THE IMPORTANCE OF ECOLOGY AND ENGINEERING IN COASTAL RESTORATION: LESSONS LEARNED IN ALABAMA

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Navigation

I. Background

What are we restoring in coastal Alabama?

Why are we restoring it?

What are the major challenges?

What are the major obstacles?

II. Technical Stuff

Design Environment

Stressor ID

Artificial Reefs

Constructed Marshes

Sandy Shorelines

III. Lessons

Who to Include

Project Scale

Implementation

Flexibility

Keys to Success

Restoration in Coastal Alabama…

I. Background

I. Background

Coastal Alabama

What are we restoring?

600 miles of tidally-influenced shorelines

60 miles of Gulf beaches

1000s of acres of marsh, SAVs

100s of miles of oyster reef

I. Background

Coastal Alabama

Why are we restoring it?

40% of bay shoreline is armored

90% chance of development armoring

Oyster decline

Marsh loss (SLR and others)

I. Background

Coastal Alabama

What are the challenges?

Identifying the stressors

Satisfying multiple goals

Balancing goals & expectations

Planning for the future

Communicating the science

I. Background

Coastal Alabama

What are the obstacles?

Best available science

Monitoring

Static regulations

Permitting

Cost

Restoration in Coastal Alabama…

II. Technical Stuff

II. Technical Stuff

Design Environment

Get to know your site…

What are the critical processes?

What is the intended function?

What needs to change in order to facilitate that function?

II. Technical Stuff

Stressor ID

What's the problem?

Identify the stressors…

- Waves
- Currents
- Sea Level Rise
- Water Quality
- Sediment Supply

II. Technical Stuff

Artificial Reefs

Tradeoffs…

Reefs as breakwaters…

Intertidal vs. subtidal reefs

Agitation

Material properties


Little Bay Project, Bayou La Batre

II. Technical Stuff

Constructed Marshes

Edge vs. Interior

Edge erosion protection

Thin-layer disposal

Wave tolerance

Salt tolerance

Little Bay Project, Bayou La Batre

II. Technical Stuff

Sandy Shorelines

Stabilization w/o trapping

Historic sand sources

Major transport modes

Trapping of LST

Blockages of XST

Restoration in Coastal Alabama…

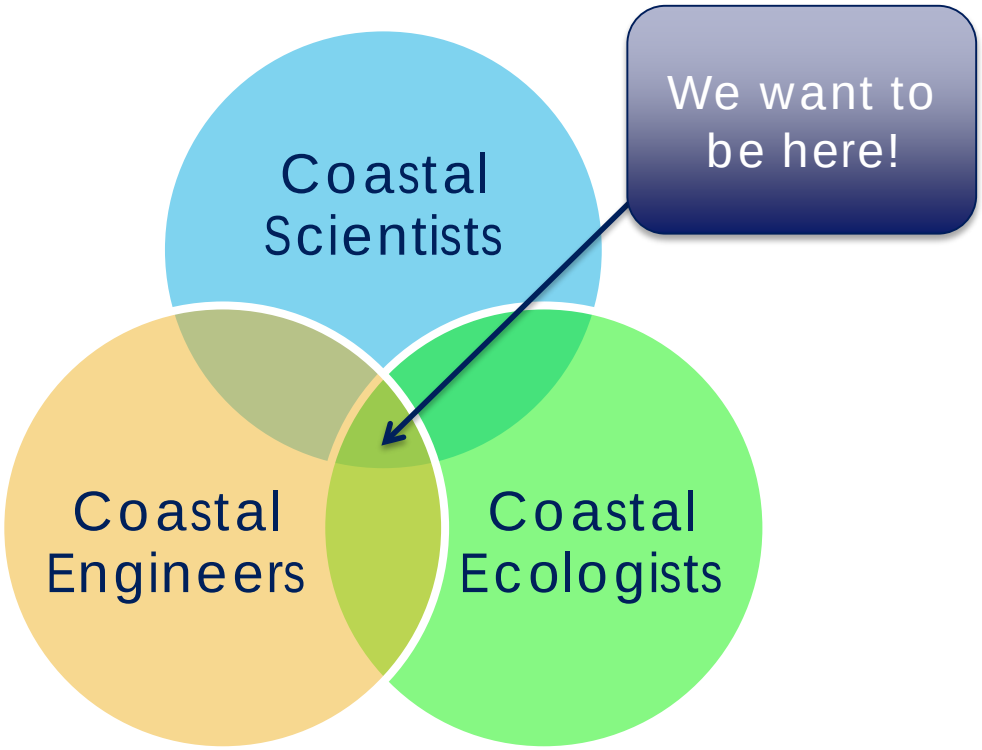
III. Lessons Learned

III. Lessons Learned

Who to Include

Interdisciplinary

The most successful projects will include coastal scientists, coastal engineers, and coastal ecologists… especially when those projects are ecosystem scale



Kari Servold, Dewberry

III. Lessons Learned

Project Scale

Success at all scales

Success can be scale independent...

III. Lessons Learned

Flexibility

Things change…

Things change during a project, so it's best to remain flexible throughout the process…

III. Lessons Learned

Keys to Success

Stem to stern

The most successful projects are those that are properly planned BEFORE a contractor is selected…

Get your best plan together at the time of the funding request…

Offshore Reef, Mobile Bay

Coastal ecosystem restoration, at any scale, requires an integration of coastal ecology and coastal engineering to be truly successful.

Dauphin Island East End

Shameless Advertisement…

New Book Coming Soon

Living Shorelines: Fundamentals of Engineering & Ecology

National Overview

Regional Chapters

Case Studies

Lessons Learned