Appearance of black mangrove (*Avicennia germinans*) on Horn Island: an indication of climate change?

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Mentor: Dr. Just Cebrian, DISL

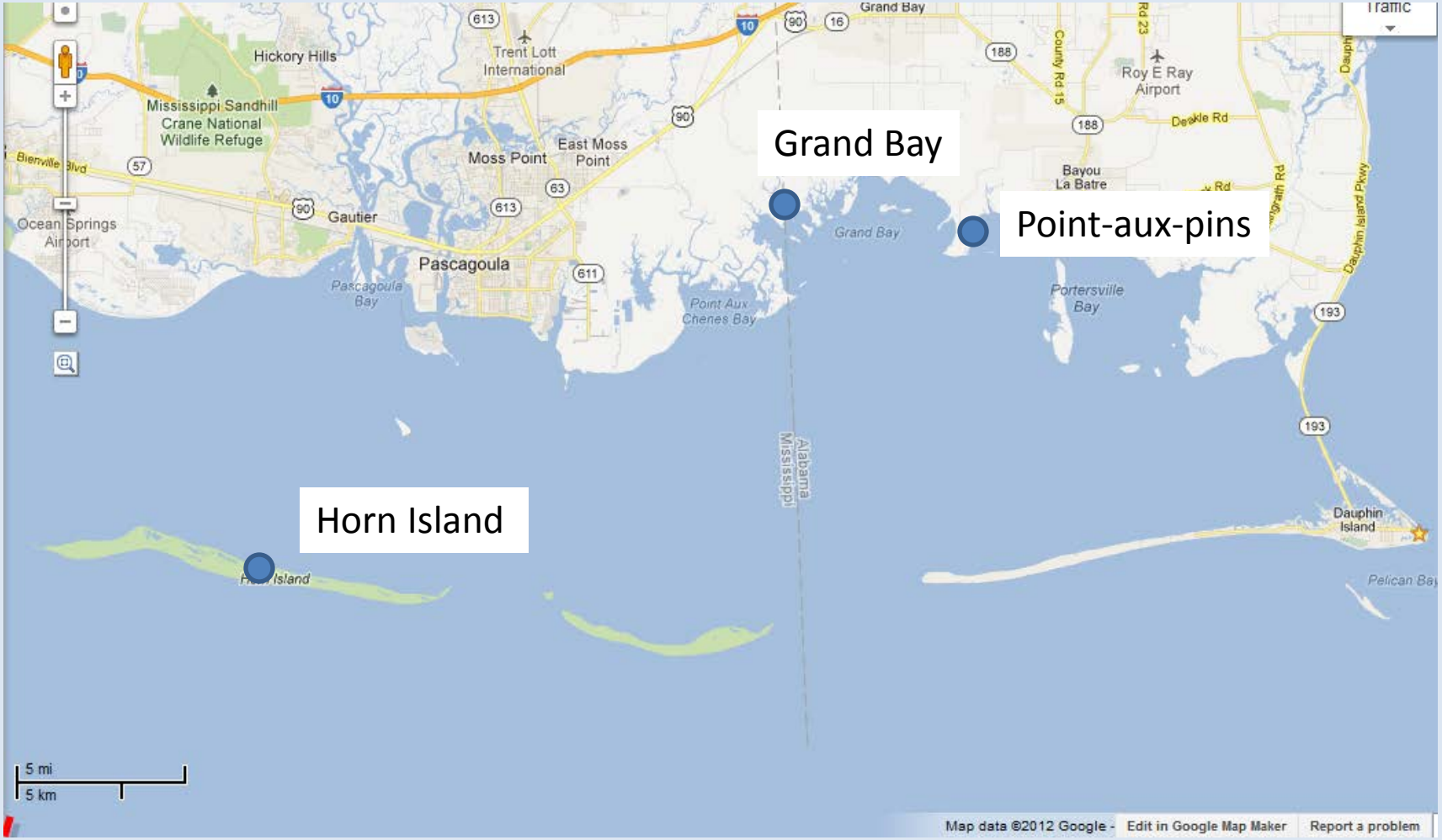
General Information

- Masters of Science in Environmental Science, TU, Kathmandu
- PhD student at University of South Alabama
- Title of dissertation
  - Restored oyster reefs: Potential impacts on water quality, submerged aquatic vegetation, salt marsh flora and associated organisms
- Graduate research assistant at DISL

General Information

- Mentor: Dr. Just Cebrian
- Ecosystems Lab at DISL
- Researches focus on coastal communities
  - Benthic communities
  - Habitat assessment
  - Fate of primary production
  - Alterations due to anthropogenic perturbations

Summer 2012


Grand Bay
Point-aux-pins
Horn Island
Hickory Hills
Trent Lott International
Mississippi Sandhill Crane National Wildlife Refuge
Moss Point
East Moss Point
Gautier
Ocean Springs Airport
Pascagoula
Pascagoula Bay
Point Aux Chenes Bay
Grand Bay
Portersville Bay
Bayou La Batre
Roy E Ray Airport
Dauphin Island
Alabama
Mississippi
5 mi
5 km
Map data ©2012 Google -
Edit in Google Map Maker
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Introduction: *Avicennia germinans*

- Subtropical woody shrub that grows in salt marshes

  Peterson and Bell (2012)

- Ecological importance:
  - Erosion control/dampening wave energy
  - Filter/trap sediment
  - Nursery habitat of crustaceans and fish
  - Helps in running detritus food web
  - Nesting habitat for birds

  Houck and Neil (2009)

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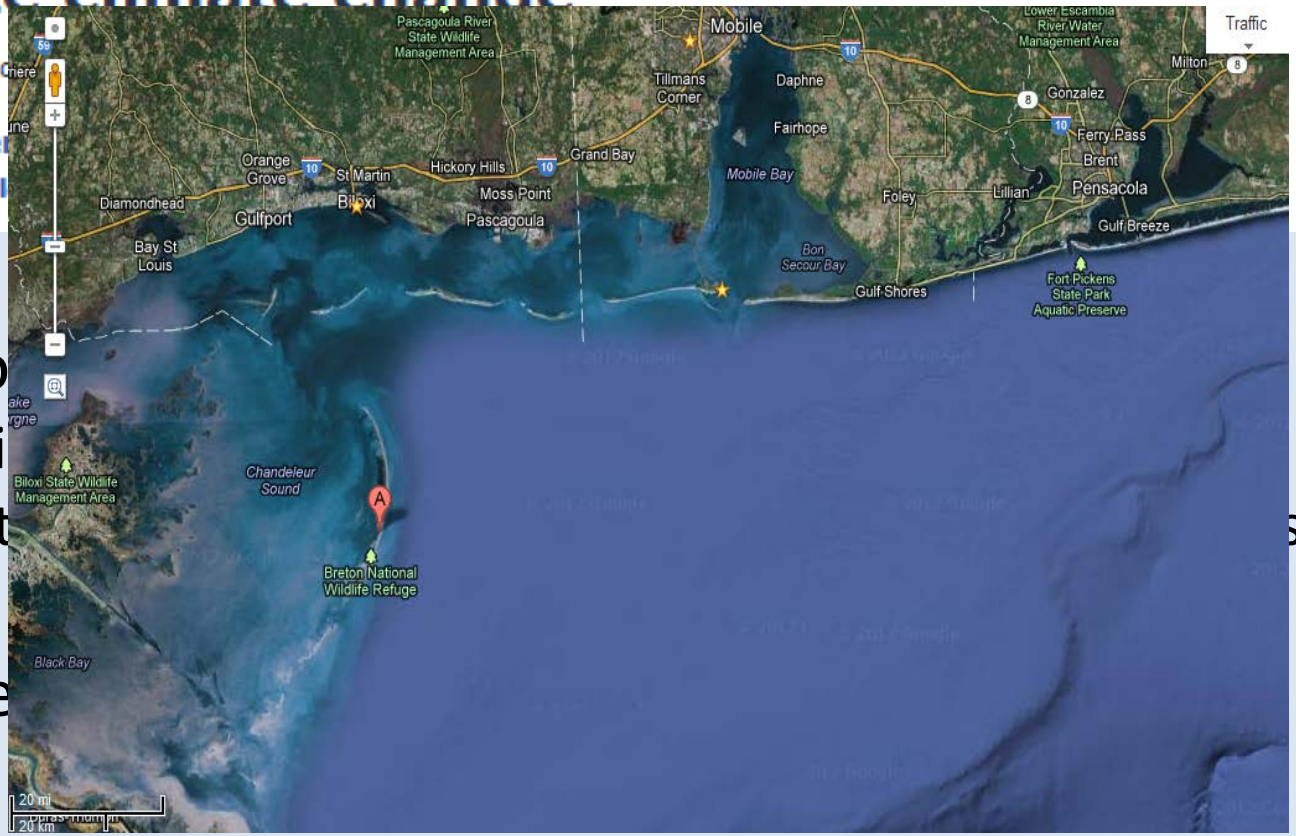

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- Close LA
- Historically, mangrove has been on and off from Horn Island

Black mangrove vs. Juncus/Spartina

- Impact of mangrove on *Juncus*/ *Spartina* is not clear yet

- Measuring a suite of variables
  - Morphometrics, herbivory, decomposition rate of the leaves

Variables measured

- Morphometrics
  - Tree height
  - Girth at base
- Herbivory
  - Photographs
  - Sigma scan software
- Density
  - Quadrat method
  - Pneumatophores, Spartina, Juncus etc
- Decomposition of leaves
  - Decomposition bag method
  - Spartina, Mangrove leaves
- Sediment size

Expected results

- Mangroves will continue to dominate?
- Mangroves will move further north?
- Micro-organisms that initiate detritus food web will be altered?

Conclusions

- We don’t know whether appearance of mangrove is good or bad for the local ecosystem
- Still in the initial stage
- Further study is required

What I learned

- First hand study of mangrove ecosystem
- Interactions with other interns
- Meta data training!

Acknowledgement

- Mr. Russ Beard, Director, NOAA-NCDDC
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- Ms. JoAnn Moody, Project Coordinator
- Dauphin Island Sea Lab