Natural Resource Issues Confronting Coastal National Parks of the Northeastern US

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Coastal National Parks in the Northeastern US

- Acadia NP
- Boston Harbor Islands
- Cape Cod NS
- Sagamore Hill NHS
- Fire Island NS
- Gateway NRA
- Assateague Island NS
- Colonial NHP
- Washington's Birthplace NM
Coastal Systems
-- Barrier Islands
-- Rocky shores
-- Estuaries
-- Salt marshes
-- Seagrass
-- Nearshore Ocean
Terrestrial and Aquatic Systems
-- Forests (boreal to mid-Atlantic)
-- Grasslands
-- Coastal Heathlands
-- Freshwater wetlands
-- Other
Urban Landscapes
Summary of Natural Resource Issues

- Wind Energy
- LNG Facilities
- Visitor Use Impacts
- ORVs
- Air Quality, Atmospheric Deposition, Hg
- Light Pollution, Sound Pollution
- Deer, Feral Ponies, and Wildlife Issues
- Rare Species and Habitat Protection
- Shoreline Change, Shoreline Protection
- Adjacent and Watershed Land Use
- Habitat Restoration
- Mosquito Control
- Nutrients and Contaminants
- Groundwater Withdrawal
- Recreational & Commercial Fishing
- Invasive and Non-native Species
- Marine Protected Areas
- Wilderness Protection
- Climate Change
Mandate to Preserve National Park Resources

1916 Congress created the National Park Service (16 USC 1)
“... to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”

2006 National Park Service Management Policies
“... natural change will be recognized as an integral part of the functioning of natural systems.”

“The Service will seek to return human-disturbed areas to the natural conditions and processes characteristic of the ecological zone in which the damaged resources are situated.”
Hydrologic Alteration

- Decreased tidal flooding
- Decreased salinity
- Conversion to Phragmites
- Altered water quality
- Altered habitat utilization
## Adaptive Management Plan

### Identify thresholds that will trigger a management action

- Suspended sediment levels impacting downstream shellfish beds
- High nutrient levels cause algae blooms
- Mobilization of metals from flooded sediments
- Response of marsh to sea-level rise
- Mosquito control
- Others
Marine Reserves/Research Natural Area
-- Identify research questions
-- Describe methods to address questions

Possible Topics
-- Quantify current fishing pressure on park
-- Study ecosystem responses to no-take reserve
-- Focus on particular species or habitats (seagrass, benthos, fish)
-- Study optimal size of a marine reserve
Invasive Species

Boston Harbor Islands, intertidal zone
- 20% of animal taxa, non-native
- 10% of marine algae, non-native
- Climate change response?
- Develop a monitoring strategy

Terrestrial Plants
- Develop a monitoring strategy
- Draw from existing NPS, TNC, and other protocols
- Focus on specific habitats (e.g., fw wetlands, forests, grasslands, etc.)
Science Communication

Technical publications produced by scientists are not an effective method for communicating management concerns and science-based solutions to the public or park managers and policy-makers.

User-friendly and technically credible fact sheets or websites are needed.

The National Park Service maintains an extensive ecosystem monitoring program in northeast coastal parks.

-- Shoreline change/erosion monitoring
-- Nutrient enrichment of estuaries
-- Marsh response to sea level rise
-- Salt marsh vegetation and fish
-- Amphibians
Barrier islands migrate landward ("rollover") in response to sea-level rise and storms – *natural processes*
Sea-level Rise and Habitat Change

Spartina marsh converting to mudflat