



Monitoring of Vegetation Communities

Importance

The monitoring of vegetation communities is a combined Vital Sign that captures multiple high-priority interests of Cumberland Piedmont Network (CUPN) parks. Significant natural communities of interest for this category include: grasslands, riparian areas and wetlands, calcareous glades, granitic domes, various forest types, and clifflines. The first phase of vegetation monitoring begins during the Spring of 2011 and will focus on forested communities and the early detection of exotic plants and forest pests.

The preservation of vegetation communities is key to the primary mission of all CUPN parks. For historic parks, strategic battles and home sites were based upon the location of natural communities, such as, open oak woodlands at COWP, the glades at STRI and CHCH, riparian forests of SHIL and FODO, and the granitic domes at CARL.

Some parks are restoring these historic landscapes and would like to track community-level changes over time. To serve as a baseline, an ecological classification and vegetation mapping effort has been completed for all CUPN parks. In addition, over 300 grid-based plots were established for plant and vertebrate inventories conducted during 2002-07.

Preliminary Monitoring Objectives

1. Assess status and trends of ecological health for forested communities and other key communities of concern.
2. Detect new outbreaks of established invasive exotic plant species and newly arrived invasive exotic plant species
3. Detect new outbreaks of established forest pest species and newly arrived forest pest species.

Potential Measures

- Forest Health measures such as canopy closure, tree condition, coarse woody debris, species list, percent cover, DBH.
- Condition assessment/associated threats (woody encroachment on glades, disturbance, presence/absence of invasive exotics and indicator species, etc) of vegetation community
- Soils measurements and analysis
- Presence/absence of new outbreaks of exotic plants/forest pests

Management Applications

Assists parks with identification and current condition of significant vegetation communities, which will help to develop desired future conditions and GPRA goals for "Land Health". So far we have documented several globally significant communities according to ranks designated by The Nature Conservancy (G1-Critically Imperiled Globally, G2-Imperiled Globally, G3-Vulnerable Globally). New discoveries include: G1 forest type at Cumberland Gap NHP, a G2 granitic dome at Carl Sandburg NHS, G2/G3 glades at Chickamauga Chattanooga NMP and Stones River NB (previously documented by TNC), a G3 forest type found at Guilford Courthouse NMP, a G2? Floodplain canebrake at Ninety Six NB, and a G2/G3 xeric forest type at Kings Mountain NMP.

Provides revised invasive species lists, linked to vegetation communities that are already impaired or may be in the future, another GPRA management goal linked to Vital Signs monitoring. This work has already documented exotics problems at many parks, with ratios of natives to non-natives ranging from 13% at RUCA, to 29% at COWP.

Vegetation monitoring will provide ongoing updates to plant inventories which will further our goal of 90% documentation for baseline inventories. For example, the report from SHIL determined 27 distinct vegetation associations, five of which are considered worthy of special attention due to high global rank, and added 87 new plant species, bringing the desired result of having over 90% of the vascular flora documented.

Vegetation plot data can also be used for projects where species occurrence data are needed. This could be useful for compliance, and for other vital signs monitoring such as ozone injury.

Vegetation monitoring can help highlight rare species and the need to protect habitat (such as dwarf-flowered heartleaf at COWP and mountain skullcap at CHCH) and also provided information related to global, federal, and state ranks. This will help parks define their "species of management concern".

Vegetation monitoring will help managers decide what types of activities are appropriate in areas prone to impacts, such as rock climbing, hiking trails, and horseback riding. These data can be used in a park's General Management Planning process.

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