

Annual Report – The Amphibian Community of the Saratoga National Historical Park
Permit # SARA-2002-SCI-0002
Principle Investigator: Lawrence Woolbright
For the 2004 calendar year

Objectives. This is a five-year study of the amphibian community of the Saratoga National Historical Park. Key goals are to determine species present on the site, population densities, and spatial and temporal patterns of habitat use. These will be accomplished mainly through auditory surveys, visual surveys, and driving transects during spring breeding seasons. Data will provide a historical baseline for future evaluations of amphibian population trends, along with information relevant to amphibian conservation.

Our primary objective for 2004 was to quantify temporal and spatial variation in patterns of habitat usage. Because of the extreme temporal and spatial synchrony of woodfrog breeding aggregations, we chose this as the focal species for egg clutch counts. We modified the methods and continued the driving transect established in previous years along the tour road. In addition we tracked the movement of individual male woodfrogs and American toads as they left the breeding pond at the end of the mating season.

Accomplishments:

- 1) Road transects and auditory surveys confirmed the continued existence on the site of most of the common species identified in prior years: the frogs *Bufo americanus*, *Hyla versicolor*, *Pseudacris crucifer*, *Rana catesbeiana*, *Rana clamitans*, *Rana pipiens*, and *Rana sylvatica*, and the salamanders *Ambystoma maculatum* and *Notophthalmus viridescens*.
- 2) We counted 4220 egg masses of the woodfrog, *Rana sylvatica*, on the site in spring 2004. That corresponds to a minimum of 4220 females of this species in the reproductive cohort. This number is the largest we have recorded in four years, almost twice as large as the previous high count from 2002, and roughly six times the lowest count from 2001. These results will help us understand and put in perspective natural fluctuations in healthy populations. Possible explanations for the large number of egg masses observed this year include the large number of eggs deposited in 2002 that are now breeding-age adults, and reasonably mild and snowy winters since then. Egg masses were deposited in 18 locations, 17 of which had been documented as breeding locations in prior years, so the number of new breeding locations we are identifying is decreasing. A total of 22 breeding sites have been located during this study, so only four breeding sites from previous years were not used this year.
- 3) The methods used for the road transect were modified this year. Previously we had attempted to document the exact location of each crossing by leaving a flag for later precise measurement. This year we recorded only the odometer reading of each sighting. This allowed for collection of more data and prevented the loss of data points. The

concurrent reduction in precision was deemed acceptable. Crossing points for each species were entered on a map of the tour road, and maps are on file in the Park office.

4) The major new effort this year was to track individual male frogs as they left the breeding site at the end of the mating season. We collected data on six toads, *Bufo americanus*, that were outfitted with backpacks containing spools of thread, and four woodfrogs, *Rana sylvatica*, that were equipped with tiny 0.5 g radio transmitters. The toads were followed for 15 days, during which they moved an average of 99 m (1 s.d. = 14.2). The woodfrogs were followed for 16 days, during which they moved an average of 277 m (1 s.d. = 24.0). Movement patterns were similar for both species: individuals tended to move in more or less a straight line, and they moved on about half the days interspersed with other days on which they stayed in the same place. Movement was still occurring in both species at the end of our data collection period, so we are not able to specify an exact distance between breeding site and summer range for either species.

