

# Southeast Coast Network

## Inventory & Monitoring Program

National Park Service  
U.S. Department of the Interior

Inventory and Monitoring Division  
Southeast Coast Network



# Vegetation Community Monitoring Program Summary

## Overview

Vegetation communities serve as the foundation for food webs and wildlife habitat for many species and are the primary drivers for a range of ecological processes integral to the proper function of ecosystems. Vegetation can function as a carbon sink, produce oxygen, cycle nutrients and energy through an ecosystem, influence the local climate, improve water quality, and moderate flooding and erosion.

The Southeast is home to a high diversity of plant species, with over 3,000 species occurring in approximately 180 vegetation associations in SECN park units. Vegetation communities vary widely across the network as it spans four ecoregions: the Southern Coastal Plain, Southeastern Plains, Middle Atlantic Coastal Plain, and Piedmont.

Vegetation communities are dynamic entities that constantly change in composition, cover, and distribution. These changes can naturally occur over time or are caused in part by the vegetation response to stressors in the environment of natural or anthropogenic origin. The primary natural disturbance processes in SECN parks are fire and weather (e.g., hurricanes, drought). Anthropogenic disturbances, however, can pose a threat to natural processes, particularly as an additive effect to typical natural disturbances, and have the potential to alter the structure, function, and composition of vegetation communities. Anthropogenic disturbances and influences include fire suppression, landscape fragmentation, altered hydrology, and non-native species introduction.

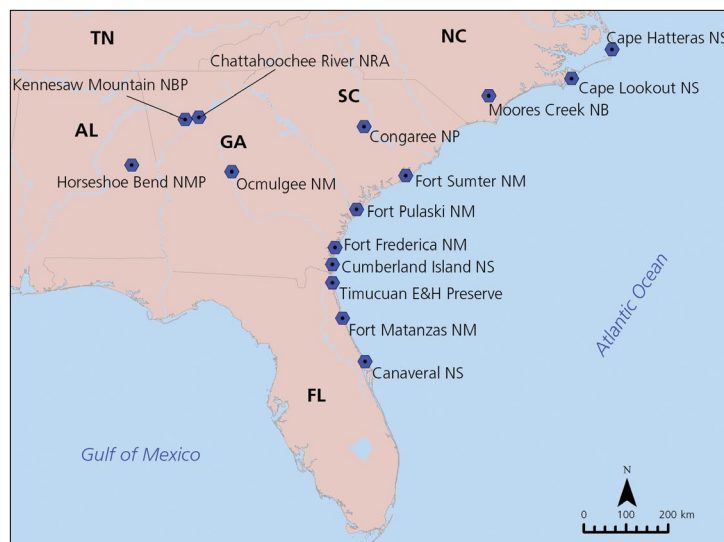
## Approach and Objectives

Vegetation communities are monitored in the spring or summer, during which species presence and cover estimates are collected from groundcover, shrub, and canopy.

Data are collected in permanent 0.5-hectare sampling location: Species present, canopy cover, shrub cover, diameter-at-breast-height (DBH), canopy-species seedling count, herbaceous cover, and herbaceous frequency. A comprehensive species list is also compiled for all species occurring in the sampling location.

Vegetation community monitoring data can be used to explore relationships between management actions (particularly fire and exotic plant management) and the degree to which observed changes meet management expectations or goals.

To address many of the objectives, species-based estimates are pooled into metrics (i.e., aggregates based upon functional, structural, or compositional characteristics) to be used in a bioassessment of park resources. Examples of metrics include wetland classification, nativity, and growth form (e.g., grasslike, forb, shrub, tree), where the estimates for all species with the same characteristic are pooled. Bioassessments focus on determining the condition of a particular



Overview map showing locations of National Park Service units in the Southeast Coast Network's vegetation-community monitoring program.

resource and provide a robust and information-rich evaluation that often compensates for small sample size or a high degree of variability in the species-level estimates that are collected.

Objectives for the vegetation-community monitoring program include:

- Determining changes in vegetation diversity in the groundcover, shrub, and canopy strata,
- Determining changes in the percent cover of vegetation metrics in the groundcover, shrub, and canopy strata,
- Determining changes in the frequency of vegetation metrics in the groundcover stratum,
- Determining changes in the DBH of canopy species and canopy-species metrics, and
- Determining changes in seedling counts of woody species and woody-species metrics in the groundcover stratum.

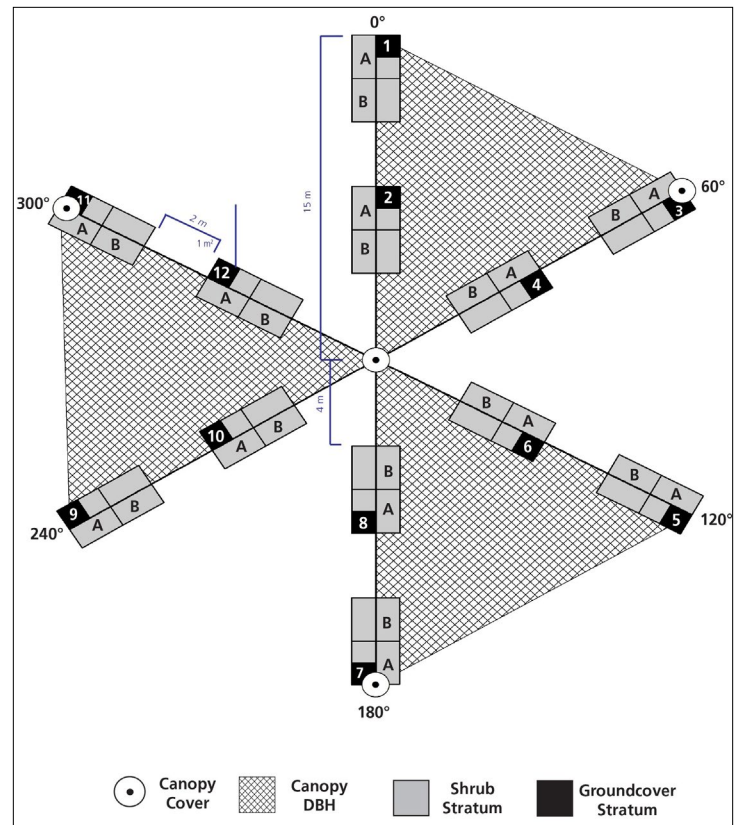
## Data Analysis and Reporting

Data collected under this protocol are summarized with several different approaches that provide insight into various aspects and properties of the status of the vegetation community. The approaches include evaluating changes in diversity, percent cover and frequency of occurrence, herbaceous species nested frequency, canopy species size and density, and canopy regeneration. Trend analysis will provide information regarding the extent to which measures change over time and will facilitate forecasting and prediction.

Vegetation community monitoring data are published annually in data summaries, which are internally reviewed, edited, and published in the National Park Service Natural Resource Data Series of reports. These data summaries are also distilled into two-page resource briefs. These reports and resource briefs are available on the IRMA web portal at <https://irma.nps.gov/DataStore/>.



Exotic *Sesbania punicea* (rattlebox) at Ocmulgee National Monument.



Southeast Coast Network vegetation community monitoring protocol plot and subplot layout identifying the juxtaposition of canopy cover, and canopy diameter, shrub, and groundcover plots within the hexagonal array.

## About the Southeast Coast Network

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 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:

1. Determine the status and trends in selected indicators of the condition of park ecosystems,
2. Provide early warning of abnormal conditions,
3. Provide data to better understand the dynamic nature and condition of park ecosystems,
4. Provide data to meet certain legal and congressional mandates, and
5. Provide a means of measuring progress toward performance goals.

The Southeast Coast Network 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 and natural resource missions, as they include four national seashores, two national historic sites, two national memorials, seven national monuments, and two national military parks, as well as a national recreation area, a national battlefield, and an ecological and historic preserve. The park units 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 Southeast Coast Network encompasses more than 253,000 acres.

### For More Information

SECN Home Page:

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

About the NPS Inventory & Monitoring Division:

<http://science.nature.nps.gov/im/index.cfm>

Data Downloads via the Natural Resource Information Portal:

<http://irma.nps.gov>

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