

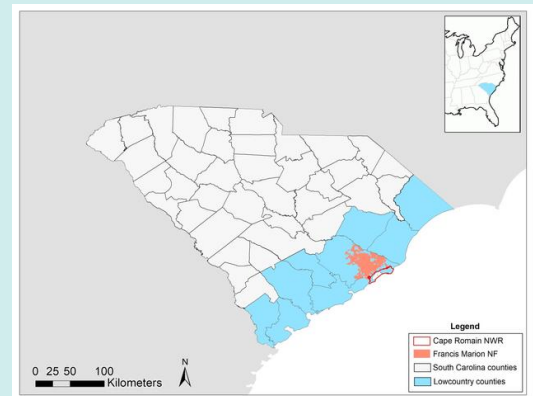
# Building Adaptive Capacity in a Coastal Region Experiencing Global Change

A case study in the coastal plain region of South Carolina

Coastal ecosystems offer substantial natural benefits to local people and wildlife. They serve as protective buffers from storms and provide food, clean water, and recreational opportunities for humans as well as critical habitat for fish and wildlife. Many of these coastal areas also preserve a rich historical and cultural heritage. Coastal communities facing global change can help maintain or increase resiliency by improving the region's adaptive capacity. **Adaptive capacity** is the ability to prepare for environmental and social stressors in advance, in a way that is responsive to constant change. The greater the adaptive capacity of a system, the more resilient it is to disturbances like sea-level rise, tropical storms, and economic downturns.

## South Carolina Lowcountry

The coastal plain of South Carolina, known as the **Lowcountry**, was the setting for a case study to identify potential ways in which local conservation groups could participate in a process of adaptation planning and an effort to broaden stakeholder diversity and inclusion. This region, rich in historical and cultural heritage, is facing rapid environmental and social change. Expanding tourism and population growth have placed strains on infrastructure, fueled urban sprawl, increased social vulnerability, and amplified economic inequalities in the region. Climate change and other environmental stressors pose an additional set of challenges that serve to intensify these socio-economic pressures. The large-scale nature of these stressors presents the region with a "**problem-of-fit**," in which the scale of the problem exceeds the capacity at which local institutions can easily mitigate or adapt to impacts.



South Carolina Lowcountry and Cape Romain National Wildlife Refuge

## A Conservation Community

The diverse conservation community in the Lowcountry focuses on protecting the region's culture and ecology. Through this project, the community embraced a process of social learning, using an assortment of approaches to identify collective action to achieve conservation goals. The **Cape Romain Partnership for Coastal Protection** (referred to as the **Partnership**) consists of local conservation and community organizations, including:

- Cape Romain National Wildlife Refuge
- Francis Marion National Forest
- NOAA Office for Coastal Management
- South Carolina Sea Grant Consortium
- South Carolina Dept. of Natural Resources
- The Nature Conservancy
- Lowcountry Land Trust
- Center for Heirs Property
- South Carolina Aquarium

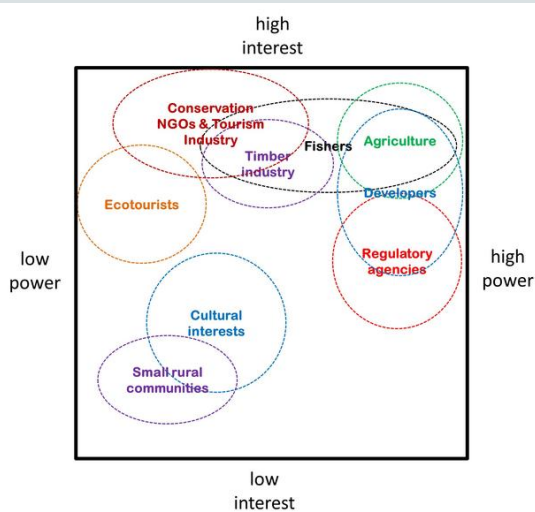
# 3 Tools for Building Adaptive Capacity

The Partnership convened meetings and workshops to explore how the Lowcountry conservation community perceives and pursues its various missions, and how the community might confront the threats and opportunities in the future. By first engaging a variety of conservation experts with interests in these social and ecological systems, multiple perspectives and values were considered to help guide adaptation planning.



## 1) Stakeholder Engagement

Many entities in the Lowcountry have an interest or stake in the issues of climate and land-use change, sea-level rise, and other social-ecological impacts to local communities. Each of these stakeholders bring unique perspectives and they each maintain different levels of capacity to act on issues of concern. The Partnership participated in a stakeholder analysis that identified socio-economic interest groups and individuals throughout the region.



These groups were categorized by their **relative interest** in changes affecting the Lowcountry and their **perceived power** to influence adaptation responses. The figure to the left portrays nine general groups of stakeholders and their perceived level of interest and power as identified by workshop participants. Many stakeholders have a high interest in the changes affecting the region, but their perceived power to influence the course of adaptation to these changes varies. Ultimately, this exercise helped to identify areas where more proactive engagement of stakeholders is needed to broaden the Partnership's message, actions, and influence.

## 2) Scenario Planning

A scenario is a believable description of a possible future state of the world (rather than a prediction of what is to come). Considering these possible alternatives allows organizations to prepare for an uncertain future by understanding a range of possible threats and opportunities facing them. The scenario planning process promotes social learning by fostering greater awareness of social-ecological change, interactions, and impacts. During the scenario planning workshop, participants identified ecological goods and services of value, helping to focus the development of alternative scenarios by determining the values at risk in a set of potential futures. Participants then developed scenarios by identifying stressors and trends that will likely shape the future of these goods and services throughout the Lowcountry. Of the services identified, **cultural values** and **provisioning services** were of greatest concern.

# 3 Tools for Building Adaptive Capacity

Three principal drivers of change were identified:



## 1) Climate Change

Severity of climate change and associated impacts (e.g., sea-level rise, frequency of extreme weather)



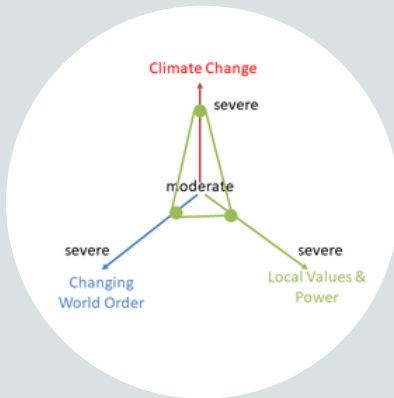
## 2) Changing World Order

National and global social-political shifts that have local implications



## 3) Local Values and Power Structures

Social resilience and how individuals & communities organize resources and exert power



Participants characterized "moderate" and "severe" versions for each of the above three drivers of change and developed four alternative future scenarios. The severity of climate change was based on observed and projected trends, and the severity of a changing world order and local values and power structures were derived from literature-based theoretical arguments. Each scenario assumed population growth will continue at pace through 2050. The resulting combinations of these drivers depict two intermediate and two extreme futures.

## 3) SWOT Analysis

**SWOT analysis**, or **S**trengths, **W**eaknesses, **O**pportunities, and **T**hreats, is a tool used to rapidly identify internal and external factors affecting an organization and to gain insight into the complex interaction among these factors to create effective solutions. Partnership members identified their organizational strengths and weaknesses, which were then organized by sector to understand how perspectives and resources differed across organizations. With these insights, the Partnership was able to develop potential strategies to help mitigate the effects of global change on valued services, including:

- Communicate the benefits of existing protected areas in providing ecological goods and services
- Increase conservation community self-awareness (expand partnerships and connect expertise with when, where, how it is needed)
- Conduct outreach in a way that connects quality of life, culture, and demand for ecosystem goods and services with conservation.



Photo Credit: Alan Cressler

# Important Findings From The Case Study

- Social and environmental systems do not operate in isolation. Issues affecting one system cannot be addressed without considering the consequences for the other. Addressing these systems in tandem, while also accounting for the important role that attachment to place plays, can help generate social cohesion and facilitate problem solving.
- Developing solutions for complex environmental issues and uncertain futures can be difficult due to the diverse values of stakeholders. It is important to respect the pluralities of experience and meaning that stakeholders bring with them to any decision-making process. Considering models of human behavior change to understand different stages of preparedness to act is key to engaging stakeholders. Such models recognize that not all people begin at the same starting place in modifying their perspectives and actions, allowing conservation practitioners to design more effective messages and activities that better align with a specific area, issue, and audience.
- Recognition of multiple scales of influence was a dominant theme throughout the scenario planning exercise. Local cultural differences, national politics, and globalization all shaped discussions about the region's future. Throughout our interactions with the Partnership, it became apparent that the conservation community is integral to the broader governance of the Lowcountry's social-ecological system, such that responses to the forces of global change are mediated through local culture, economies, and politics.
- Adaptive capacity depends on the ability to act collectively, which, in turn, is influenced by social capital, trust, and organizational structure. The presence of strong social networks, coordination and deliberation among diverse stakeholders, mechanisms for experiential feedback, and emphasis on social learning are key elements needed to build adaptive capacity.

These efforts to support Cape Romain National Wildlife Refuge and the Partnership focused on engaging conservation interests and collective decision making within the larger Lowcountry social-ecological system.

The results have broad implications for coastal and other regions faced with uncertain futures.

View a recent publication for more detail on these lessons: [doi.org/10.5751/ES-11700-250309](https://doi.org/10.5751/ES-11700-250309)

"Plurality is not merely a nuisance to be abstracted away,  
but something that must be embraced in any  
attempt to solve a wicked problem."

