Understanding Ecological Interactions in the SE USA
Gerard McMahon, SE Climate Science Center
SECOORA Stakeholder Meeting May 2016 * Raleigh, NC
DOI Secretarial Order 3289: Producing actionable science that helps individuals and organizations understand and adapt to global change.
What is the right scale to be working at?

Processes that may be global in scale have effects at many scales.

What is the appropriate scale of emphasis for the SECSC?

After Cash et al, 2006
Convene conversations among decisionmakers, scientists, and managers to identify: key ecosystem adaptation decisions driven by climate and land use change, the values and objectives that will be used to make decisions, and the adaptation policy/action options.

Build the capacity of natural resource professionals, university faculty, and students to understand and frame natural resource adaptations decisions and develop and use research-based information to make wise adaptation decisions in the face of climate change.

Provide decision-focused, researched based information that supports wise global change adaptation decisions.
SECSC 2012-2017 science plan: 6 strategic science themes

2: processes that drive change  4: processes that respond to drivers

- Science Theme 1: Develop climate projections and determine appropriate projections to use for resource management

- Science Theme 2: Land use and land cover change projections

- Science Theme 3: Impacts of climate change on water resources

- Science Theme 4: Ecological research and modeling

- Science Theme 5: Impacts of climate change on coastal and near-shore marine environments, and

- Science Theme 6: Impacts of climate change on cultural-heritage resources.
Theme 5: Coastal and near shore impacts of CC

Global change and conservation triage on National Wildlife Refuges

Fred A. Johnson¹, Mitchell J. Eaton¹, Gerard McMahon¹, Raye Nilius², Michael R. Bryant², David J. Case³, Julien Martin¹, Nathan J. Wood¹ and Laura Taylor⁴
Ridge to reef: a familiar construct for linking land and sea in Pacific and Caribbean island ecosystems

Clarke & Jupiter, 2010
R2R: a coupled human-natural systems conceptual framework...

...to frame GC adaptation decision problems

Clarke & Jupiter, 2010
### R2R decision framework: How to meet R2R objectives in face of local to global threats?

#### Objectives

**Meet mandated objectives**
- T&E species
- Sediment water quality standards

**Meet regional conservation objectives**
- Minimize dispersal of invasive species
- Maintain biodiversity, esp endemism

**Viable local economy**
- Ecotourism
- Commercial fishing

**Protect cultural landscape and resources**
- Connecting people and nature

#### Adaptation policy options

**(what are options for addressing the things that matter?)**

<table>
<thead>
<tr>
<th>Business as usual</th>
<th>Expand land use planning and fee simple acquisition</th>
<th>Expand land use planning and use easements</th>
<th>Change mandated objectives</th>
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#### "Scientific" predictive models

**(how does action affect objective?)**

- *Science on the ridge*
- *Science along the transport path*
- *Science on the reef*
- *Science that connects islands*
- *Science that connects people and places*
Ridge to reef: challenges for linking land and sea in Pacific and Caribbean island ecosystems

• **Endpoints that matter to diverse stakeholders**
  - Movement from general understanding of framework and footprint of change to framing adaptation decision problems
  - Will require time consuming and culturally astute and sensitive discussion among diverse stakeholders about what matters in 3 or more settings

• **Science that can predict the state of these endpoints**
  - Doing science (ridge, transport, reef, coupled human-natural systems) in settings that may be data poor.
  - Complex systems will result in uncertain predictions of endpoint condition...stakeholders will need to increase their skills for decisionmaking in face of uncertainty.

• **Integrated PI/Carib R2R studies? LCC and CSC roles?**