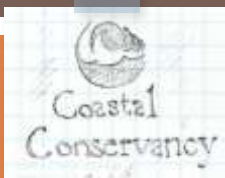


MANAGER NEEDS IN ADDRESSING WETLAND RESPONSE TO SEA LEVEL RISE

Major Feared “Impacts”:

- Loss of habitats themselves/wildlife values if/where marshes can't keep up with SLR
- Loss of co-benefits : flood protection and water quality
- Damage to/loss of restoration investments
- Loss of funding support due to challenges to restoration project sustainability



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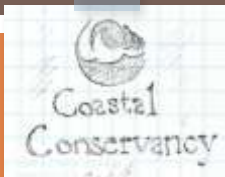
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MANAGER NEEDS IN ADDRESSING WETLAND RESPONSE TO SEA LEVEL RISE

Information Gaps: Technical

- Sediment budget projections useable for driving projections of long-term marsh evolution
- Spatial evolution of marsh edges/extent – interactions with mudflats and subtidal areas
- Abilities/liabilities of living shorelines in terms of providing an appropriate shoreline protection/habitat combo



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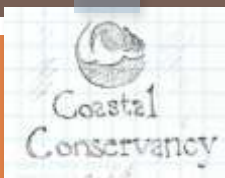
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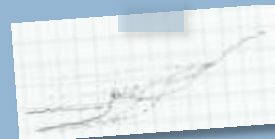
Information Gaps: Practical

- When/where does infrastructure backing a marsh provide opportunities for movement/alteration and where/when not?
- Clear understanding in management community of the limitations and assumptions of the models
- How should managers cope with the uncertainties in the science in addressing their vulnerabilities? Some vulnerabilities are very high cost to address – potential for uncertainty paralysis.



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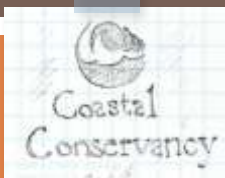


MANAGER NEEDS IN ADDRESSING WETLAND RESPONSE TO SEA LEVEL RISE

Manager Needs/Analytical Capability:
Clear understanding of geomorphic
settings – relative rates of SLR and
sediment budget futures



- Need models that can be applied consistently/well to wide range of predicted SLR rates and sediment regimes (particularly variable across the state)
- Need high quality inputs on those parameters



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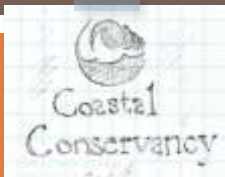
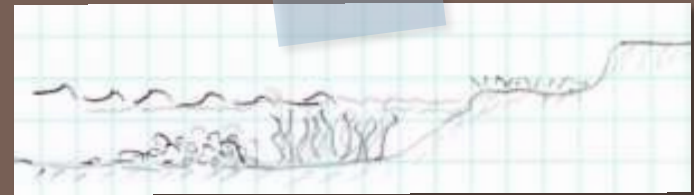
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MANAGER NEEDS IN ADDRESSING WETLAND RESPONSE TO SEA LEVEL RISE

Manager Needs/Analytical Capability:
“Edge”/erosional effects to marshes –
storm surge related or hydrological shifts;
ability to dynamically model marsh edges
and slough evolution

- Information needed to inform protection strategies – living shorelines
- Need process-based understanding of marsh and bed dynamics, either as grounding to check parameterizations or for investigating site specific designs



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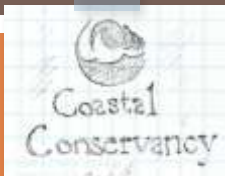
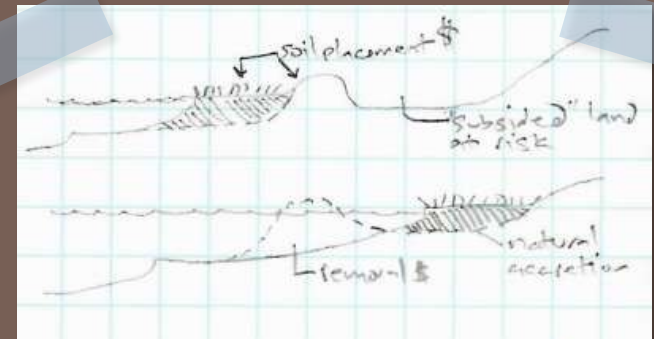
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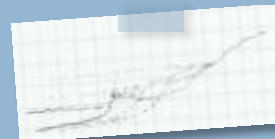
Manager Needs/Analytical Capability: Where will the marshes go? What do we lose if we don't act? Where could they go if we did?

- Analysis of projected changes to existing marshes/Analysis of opportunities to migrate wetlands inland – where are there low-cost options (or high avoided-cost options)
- Requires understanding of “in-board” environment – ecotone, levee heights/conditions, infrastructure
- Analytical support for nourishment strategies
- Understanding of legal/mitigation constraints



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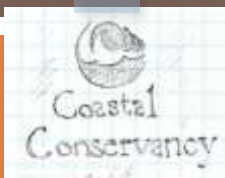


MANAGER NEEDS IN ADDRESSING WETLAND RESPONSE TO SEA LEVEL RISE

Manager Needs/Analytical Capability:
Cost/benefit analysis of the above –
needed to prioritize potential
restoration investments



- Need ability to address/incorporate understanding of near-shore land uses (and land use plans), and replacement/maintenance schedule of shoreline structures
- Cost information on restoration/adaptation strategies – sediment placement needs and \$\$



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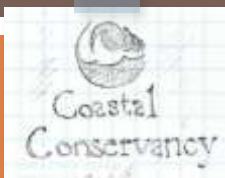
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MANAGER NEEDS IN ADDRESSING WETLAND RESPONSE TO SEA LEVEL RISE

Manager Needs/Analytical Capability: Linkages to other Climate Change effects

- Even if there in future, how will they change? – impacts to functioning: salinity, freshwater input changes, vegetation and habitat assemblage changes
- Changes in other physical factors – watershed sediment/hydrology and timing, beach dynamics and saltwater flows (particularly with seasonal closures)



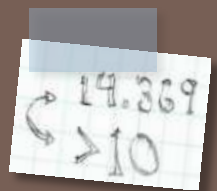
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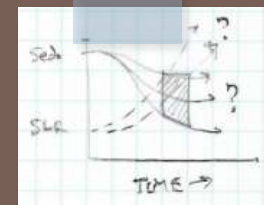
Pitfalls...



- Under-simplifying (over-specifying) model results for application at hand
- Lacking clarity about projections (of potential scenarios) versus predictions (of outcomes)

...And Best Practices in Representing Uncertainty

- Bracketing management options
- Confidence estimates and other uncertainty measures
- Analyzing overlap and concurrence among scenarios, without simply “shooting for the mean”



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