

Coastal Watershed Condition Assessments

National Park Service
U.S. Department of the Interior
Natural Resource Program Center
Water Resources Division



PURPOSE

To determine the status of coastal park resources including water quality, habitat condition, invasive species, extractive uses, coastal development, and other issues affecting their condition, to identify knowledge gaps, and to make recommendations for further studies that address resource threats

INTRODUCTION

The National Park System includes more than 5,000 miles of coral reefs, barrier islands, kelp forests, estuaries and other resources in over three million acres of ocean and Great Lakes waters. Seventy-four coastal parks attract more than 76 million visitors to experience America's ocean heritage. Recognized for their beauty and national significance, these Parks provide recreational opportunities, havens for ocean wildlife, and economic benefits to local communities.

OUR THREATENED COASTS

Coastal watersheds or land areas that drain into the coastal zone are nature's dynamic hydrologic systems that create and sustain coastal ecosystems. Over 55% of the US population now occupies the coastal zone. As a result, population pressures on water and land resources and consumption of marine resources are taking their toll on coastal ecosystems. Coastal watersheds face many threats which may have dramatic impacts on the functioning and integrity of coastal park ecosystems, or reduce quantity and quality of wildlife habitat:

- Wetlands losses: Over 20,000 acres per year
- Water Quality Problems: Harmful algal blooms, salinity changes, hypoxia, pollutants, eutrophication
- Overfishing and recreational overuse
- Coastal Development: shoreline change and sedimentation

NPS COASTAL WATERSHED/WATER RESOURCE CONDITION ASSESSMENTS

The National Park Service (NPS) is charged with conserving natural and cultural resources unimpaired for the enjoyment of current and future generations. To achieve its mission, NPS must increase its scientific understanding of coastal park conditions, evaluate threats, and pursue solutions. The NPS Coastal Watershed Condition Assessment Program (CWCA) is providing scientific assessments of coastal parks through the Natural Resource Challenge. As of FY'05, NPS Water Resources Division (WRD) has initiated Phase I condition assessments of 39 ocean and Great Lakes parks, with more planned for FY'06.

Scientists review and synthesize existing information to determine the status of coastal Park resources including water quality, habitat condition, invasive and feral species, extractive uses, physical impacts from

resource use and coastal development, and other issues affecting resource health. Working through universities in the Cooperative Ecosystem Studies Units, Water Resources Division plans to complete Phase I assessments of 52 ocean and Great Lakes parks, utilizing expertise in physical and biological sciences, including oceanography, water quality, marine and estuarine sciences, and geographic information systems (GIS).



Assessment of Coastal Resources and Watershed Conditions: Phase I

TYPES OF INFORMATION

- Land Use Patterns & Trends
- Water Quality Data & Assessments
- Biological Inventories and Studies
- Habitat Quality Assessments
- Invasive Species Issues
- Resource Utilization Issues
 - coastal and offshore development
 - commercial and recreational fisheries
 - recreational use

GOALS

- Describe coastal water resources (marine, estuarine, island)
- Determine state of knowledge on their condition using existing data
- Identify information gaps
- Draw a conclusion or hypothesis re: relative condition (unknown, degraded, unimpaired)
- Identify resource threats or potential issues affecting ecosystem health
- Recommend further studies, if needed (Phase II)



Gulf Islands NS Water resources were found to be in a “stressed” condition. Stressors such as nutrients, invasive species, toxic compounds and metals were identified as problems of varying degrees of concern.

Cumberland Island NS: Dissolved oxygen concentrations were found to be low in surface waters during summer months. This observation has already resulted in increased attention by the State of Georgia concerning the potential for hypoxia in the area. Potential threats to CUIS water resources including toxic compounds, metals, invasive species are summarized in a threat matrix table.



PHASE 1 REPORTS

Reports from these assessments are characterizing the relative health or status of marine, estuarine and Great Lakes resources in the National Park System and revealing factors that may cause impairment. The reports also clarify needs for field studies and identify information gaps that hinder efforts to address resource problems or more fully evaluate conditions. WRD coordinates closely with parks and the NPS Inventory and Monitoring Networks to integrate these assessments into park and servicewide databases and Vital Signs monitoring plans.

Phase I coastal condition assessment reports will be used to guide more intensive Phase II assessments aimed at further elucidating known park problems, identifying pollution sources or other resource stressors, and to develop restoration or cooperative watershed management strategies in parks and nationwide. These reports are being published through the WRD technical report series.

SUMMARY OF PHASE I RESULTS TO DATE

These reports are providing valuable insights into factors affecting the health of park resources for use by natural resource managers. Some important findings include:

Cape Lookout NS: Contamination of groundwater and tidal creeks by leaking septic systems and fuel storage tanks was identified as a possible threat

Padre Island NS: Physical changes to the coastal environment dramatically altered salinity patterns and affected seagrass composition and low dissolved oxygen levels require further investigation

Threat Matrix Tables

Threat Matrix Tables are being included in each report. The threat matrix tables are useful summaries of known and potential stressors and will be used to further develop resource condition score cards for each park as well as to provide a regional summary of the condition of the NPS coastal units.

FOR FURTHER INFORMATION CONTACT

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WRD Watershed Condition Assessment Program Site

www.nature.nps.gov/water/watershedconds.htm

PHOTOGRAPHIC CREDITS & LOCATIONS:
 Kristen Keteles, Point Reyes National Seashore NPS, Salt River Bay National Historical Park & Ecological Preserve
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 Cliff McCreedy, Kenai Fjords National Park NPS, Gulf Islands National Seashore
 Kristen Keteles, Kalaupapa National Historical Park

Cumberland Island National Seashore, GA Stressor Matrix Table

Prepared by Merryl Alber, Janice Flory and Karen Payne

Indicator	Ocean Beach	Sound Shore	Tidal Creeks	FW Ponds	Ground Water
Water Quality					
Nutrients	LP	PP	ND	LP	LP
Fecal bacteria	LP	PP	ND/PP	ND/PP	ND
Dissolved oxygen	LP	HP	ND	PP	NA
Metal contamination	ND	PP	ND	LP	LP
Toxic compounds	ND	PP	ND	ND	ND
Population Effects					
Fish/shellfish harvest	ND	PP	ND	LP	NA
Invasive species	ND	ND/PP	ND/PP	LP	NA
Habitat disruption	ND	PP	ND/HP	ND/HP	LP

Definitions: ND – no data to make judgment, NA – not applicable, LP – low or no problem, HP – high problem, PP – potential problem