

Inventory of frog species in the South Carolina Sandhills with a focus on the pine barrens treefrog and the gopher frog

FY 2011

PROJECT DESCRIPTION

The purpose of this proposed study is to develop a list of frog species occurring on the Carolina Sandhills National Wildlife Refuge (CSNWR) and adjacent properties within the Sandhills Ecosystem Project (SEP) area and determine the relative abundance and detection probabilities for these species, based on call counts for males of the species.

While the project will include all frog species within the region, particular attention will be given to the State Endangered pine barrens treefrog and Carolina gopher frog. The pine barrens treefrog was the subject of a survey, by SCDNR staff, in the early 1980's, but little work on this species has been accomplished in the interim. There are a number of extant and historic occurrences for this species in the refuge and nearby properties, including Cheraw State Park and the Sand Hills State Forest. Presence of the Carolina gopher frog in the Sandhills Ecosystem project area has not been verified, but Jeff Camper (pers. Com.) reported hearing a calling male on the Sand Hills State Forest ca. 1998, and the species is known from the sandhills of North Carolina.

OBJECTIVES AND ALTERNATIVES

1. Develop a list of frog species for the SEP properties
2. Determine the relative abundance of these species based on call counts
3. Determine the detection probability for these species using call data
4. Determine the status of all historic pine barrens treefrog occurrences within the SEP area
5. Identify potential breeding sites for the gopher frog, within the SEP area, and monitor these sites for calling males.

METHODS AND PROTOCOLS

Inventory protocols will follow those recommended in: **INVENTORY AND MONITORING: Recommended Techniques for Reptiles and Amphibians**

With Application to the United States and Canada.

This publication (currently in press) is a product of Partners in Amphibian and Reptile Conservation (PARC). One of the investigators for the proposed project (S. Bennett) served as a reviewer of the document and has access to a pre-publication copy, which is too large to email, but can be printed and provided if necessary. Use of these protocols will allow this project to transition to a monitoring project, if funding is available.

DATA MANAGEMENT

Data is stored at CSNWR and SCDNR in the form of Excel database (GPS locations and species heard at individual sites) and in .wav audio files from Songmeter SM2 and analyzed using SongScope. The .wav files are very large so they are stored on an external terabyte hard drive; the combined files are too large to download to our refuge server. This data may be difficult to upload to the future ServCat.

DATA ANALYSIS / MODELS

Audio recordings were analyzed for species identification using SongScope (Wildlife Acoustics). This was a presence/absence survey.

ACCOMPLISHMENTS AND MANGEMENT IMPLICATIONS

Pine barrens treefrogs were documented at 8 of the 22 sites sampled during FY12. Five of these sites were historic locations, and one of the sites was within .3mi of an historic location. The two new sites were both associated with gas line rights-of-way, as was the site that was .3 mi from an historic site. Thirteen species of frogs were documented, using the automated recorders, at CSNWR during FY12. Frogs were documented at 18 of the 22 sites sampled.

Recommend re-sampling sites in FY13. Allow prescribe fire to burn into pocosin stream edges in historic locations where fire has been excluded from the ecotone and sample those post-burn. Recommend further research into what constitutes

suitable breeding habitat for the pine barrens treefrog.

One observation worth noting is that the historic location known as Oxpen seep, which has supported a large breeding population of pine barrens treefrogs in the past did not support a large breeding population during the FY12 surveys. This site has been burned annually for several years and the shrub component at the site is greatly reduced and almost eliminated. Another site, 67, at which fire had recently burned through the pocosin and ecotone, supported a very large breeding population of the frog. There were, however no hillside seeps or bogs at this site, but there were shallow pools where the fire had burned out the sphagnum and the calling male treefrogs were all in the vicinity of these pools.

Pine barrens treefrogs have been documented to use gas and power-line rights-of-way as breeding sites and several breeding populations were documented at such sites on CSNWR and SHSF during FY12. Previously it was thought these sites are selected because the mechanical maintenance of the rights-of-way results in the open sedge-bog habitat thought to be preferred breeding sites for the species. The observations at Oxpen seep, during FY12 may indicate that the open seep or bog habitat is only one component of preferred breeding habitat and that the proximity of pocosin shrubs, from which the males call may also be of critical importance. Additionally, the observations at site 67 may indicate that seeps may not be required for breeding habitat, but any shallow pool at the ecotone of the pocosin streams may be suitable.

We recommend that further research into what constitutes suitable breeding habitat for the pine barrens treefrog be included in this project in the remaining two years.

PARTNERS

South Carolina DNR

Longleaf Pine Conservation Partnerships

Sandhills State Forest

SOURCES OF SUPPORT

Maps (in-kind) from CSNWR and Sandhills State Forest

MORE INFORMATION

Final Report from SCDNR:

Interim Performance Report, South Carolina Project T-57-R-1, South Carolina Endangered Species Program, South Carolina Department of Natural Resources, October 1, 2011 to September 30, 2012. Project: South Carolina Reptile and Amphibian Conservation. Job 1. Pine Barrens Treefrog. Written by Steve Bennett, SCDNR. (Hard and electronic copy of report is stored at CSNWR).

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