

Moores Creek National Battlefield

National Park Service
U.S. Department of the Interior

Inventory & Monitoring Program
Southeast Coast Network



Resource Brief: Amphibian Community Monitoring, 2010

Vital Sign Overview

Amphibian communities of the Southeast Coast Network (SECN) are monitored because of their global importance as ecological indicators, documented population declines and extinctions, and their high level of diversity in the Southeast. With an estimated 140 amphibian species, the Southeast accounts for about half of the total number of amphibians in the U.S.

The SECN has 61 known amphibian species: 26 in Caudata (salamanders, newts, amphiumas, sirens), and 35 in Anura (frogs and toads). Because of their complex life histories, habitat requirements, anatomy, and physiology, amphibians are considered to be good indicators of changes in ecosystem conditions as they are affected by climate change, land use development and conversion, contaminants, and changes in hydrology.

Significant Findings

Thirty-two post-metamorphic amphibians were detected during sampling. Twenty-eight individuals were identified to the species level (nine species total) and three individuals were only identified to the genus level.

Twenty-one reptiles were also detected. Twenty individuals (six species total) were identified to the species level and one individual was only identified to the genus level.

An incidental observation of an Eastern hog-nosed snake (*Heterodon platirhinos*) was a new species observation at Moors Creek.

No non-native amphibians or reptiles were detected.



Slimy salamander (*Plethodon glutinosus*)

Cope's gray treefrog was the most widely distributed amphibian.

Ground skink was the most widely distributed reptile.

Sampling Effort

Data were collected at seven spatially-balanced random locations (Figure 1) within potentially suitable amphibian habitat using multiple sampling techniques (see below).

A total of 1,680 minutes were recorded by all of the automated recording devices deployed at Moors Creek National Battlefield.

Analysis of the data indicate that the sample size was not adequate to characterize amphibian species diversity. Therefore, future sampling will occur at more locations throughout MOCR.

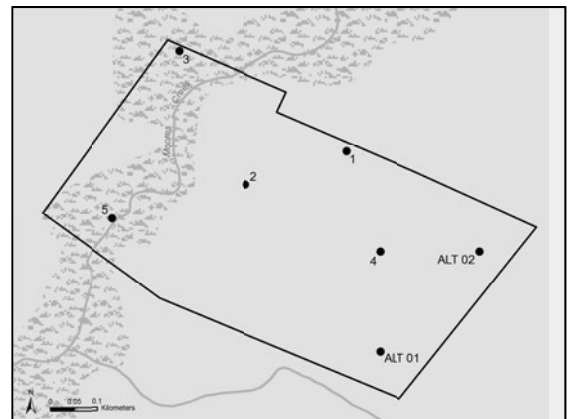


Figure 1. Spatially-balanced sampling locations at Moors Creek National Battlefield, 2010.

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 temperature, precipitation, and humidity play a crucial role in whether or not an Anuran will call or if a salamander emerges from its below-ground residence. Therefore, a comprehensive approach is necessary to ensure a site is adequately characterized.

Two techniques are used to monitor amphibians, an automated recording device and a visual encounter survey (VES). Since most vocal Anurans (i.e., frogs and toads that vocalize) call at night,

monitoring these species can be challenging. Often times, personnel need to work through the night and this not only presents several safety concerns but also can be expensive. The ARD was deployed ten days and programmed to record at specific intervals throughout the evening, night, and morning; times when we know Anurans are most likely to call. When viewed in specialized software, Anuran calls display unique patterns that can be identified through an automated process. A VES is a time-constrained survey where the site is manually searched for amphibians (particularly species that do not vocalize like salamanders), including throughout the vegetation, under logs, leaves, rocks, and other cover objects. The VESs were conducted once at each sample site. Each sample site is 0.5 ha (~ 1acre).

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>

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