



Vegetation Community Monitoring, 2012

Overview

The Southeast Coast Network conducted an assessment of vegetation communities at Cape Lookout National Seashore in June 2012. Monitoring was conducted at 30 randomly-selected sites within the main unit of the park to help managers make better-informed decisions by understanding trends and variability related to plant species, frequency of occurrence, percent cover, diversity, and distribution in the groundcover, shrub, and canopy strata.

Study Area

Cape Lookout National Seashore (CALO) is located along the southern end of the Outer Banks, is largely undeveloped, and accessible only by boat, Figure 1. CALO is primarily composed of three barrier islands and has 645 known vascular plant species, subspecies, and varieties. Core Banks is a long, narrow expanse of low dunes and maritime grasslands, dominated by sea oats (*Uniola paniculata*), and extensive salt marsh cordgrass (*Spartina alterniflora* and *S. patens*) communities. Wax myrtle (*Morella cerifera*) dominated shrub communities border the grasslands in many areas, and a low coastal maritime hammock, commonly characterized by Virginia live oak (*Quercus virginiana*), occupies small areas that are slightly higher than the surrounding areas. Several plant species are part of the Seashore's eradication program, including common reed (*Phragmites australis*), and the non-native Chinese wisteria (*Wisteria sinensis*). One federally-threatened species occurs at the Seashore, seabeach amaranth (*Amaranthus pumilus*).

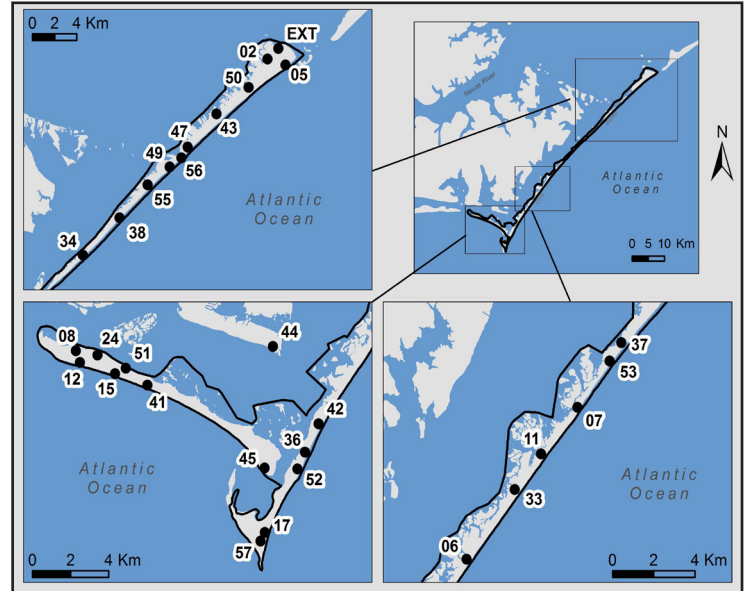


Figure 1. Vegetation community monitoring sampling locations at Cape Lookout National Seashore, North Carolina.

Significant Findings

Monitoring efforts resulted in the addition of seven species, subspecies, or varieties to the CALO species list.

Absolute canopy cover across CALO was roughly 15.58%.

Eastern redcedar (*Juniperus silicicola*) had the largest average diameter at breast height (DBH) of any canopy species at CALO where more than two individuals were measured.

Wax myrtle had the highest absolute and relative cover in the shrub stratum, while seaside oxeye daisy (*Borrchia frutescens*) had the second highest relative cover and absolute cover in the shrub stratum.

Wax myrtle was the most frequently occurring species in the shrub stratum.

Sea oats had the highest relative groundcover, while sand cordgrass had the second highest relative cover in the groundcover stratum.

Beach pennywort (*Hydrocotyle bonariensis*) and sand cordgrass were the most frequently occurring species in the groundcover stratum.

Leaf litter was the most frequently occurring ground condition at CALO and also had the highest relative and absolute cover of any ground condition.

Seaside oxeye daisy had the highest estimated seedling density at CALO.



Figure 2. Blossom of saltmarsh false foxglove (*Agalinis maritima*) at Cape Lookout National Seashore, North Carolina. Photograph by Sarah C. Heath, SECN Botanist.

Sampling Methods

Data were collected at 30 sampling locations throughout CALO.

Vegetation community measures were divided into three strata based upon height: canopy, shrub, and groundcover.

Within each stratum, vegetation communities were sampled using a hybrid of methods used by the North Carolina Vegetation Survey and was a nested-subplot design within a circular plot similar to the Forest Inventory and Analysis protocol.

The layout of each sampling location consisted of a circular plot with a radius of 15 m. Plots were systematically placed along six transects that radiated from the center point at azimuths of 0°/360°, 60°, 120°, 180°, 240°, and 300°.

Five measures were collected in nested subplots within each plot: canopy cover, shrub cover, diameter at breast height (DBH), canopy-species seedling frequency, and herbaceous cover.

The relative canopy cover was estimated in the four cardinal directions with a concave spherical densiometer placed on a 1.1-m tall tripod at the plot center.

DBH was measured for all trees with a diameter greater than or equal to 4 cm that occurred within the 0–60°, 120–180°, and 240–300° “slices.” Shrub cover was visually estimated for each of the 12 2-x-4-m plots.

Groundcover was visually estimated in each of the 12 1-x-1-m plots. Canopy-species seedling counts were determined by counting the number of seedlings that occurred in each 1-x-1-m plot. Shrub and herbaceous cover were estimated in one of eight coverage percentage classes.

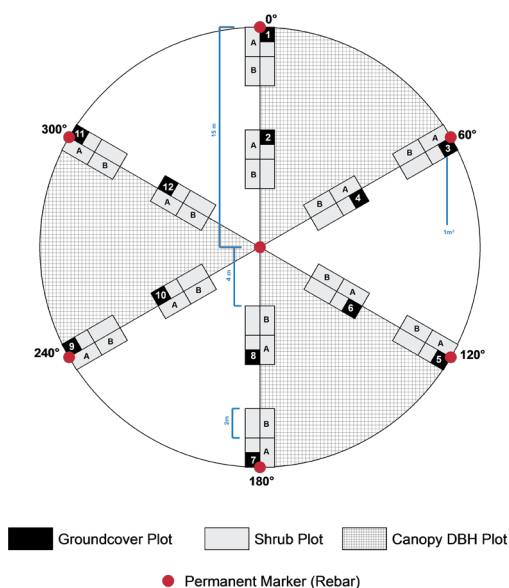


Figure 3. Vegetation community monitoring plot layout identifying juxtaposition of canopy, shrub, and groundcover plots within a circular array.

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 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.

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.

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/publications.cfm>

About the NPS Inventory & Monitoring Program:

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

Data Downloads via the Natural Resource Information Portal:

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