

PLANNING FOR RESILIENT SHORELINES IN COASTAL ALABAMA

March 31, 2023



Coastal Alabama Factoids

- » 600+ miles of tidally influenced shoreline
- » 60+ miles of “coastline”
- » Ranked 1st in biodiversity
- » \$25B impact
- » 40% of ALL tourism spending for the STATE!
- » Healthy coast = healthy economy





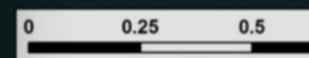
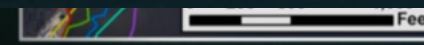
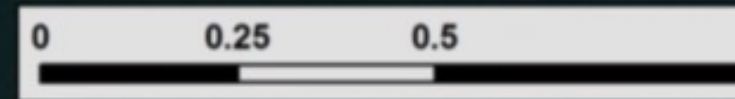
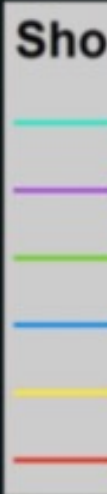
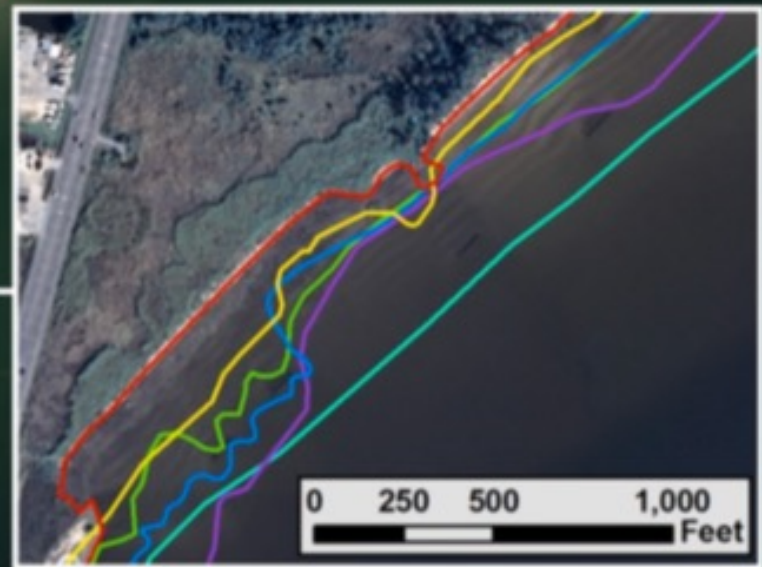
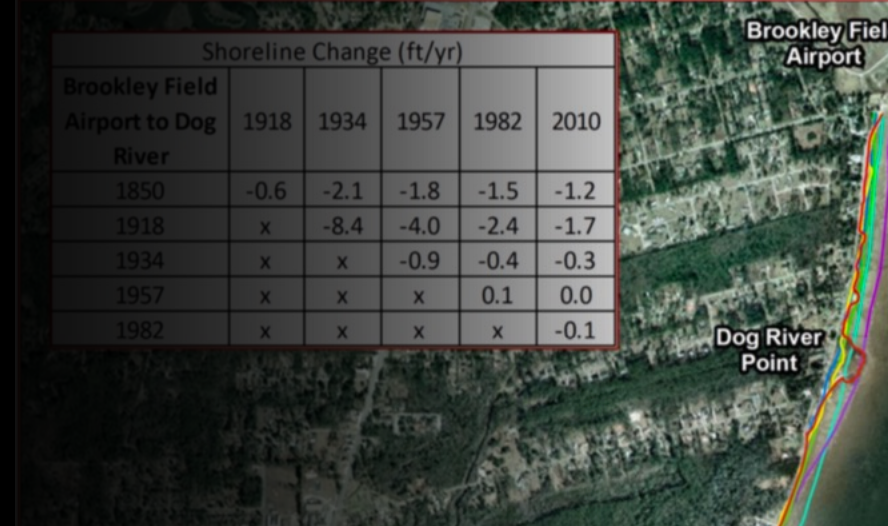
Shoreline Status & Trends



Status & Trends

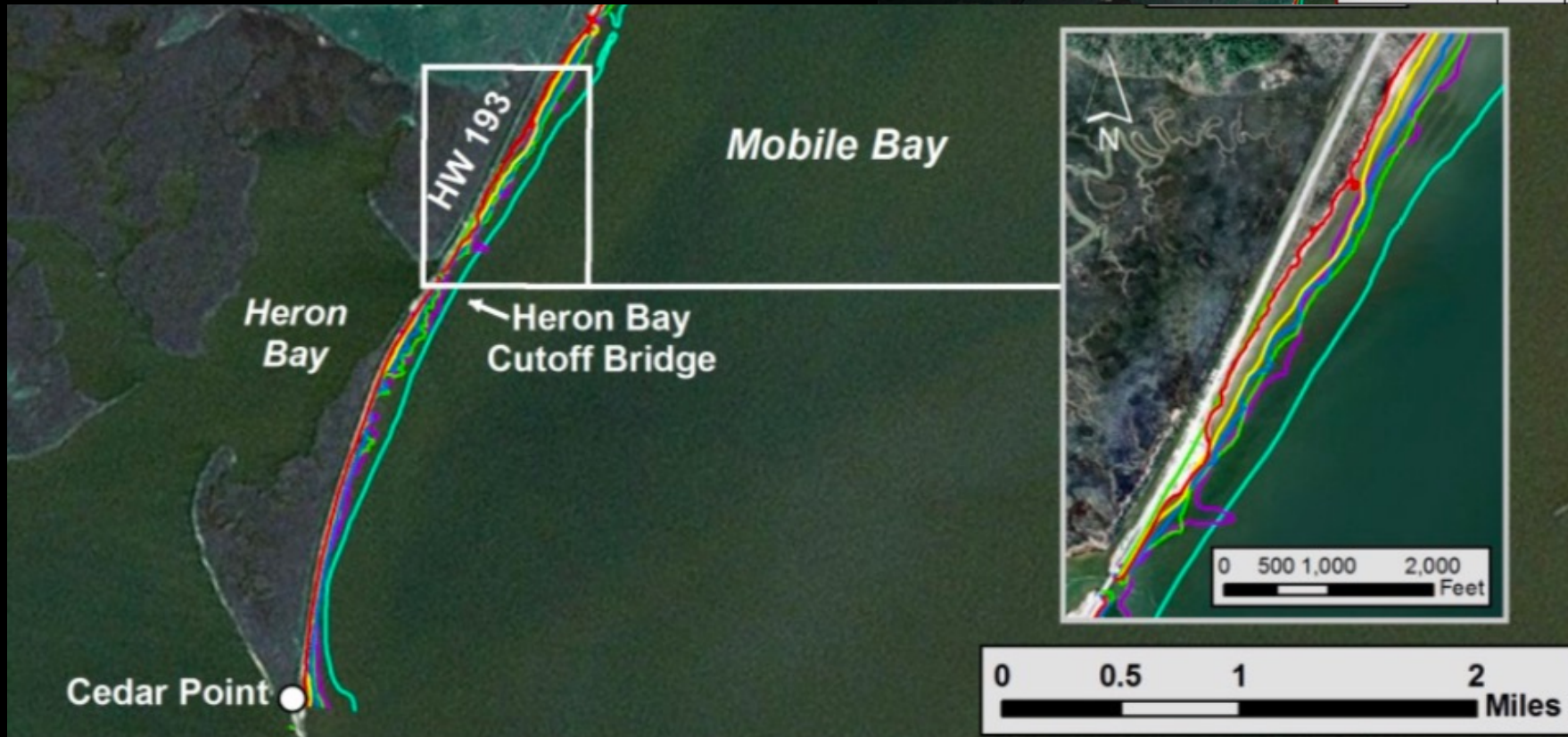
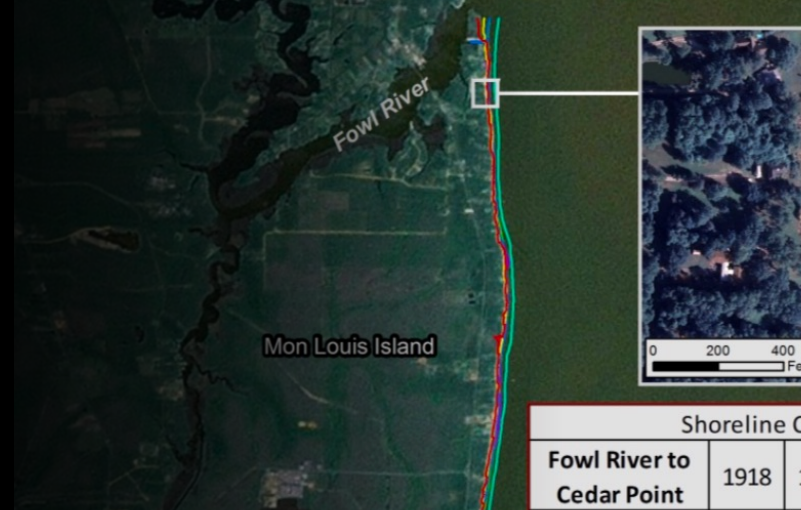
» Garrow's Bend

Shoreline Change (ft/yr)					
Brookley Field Airport to Dog River	1918	1934	1957	1982	2010
1850	-0.6	-2.1	-1.8	-1.5	-1.2
1918	x	-8.4	-4.0	-2.4	-1.7
1934	x	x	-0.9	-0.4	-0.3
1957	x	x	x	0.1	0.0
1982	x	x	x	x	-0.1



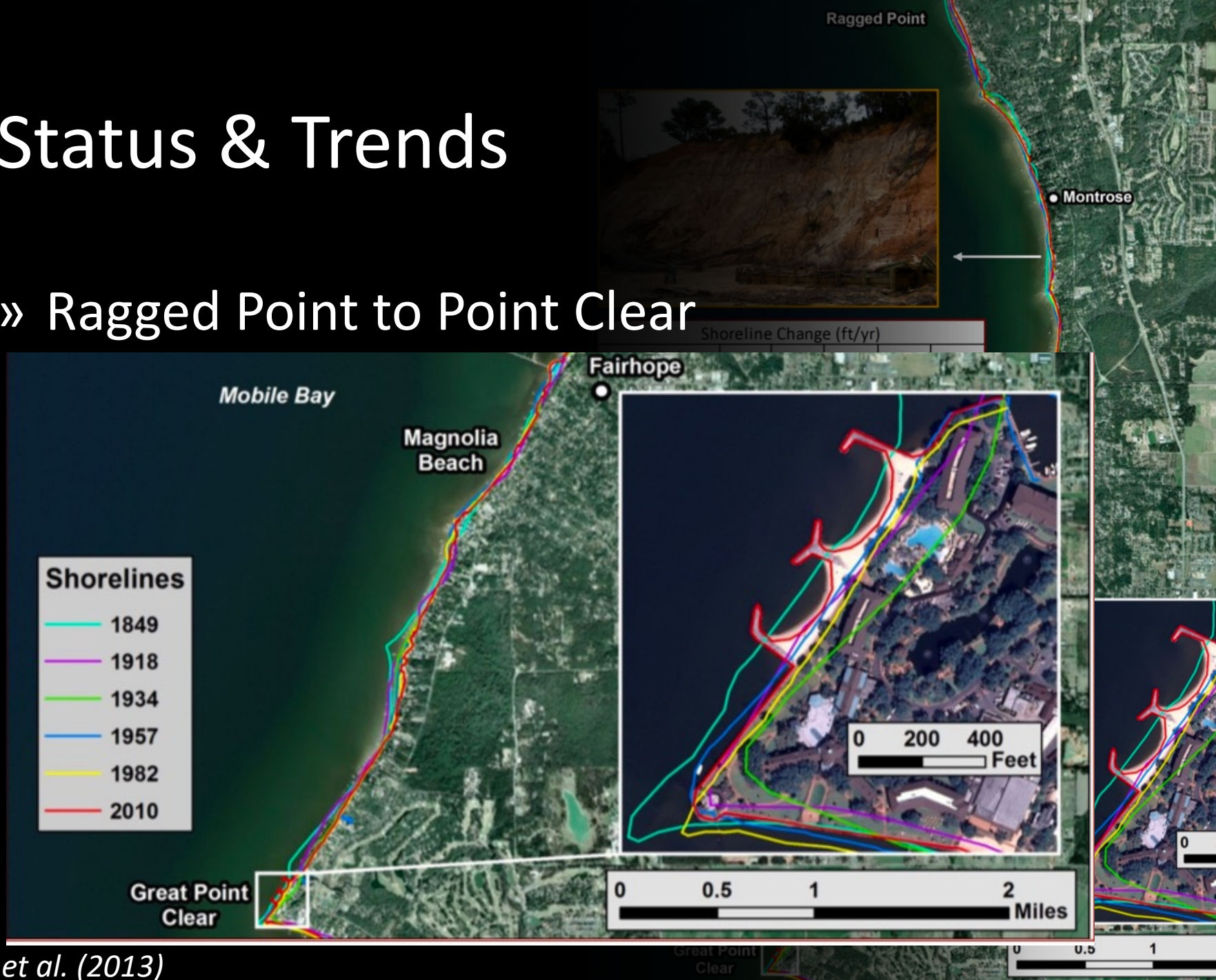
Status & Trends

» Delchamps Bayou



Status & Trends

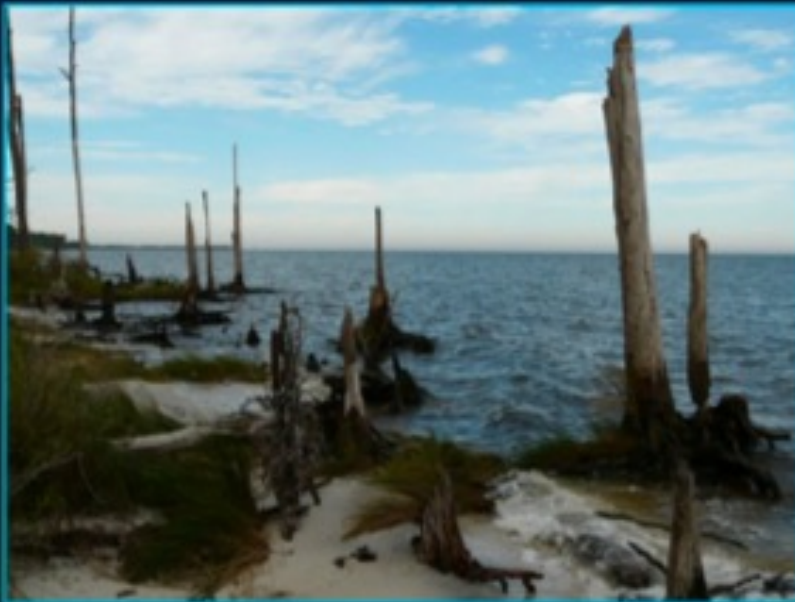
» Ragged Point to Point Clear



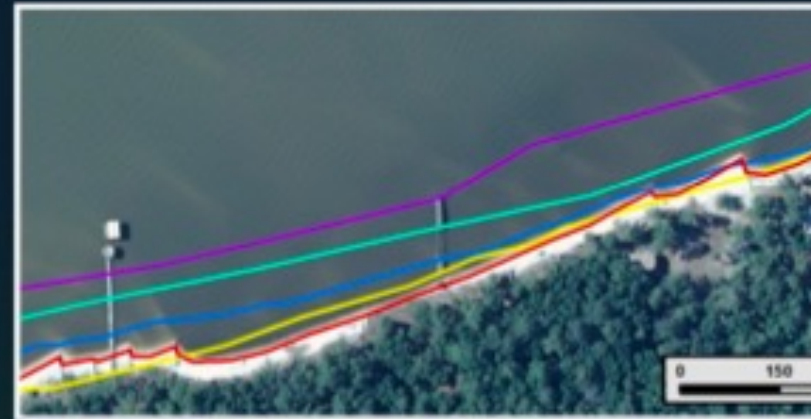
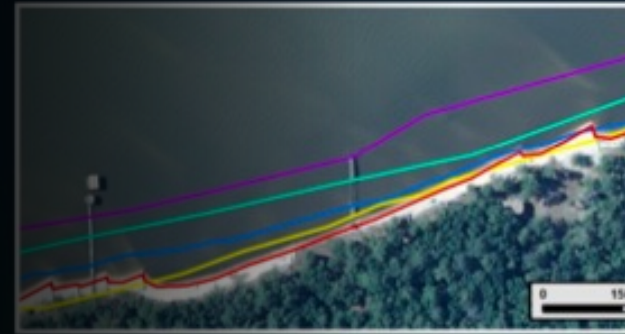
Status & Trends

» Eastern Fort Morgan

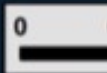
Mobile Bay



tree ▲



x	x
0.7	-1.2
x	-1.5





Impacts & Issues



Impacts & Issues

- » Lack of Sediments
- » Shoreline Armoring
- » Sea Level Rise
- » Storms & Ship Wakes



Impacts & Issues

An aerial photograph showing a wide, light-colored river or floodplain on the right side of the frame. The left side shows a darker, more textured landscape, possibly a forested area or a region with significant erosion. The overall scene illustrates the impact of sediment input on the surrounding environment.

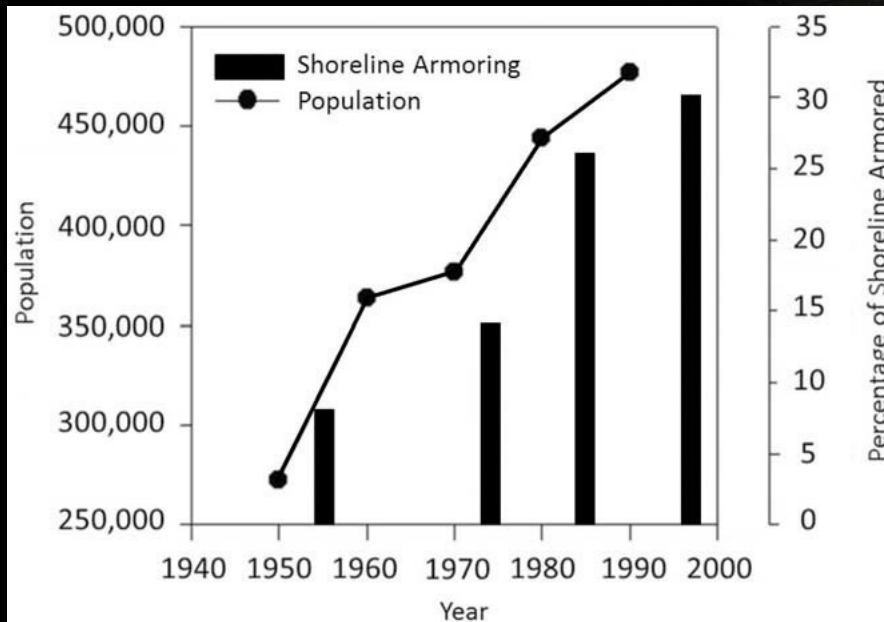
- » Lack of Sediment Input
 - » River Floods
 - » Shoreline/Bluff Erosion
 - » Creek Floods

Impacts & Issues

» Shoreline Armoring

» Loss of Habitat

» Reduced Biodiversity



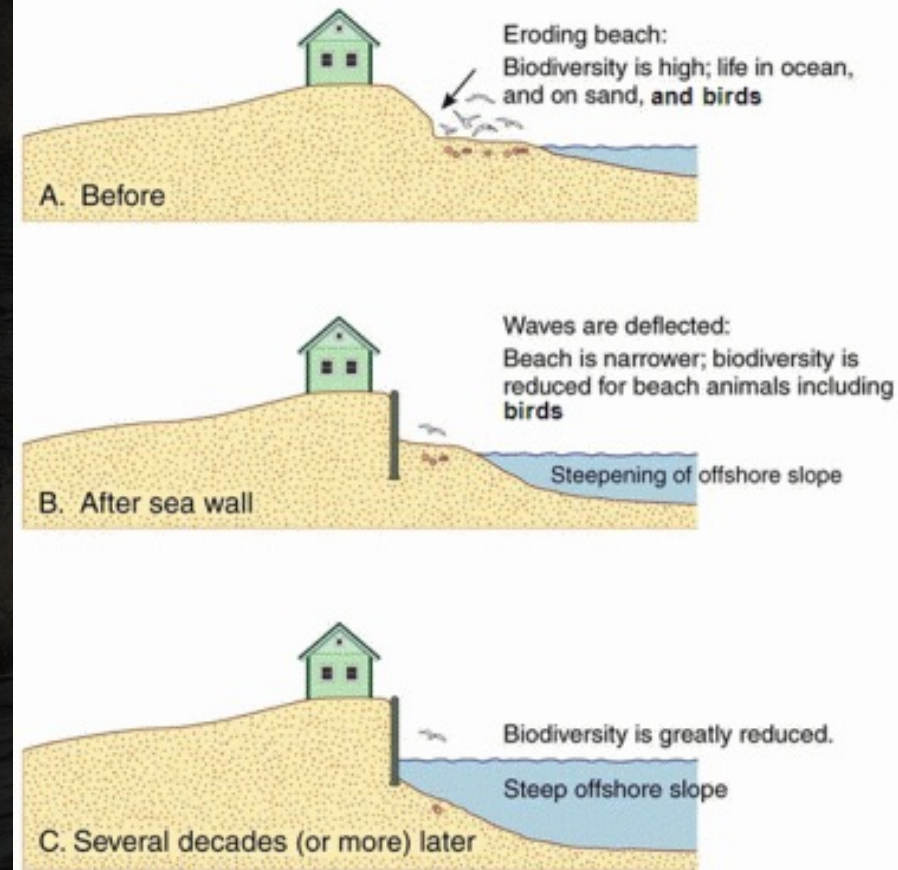
Douglass & Pickel (1999); Scyphers et al. (2011)

Jon Hauge/Press-Register Correspondent

Impacts & Issues

» Shoreline Armoring

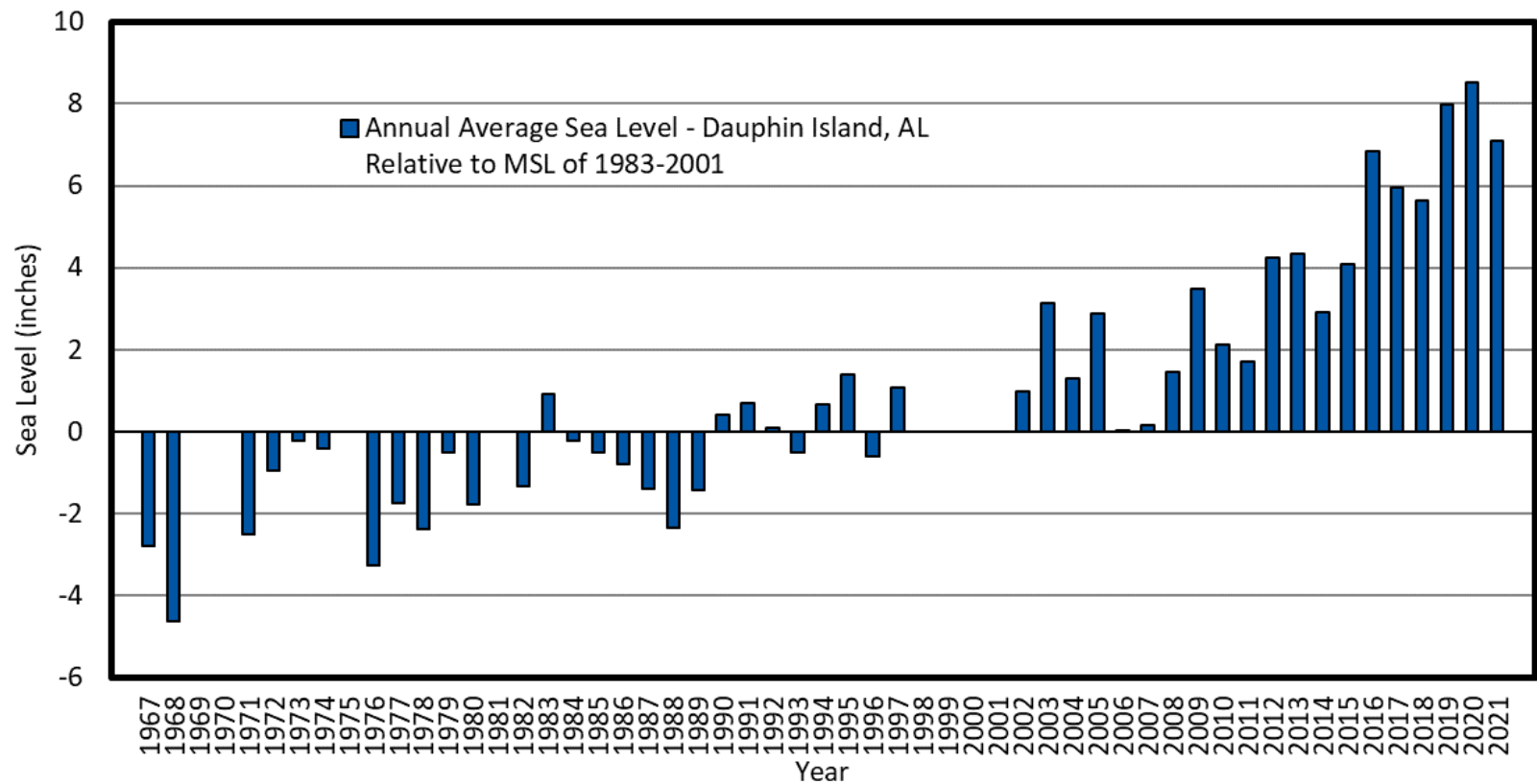
- » Loss of Habitat
- » Reduced Biodiversity
- » Increased Reflection
- » Increased Erosion



Source: Pilkey, O.H. and Dixon, K. L. 1996
(modified) *The Corps and the Shore*. Island Press, Washington, D.C.

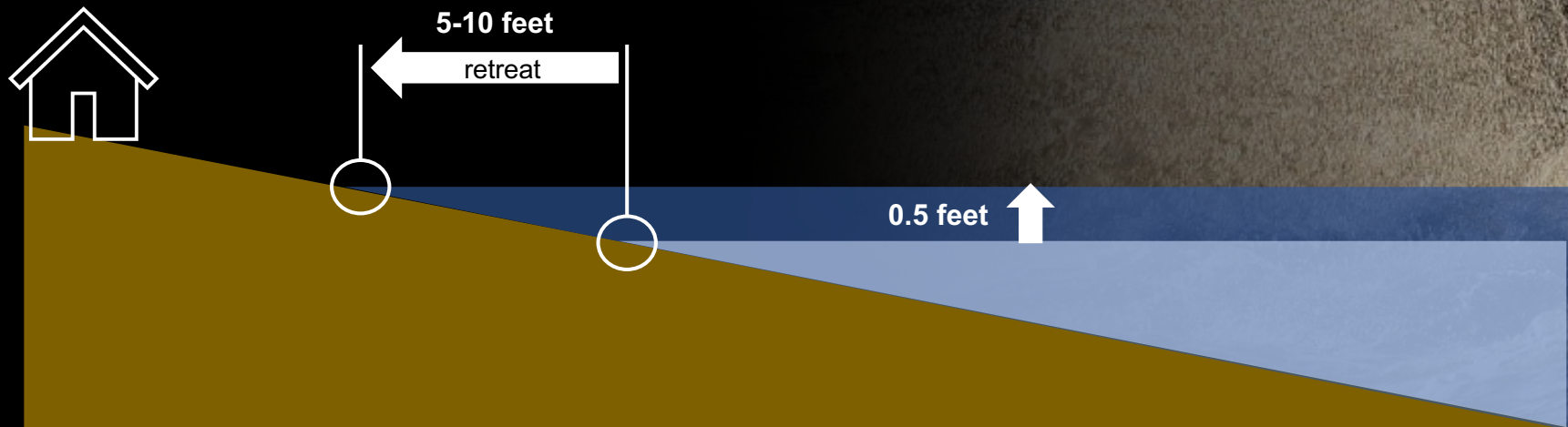
Impacts & Issues

» Sea Level Rise



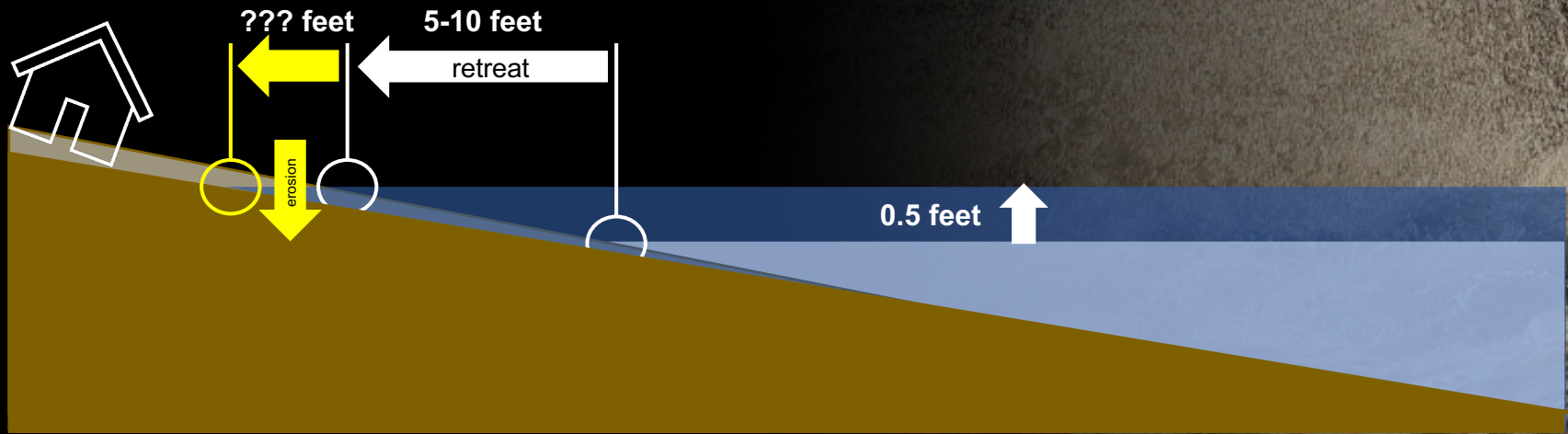
Impacts & Issues

» Retreat vs. Erosion



Impacts & Issues

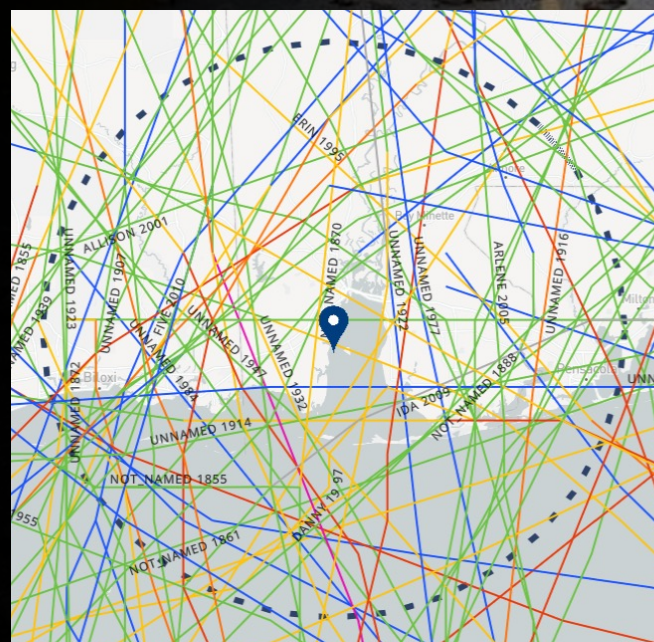
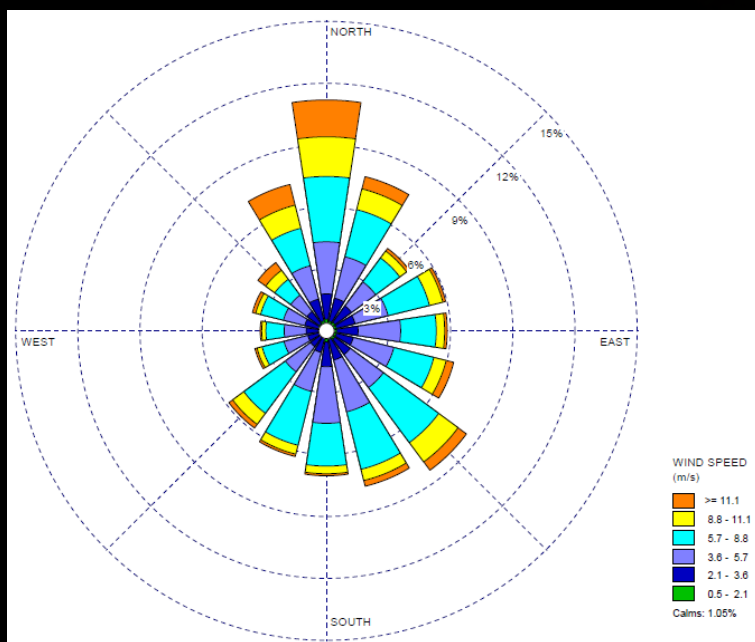
» Retreat vs. Erosion



Impacts & Issues

» Storms & Storm Waves

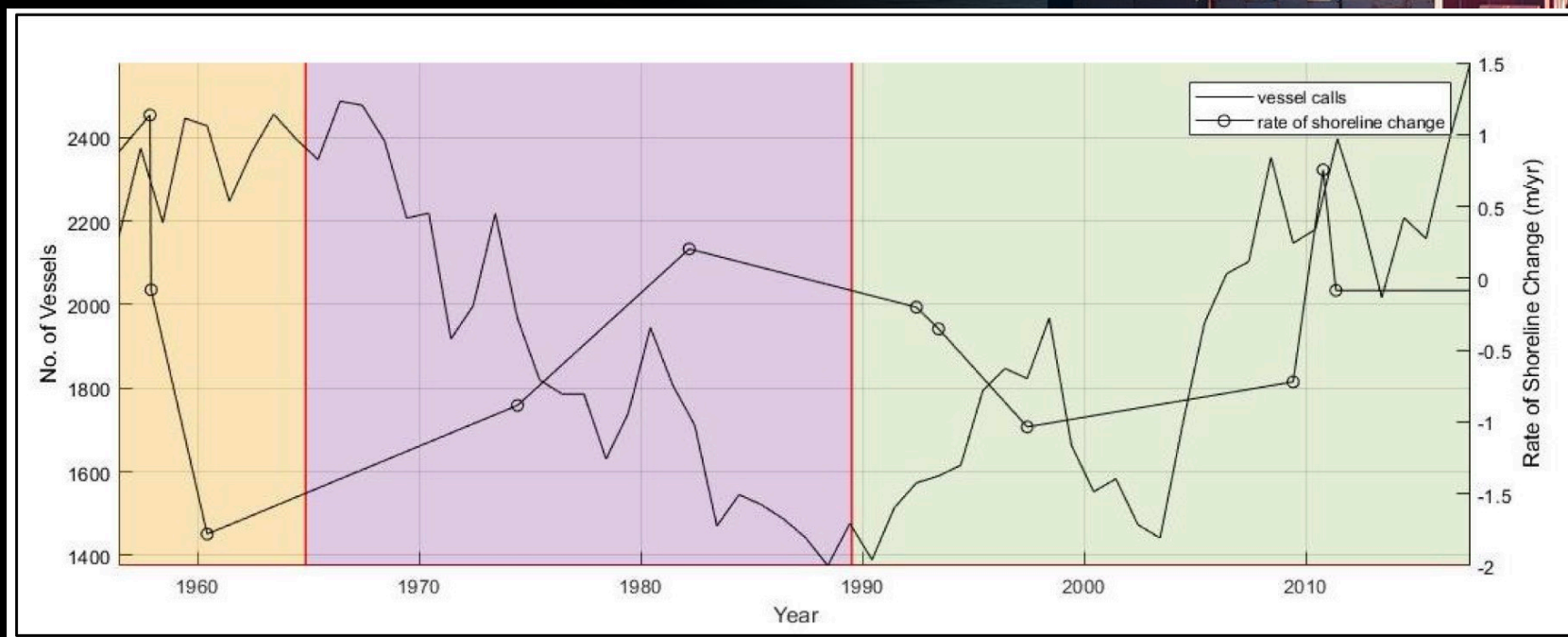
- » Flooding
- » Erosion
- » Infrastructure



Impacts & Issues

» Ship Wakes & Erosion

» USACE Ship Wake Study



Allen, R.J. (2018). *Vessel Generated Wave Energy: Field Data Collection, Prediction, and Impacts Assessment (Mobile Bay, Alabama)*. USACE GRR EIS Appendix A-4. 95 pp.



Potential Solutions



Potential Solutions

- » Do Nothing
- » Retreat
- » Regrade
- » Stabilize / Armor
- » Enhance / Manage



Potential Solutions

» Regrade



<https://bayshoredesign.com/>

Michael Clemmer

Potential Solutions

» Stabilize / Armor



Potential Solutions

- » Enhance / Manage
 - » Beach nourishment
 - » Living shorelines
 - » Sandy bay beach
 - » Intertidal marsh
 - » Seagrasses
 - » Oysters



LIVING SHORELINES

A Guide for Alabama Property Owners



LIVING SHORELINES

A TECHNICAL GUIDE FOR CONTRACTORS IN ALABAMA & MISSISSIPPI



An Introduction to Living Shoreline Management Practices 2016

Potential Solutions

» Beach Nourishment



Potential Solutions



Living Shorelines for Homeowners



Before and after a living shoreline installation. Project completed by the Elizabeth River Project and Bay Environmental.

Brought to you by the following partners of the Living Shoreline Collaborative



Potential Solutions

» Pocket Beaches



<https://www.chesapeakebay.net/>

Michael Clemmer

Potential Solutions

» Marsh + Sill



<https://ncseagrant.ncsu.edu/>

Michael Clemmer

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» Marsh + Oysters (+ sand)



<https://floridalivingshorelines.com/>

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» Belt + Suspenders



<https://www.windcheckmagazine.com/>

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Open Discussion



Open Discussion

