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## Academia Session

Commenter's Affiliation	Comment
First Academic presentation part 1	<p>Perdido Bay, Mobile Bay, Miss. Sound. Coastal habitat loss: loss of ~50%, lack of historical data; marshes~50% loss, may have slowed a bit in the past few decades; oyster reefs-Cedar Point-main production area; historical trend-low points coincide with tropical storms/hurricanes; commercial reefs have been regularly restored by Marine Resources Division; research into ecosystem services. Dauphin Island-losing a lot of area, reduces wave energy for smaller islands and mainland. Overall-downward trend and difficult to quantify. On-going habitat restoration. Reef restoration program-focus on ecosystem services/ecological benefits, not commercial production. Living breakwater projects-multi step-provides reef construction, shoreline stabilization, marsh regrowth, faunal utilization, seagrass colonization. Start with shell base.</p>
First Academic presentation part 2	<p>Erosional situation-ongoing for 300-400 years; primarily due to shifting in barrier islands-areas of greatest loss Miss Sound, Mobile Bay western shoreline, in Miss Sound-around 40 acres/year disappearing. Mobile Bay-up to 8 feet per year erosion. Reaction-armoring of shore. Impact-loss of intertidal habitat, motivated the living shoreline habitat. Alabama Port-living breakwaters-being done at a variety of scales. Monitoring of replicated areas, and monitored modified and control areas. American recovery and Reinvestment Act (ARRA) project-stabilization of 1.5 miles of eroding shoreline, evaluation of multiple methods for reef development. There are five restoration projects in south Mobile County-largely National Oceanic and Atmospheric Administration (NOAA) money. Seagrass/Marsh restoration-why are submerged aquatic vegetation (SAV) declining? Water clarity-runoff, poor land management. Restoration can't take place until we repair water clarity, also have issues with nutrients. Damage by boating-requires education/outreach, establishing no motor zones around scarred areas. Bird stake method-stake area, birds roosting, nutrient input. Marsh restoration is separate from living breakwaters; ultimate goal-healthy salt marsh.</p>

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Academia	Hard to work with private landowners on living breakwaters. Working primarily with state. There's a learning curve
Academia	Rate of marsh loss slowed. Lost so much that corps has set up obstacles to destroying wetland that it is starting to have an effect.
Academia	Only loss of fringing and emergent wetlands slowed. Rest still being loss. Protections are erected for fringing and brackish marsh.
Academia	Two coastal counties, enormous amount of wetlands.
Academia	Numbers based on historical data, not monitoring data.
Academia	Work mostly in fringing grass beds. One of issues is concern about establishing what was before whatever line we want to restore to.
Academia	Need to value ecosystem services in actual dollars but this is the challenge.
Second Academic-presentation part 1	More inland, Mobile and Tensaw Delta Restoration projects. The sink for the fourth largest watershed in the US in terms of inflow. Rich diversity of habitat, open water, fresh and mixed marsh, etc. Nursery value of these inland submerged aquatic vegetation (SAV) are unknown. Other services play a key role in water quality, remove as much as 50 percent of nitrogen entering estuarine systems, preventing potential algae blooms. Invasive species such as milfoil, cause reorg of natural marine ecosystems. Other warning signs are significant decline in waterfowl this century. Lots of macroalgal blooms in summer. So what generates these blooms. Hypothesized culprit. Mobile bay causeway may serve as a physical barrier to salt wedge. Stops at bridge. Milfoil can flourish in absence of salt water So plan was to poke holes in the causeway to manage salinity.



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Second Academic-presentation part 2	<p>So conducted a number of experiments. Didn't matter what salt treatment used, couldn't kill the milfoil no evidence that any of the hypotheses in the management circles was correct. Now focus south of causeway. Algae dominates. North of causeway, multiple species. Opposite of hypothesis that the milfoil would contribute to decline of multiple species. So do physical processes control the distribution of milfoil in Mobile Bay. Now trying to estimate the breaking strength of milfoil. Fragile in comparison to native wild celery. Seems to be wave force. Take home message: simply poking holes in causeway will make no impact. So restore salt content will do nothing. But need to restore natural wave trains. So can't do restoration for sake of restoration.' So need to know why habitats are lost in the first place. Specifically. Expand current monitoring coverage. Need data because we have no sustained long term records.</p>
Second Academic-presentation part 3	<p>Need to make accurate predictions but can't do it. Increase river gauge coverage throughout Mobile Bay tributaries. Develop a sediment budget – time to rethink offshore dredged material disposal. Develop proactive invasive species management (we need to think more about this, not in our plan to date) Policy questions Scenario based oil spill management plans. Check University of Wisconsin web site. Scenario based management planning. Borrow from Chesapeake Bay plans. They have extensive ideas about this.</p>
Academia	<p>Monitoring: need wave data presently not available. Beyond physical variables, need observatories similar to National Ecological Observatry Network (NEON) (National Science Foundation) need monitoring of species on some scale. Lab been here for 40 years and had uncountable trips with students. Haven't assembled data base. Need funding. Include biological data.</p>



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Academia	College of Engineering (COE) advisory board. Barely learning to do habitat restoration, but to talk about ecosystem restoration, going up in scale by order of magnitudes.
Academia	Restore to what? Several folks have mentioned historical, we have been talking about restoring to a measure of resiliency since we may not even know about historical conditions. What do you think?
Academia	If restoring to extent (acreage) probably never get to that. Restoring “historic balance” may be able to get back to a historic balance, in terms of critical habitats that support fishery resources. Can call that somewhat restored.
Academia	Need to fix the stressors, then nature will take care of itself.
Academia	Make coordinated plans to use all of our resources. Including academics. Usually we react to crisis. Management community gets a mandate saying how will you use funding that will drop on your head next week, need a plan tomorrow. So never have proper plan to use that funding. Need sustained funding with long time line.
Academia	Challenges: Freshwater wetlands and the ecosystem services they provide; and how do you deal with mercury in sediments-mercury cycling-addressing with dredge material.
Academia	Some good programs exist for freshwater wetlands-largely focused on high-gradient, not here, not about oligohaline habitats.
Academia	Need to examine linkages between freshwater wetlands and total ecosystem, how do those link to other goals in the strategy-what is the flood storage capacity of the wetlands? This is critical for ecosystem valuation-need to move beyond food services, but the broad societal values.
Academia	Need to examine stormwater buffering capacity of wetlands and storm surge capacity.



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Academia	What about balance? Does a resilient community equate to a sustainable community? Sustainable community must be resilient but a resilient community may not be sustainable
Academia	Resilience getting linked to adaptability to sea level rise. if we restore something, it could then adapt to future changes without intervention
Academia	watershed approach-Mobile Bay watershed-need to go up the watershed. Won't help to restore Mobile Bay if don't address the watershed. Who do you engage with to deal with agriculture?
Academia	Hard to challenge the development interests of the state. Coastal Zone Management Act challenged-10' boundary. Where do the two management plans overlap? Same issues, but not geography. Geography-two coastal counties.
Academia	Focus is on the two coastal counties-other groups addressing the watershed. Need to work with groups addressing the water quality groups-clean water partnerships.
Academia	Can't fix the issues unless you go up the watershed. Can we fix most of the issues in Alabama without irritating Montgomery or do we need to bite the bullet? Need to take action now.
Academia	Sediment is the biggest "pollutant" in Mobile Bay.
Academia	Sediment input could help restore the wetlands.



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Academia	Haven't minimized sediment flow in Mobile watershed-haven't changed the hydrology extensively. Dams are flow-through. Most of the sediment that comes through causeway is in ship channel and by law must be removed and gotten rid of, not used beneficially. Limited understanding of sediment budget in Mobile Bay. If we're looking at restoration-this is fundamental. We have a decent understanding of budget along barrier islands but not interior part of bay. Need engineering study-sources, sinks, migration.
Academia	Tidal streams right around the bay are filling with sand-erosive product is not getting into bay.
Academia	Adaptive management-will there be an allowance for experient restoration? A testing of the idea?
Academia	Need to compare different methods of restoration. What do you need to monitor success?
Academia	Application of results-what is the mechanism to make the connection between the scientists and the managers?
Academia	Monitoring Needs: We need to know and measure indicators of well-being, not just indicator species
Academia	Need process indicators-can't use just static measures, small chance of detection with synoptic measures.
Academia	We have 20-25 potential parameters that would be worth looking at-integrated paramters part of processes, not independent measurements.
Academia	With start of Dauphin Island Sea Laboratory (DISL), benthic ommunity was an integrated parameter. Also, we need to continue to look at beneficial use.
Academia	Aerial imagery and habitat mapping-not done often enough; habitat change anlaysis-gives you can idea of shifts.





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Academia	Can we make adaptive management real? Can we incorporate that into the regulatory authority? Based on best available science.
Academia	Need baselines, but have lots of existing data. National Coastal Data Development Center (NCDDC) collects and synthesizes data-what are the gaps?
Academia	How can we standardize what we collect now so we have a consistent database later.
Academia	Trade-offs-American Environmental Value Survey-the only environmental behavior change was related to economics. Need to examine the economics of environmental protection. Need to explain environmental protection in terms of economic benefit.
Academia	Good ecosystem service valuation research-will make the connection to the personal level.
Academia	It's a money issue.
Academia	Need to consider that personal level.
Academia	It's also how we communicate the issue.
Academia	It's personal accountability as well.