

Coastal Watershed Condition Assessment through the Watershed Condition Assessment Program

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 Service (NPS) manages more than 5,000 miles of coast including 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.

NPS COASTAL WATERSHED/WATER CONDITION ASSESSMENTS

The National Park Service 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 Watershed Condition Assessment Program (WCAP) began initiating scientific assessments of coastal parks through the Natural Resource Challenge in FY 2003. As of

FY 2006, NPS Water Resources Division (WRD) has initiated assessments in 40 coastal parks and plans to complete WCA assessments for a total of 53 parks that manage significant ocean and Great Lakes resources.

Through universities in the Cooperative Ecosystem Studies Units, scientists with expertise in oceanography, ecology, hydrology, marine and estuarine sciences, and geographic information systems (GIS) 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.



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.



Beginning in FY 06, the Scope of Work for the remaining coastal/marine assessments were modified to evaluate the condition of upland resources within coastal Park boundaries. Results of these assessments will be integrated into park and service-wide databases and will be used to guide Department of Interior land health goal reporting as prescribed by the Government Performance and Results Act (GPRA) of 1993. GIS databases and synthesis reports produced from this program will provide parks with an integrated, overall evaluation of current resource conditions for the DOI land health goal "land types" which include upland, riparian, wetland, and coastal/marine areas.

COASTAL WATERSHED CONDITION ASSESSMENT 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 the assessments into Vital Signs monitoring plans and servicewide databases.

SUMMARY OF SELECT 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:

Kaloko-Honokohau NHP (HI) Nonpoint sources of pollutants from development outside the park have the potential to impact coastal water resources within the park.

Wrangell St Elias NP&P (AK) Mercury, Persistent Organic Pollutants (POPS), Harmful algal blooms (HABS), invasive species and climate change could potentially impact park resources and should be monitored.

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

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



Gulf Islands NS (FL & MS) 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 (GA) 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.

Stressor Tables

Stressor 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 (See example below).

FOR FURTHER INFORMATION CONTACT

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Assessment Program Site

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

PHOTOGRAPHIC CREDITS:

Kristen Keteles, Point Reyes NS; NPS, Salt River Bay

NHP; Kristen Keteles, Olympic NP; NPS, Kaloko

Honokohau NHP; Kristen Keteles, Redwood NP;

NPS, Gulf Islands NS

Stressor Table example for Kaloko-Honokohau NHP, HI adapted from Hoover and Gold, 2005

Stressor	Anchialine Pools	Kaloko Pond	Wetlands	Intertidal	Coastal Waters
Nutrients	PP	PP	OK	OK	OK
Fecal bacteria	OK	OK	OK	OK	OK
Dissolved oxygen	OK	OK	OK	OK	OK
Metals	OK	OK	OK	OK	PP
Toxic compounds	PP	PP	PP	OK	OK
Increased temperature	OK	OK	OK	OK	PP
Reduced GW flux	PP	PP	PP	OK	OK
Fish/shellfish harvest	PP	OK	OK	PP	OK
Invasive species	EP	EP	EP	PP	PP
Physical impacts	OK	OK	OK	OK	OK
Sea level rise	PP	OK	OK	PP	OK
Sound pollution	OK	OK	PP	PP	PP
Light pollution	PP	OK	OK	OK	PP

EP - existing problem, PP - potential problem, OK - not currently or expected to be a problem, shaded- limited data, na - not applicable.