



Resource Brief: Fixed-Station Water Quality Monitoring Data Summary, 2010

Vital Sign Overview

In 2007 the National Park Service (NPS) Southeast Coast Network (SECN) began collecting water quality data in the estuarine waters of Canaveral National Seashore as part the NPS Vital Signs monitoring program. The scope of the monitoring program includes Mosquito Lagoon and is comprised of continuous water-quality monitoring conducted by the SECN at one site that is augmented with monthly data collected at an additional five stations by St. Johns River Water Management District (SJRWMD). The continuous monitoring data station collects pH, dissolved oxygen, temperature, salinity, conductivity, turbidity and water level data every 30 minutes. The five stations located throughout Mosquito Lagoon are sampled by Volusia County for the SJRWMD as part of the District's Indian River Lagoon Water Quality Monitoring Network.

Significant Findings

High levels of total dissolved nitrogen (TDN) were the most common cause of *poor* water-quality ratings (Table 1). *Poor* TDN ratings were mostly observed during the late spring and summer months and were more common in the southern end of Mosquito Lagoon.

Dissolved oxygen concentrations ranged from *good* to *fair* although lower concentrations were observed during the summer, when nighttime temperatures were warmest.

Water clarity conditions ranged from *poor* to *fair* with the majority of *poor* conditions recorded between February and April at the two most southern stations.

Salinity ranged from 29 to 40 parts per thousand (ppt) with the higher values occurring later in the year and likely a result of several months of lower than normal rainfall.

pH values ranged between 7.7 and 8.4 units throughout the year with the most acidic conditions occurring episodically throughout the summer months; however these values are above levels shown to cause problems with shellfish growth rates especially when combined with the observed elevated salinity levels.

Status of Conditions

Table 1. Median measurements and ratings of monthly water quality data from sampling stations maintained by St. Johns River Water Management District at CANA. Numbers in brackets indicate the number of months in 2010 when water quality measurements indicated a *poor* rating. Green = *good*; yellow = *fair*; red = *poor*.

Station Name	Water Clarity Index (k)	Chlorophyll a (ug/L)	Dissolved Oxygen (mg/L)	Total Dissolved Nitrogen (mg/L)	Total Dissolved Phosphorus (mg/L)
IRLM02	1.49 [1]	6.63 [0]	6.45 [0]	0.94 [10]	0.021 [0]
IRLM169	1.55 [3]	6.40 [0]	6.22 [0]	0.62 [7]	0.030 [0]
IRLV11	2.83 [0]	9.55 [2]	6.15 [0]	0.50 [5]	0.041 [1]
IRLV17	2.63 [0]	9.34 [1]	6.04 [0]	0.46 [4]	0.025 [0]
IRLV05	2.13 [0]	10.43 [0]	6.82 [0]	0.39 [2]	0.031 [1]

Sampling Area

Canaveral National Seashore is 24 miles long and is located midway on the east coast of Florida between New Smyrna Beach and Titusville, Florida. It is situated within Volusia and Brevard County and encompasses approximately 58,000 acres including Mosquito Lagoon. The Seashore is also adjacent to the Merritt Island National Wildlife Refuge and the John F. Kennedy Space Center.

Mosquito Lagoon is approximately one mile wide and averages about four feet in depth. It is connected to the Atlantic Ocean by Ponce de Leon Inlet in the north and the Indian River via the Haulover Canal on the west. The northern end of the lagoon contains numerous islands with hammock, mangrove, and marsh vegetation communities, while the southern end is primarily open water. The Intercoastal Waterway runs along the west side of the lagoon and serves as a shipping route from the Ponce de Leon Inlet to the Haulover Canal. Several water-quality issues affect activities at CANA including high fecal coliform levels during rainy periods, as well as federal- and state-mandated mosquito control operations.



About the Southeast Coast Network

The Southeast Coast Network (SECN) includes twenty parks, seventeen of which contain significant and diverse natural resources. In total, SECN parks encompass more than 184,000 acres of federally-managed land across North Carolina, South Carolina, Georgia, Alabama, and Florida. The parks span a wide diversity of cultural missions also, including four national seashores, two national historic sites,

two national memorials, seven national monuments, two national military parks, as well as a national recreation area, national battlefield and an ecological and historic preserve. The parks range in size from slightly more than 20 to nearly 60,000 acres, and when considered with non-federal lands jointly managed with NPS, the Network encompasses more than 253,000 acres.

About the Inventory & Monitoring Program

In 1999, the National Park Service initiated a long-term ecological monitoring program, known as “Vital Signs Monitoring,” to provide the minimum infrastructure to allow more than 270 national park system units to identify and implement long-term monitoring of their highest-priority measurements of resource condition. The overarching purpose of natural resource monitoring in parks is to develop scientifically sound information on the current status and long-term trends in the composition, structure, and function of park ecosystems, and to determine how well current management practices are sustaining those ecosystems.

The NPS Vital Signs Monitoring Program addresses five goals for all parks with significant natural resources:

- Determine the status and trends in selected indicators of the condition of park ecosystem,
- Provide early warning of abnormal conditions,
- Provide data to better understand the dynamic nature and condition of park ecosystems,
- Provide data to meet certain legal and Congressional mandates, and
- Provide a means of measuring progress towards performance goals.

For More Information

SECN Home Page: <http://science.nature.nps.gov/im/units/secn/index.cfm>

SECN Reports & Publications: <http://science.nature.nps.gov/im/units/SECN/reports.cfm>

Inventory & Monitoring Program: <http://science.nature.nps.gov/im/index.cfm>

Data Downloads via the Natural Resource Information Portal: <http://nrim.nps.gov/Home.mvc>

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Project Lead: Brian Gregory at mark_gregory@nps.gov