Fort Sumter National Monument

National Park Service
U.S. Department of the Interior

Inventory & Monitoring Program
Southeast Coast Network

Resource Brief: Landbird Community Monitoring, 2010

Vital Sign Overview

Birds are an important component of park communities and their ecological position in most food webs allows them to be good indicators of local and regional ecosystem changes. Long-term trends in the community composition, relative abundance, distribution, and occurrences of breeding-bird populations provide a measure for assessing the ecological integrity and sustainability in southeastern systems. Further, long-term patterns in community composition, relative abundance, distribution, and occurrences in relation to current management practices will improve our ability to implement effective management strategies in the future.

Significant Findings

Two hundred birds representing 36 species were detected at Fort Sumter National Monument during surveys in 2010. The majority of detections consisted of boat-tailed grackle (14%), Northern mockingbird (7.5%), blue jay (7.5%), and brown pelican (7.5%).

Four non-native species were detected: Eurasian collared-dove, European starling, house finch, and house sparrow.

Five new species were added to the Monument's official list: green heron, chimney swift, Eastern kingbird, blue jay, and seaside sparrow.

Several priority species were detected during the sampling effort including brown pelican, chimney swift, Eastern kingbird, least tern, painted bunting, prothonotary warbler (Figure 1), royal tern, seaside sparrow, semipalmated sandpiper, white-eyed vireo, and white-throated sparrow.

Figure 1. Prothonotary warbler (*Protonotaria citrea*) was a priority species detected at Fort Sumter National Monument in 2010. Photo by Anna Joy Lehmicke.

Sampling Effort

Data were collected at five spatially-balanced random locations throughout the Monument (Figure 2).

An adapted variable circular plot (VCP) technique was used with distance estimation to survey bird communities.

Survey locations were visited two times during the breeding season, at least three weeks apart, in order to detect migrants and breeders that arrive at different times of the year.

Species accumulation curves indicated that the sample size adequately characterized species diversity at the Monument.

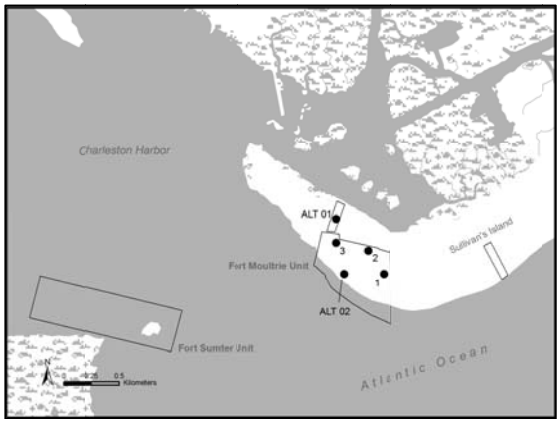

Figure 2. Spatially-balanced sampling locations at Fort Sumter National Monument, 2010.

Monitoring Techniques

Determining the species that are present at a site can provide a great deal of insight to the condition of that location. Surveying for an elusive species, however, can be challenging and a single visit to a site cannot determine a species' true presence or absence. Further, weather variables such as wind, cloud cover, temperature, and precipitation, play crucial roles in whether or not a given individual can be detected. Therefore, a comprehensive approach is necessary to ensure a site is adequately characterized.

Bird surveys were conducted at the center point of each sampling location (Figure 2) beginning at 5:30 a.m. and continuing until 11:00 a.m. from April – June. This time period was selected to maximize the detection of bird species that breed within the park and also detect some migrants.

Bird surveys used an adaptation of the variable-circular plot (VCP) technique with distance estimation.

At each station, counts were separated into four time segments of equal duration, 0–3 minutes (to allow comparisons with the nationwide Breeding Bird Survey data), 3–6 minutes, 5–9 minutes, and 9–12 minutes.

Distance to each bird detected was estimated and placed into one of four distance classes (0–25 m, 25–50 m, 50–100 m, >100 m) to allow for changes in detection probabilities at increasing distances from the observers.

All detections, auditory or visual, resident or migrant, breeder or non-breeder, and flyovers, regardless of distance detected from the observer, were counted and recorded. All detections were made via auditory cues or visual observations with binoculars.

About the Southeast Coast Network

The Southeast Coast Network (SECN) includes 20 parks, 17 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://nrinfo.nps.gov/Home.mvc

Follow us on Twitter at: http://twitter.com/SECoastNetwkNPS or @SECoastNetwkNPS

Project Lead: Michael W. Byrne at michael_w_byrne@nps.gov