Case Study 23: Incorporating Climate Change Response into a General Management Plan, *Assateague Island National Seashore, Maryland and Virginia*

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The low elevation of Assateague Island National Seashore increases park vulnerability to climate change impacts. Image credit: Jane Thomas, Integration and Application Network, University of Maryland Center for Environmental Science.

Goals

Assateague Island National Seashore is developing a general management plan that addresses projected climate change impacts on resources and infrastructure. The plan must include a range of management tools for improving resource resiliency and repairing facilities that will be impacted by climate change and storms.

Challenges and Needs

The park's current plan, which was signed in 1982, did not consider the impacts of a changing climate on the island's dynamic geomorphology. Park partners include local governments, area residents, and two other agencies (US Fish and Wildlife Service [USFWS] and Maryland State Park) that manage portions of the island. USFWS does not have strong policy statements concerning beach nourishment and shoreline armoring, increasing the difficulty of countering local interests in beach nourishment. Local government and residents in Chincoteague, Virginia, prefer current management practices to new policies that consider climate change, which is viewed skeptically despite the high vulnerability of this area to impacts from increased storm intensity. The state park system has not included climate change in its planning efforts, and current practices are impeding barrier island migration processes.

The park would benefit from a comprehensive plan directing its response to the expected landscape-level changes and the associated impacts to visitor services and resources. Outstanding questions include the following:

- How can the park improve sustainability of facilities?
- Should facilities be relocated or replaced as the island migrates westward and following storm damage?
- How should the park respond to a loss of vehicular access to the island?

- How should the park respond to an island breach?
- What is the best way to balance wilderness with off-road vehicle use?
- In what ways can the park cooperate with partner land management agencies?

Responsive Actions

The park has improved its understanding of climate change and park impacts through several efforts. By participating in the National Park Service Climate Change Scenario Planning process, the park was able to explore a range of possible future scenarios under different combinations of social and natural forces and to better identify the major drivers of change and the major issues that were common to all scenarios. The park also scaled the Intergovernmental Panel on Climate Change's sea level rise projections to a 30-year time span in order to identify an assumed local rate of sea level rise that is relevant both to the scope of the general management plan and to park neighbors and audiences.

Ongoing GPS and LiDAR monitoring of the island's shoreline and topography has allowed trend analysis of coastal change. Several new research and modeling projects will provide additional information over the next several years. The park is working with the US Geological Survey to develop a model for the projected impacts of sea level rise and increased storm intensity on the island's shoreline, and the predicted availability and distribution of shorebird nesting habitat under various sea level rise scenarios. The park and the US Geological Survey are also partnering to monitor salt marsh height, hydrology, and salt water intrusion on the shallow freshwater system.

The actions and alternatives described in the general management plan all consider and integrate the likely impacts of climate change identified through these scenario planning and research efforts. A consistent climate change message provides the base of a new educational outreach effort that targets park neighbors, an effort that also intends to garner support for the direction of the general management plan. The park has also communicated regularly with the adjacent Chincoteague National Wildlife Refuge, which has been developing its comprehensive conservation plan, the USFWS equivalent long-term planning effort with a similar public process. The results of the scenario planning, and the park's climate change message, have been shared with all employees. Meetings with land management partners have included presentations of the park's findings and concerns. The park has also held public meetings to discuss climate change and the projected impacts. The draft plan is expected to be released in fall 2015.

This project is ongoing. This case study is an example of the following adaptation strategies:

- Incorporating climate change into policies, plans, and regulations
- Coordinating planning and management across institutional boundaries
- Increasing/improving public awareness, education, and outreach efforts
- Conducting/gathering additional research, data, or products
- Conducting adaptation training and planning meetings or workshops
- Making infrastructure resistant or resilient to climate change
- Managed retreat of built infrastructure
- Developing/implementing an adaptation plan
- Creating new or enhancing existing policy

For more information:

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