U.S. Fish and Wildlife Service

FY 2015

Recommendations on Utilizing the National Park Service Southeast Coast Network Protocol on National Wildlife Refuges in the Southeast. Pilot Project: Amphibian Community Monitoring at Roanoke River NWR

Spring Peeper (*Pseudacris crucifer*) observed during the visual-encounter survey at Roanoke River National Wildlife Refuge.

PROJECT DESCRIPTION

In the spring 2013, the U.S. Fish and Wildlife Service Southeast Region Inventory and Monitoring Branch (USFWS SE I&M) and the National Park Service Southeast Coast Inventory and Monitoring Network (NPS SECN I&M) collaborated on a pilot project to test the feasibility of using the NPS SECN I&M Amphibian Community Monitoring Protocol on Roanoke River NWR and provide recommendations for using the protocol on other Southeast Region NWRs. The detailed methodology, results, and data management are included in the USFWS SE I&M Project Template for this pilot (Stanton et. al. 2015) and in the NPS SECN I&M draft report Pilot Study of Amphibian Community Monitoring at Roanoke River NWR, 2013 (Smrekar et. al. 2014). Both these documents contain protocols and standard operating procedures and are available on the USFWS Fishnet site and archived on ServCat.

OBJECTIVES

During 2012 -2013, the NPS SECN I&M Network evaluated four years of data and field procedures in accordance with the 2012 NPS SECN I&M Protocol for Amphibian Community Monitoring. In 2013, based on this review, the protocol recommended was to monitor vocal anuran communities with only Wildlife Acoustics Automatic Recording Devices (ARDs) and eliminate the use of visual encounter surveys (VES). This recommendation is included in the 2013 NPS SECN I&M protocol to monitor vocal anuran communities. This revision meets the vital signs objectives, increases overall quality of species identification, provides complete coverage of habitat, reduces labor and costs and addresses safety concerns.

The objectives of the revised protocol include:

1. Determine the status and trends in species richness and diversity of vocal anurans.
2. Determine the status and trends in occupancy by vocal anurans.
3. Determine the status and trends in frequency of detection of vocal anurans.
4. Determine trends in the vocalization phenology of select anurans with high detectability.

The objectives of the pilot project to monitor amphibian community on RRNWR included:

1. Document the presence or absence of amphibian species, distribution, diversity, community structure, function and composition at selected sites.
2. Establish an inventory of anuran vocalization Phenology (based on one year).
3. Document the current condition of amphibian Communities at selected sites.
4. Assess the logistics and feasibility of using the SECN I&M amphibian protocol on southeastern refuges.

RECOMMENDATIONS ON UTILIZING THE NPS SECN I&M PROTOCOL ON SOUTH ATLANTIC NWRS

- The 2013 NPS SECN I&M protocol to monitor vocal anuran communities is an approved NPS protocol framework available to refuges. It has been has been piloted on two NWRs and is underway on a third NWR in the southeast to document species composition of vocal anurans.

- This protocol is designed to include the entire park boundary as the sampling frame. Many of the Southeast NWRs are large in size, have experienced extensive reductions in staffing and do not have the capacity to implement the NPS SECN I&M Protocol refuge-wide. However, depending on the refuge objective, this protocol can be used to monitor vocal anurans in management units or unique habitats to evaluate management actions directly or indirectly on amphibians and ecosystem health using vocal anurans as an indicator species.

- When developing monitoring objectives, important factors to consider include the life history of the species or guild to be monitored, when target species are most active, what sampling techniques (ARDs for vocal anurans) are most effective and the availability of staff, size and number of units to be surveyed, accessibility of sites (e.g. management units), habitat conditions, and cost.

- Depending on the monitoring objective, a power analysis may be needed to determine the number of samples or years needed to detect a change.

Specific findings of the pilot project:

- The ARDs accurately recorded vocal anurans within the 0.5 ha plots and across numerous habitat types in somewhat difficult sites to access in the field.

- The VESs and dip netting were important to document non-calling anurans and other amphibian and reptile species. Although VESs are no longer included in the NPS SECN I&M protocol, standard operating procedures for these survey techniques are available to refuges to survey for these species.

- The most physically challenging technique during the pilot project was conducting the VESs in swampy habitats.

- One caution is warranted: because of the high cost of ARDs units, deploying ARDs on refuges with dense bear, other predator or rodent populations may result in major damage to the units.

- The NPS SECN I&M vocal anuran community monitoring protocol used on Roanoke River NWR met the objectives defined for the pilot project.

PARTNERS

- NPS SECN I&M Network
- USFWS Southeast Region I&M Branch
- Roanoke River NWR
- Internship program at Pocosin Lakes NWR

MORE INFORMATION

For more information about this and other regional Inventory and Monitoring efforts:

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