

Local Action to Preserve Biodiversity

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Introduction

Loss of biodiversity is well documented as a global concern. The highest rates of extinction appear to be among reptiles and amphibians (Friedland). Across the state of New Hampshire there is a lack of data on amphibian and reptile species occurrence. This project is a comprehensive effort to map vernal pools and reptile and amphibian species presence/absence. Documenting the presence of amphibian *species of special concern*, and *species of greatest conservation need* as identified by the NH Wildlife Action Plan can help guide conservation actions at the local level to preserve biodiversity and steward critical habitats.

Project Background

This work builds local knowledge of habitat quality, amphibian presence/absence and identifies stressors and threats. Students, landowners and municipal leaders have the opportunity to engage in active stewardship that addresses information gaps and empowers individuals and groups to preserve local biodiversity. Since 2017 the project team has focused on identifying amphibian migration hot spots, and building community awareness about vernal pools and their importance to the ecosystem and humans. This project aims to:



- Document critical aquatic habitats & identify presence/absence of amphibians
- Establish priority sites for amphibian monitoring and habitat conservation
- Support local and state leadership by providing data for informed, prioritized actions that preserve biodiversity
- Promote sustainable development that is ecologically sensitive
- Involve Plymouth residents and students in active stewardship of vernal pool resources and reptile and amphibian habitats

What is a Vernal Pool?

A vernal pool is a depression that temporarily fills with water in the spring. Vernal pools are crucial to the survival of native amphibian populations as breeding and larval habitat. These amphibians are important predators and prey as they help facilitate nutrient cycling and mosquito population control. In addition, the biomass of salamanders in local forests is higher than the biomass of birds and is equal to the biomass of mice and shrews (Burton). For most of the year the pool can be completely dried up; making them hard to find. The drying cycle of these pools prevents colonization by fish. In order for a small body of water to be considered a vernal pool it has to have the presence of an indicator species.



Wood Frog



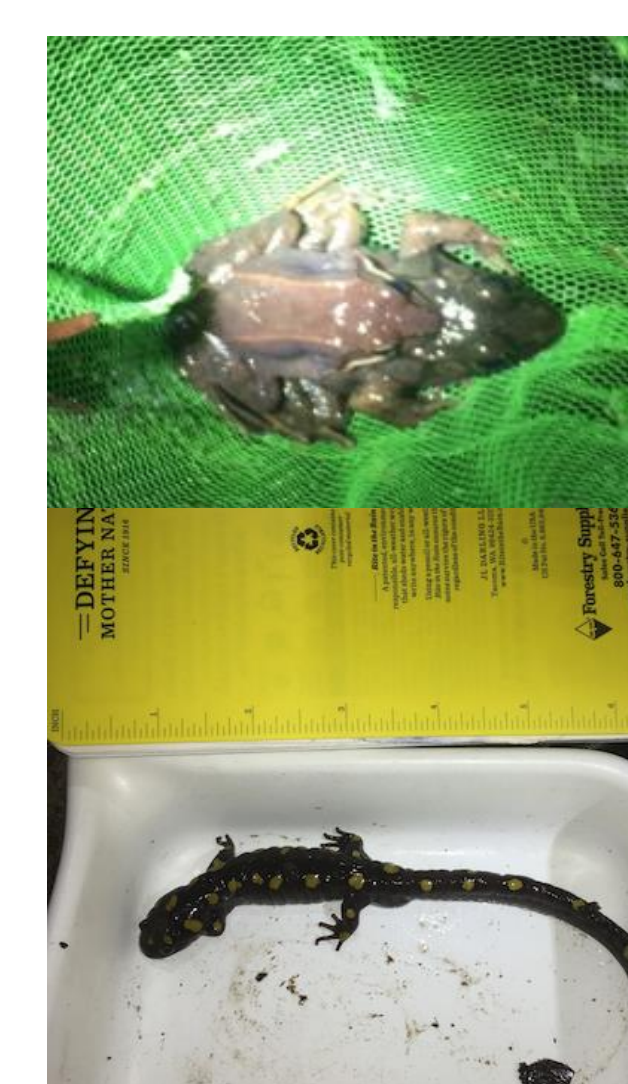
Fairy Shrimp



Spotted Salamander

Signs of a Vernal Pool

- Sounds of Spring Peepers and other frogs chirping
- Seasonal abundance of frogs and/or salamanders on your property
- Temporary pools of water in the spring to summer that dry up
- Pools filled with leaf litter and sticks (look for egg masses attached)
- Migrating amphibians and reptiles (across roads, through yards, etc.)



Wildlife Action Plan Reptile and Amphibian Species in Greatest Need of Conservation:



Blue-spotted Salamander



Jefferson Salamander



Northern Leopard Frog



Mink Frog



Blanding's Turtle



Spotted Turtle



Smooth Green Snake



Wood Turtle



Black Racer

Stressors and Threats

- Pesticides, fertilizers (pollutants)
- Habitat Fragmentation
- Human encounters
- Disease

How to Get Involved

Landowners Our team can visit your property to help identify potential vernal pools and conduct species surveys. Landowners can limit pesticide and chemical use near vernal pools.

Residents Become a citizen scientist by reporting amphibian and reptile sightings to NH Wildlife Sightings. Pay attention to migrating amphibians while driving and avoid running them over.

Educators Our team can come to your school to deliver a unit about vernal pools and local stewardship action.

For additional information, please contact Rachelle Lyons (rllyons@plymouth.edu)

References: Burton, Thomas M., and Gene E. Likens. "Salamander Populations and Biomass in the Hubbard Brook Experimental Forest, New Hampshire." *Copeia*, vol. 1975, no. 3, 1975, pp. 541–546. *JSTOR*, JSTOR, www.jstor.org/stable/1443655.
Friedland, Andrew, et al. *Environmental Science: Foundations and Applications*. W.H. Freeman, 2012.

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