

What does social-ecological system resilience really mean?

Enhancing our understanding with information from a community-based collaborative project

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Topics Covered

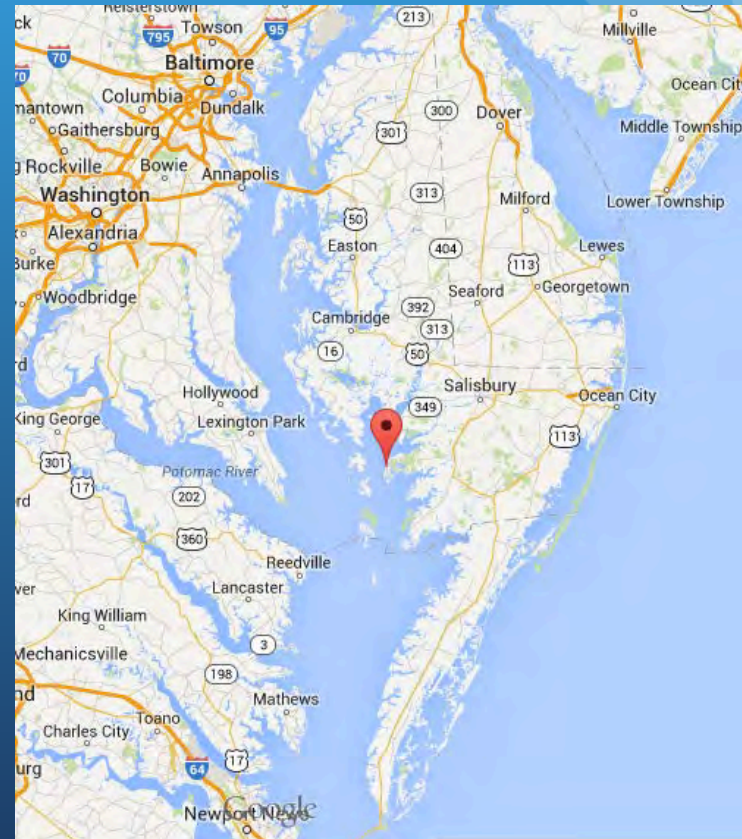
- I: The Project
- II: Who's Involved
- III: What is the social-ecological system?
- IV: What is resilience?



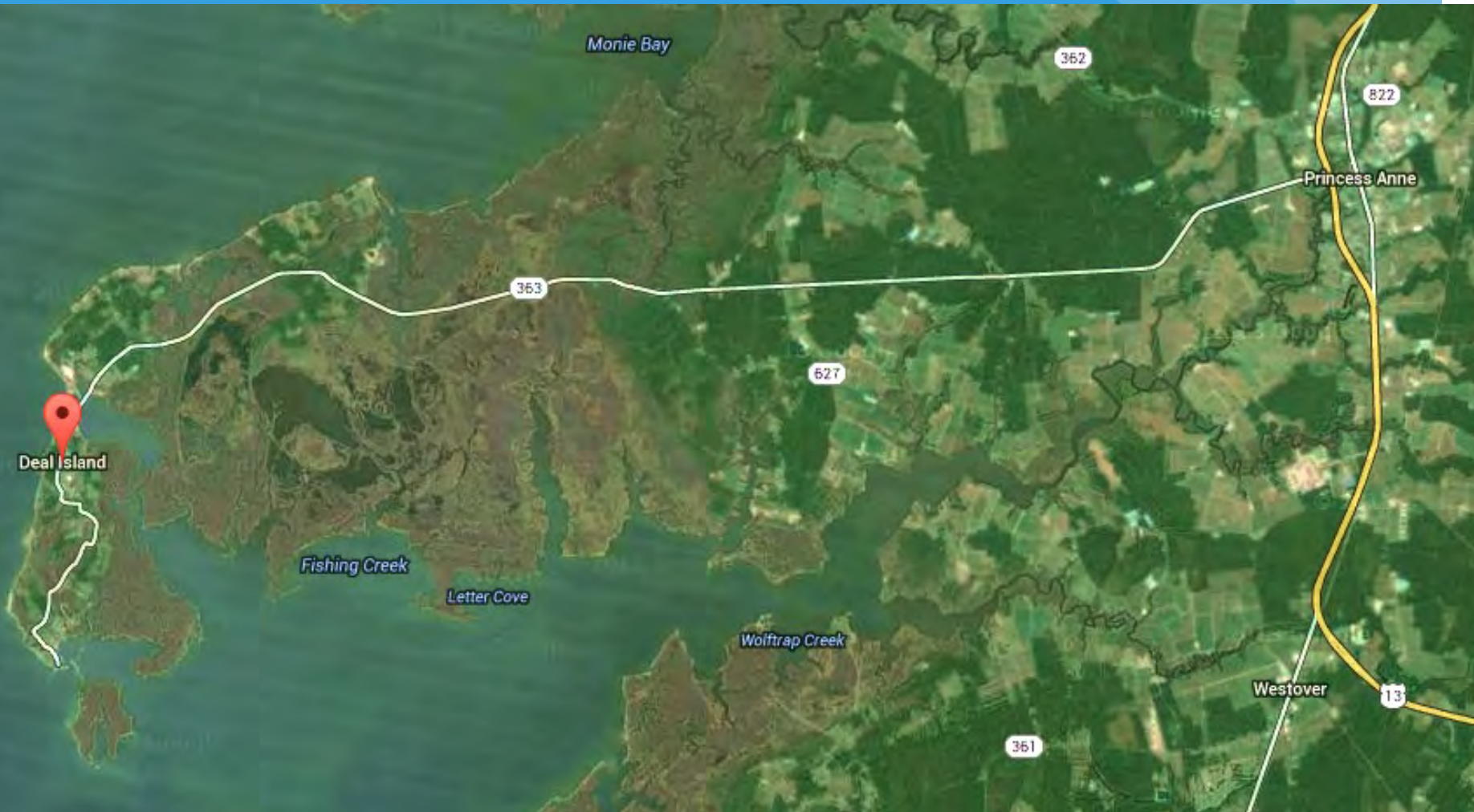
I. Our Project: To build resilience to climate change in marsh and community

Located:

- Mid-Atlantic US
- Delmarva Peninsula
- Maryland's "Eastern Shore"
- Tangier Sound of the Chesapeake Bay



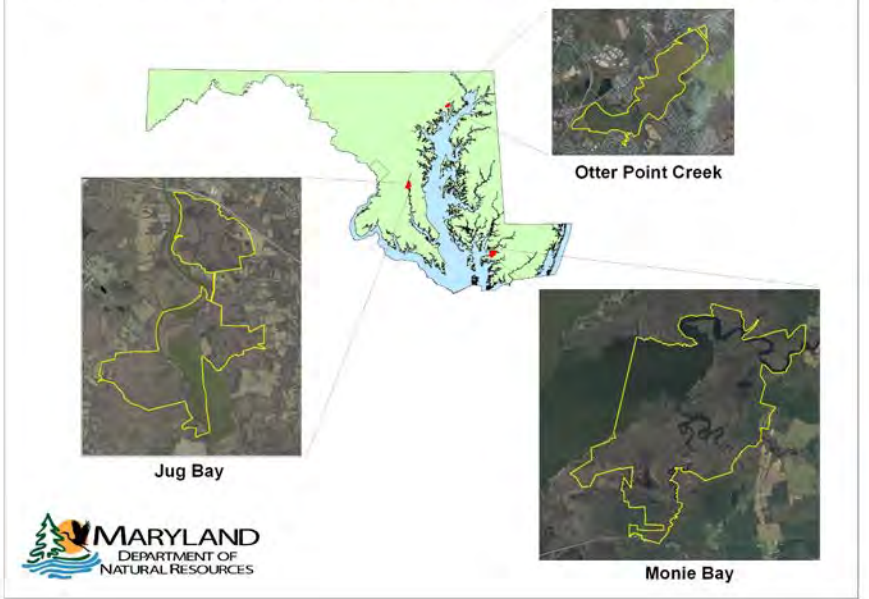
The Deal Island "Peninsula"



Science collaborative Program of the National Estuarine Research Reserve System



Chesapeake Bay National Estuarine Research Reserve in Maryland



“Resilient estuaries and coastal watersheds where human and natural communities thrive”

A NOAA NERRS Funded Collaborative Science Project

socio-ecological research



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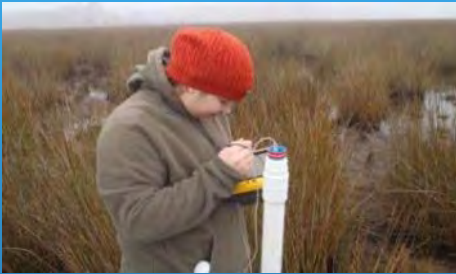
collaboration



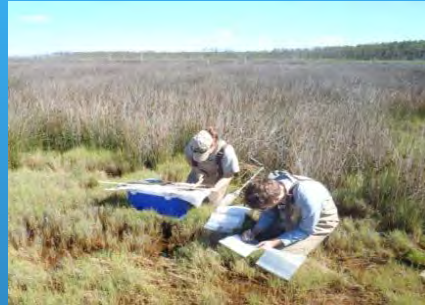
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**MARSH AND COMMUNITY
RESILIENCE**

Ecological Science Research



Hydrology



Soils



Vegetation



Elevation change



Mosquitoes

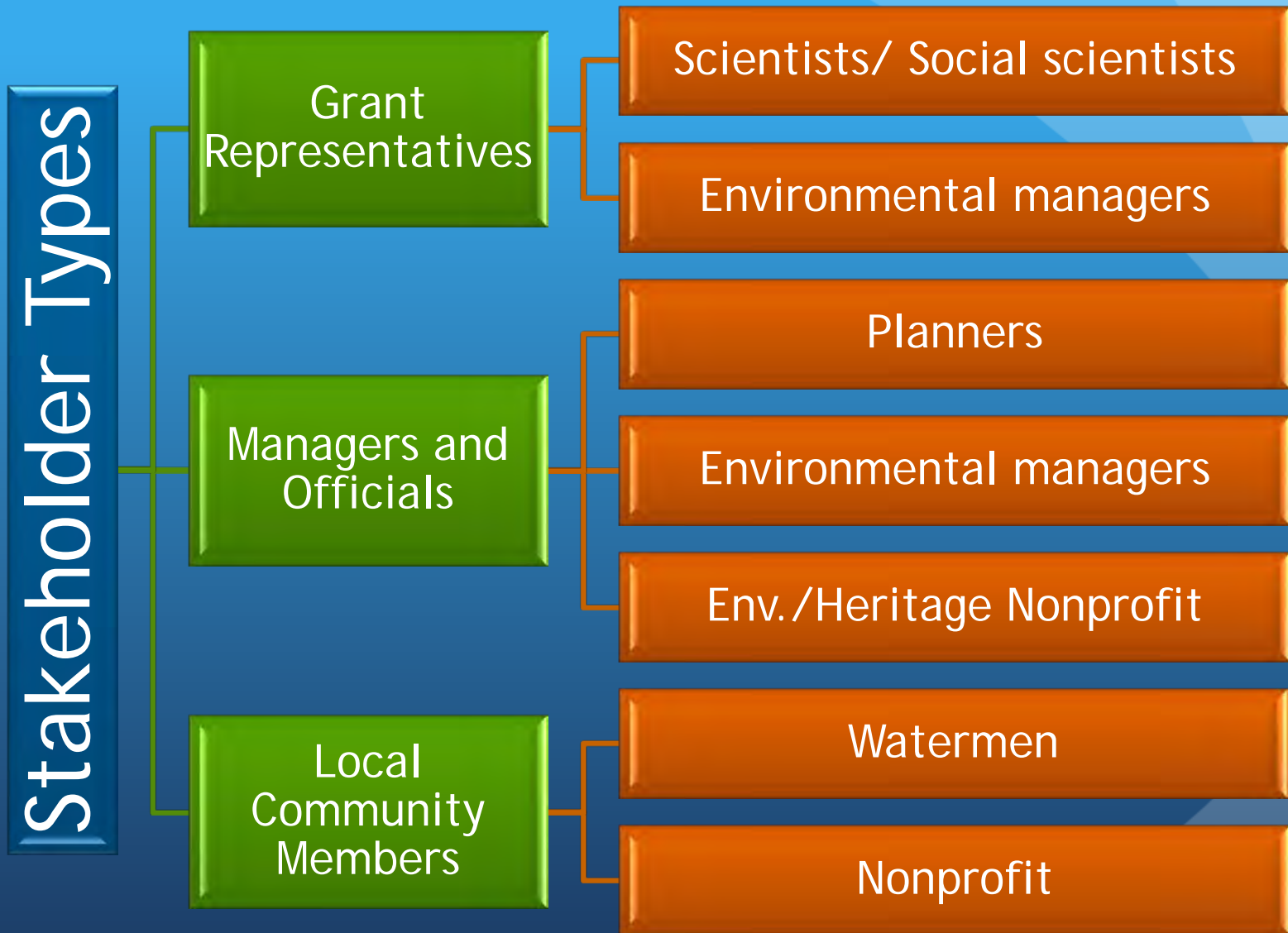
Also:
species diversity, water quality, sediment deposition, and GIS

Other research work:

- Economics:
 - Ecosystem services evaluation
- Anthropological:
 - Community research
 - Coordination of collaborative learning activities
 - Facilitation of community meetings and research groups
 - General project documentation



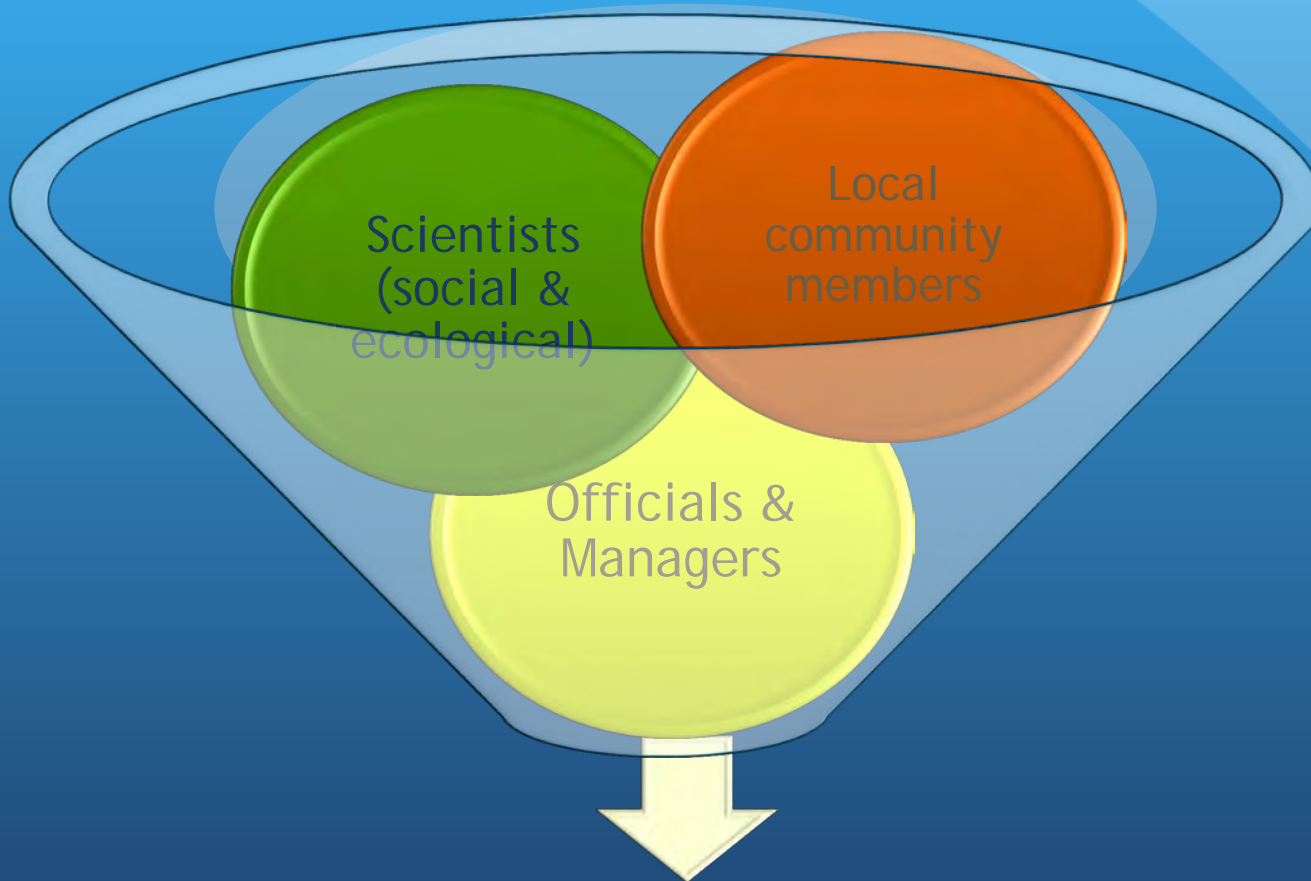
II. Who's Involved:



Collaborative Learning

- Employed to “make progress” in the face of “potentially paralyzing social and technical complexity” .
 - Daniels and Walker 2001
- A form of environmental governance utilizing social learning
- Focus on deliberative governance

Stakeholder Collaboration:

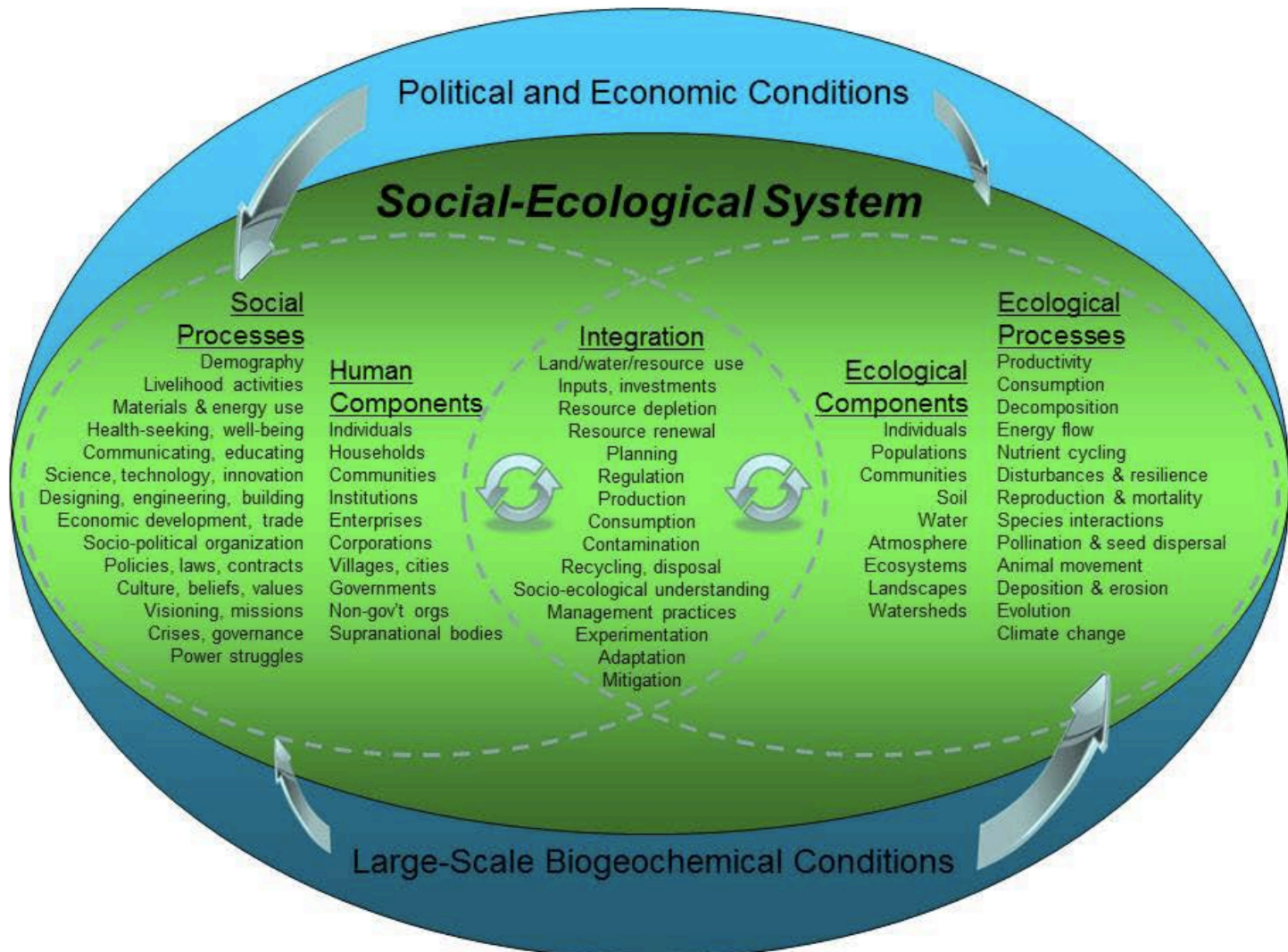


Resilient Social Network

Engagement across the project

- 3 major workshops- all stakeholders invited
- Smaller collaborative research projects- topically based, participation by interest
- Community conversation talks (3 held: flooding, marsh restoration, and shoreline erosion)
- Presence at local venues/ events (church, Labor Day skipjack festival)
- Ongoing conversations with environmental management organizations on how to keep moving agenda forward

III. The Social-Ecological System



Types of Change

- Environmental change
 - Increased storm ferocity
 - Increased flooding
 - Land subsidence
 - Sea-level rise
 - Shoreline erosion
- Social change
 - Loss of subsistence base
 - Loss of independence
 - Transition away from traditional values



Potential Risk

The background of the slide is a photograph of a person standing in a small boat on a body of water. The person is wearing a dark jacket and a hat, and is holding a long pole. The water is calm, and the background shows a forested shoreline under a clear sky. The entire image is overlaid with a semi-transparent blue filter.

Environmental Hazards:

- Increased storm ferocity
- Increased flooding
- Land subsidence
- Sea-level rise
- Shoreline erosion
- Land loss/ marsh encroachment

Social Vulnerability:

- Loss of subsistence base, economic decline
- Move away from traditional values
- Lack of governance structures/ decision making bodies
- Distrust of government & outsiders
- Aging population

IV. Defining Social-Ecological Resilience

Traditional Definitions:

- Walker and Salt 2012
'cope with shocks'
- Boyd and Folke 2012
'reorganizing, learning, evolving, innovating'

Complicating the picture:

- Cutter et al. 2008
'inherent resilience and adaptive qualities'
- Paolisso 2014
"state of engagement"



Resilience Interviews

- 19 semi-structured interviews
- Representation among three major stakeholder groups: grant, officials/ managers, and local community members
- 45min-2 hr/ interview
- Transcribed, in the process of coding for features of resilience:
 - For Deal Island area, to build resilience, existing resilience, constraints and opportunities for resilience, personal resilience

Preliminary conclusions:

- Double duty: marsh and community are identified both as the most and least resilient aspects of the social-ecological system
- Building resilience means: increasing information and understanding about changes that are happening, restoring marsh health, as well as strengthening the community economically
- Disparity between individual and system level: individuals can do little to combat climate change and are on their own largely resilient to the coming changes, but the overall system is seen as very vulnerable

Needs for a better understanding of resilience

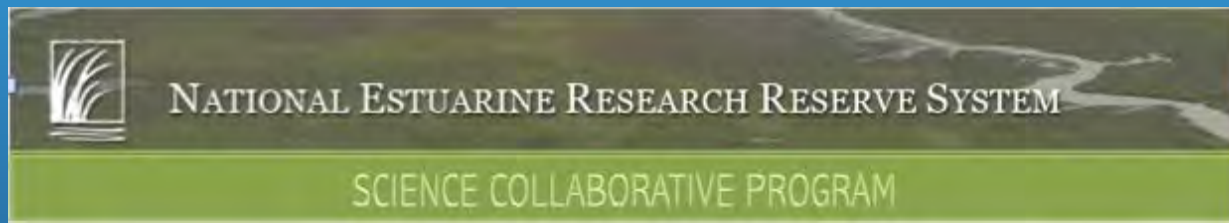
- Inherent (existing) properties of system resilience (ecological and social)
- Better criteria for analyzing resilience for the future (adaptive resilience) outside for post-disaster/perturbation experiences
- More investigation of individual's resilience within the system vs. individual's perspectives of system resilience

Thanks to:



NOAA

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