



A Collaborative Approach to Assessing Watershed Conditions in Coastal National Parks

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NPS Coastal Watershed Portfolio

- >3 million ac marine area
- 5,000 miles shoreline
- Coastal fjords, bays, rivers, estuaries, barrier islands, coral reefs, wetlands, Great Lakes, open ocean
- Coast and uplands inextricably linked via watersheds



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Stressed Coasts

- 53% population occupy less than 17% entire U.S. land area (coastal zone)
- 75% by 2020
- Wetland loss >20,000 acres year
- Water quality problems, algal blooms, pfiesteria, salinity changes, hypoxia
- Recreational overuse, overfishing
- Shoreline, sediment flow alterations





Coastal Watershed Condition Assessment (CWCA)

- Funded by the NPS Watershed Condition Assessment Program (WCAP) began funding assessments of Coastal parks in 2003
- NPS plans to complete assessments of 52 coastal park units by 2008
- As of April 2006 assessments have been completed in 9 parks (SE/Gulf coasts, SE Alaska, Hawai'i)
- Assessments currently underway in 37 parks

Year Initiated/Planned

2003	2004	2005
2006	2007	

Not Shown On This Map:

- War in the Pacific (Guam)
- National Park of American Samoa
- American Memorial Park (Saipan)



Goals of the Coastal Watershed Condition Assessments

- Determine the state of knowledge concerning overall water resources condition
- Identify information gaps and resource threats
- Assess overall ecosystem health
- Sets the stage to establish the context for management actions and collaborations



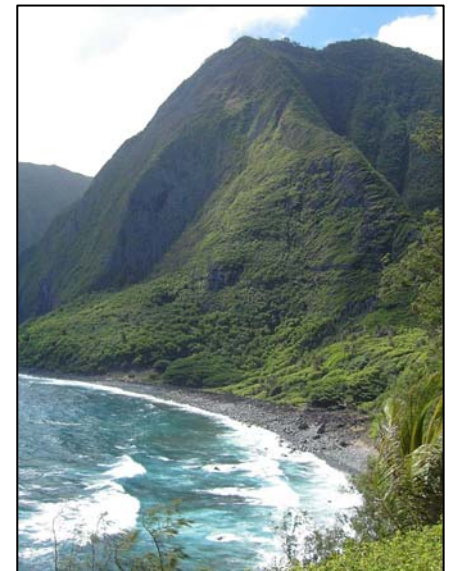
NPS Coastal Watershed Condition Assessment Reports

- 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 Collaborations)



Components of the CWCA Assessments

- Land Use Patterns & Trends
- Water Quality Data & Assessments
- Biological Inventories and Studies
- Habitat Quality Assessments
- Invasive Species Issues
- Resource Utilization Issues



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Who does the work?

- Thru CESU Networks
- Universities with regional/local orientation near Park
- Interdisciplinary Teams
- Marine expertise
- Provide geospatial information, water quality analysis, biological assessments



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South Atlantic & Gulf Coast National Seashores & Parks

- Protect last remaining undeveloped beaches
- Rare habitat for T&E species: sea turtles, amphibians, manatees, shorebirds, etc.
- Productive estuarine habitats: seagrass beds, salt marshes
- Fish, bird and invertebrate nurseries and feeding grounds
- Valuable recreation sites > 15 million visitors per year



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Cumberland Island NS Land Cover/Land Use

- Park area: 36,402 ac
- Beaches & dunes: 2,405 ac
- Salt marsh: 10,717 ac
- Forested wetlands: 804 ac
- Evergreen forest: 10,924
- Roads: 1,190 ac
- Open water: 9,651 ac



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Stressor Table for Cumberland Island National Seashore

Indicator	Ocean beach	Sound shore	Tidal creeks	FW ponds	Ground water
Water Quality					
Nutrients	OK	PP	ND	OK	OK
Fecal bacteria	OK	PP	PP	PP	ND
Dissolved oxygen	OK	EP	ND	PP	NA
Metal contamination	ND	PP	ND	OK	OK
Toxic compounds	ND	PP	ND	ND	ND
Population Effects					
Fish/shellfish harvest	ND	PP	ND	OK	NA
Invasive species	ND	PP	PP	OK	NA
Habitat disruption	ND	PP	EP	EP	OK



















OK=Not currently a problem, PP =Potential problem,
EP=Existing problem, ND: No data, Shaded=limited data

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CUIS Assessment Summary: Water Quality

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WATER QUALITY	Marine	Estuarine	Freshwater*
Eutrophication			
Contaminants			
Hypoxia			
Turbidity			
Pathogens			
Harmful Algal Blooms			

Current Condition of Park Water
Resources in Relation to Stressor

Problem Level Caused by Stressor

Confidence From Existing Data



poor condition

PP

potential problem



high confidence



fair condition



moderate confidence



good condition



low confidence












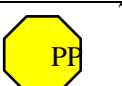











insufficient data to
judge condition

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CUIS Assessment Summary: Habitat Disruption and Other Threats

HABITAT DISRUPTION	Marine	Estuarine	Freshwater/Upland
Benthic Impacts		 ¹	 ²
Coastal Development	 ³	 ⁴	
Altered Flow		 ⁵	 ⁶
Erosion / Sedimentation	 ⁷	 ¹⁴	 ⁷
Altered Salinity		 ⁸	 ⁹
OTHER THREATS	Marine	Estuarine	Freshwater/Upland
Aquatic Invasive Species		 ¹⁰	
Fisheries Impacts			NA
Terrestrial Invasive Species	NA	NA	 ¹¹



Collaborative Monitoring and Assessment

Goal: Fill information gaps to clarify condition and identify stressors on coastal resources

- National Coastal Condition Assessment: Use of protocols, similar indicators
- Park Service Leads: NPS Water Resources Division/NPS Vital Signs Monitoring Networks (parks grouped by bioregions)

Partners:

- State agencies
- Coastal Parks overlapping or located near NOAA Estuarine Research Reserves, National Marine Sanctuaries, EPA National Estuary Program sites, State parks, etc.
- Monitoring Programs: U.S. Geological Survey, EPA, NOAA
- Local Watershed Councils and Planning Agencies

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Park-Level Management Action

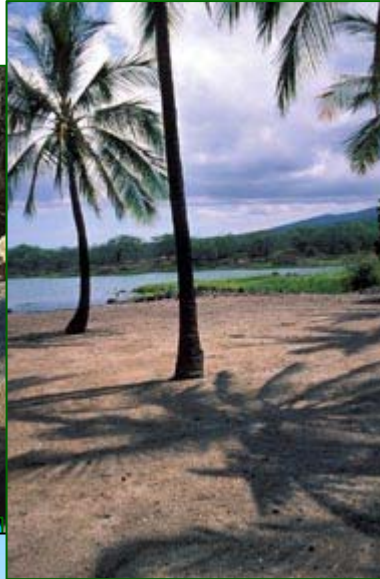
Goal: Work cooperatively with states and local groups to address impacts on park resources

- Point Reyes National Seashore/Pacific Coast Science and Learning Center/Tomales Bay Watershed Council
- Assateague National Seashore/Maryland DNR/Maryland Coastal Bays Program
- Olympic National Park/Olympic National Marine Sanctuary

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