

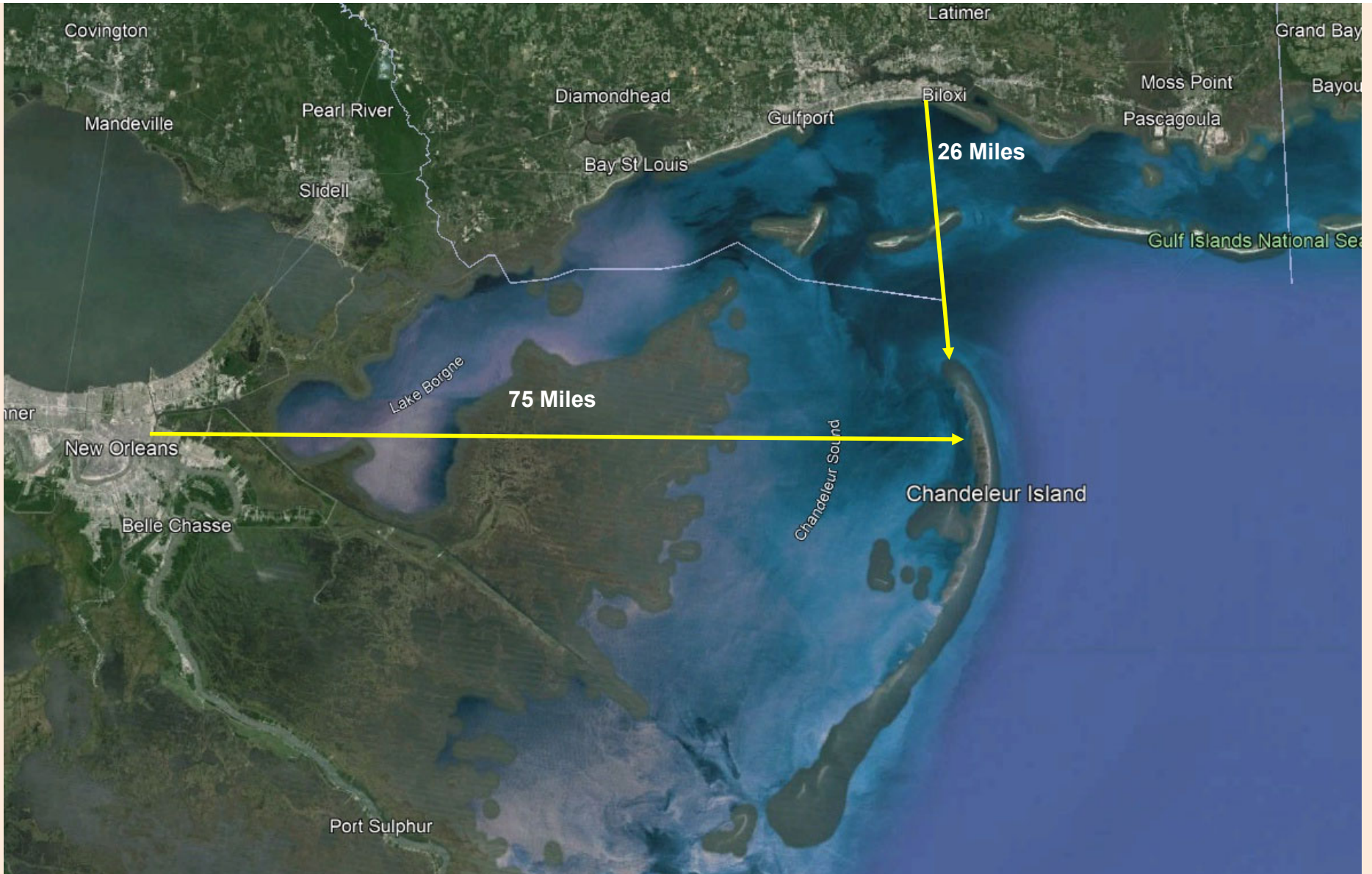
# Chandeleur Island Restoration Project PO-199

March 19, 2024



committed to our coast







# Chandeleur Island is Breton National Wildlife Refuge

- 2nd oldest National Wildlife Refuge in US - 1904
- The only Refuge visited by Theodore Roosevelt
- Designated as a Federal “Wilderness Area”
- Since the late 1800’s more than 90% of the refuge has been lost.
- Today the refuge is less than 1,000 acres. In the late 1800’s it was estimated to be approximately 11,000 acres



*Breton National Wildlife Refuge, established in 1904, is the second oldest refuge in the National Wildlife Refuge System. The Refuge is comprised of a series of barrier islands including Breton Island and the Chandeleur Islands in the Gulf of Mexico.*

## An Early Refuge

In the early 1900's President Theodore Roosevelt learned of the over harvest of waterbirds and the destruction of birds and their eggs on Chandeleur and Breton Islands. He created Breton Island Reservation to serve as a refuge and breeding ground for these birds and other wildlife species. Roosevelt visited the islands in June of 1915, this is the only refuge the "Conservation President" ever visited. The reserve name was changed to Breton National Wildlife Refuge (NWR) in 1938.



The objectives of the Refuge are to provide sanctuary for nesting and wintering seabirds, to protect and preserve the wilderness character of the islands, and provide sandy beach habitat



# Land Loss Over Last 39 Years

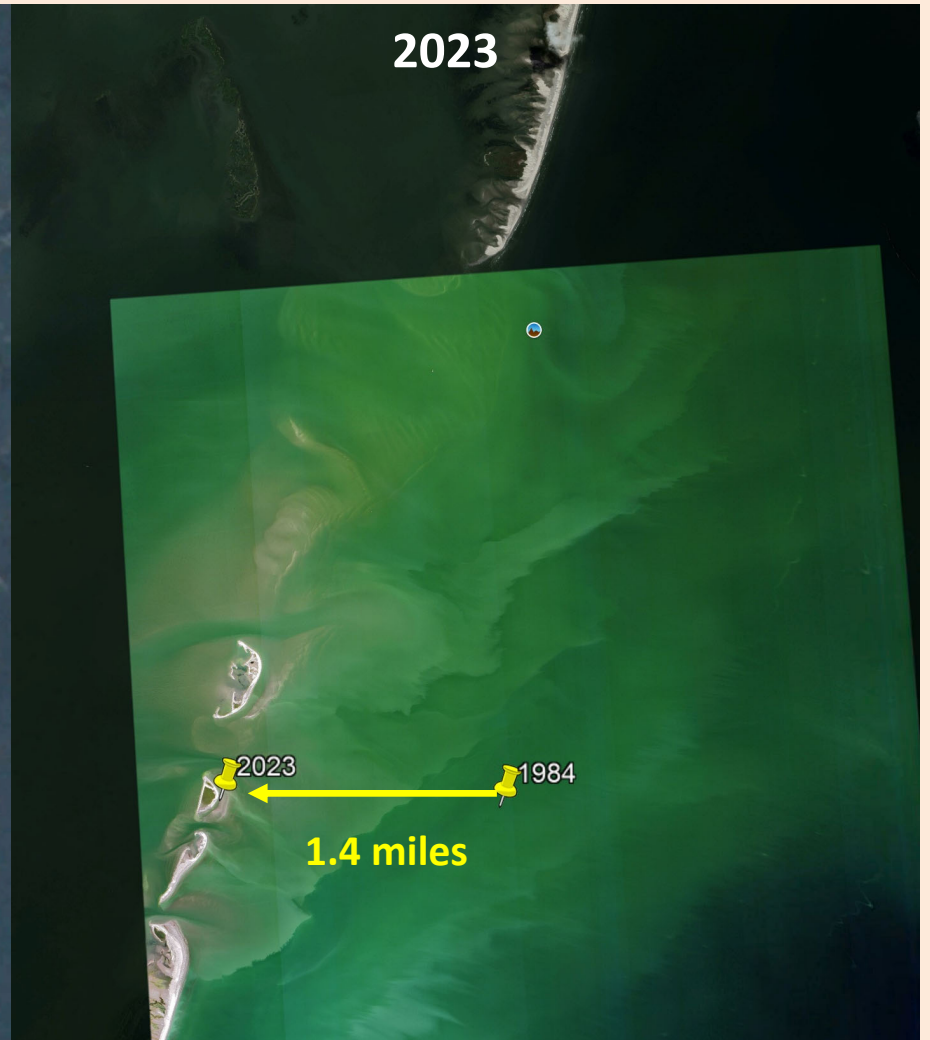


1984

2023



# Land Loss Over Last 39 Years





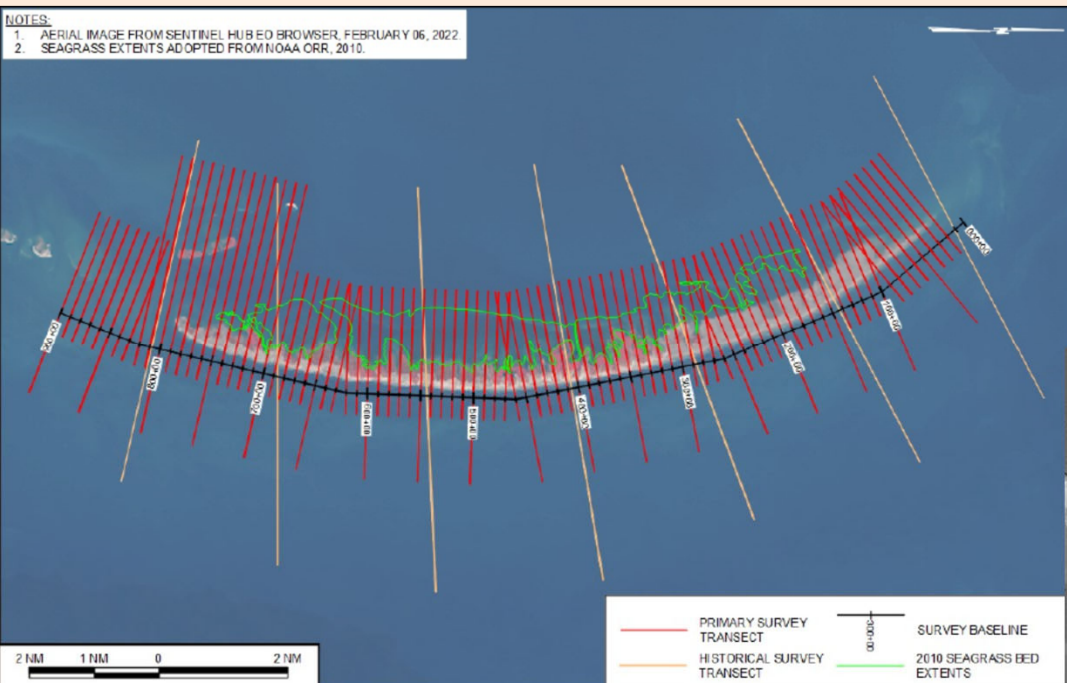
# Goals for PO-199

## Habitat Restoration Coastal Wildlife and Fisheries

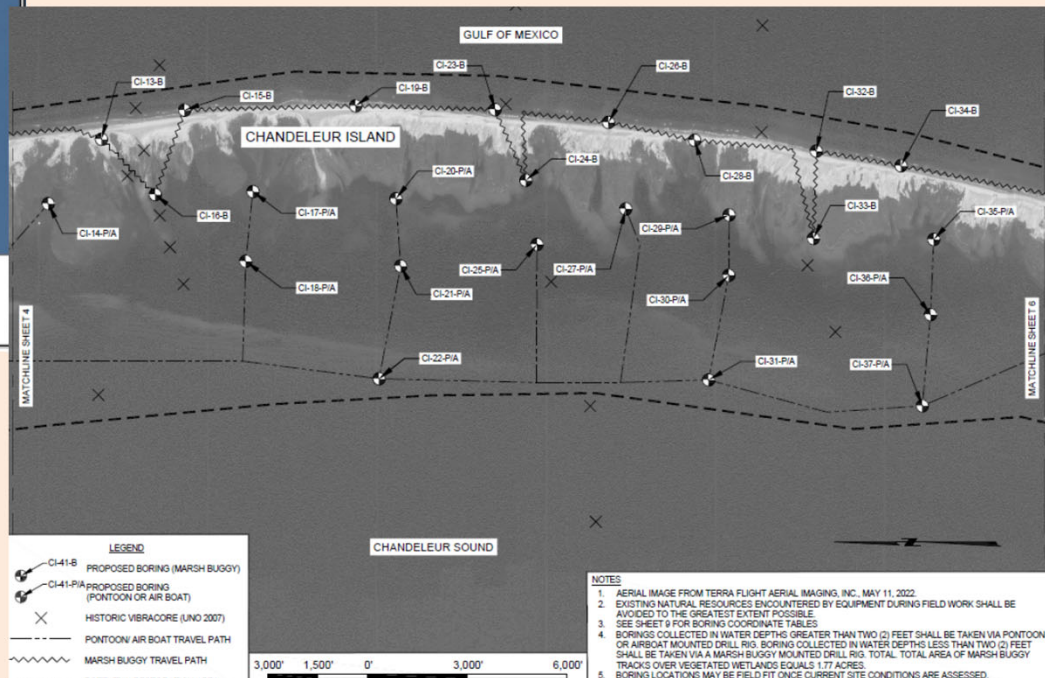
- Restore and Conserve Bird Nesting and Foraging Habitat
- Restore and Enhance Submerged Aquatic Vegetation
- Enhance Sea Turtle Hatchling Productivity and Restore and Conserve Nesting Beach Habitat
- Create, Restore, and Enhance Barrier and Coastal Islands and Headlands



# Engineering and Design is Underway



**Geotechnical Investigations Data Collection Completed in August 2023**



**Topographic and Bathymetric Surveys will be Completed early 2024. Approximately 300 miles of Survey**

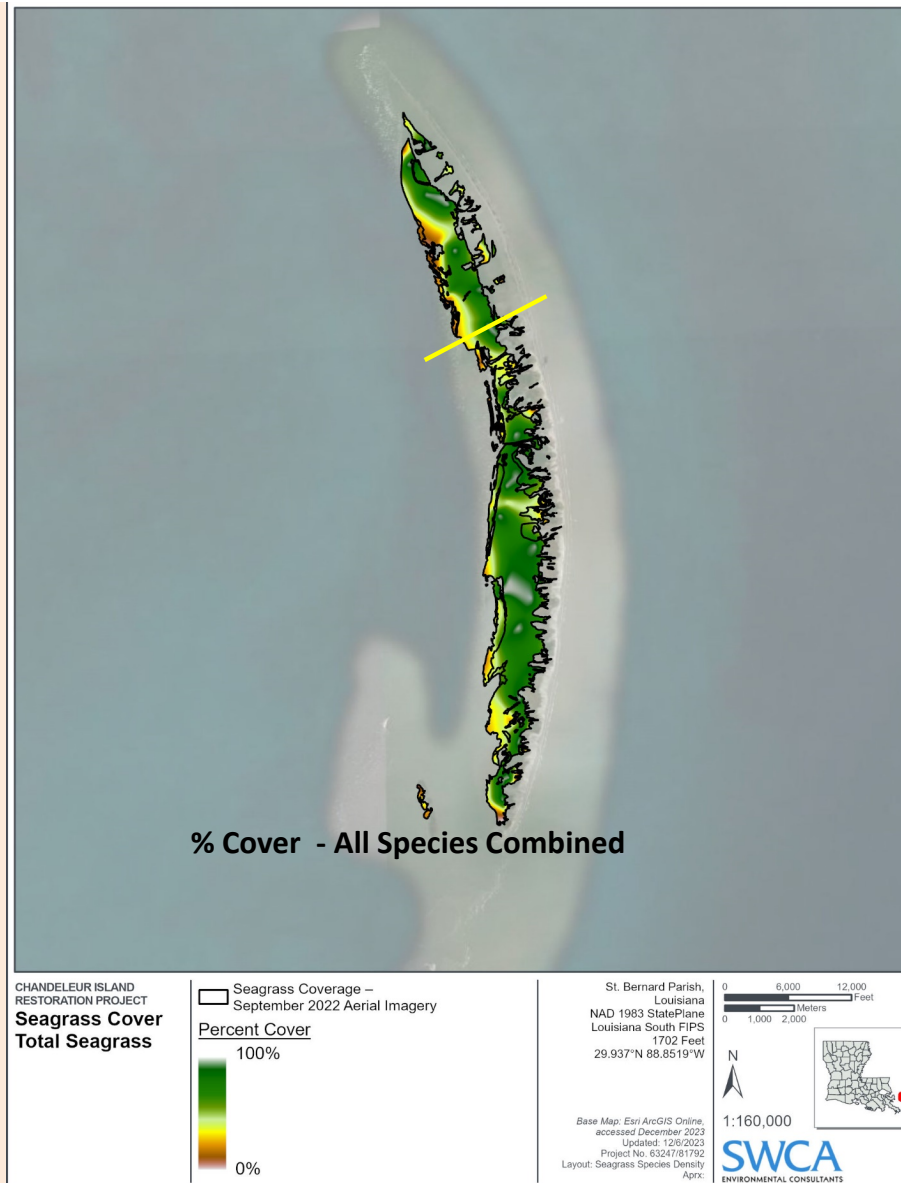


# Marine Seagrass Vegetation Survey



# Vegetative Composition of Marine Seagrasses

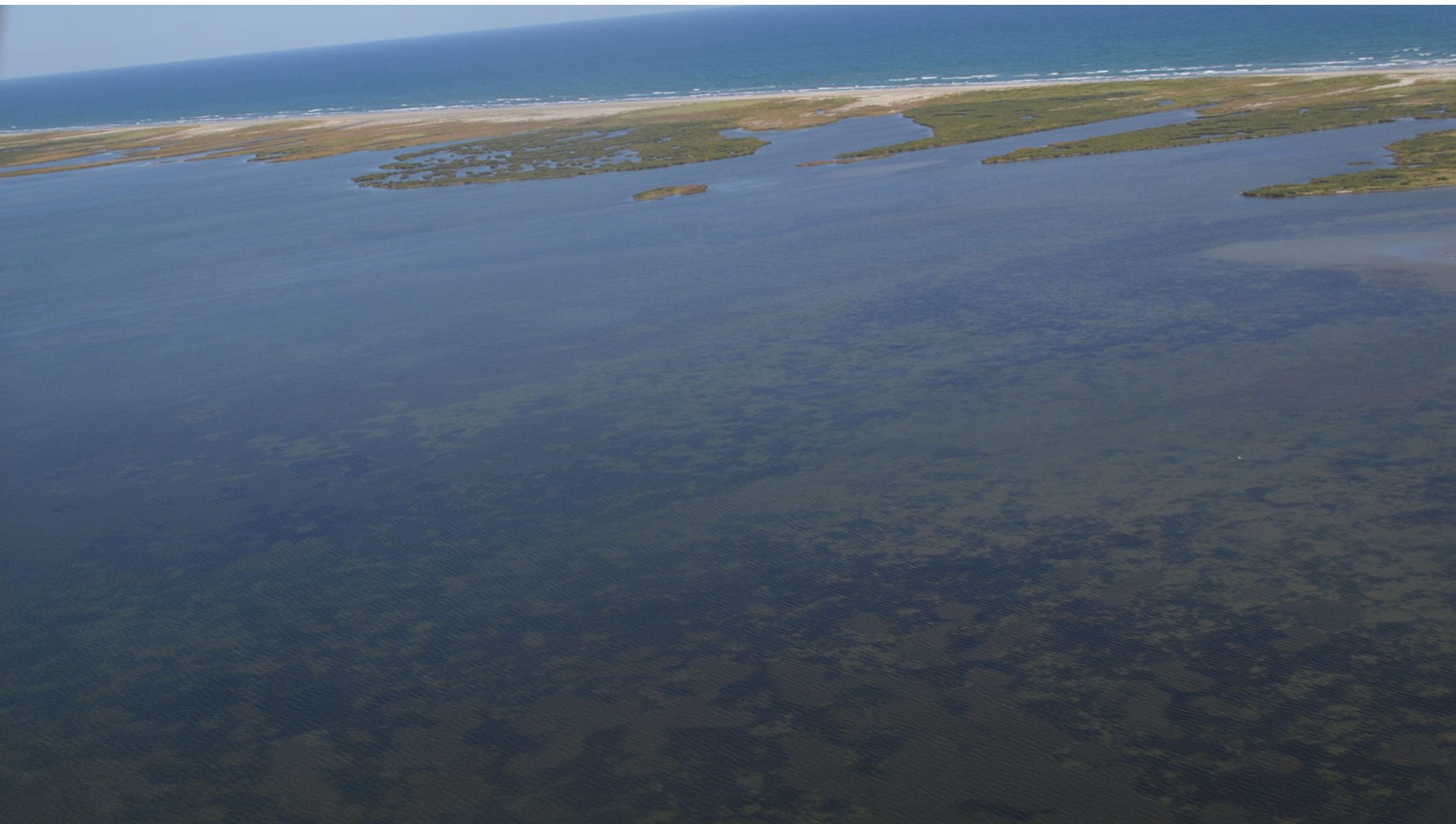
- **Total Seagrasses: 5,194 acres**
  - 2,102 hectares
- *Thalassia testudinum*: 2,580 acres
  - Turtle Grass
- *Syringodium filiforme*: 475 acres
  - Manatee Grass
- *Halophila engelmannii*: 1,195 acres
  - Star Grass
- *Halodule wrightii*: 4,970 acres
  - Shoal Grass
- *Ruppia maritima*: 2,560 acres
  - Widgeon Grass















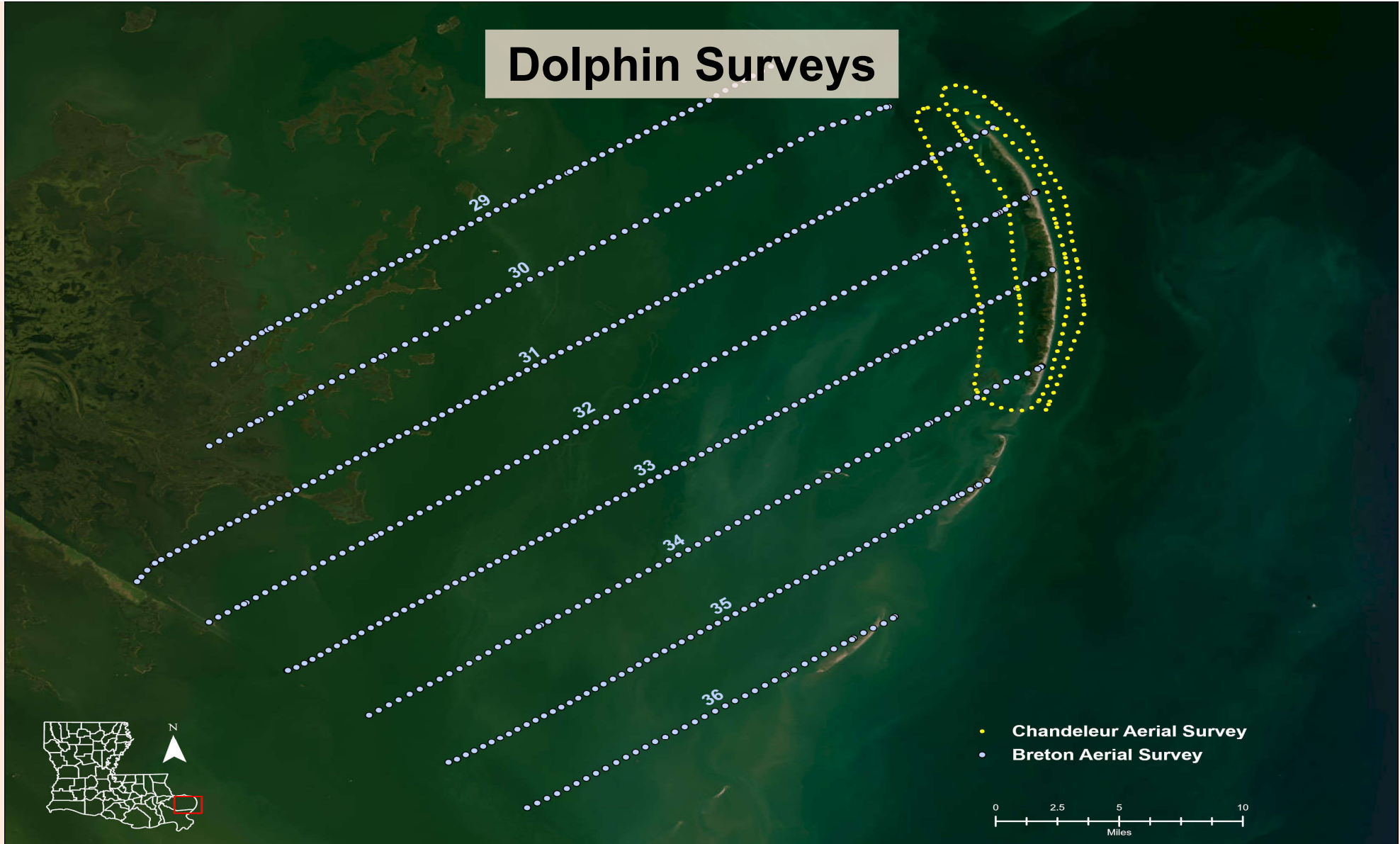




# Dolphin Surveys



# Dolphin Surveys





# Dolphin Surveys

12 Months of survey completed in May 2023

- **255 Total Dolphin Sightings**
- **Higher rate of observance of dolphins around CI (1.3 dolphins/effort) than transects over Biloxi Marsh and Chandeleur Sound (0.54 dolphins/effort).**
  - **2.4 times more likely to observe Dolphins at Chandeleur Island than over the marsh of St. Bernard or Chandeleur Sound.**
- **Dolphin Sightings at Chandeleur Island:**
  - **Within or Immediately adjacent to Seagrass Meadows - 91**
  - **East of Islands - 74**
  - **West of the Seagrass Meadows - 19**



# Sea Turtle Surveys





# Sea Turtle Survey Results 2022 and 2023

- **108 Crawls**
  - **54 Crawls each year.**
- **2022 Genetic analysis of 5 samples resulted in:**
  - **3 Kemp's Ridley and:**
  - **2 Loggerhead turtle nests.**
- **2023 Observed 14 nests but more suspected**
  - **10 Confirmed as Kemps Ridley**
  - **1 Loggerhead**
  - **3 Unknown and undergoing further genetic analysis**
- **Kemp's Ridley are the most critically endangered sea turtle in the world.**

# Bird Surveys



New Harbor Island 2023





Photo Credit:  
Matt Conn SEG  
Environmental





Photo - USFWS



# Preliminary Bird Survey Results

- **Solitary Beach Nesting Birds**      **624 Birds**
- **Colonial Waterbirds**      **27,534 Nests**
- **Migratory Waterfowl**      **48,980 Birds**
- **Migratory Shorebirds** (focal birds)      **\*1,359 Birds**
  - **Total Documented Winter Birds:**      **Over 31,000 Birds**

\*(High counts for Red Knot and Piping Plover: 1,176 Red Knots and 141 Piping Plover.) - Survey is ongoing

- **Birds not surveyed include Secretive Marsh Birds, Passerines, or Pelagic birds that frequent the Islands.**



## Chandeleur Gull



**Once numbering around 100 birds are now down to 24 adults and 4 chicks as of 2023.**



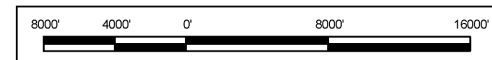
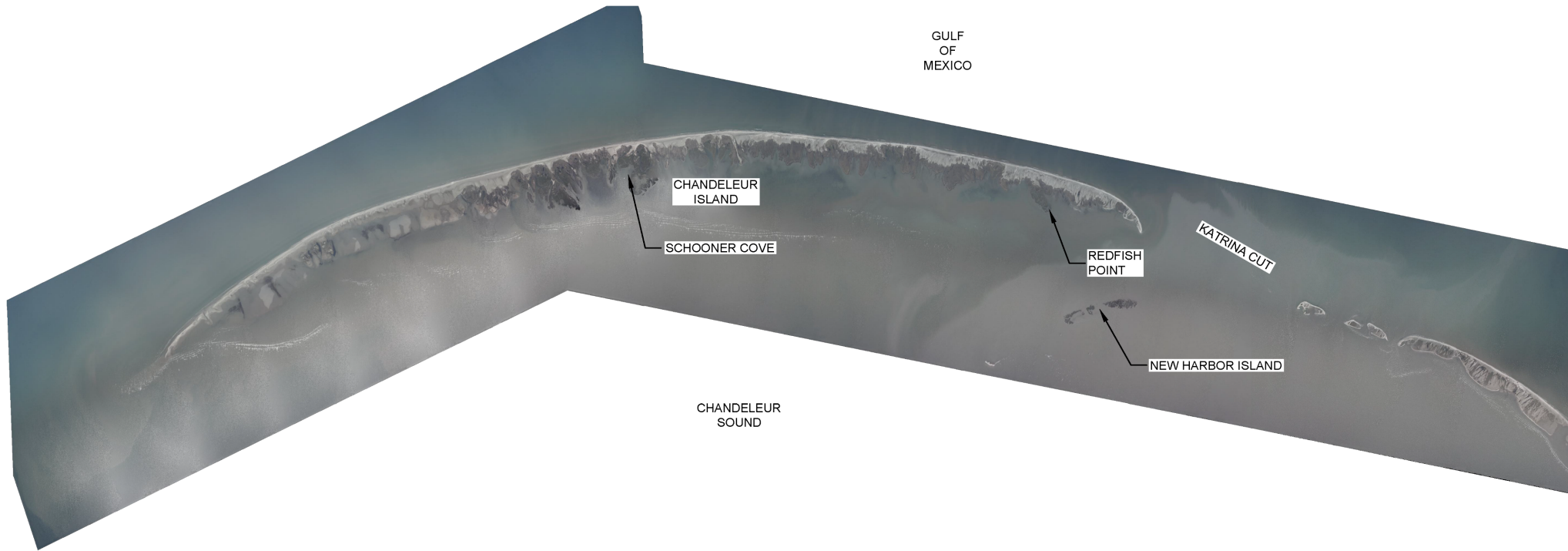
**August 16, 2023 Sunrise**

**The Chandeleur Islands supported the largest breeding colonies in the world during the 1980's and 1990s.(Spendelov and Patton 1988, USFWS 2013)**

# ***ALTERNATIVE 1***

## **“No Action”**

NOTES:  
1. AERIAL IMAGE REFERENCE: NOAA MARCH 2023.



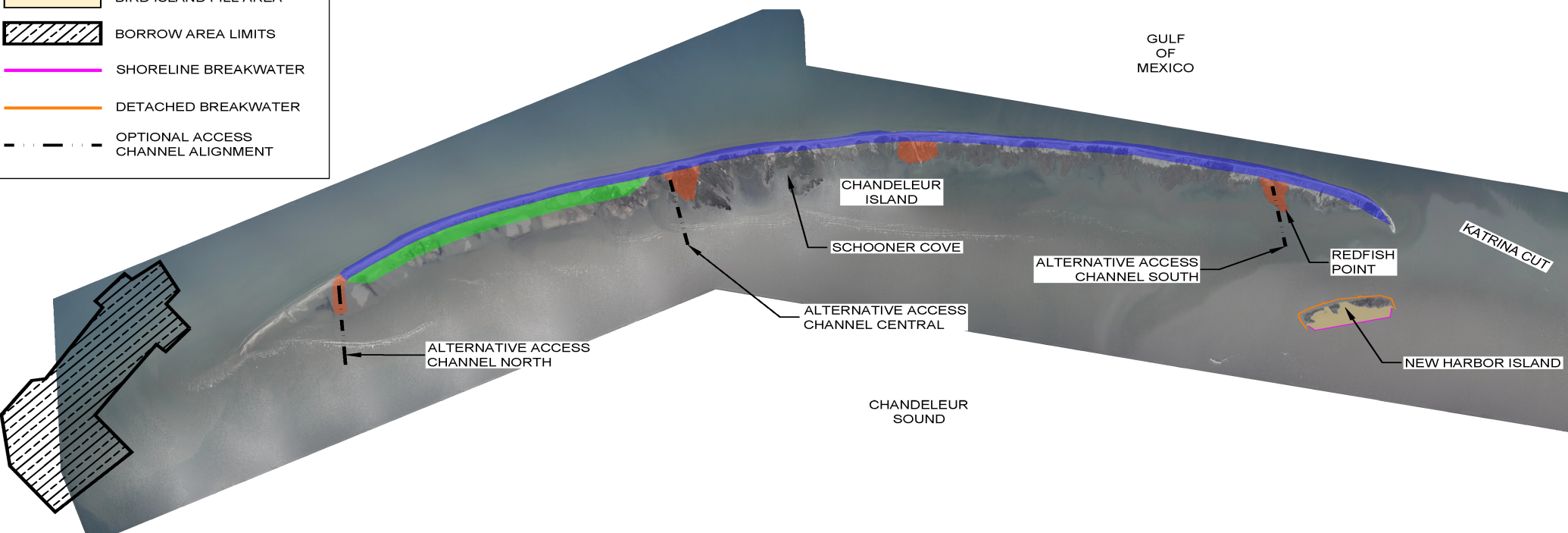


# ALTERNATIVE 2

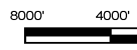
## “Sand Reservoirs”

NOTES:  
1. AERI

- LEGEND**
- BEACH/DUNE FILL AREA
  - MARSH FILL AREA
  - SAND RESERVOIR FILL AREA
  - BIRD ISLAND FILL AREA
  - BORROW AREA LIMITS
  - SHORELINE BREAKWATER
  - DETACHED BREAKWATER
  - OPTIONAL ACCESS CHANNEL ALIGNMENT



ALTERNATIVE	DESIGN FEATURES	ACRES BEACH/DUNE	ACRES MARSH	VOLUME (CY)	EST. CONSTRUCTION COST	MONITORING/ADP. MANAGE	TOTAL COST
ALTERNATIVE 2	NORTHEND BEACH, DUNE, & MARSH FROM 100+00 TO 310+00	1,237	468	3,460,000	\$282,697,000	\$15,000,000	\$297,697,000
	BEACH & DUNE FROM 310+00 TO 750+00			2,552,500			
	SOUTHEND BEACH & DUNE FROM 750+00 TO 790+00	304,500					
	SAND RESERVOIRS (4)	273	0	1,635,500			
	NEW HARBOR ISLAND WITH SHORELINE PROTECTION	0	109	970,000			
	<b>TOTALS</b>	<b>1,510</b>	<b>577</b>	<b>8,922,500</b>			

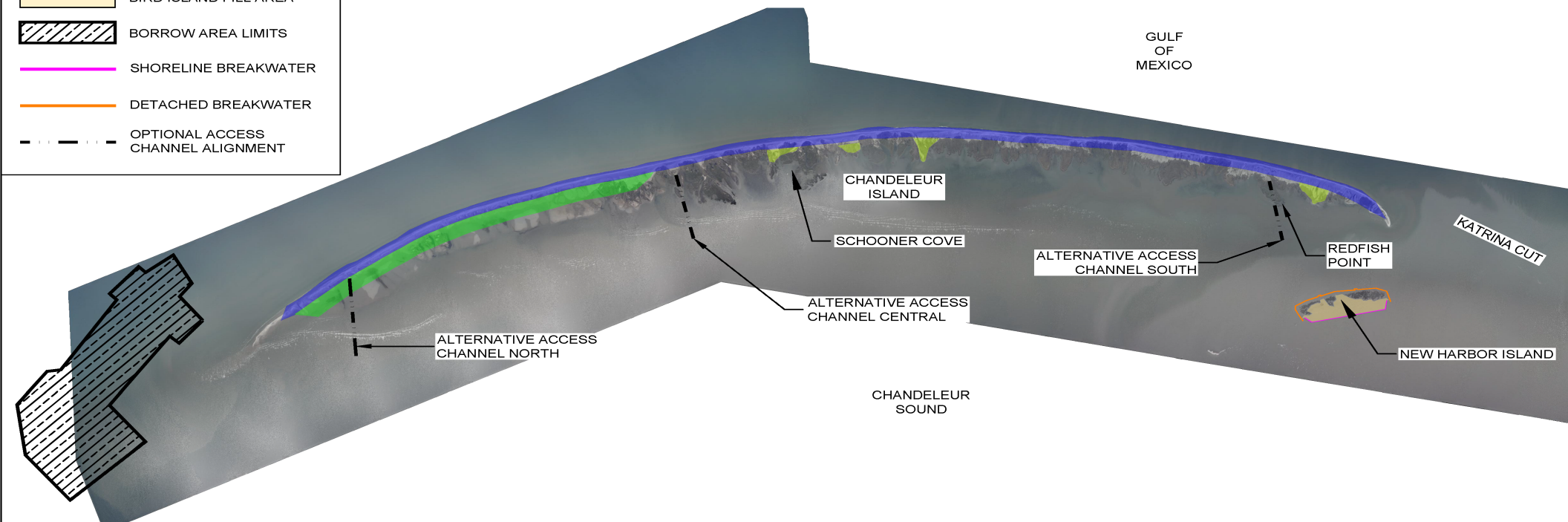


NOTES:  
1. AEP

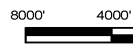
# ***ALTERNATIVE 3***

## **“Big Island & Pocket Marshes”**

- LEGEND**
- BEACH/DUNE FILL AREA
  - MARSH FILL AREA
  - POCKET MARSH FILL AREA
  - BIRD ISLAND FILL AREA
  - BORROW AREA LIMITS
  - SHORELINE BREAKWATER
  - DETACHED BREAKWATER
  - OPTIONAL ACCESS CHANNEL ALIGNMENT



ALTERNATIVE	DESIGN FEATURES	ACRES BEACH/DUNE	ACRES MARSH	VOLUME (CY)	EST. CONSTRUCTION COST	MONITORING/ADP. MANAGE	TOTAL COST
ALTERNATIVE 3	NORTHEND BEACH, DUNE, & MARSH FROM 40+00 TO 310+00	1,341	592	4,675,000	\$280,170,000	\$15,000,000	\$295,170,000
	BEACH & DUNE FROM 310+00 TO 750+00			2,552,500			
	SOUTHEND BEACH & DUNE FROM 750+00 TO 790+00			304,500			
	POCKET MARSHES (4)	0	106	475,000			
	NEW HARBOR ISLAND WITH SHORELINE PROTECTION	0	109	970,000			
	<b>TOTALS</b>	<b>1,341</b>	<b>807</b>	<b>8,947,000</b>			



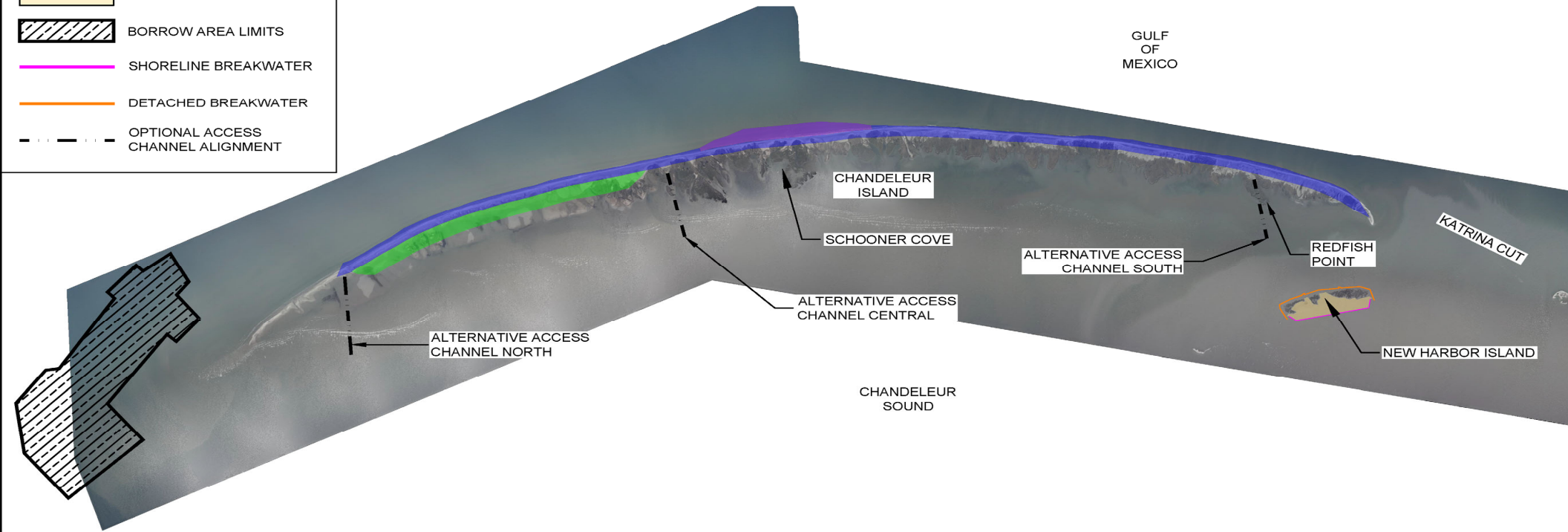


# ALTERNATIVE 4

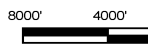
## “Feeder Beach”

NOTES:  
1. AERIA

- LEGEND**
- BEACH/DUNE FILL AREA
  - MARSH FILL AREA
  - FEEDER BEACH FILL AREA
  - BIRD ISLAND FILL AREA
  - BORROW AREA LIMITS
  - SHORELINE BREAKWATER
  - DETACHED BREAKWATER
  - OPTIONAL ACCESS CHANNEL ALIGNMENT



ALTERNATIVE	DESIGN FEATURES	ACRES BEACH/DUNE	ACRES MARSH	VOLUME (CY)	EST. CONSTRUCTION COST	MONITORING/ADP. MANAGE	TOTAL COST
ALTERNATIVE 4	NORTHEND BEACH, DUNE, & MARSH FROM 90+00 TO 310+00	1,397	468	3,525,000	\$283,032,000	\$15,000,000	\$298,032,000
	BEACH & DUNE FROM 310+00 TO 750+00 PLUS FEEDER BEACH			4,078,000			
	SOUTHEND BEACH & DUNE FROM 750+00 TO 790+00			304,500			
	NEW HARBOR ISLAND WITH SHORELINE PROTECTION	0	970,000				
	<b>TOTALS</b>	<b>1,397</b>	<b>577</b>	<b>8,877,500</b>			

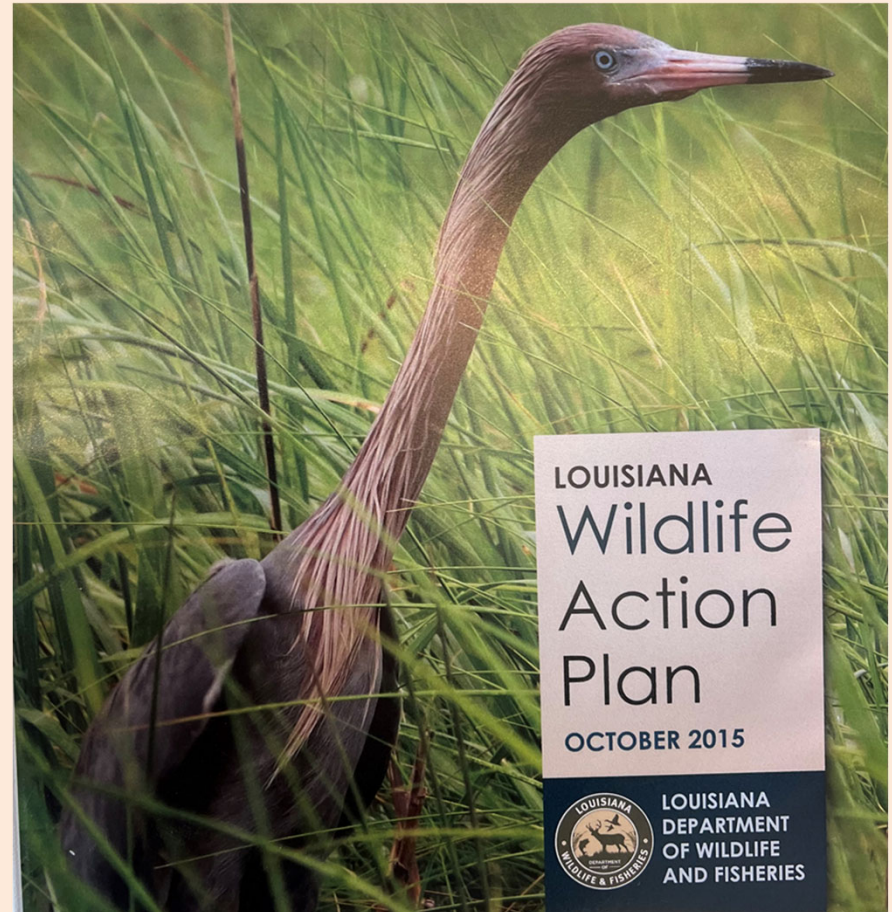


# Species of Greatest Conservation Need Chandeleur Islands = 76 Total Species

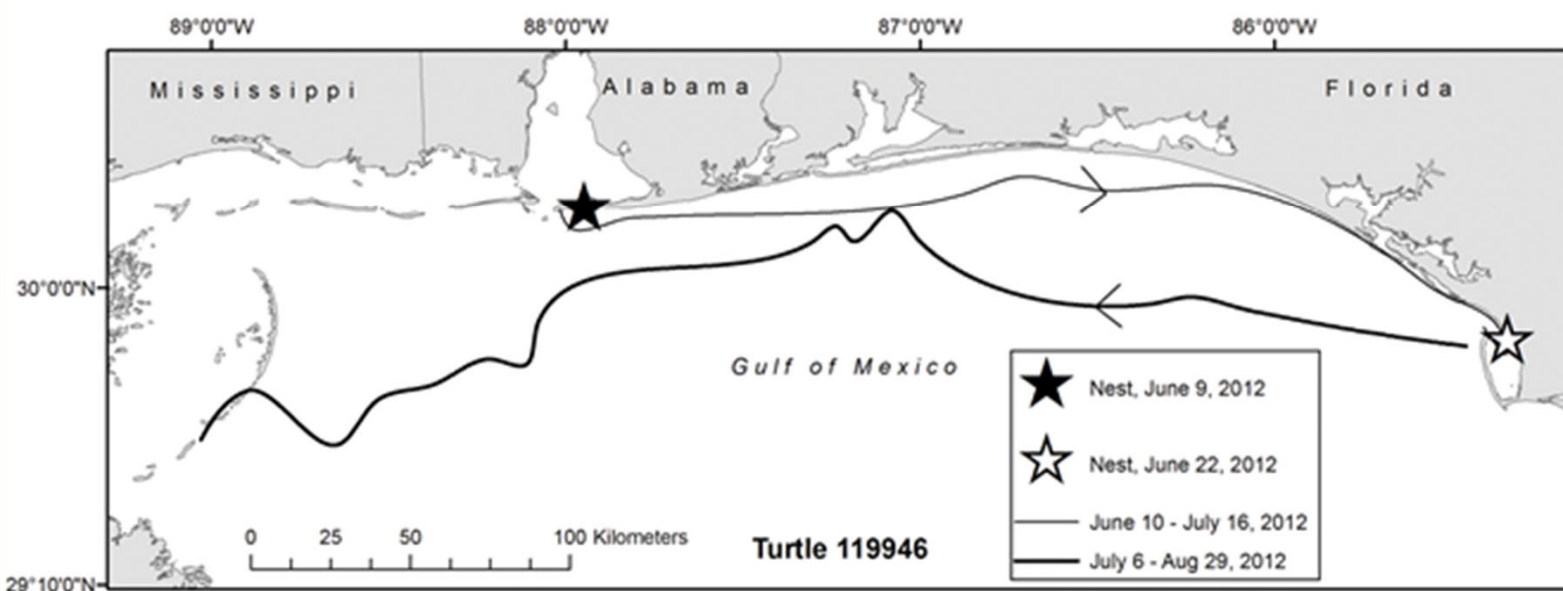
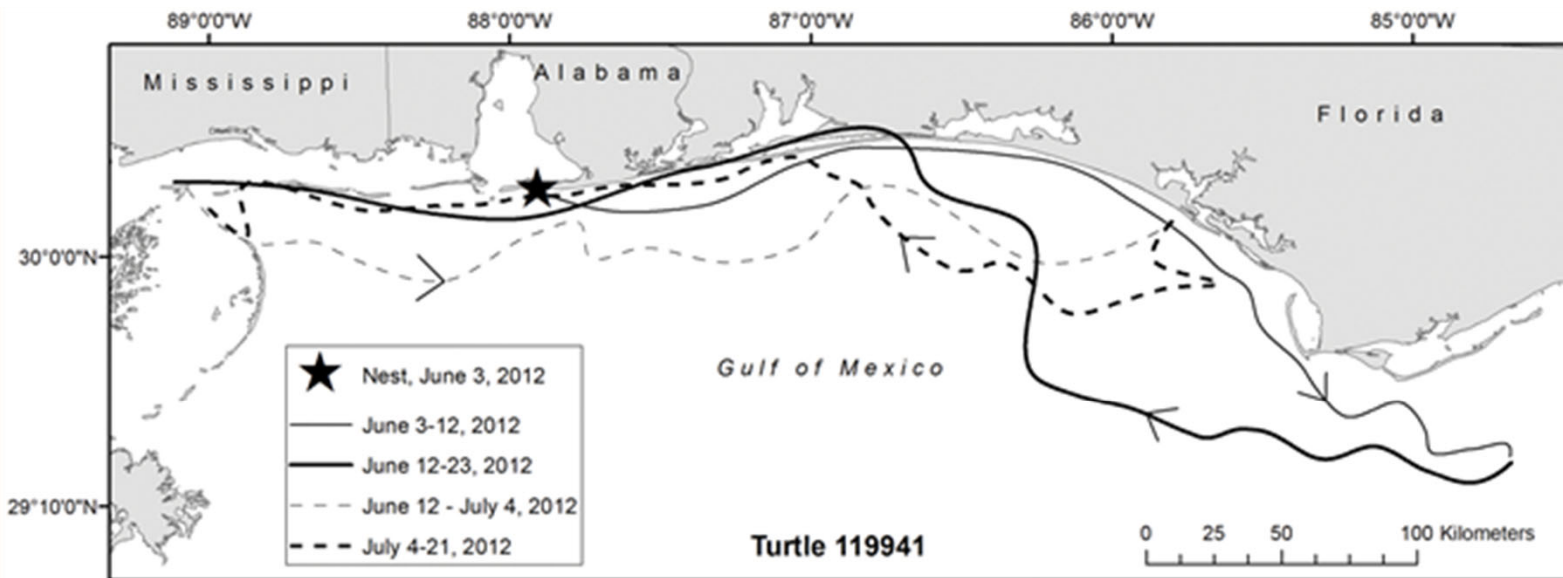
- Birds - 35 Species
- Plants – 12 Species
- Fish – 10 Species
- Reptiles – 6 Species
- Mollusks - 5 Species
- Arthropods - 5 Species
- Mammals – 1 Species
- Crustaceans – 2 Species

## 7 Species of Global Importance:

- Piping Plover
- Red Knot
- Reddish Egret
- Snowy Plover
- Kemp's Ridley Sea Turtle
- Loggerhead Sea Turtle
- Gulf Sturgeon



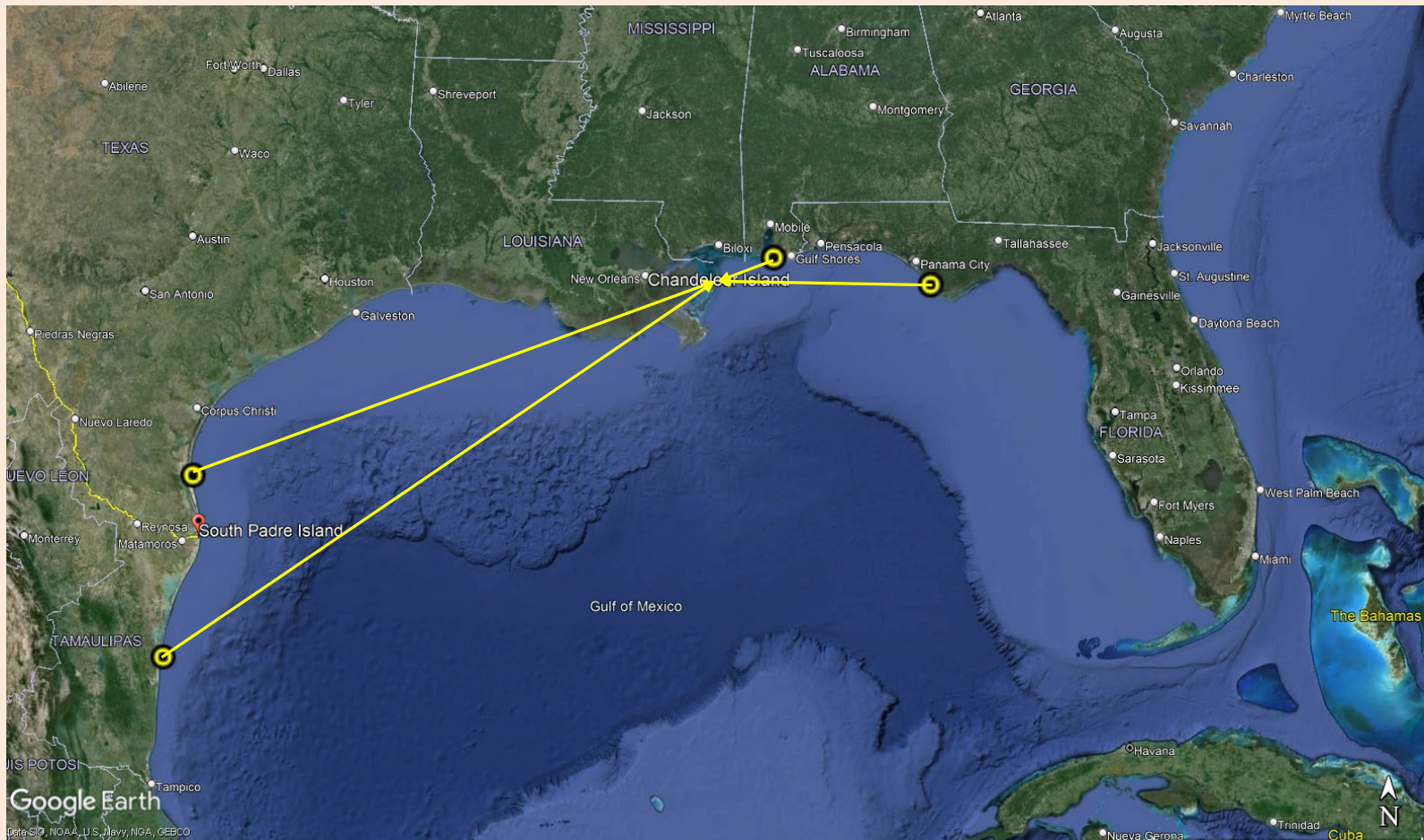




Ref: Hart et al 2013. e66921.  
doi:10.1371/journal.pone.0066921

# Gulf Wide and International Significance

**Kemp's Ridley Sea turtle**– *Lepidochelys kempii* – Nests 700 miles away.  
**Loggerhead Sea Turtle**– *Caretta caretta* – Nests at least 200 miles away.





# Gulf Wide and International Significance



Photo: Jeff Deblieux

Photo: Brad Miller

Photo: Jeff Deblieux



## Gulf Wide and International Significance

### Lemon Sharks:

- Northernmost Nursery ground for Lemon Shark
- Only nursery ground for Lemon Sharks in the Northern Gulf of Mexico

### Snapper:

- Important nursery for several species of snapper including Red, Gray, Lane.
- Important habitat linkage in the GOM.

Juvenile Gag Grouper also regularly sampled in the sea grasses.



C. Davis, 2010. Prey selection by Lemon Sharks..." UNO



# Gulf Wide and International Significance

## Gulf Sturgeon – *Acipenser oxyrinchus*



Dr. Michael Dance  
Department of Oceanography and Coastal Sciences  
Louisiana State University  
Email: [mdance1@lsu.edu](mailto:mdance1@lsu.edu)

Status - Threatened

Adults Detected at the Chandeleur Islands from the Pearl, Pascagoula, and Mobile Rivers.



Google Earth

Data SIO, NOAA, U.S. Navy, NGA, GEBCO  
Image Landsat / Copernicus  
Image © 2024 TerraMetrics

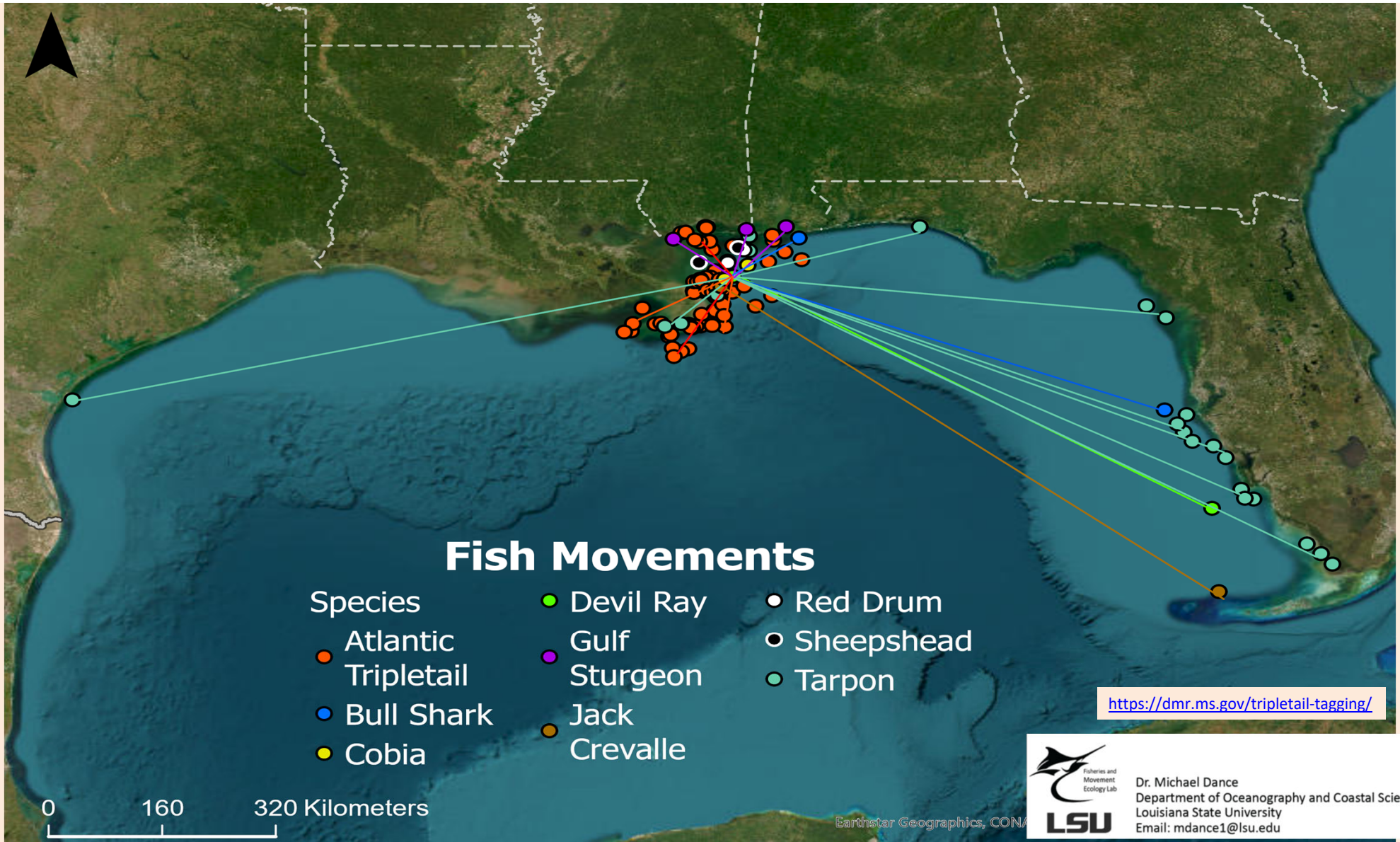


Dr. Michael Dance  
Department of Oceanography and Coastal Sciences  
Louisiana State University  
Email: mdance1@lsu.edu



60 mi

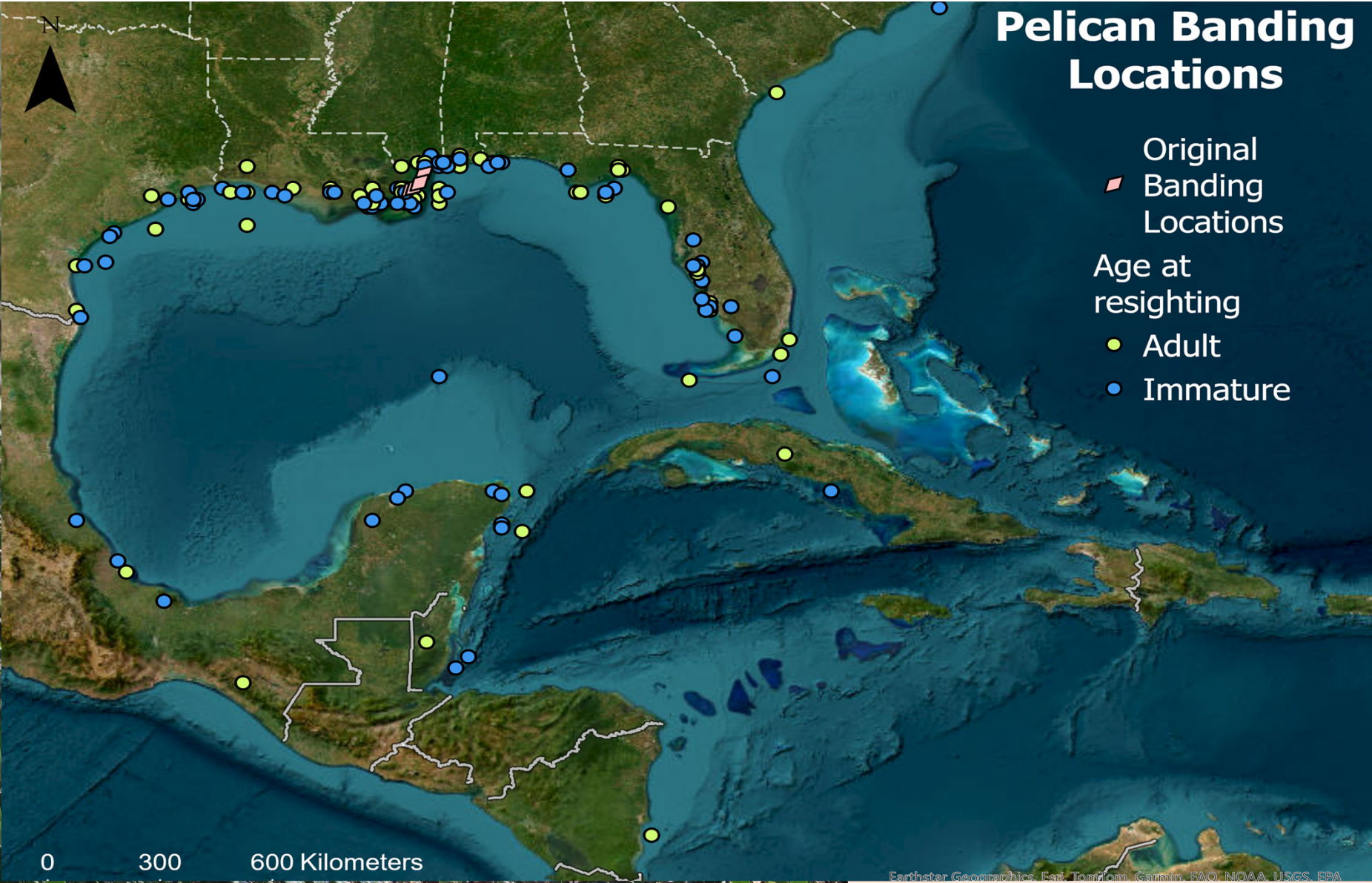






# Pelican Banding Locations

- Original Banding Locations
- Age at resighting
  - Adult
  - Immature

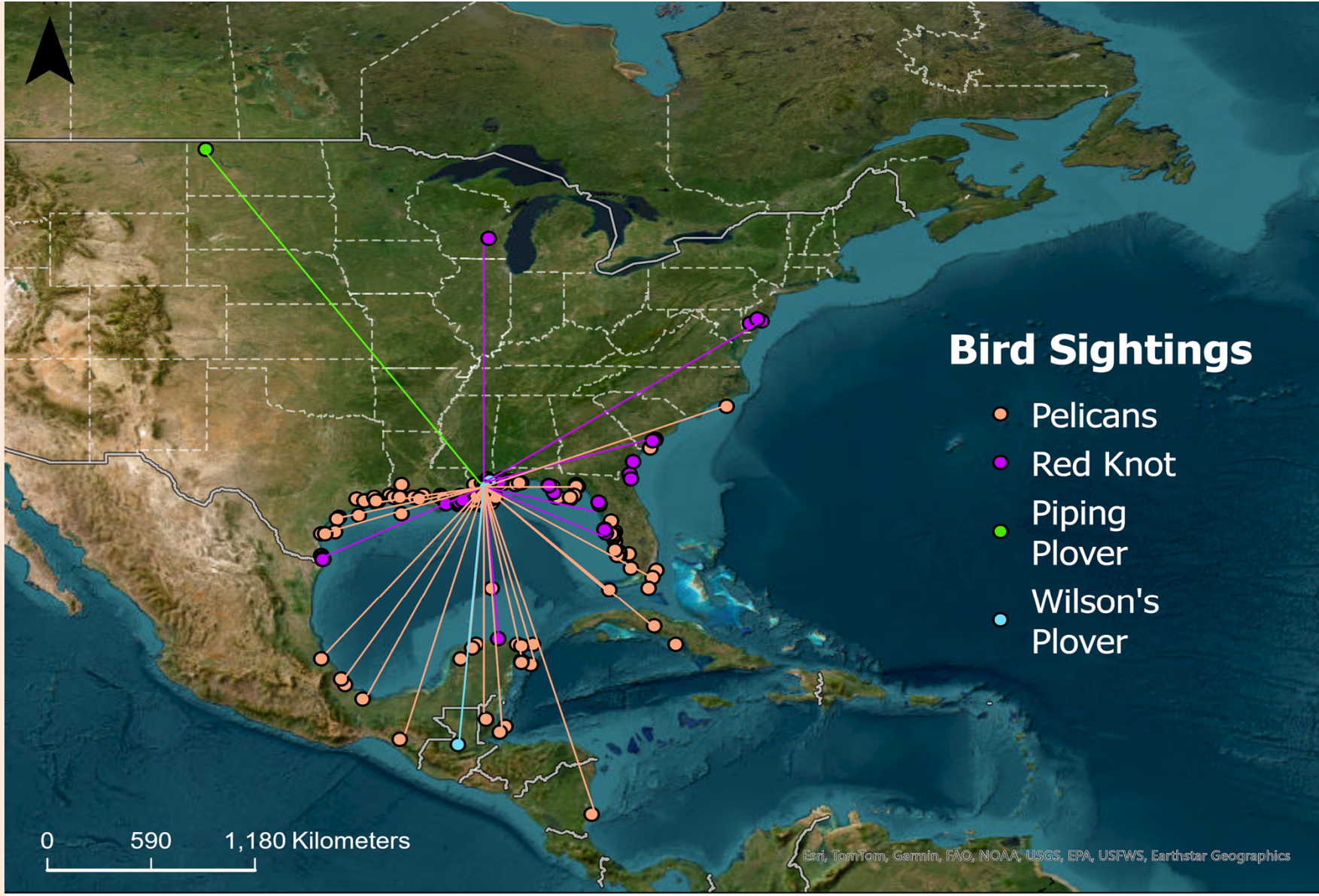




# Banded Birds



Photo Credit: Matt Conn SEG Environmental



## Bird Sightings

- Pelicans
- Red Knot
- Piping Plover
- Wilson's Plover

0 590 1,180 Kilometers

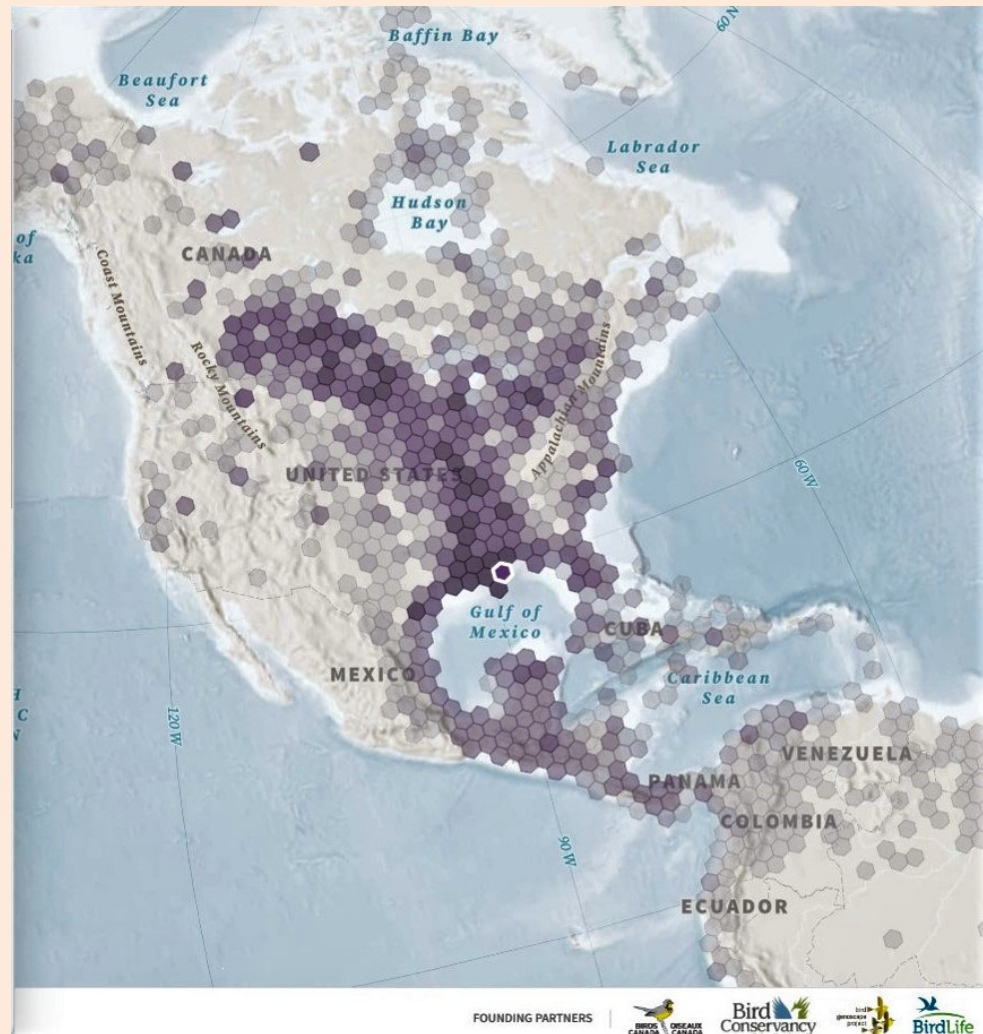
Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Earthstar Geographics



# Gulf Wide and International Significance

- Banded birds that visit Chandeleur Island have been observed in 33 other countries around the world.
- Chandeleur Islands are considered “Globally Significant” Bird Area by the National Audubon Society

<https://www.audubon.org/important-bird-areas>



Delta and Breton National Wildlife Refuges Comprehensive Conservation Plan

U.S. Fish & Wildlife Service

# Delta and Breton National Wildlife Refuges Comprehensive Conservation Plan



USFWS Photo

Gulf Coast Joint Venture Conservation Planning for Reddish Egret

A Product of the Gulf Coast Joint Venture Monitoring, Evaluation, and Research Team Waterbird Working Group

Suggested Citation:  
Vernillion, W.G., and B.C. Wilson. 2009. Gulf Coast Joint Venture Conservation Planning for Reddish Egret. Gulf Coast Joint Venture, Lafayette, LA. 18pp.

## U.S. SHOREBIRD CONSERVATION PLAN

### LOWER MISSISSIPPI/WESTERN GULF COAST SHOREBIRD PLANNING REGION



APRIL 2000

Prepared by:

Gulf Coastal Prairie Working Group  
Mississippi Alluvial Valley/West Gulf Coastal Plain Working Groups

Coordinated by:

Lee Elliott  
USFWS  
6300 Ocean Dr.  
Campus Box 338  
Corpus Christi, TX 78412

## Recovery Plan for the Northwest Atlantic Population of the Loggerhead Sea Turtle (*Caretta caretta*)

Second Revision



U.S. Department of Commerce  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE



U.S. Department of the Interior  
U.S. FISH AND WILDLIFE SERVICE

LOUISIANA Wildlife Action Plan  
OCTOBER 2015

LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES

CPRA | State of Louisiana | The Honorable John Bel Edwards

**2023**  
Louisiana's Comprehensive Master Plan for a Sustainable Coast

4<sup>TH</sup> EDITION

COASTAL DIVISION | ARCADIS

St. Bernard Parish Government  
**2022 Coastal Strategy Document**

Photo Courtesy of P.J. Mohr





**Questions?**

