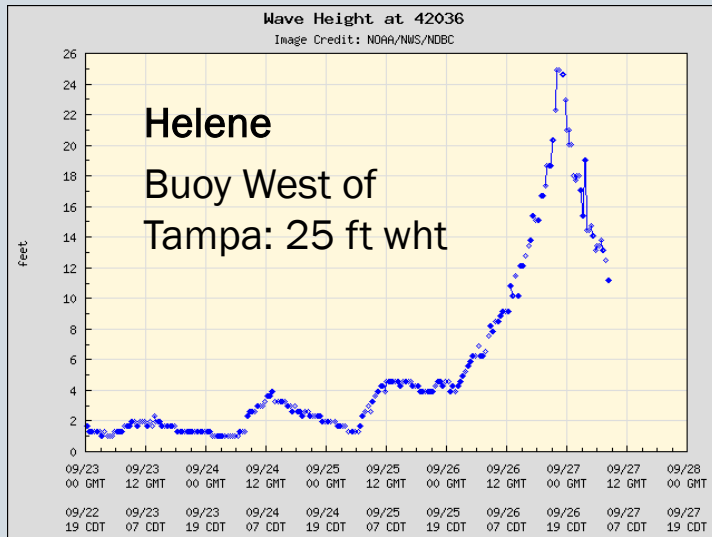
# Trends

- Increased storm activity
  - Ten major hurricanes since 2017
  - All along Gulf Coast (none off Atlantic)



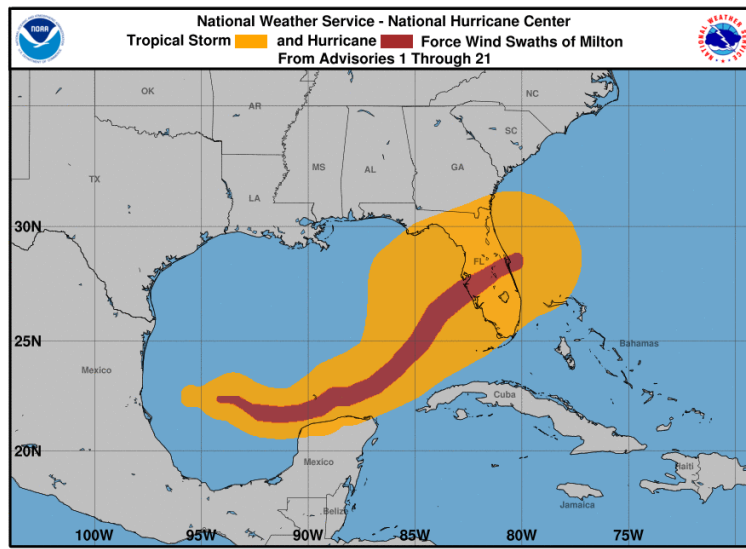
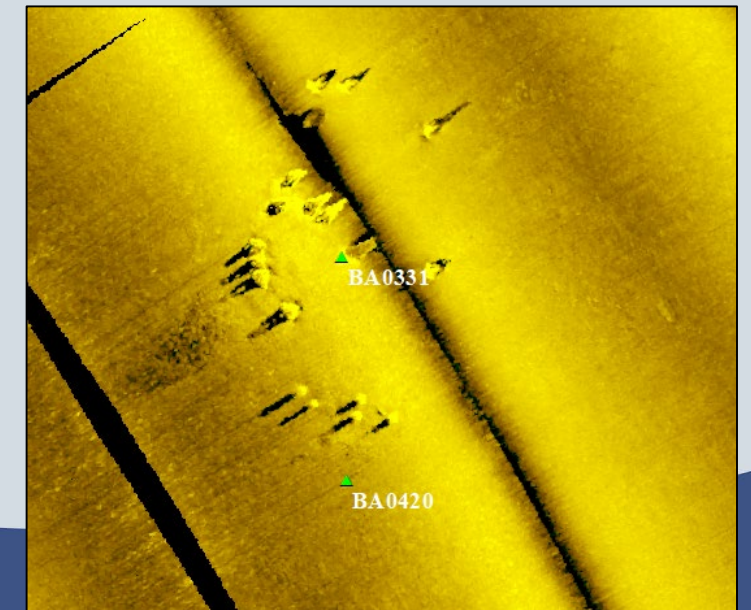
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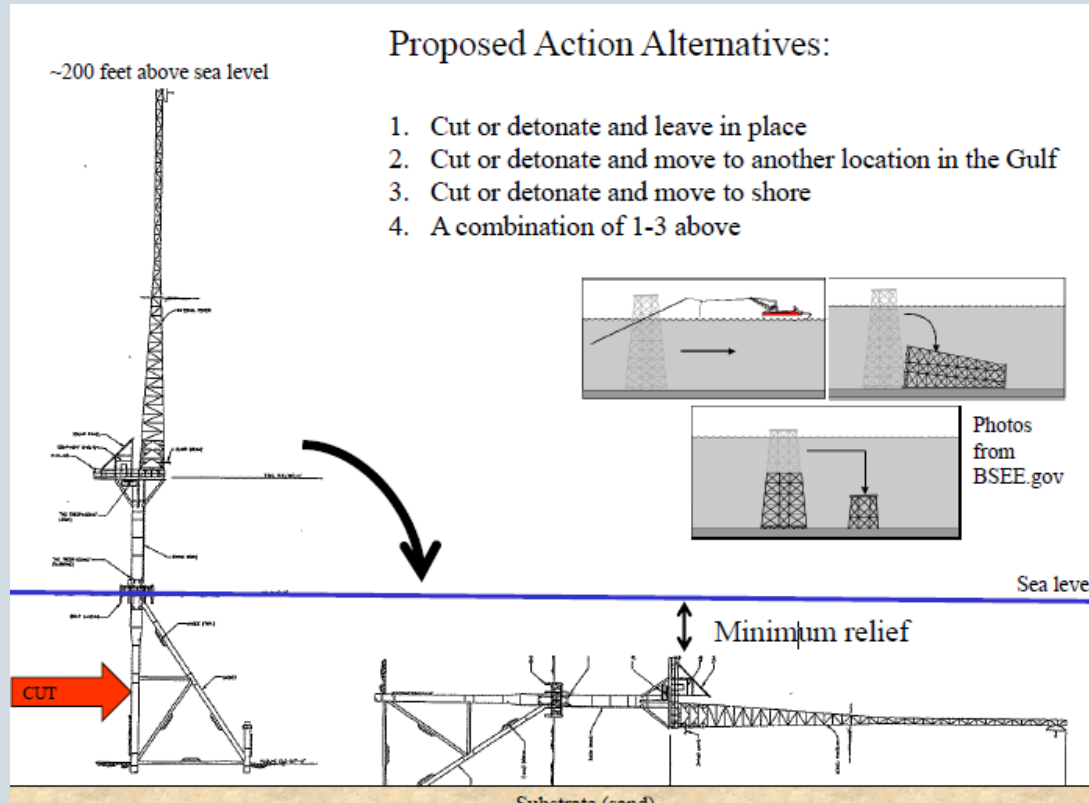
# Trends

- Increased storm activity
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- Improved use of technologies
  - High accuracy pre- and post-surveys
  - Greater data availability for permit applications and review
  - Increased database accuracy



# Upcoming Reef Projects

## Air Combat Maneuvering Instrumentation (ACMI) Towers Decommissioning



# Upcoming Reef Projects

## Monroe County Habitat Support Structures

- 62 existing deployments, most 1982-1989, none since 2009 (14 yrs), no active permits



### Project goals include

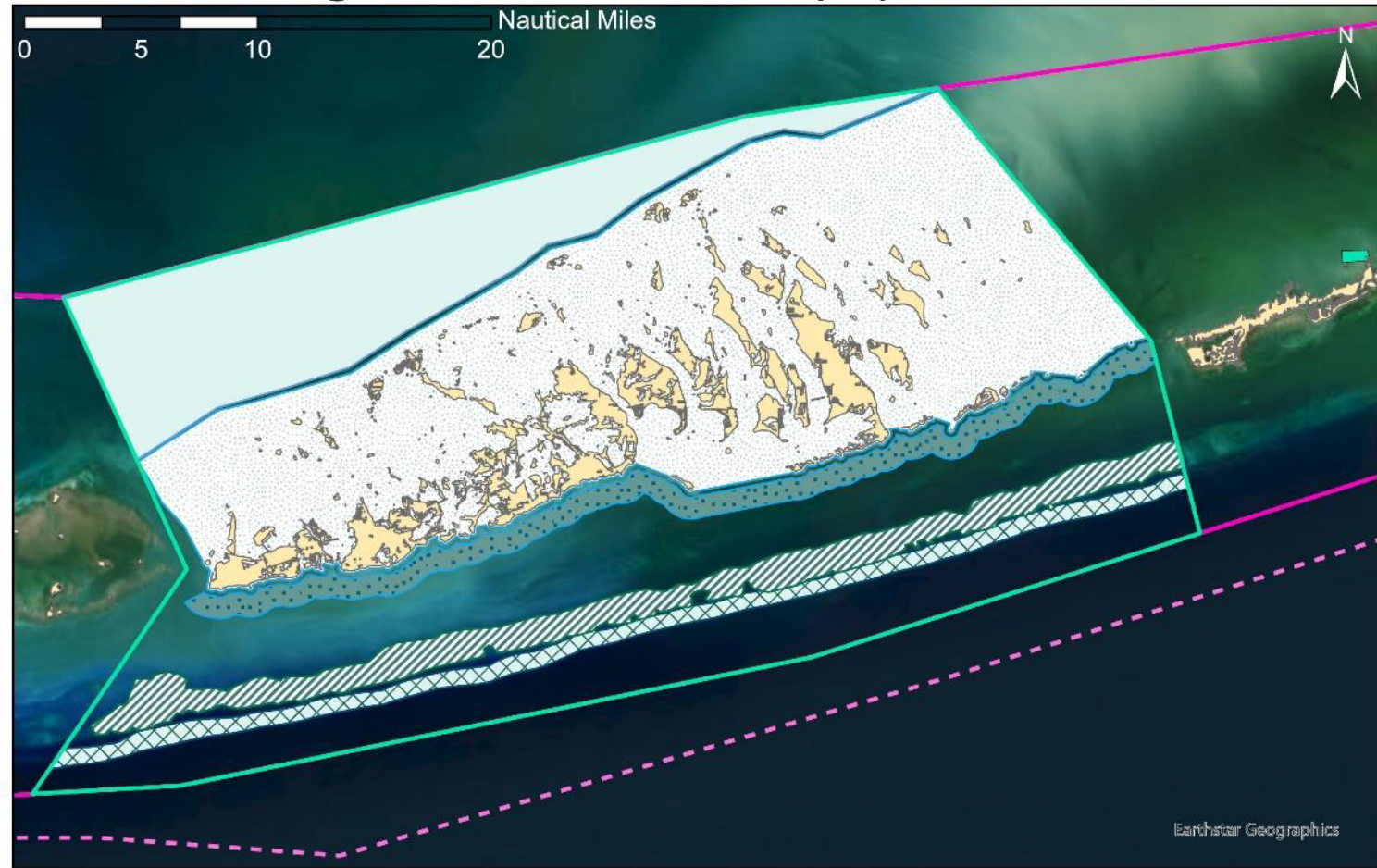


- fishing and diving opportunities
- address habitat deficits inside the FKNMS
  - Nearshore hardbottom habitat sedimentation and sponge loss
  - Reduction in very large bayside structural components
  - Nearshore oceanside loss of living coral structures
  - Flattening of offshore reefs
  - Loss of deep reef (60-100 ft) habitat due to sedimentation
  - Loss of spawning aggregation sites
- Create ontogenetic pathway/connectivity from nearshore to offshore waters for fishes and mobile invertebrates



# Upcoming Monroe County Habitat Support Structures

## Deficit regions in the Lower Keys portion of FKNMS



- Legend**
- Lower Keys
  - Land
  - Southern Gulf of Mexico
  - Nearshore hardbottom
  - Solution hole survey site
  - Nearshore ocean
  - Offshore waters
  - Deep reef
  - FKNMS Boundary
  - FKNMS Boundary (proposed)



Florida Fish and Wildlife  
Conservation Commission  
Division of Marine Fisheries  
Management  
Florida Artificial Reef Program  
Prepared By: Carolyn Kalinowski  
06/04/2024



### Southern Gulf of Mexico

The area of FKNMS north of the lower keys. Depth ranges from 8-40 ft. Speckled with relic structures, mostly solitary or occasionally clumped coral heads ranging from 1-3 m in diameter.



### Nearshore hardbottom

The shallow hardbottom habitat located mostly but not exclusively on the bayside of the Keys. Extends 200 yd from land the Atlantic ocean side of the lower Keys. Structurally complex and comprised of underground solution holes and a complex assemblage of sponges and octocorals.



### Solution hole survey site

Approximate area where one of the solution hole study sites occurs.



### Nearshore ocean

Patch reefs of the lower keys found in depths of 8-15 ft. Comprised of individual smaller coral rock formations that rise off the bottom often very near the surface of the water. Individual corals are found on the coral rock formations. This area extends from 600 yds from land to 1 nm from land on the ocean side of the lower keys.



### Offshore waters

Offshore bank reefs experiencing substantial flattening. Extends from Sand Key to the eastern edge of the lower keys and includes all reefs in the 30' or shallower depth contour.



### Deep reef

Reefs ranging from approximately 60-125 ft depths. The base of the deep reefs ends in either extensive sand plain or occasionally in an offshore bar. The deep reef consists of linear reef features with sand channels interspersed, oriented perpendicular from the slope a few meters above the sand channels.



# Upcoming Reef Projects

## SS United States

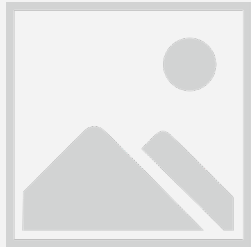


# Possible Future Reef Projects

## MARAD Vessel Opportunities

### FY27 Target Potential Vessels Available

PECOS (T-AO 197) 198 Fleet Oiler



GUNSTON HALL (LSD-44) 1986 Dock Landing Ship



Nathaniel “Morris” G. Williford

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**Office of Ship Operations / Ship Disposal**  
**Program**

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### FY28 Target Potential Vessels Available

JOHN LENTHALL (T-AO 189) 1986 Fleet Oiler



### FY29 Target Potential Vessels Available

TORTUGA (LSD-46) 1987 Dock Landing Ship





# In memory of Ron Lukens



