

2014 SPRINGTIME MONITORING REPORT

VERNAL POOL AMPHIBIANS BREEDING

BNE/ COLEBROOK SOUTH/PETITION 983

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INTRODUCTION: As part of the Connecticut Siting Council's decision to permit three wind turbines at the Flagg Hill Site (a.k.a. Colebrook South, Petition 983) monitoring of vernal pool obligate amphibians was requested. During the permitting process BNE submitted studies that identified areas of vernal pool use (i.e., cryptic vernal pools) within the northern end of Wetland 1, a large beaver impoundment. These areas were at the northeast and northwest corners of the impoundment. Clearing of the site has commenced; that clearing in accordance with Calhoun and Klemens (2002) which requires a variety of best management and development practices to avoid impacts the pool breeding amphibians. These include avoiding all clearing within the vernal pool envelope (0-100 feet from the edge of the vernal pool) and no more than 25% clearing in the critical upland habitat zone (100-750 feet from the edge of the vernal pool). There are also standards for the construction of roads within the critical upland habitat zone, specifically the avoidance of the creation of water filled ruts that could act as "decoy pools" and excluding amphibian movements into areas where active construction/logging is occurring by the use of exclusionary silt fencing.

MATERIALS AND METHODS: A single site visit was conducted on May 3, 2014. Based on the past two seasons of field work it has been determined that by early May all the amphibians (wood frogs and spotted salamanders) have bred. The weather during the sampling period, 12:30-3:30 PM was around 60 degrees F, with intermittent clouds, and breezy. Sampling included visually examining shallow areas of the wetland to observe egg masses, cover searching around the edge of the pools to locate amphibians, and audial surveys to detect calling frogs. The sampling team was led by Dr. Michael Klemens, with the assistance of Mathew Davison, Melanie Bachman, and Robert Mercier.

RESULTS: The study site is divided into two cryptic vernal pool areas, the northeastern and northwestern cryptic vernal pools embedded in Wetland 1. Associated with the northeastern vernal pool is a road rut on an old woods road. Egg masses of spotted salamanders were concentrated in very deep water (several feet) which is a result of the very dry spring. Apparently spotted salamanders laid their eggs in the shallows of the drawn down wetland, which then filled to a much greater surficial extent with the recent torrential rains. There were no spotted salamander egg masses in many of the shallower areas of the wetland, where they have been found in past seasons. These areas likely were too shallow during the breeding season to support reproduction. The depth that the egg masses were now located (several feet minimum) made counting quite difficult, and it is quite likely that we undercounted the number of spotted salamander egg masses this year.

We counted a total of 83 *Ambystoma maculatum* egg masses in the northeastern vernal pool area of Wetland 1. There were also two large rafts of *Rana sylvatica* egg masses each totally approximately 25 egg masses and a single isolated egg mass for a total of 51 egg masses. In addition the road rut, which held far more water than in previous years, contained two rafts of *Rana sylvatica* egg masses of an undeterminable mass count due to advanced development (hatching) and jelly mass decay and a single *Ambystoma maculatum* egg mass. The total egg masses in the northeastern vernal pool area including the road rut pool were 53 ++ *Rana sylvatica* egg masses and 84 *Ambystoma maculatum* egg masses. Additional species observed were *Thamnophis sirtalis* along the shore edge, and *Pseudacris crucifer* calling. A freshly dead *Pseudacris crucifer* was collected (MWK 19825). Two adult painted turtles were observed in the vernal pool area submerged in water. They were a male and female and may have been engaged in courtship. A shell of a juvenile *Chelydra serpentina* was collected (MWK 19826) on the shoreline. Both these these collected specimens will be deposited at the American Museum of Natural History in New York City. *Notophthalmus viridescens* were abundant in this wetland as were tadpoles of *Rana clamitans*. A least one blue heron nest was active, and wood duck was nesting in a wood duck box in the wetland.

A total of 49 *Ambystoma maculatum* egg masses were found in the northwestern vernal pool area. As a result of dry conditions only two of these were found in the impoundment on the feeder stream and one in an adjacent tree throw pool. *Desmognathus fuscus* were found in the feeder stream, and sub-adult *Rana sylvatica* and *Pseudacris crucifer* were found on the forest floor, as well as *Plethodon cinereus*

DISCUSSION: A total of **33** *Ambystoma maculatum* egg masses were counted in the northeastern cryptic vernal pool in 2012, contrasted with **114** egg masses counted in the same pool area in 2013, and **84** egg masses in 2014. Of the three sampling years, two of these, 2012 and 2014, were characterized by a drawn down pool when eggs were deposited and inundated subsequent to egg mass deposition. Similarly the northwestern cryptic vernal pool contained **25** spotted salamander egg masses in 2012 contrasted with **83** egg masses in 2013 and **49** in 2014. It is apparent in those years when Wetland 1 is drawn down at the beginning of the amphibian breeding period, and then refills after egg deposition, egg mass counts are lower, which is likely a combination of researcher inability to locate eggs in deeper water, and the predation of those egg masses by fish. Wood frog populations appear to have increased greatly in 2014, with significantly large numbers of egg masses compared to previous years. Such fluctuations are quite normal for wood frog populations, which respond to a generation time of three years, as opposed to twenty years for spotted salamanders.

In conclusion the spotted salamander population appears stable, and the wood frog population increasing in the three-year period between 2012 and 2014. A small area of *Phragmites* has become established at the edge of the northeastern vernal pool and should be monitored to contain its spread, or eradicated.

REFERENCES:

Calhoun, A. J. K. and M. W. Klemens. 2002. **Best Development Practices (BDPs) for Conserving Pool-breeding Amphibians in Residential and Commercial Developments in the Northeastern United States.** MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, NY.



Photo 1: New *Phragmites* Infestation in Northeastern Vernal Pool Area of Wetland 1