NORTHEAST REGIONAL CONSERVATION NEED GRANT
QUARTERLY REPORT

Grant Number: 2009-04

Grant Title: Development of Noninvasive Monitoring Tools for New England Cottontail Populations: Implications for Tracking Early Successional Ecosystem Health

Grant Receipt: January 15, 2010

Grant Contact Name: Adrienne Kovach

Report #: 2010 3rd Quarter

Were planned goals/objectives met last quarter? YES

Regional Conservation Need Addressed: RCN Priority 6: Development of Regional Indicators & Measures

Progress Achieved: (For each Goal/Objective, list Planned and Actual Accomplishments)

1.) Evaluate the effectiveness of the current presence/absence winter survey monitoring protocol through a systematic investigation of detection rates; use this knowledge to develop an improved protocol for maximal detection of NEC on occupied patches.
During this quarter, we completed the genetic analyses for species identification of the 265 pellet samples that were collected from detection sites in Maine (45 samples from 25 sites), New Hampshire (40 samples from 9 sites), Massachusetts (9 pellets from 2 sites) and New York (161 samples from 7 sites) during the 2010 field season. Substantial data were only collected from ME and NY for further evealuation. For the ME sites, all were known from previous surveys to have New England cottontail in the year prior. For the NY sites, only 3 of the 7 were found to have New England cottontail and to therefore be relevant to the detection study. For 2 of the 3 NY sites, eastern cottontails were also detected. For these sites we determined that 3-5 pellets per site is sufficient to have a high probability (93-98%) of detecting New England cottontail if present. From our Maine sites, there were only 3 of 17 sites with multiple visits for which New England cottontail were not detected on one of the visits. Given the poor snow conditions last year, further sampling in winter 2010-2011 is needed to fully address these questions of detection.

2.) Develop a noninvasive genetic monitoring technique for estimating the numbers of individuals occupying a habitat patch; apply this tool to measure baseline population levels on multiple sites throughout the range of NEC.
In the previous quarter, we identified additional polymorphic markers to increase the power of our genetic marker set. We used this new suite of 11 polymorphic markers in Maine to conduct some pilot population estimates from samples collected during a previous survey effort (2009-

prior to this project and grant). We were able to generate population estimates for a number of patches from this effort, but will need to evaluate whether our ad-hoc sampling protocol (which at that time was not designed for this question) was suitable for yielding reasonably unbiased estimates. Dedicated, systematic sampling during the 2010-2011 season will be used to evaluate the best sampling protocol for obtaining unbiased population estimates. We also used our pilot data (from 2009) to evaluate an optimal sampling interval for pellet collection in future population estimates (optimal so as to maximize the number of different individuals sampled). This information will increase the efficiency of our upcoming field effort.

3.) Use the population estimates in (2) to develop a population index based on pellet counts; establish guidelines for implementing this tool throughout the range of NEC.
For this effort, we are making use of the unique opportunity to study the rabbits recently translocated to Stage Island. In early May, we established pellet plots, for a pilot study to evaluate the utility of using pellet counts as a population index. Fifty rectangular plots (10' x 1') were established at ~ 40 m intervals along rough transects with ~40 m spacing. Initial efforts suggest this will be a logistically challenging endeavor, as the habitat conditions are vastly different from those of snowshoe hares, for which this method is widely used. We have made plans with our partners at MDIFW for fall activities of clearing plots. We will also partner with them on a mark-recapture (live-trapping) effort to estimate the number of rabbits remaining on the island. This estimate will be useful in the calibration of our pellet plots.

Summary of Progress: (Provide a paragraph describing progress, work to come, and timelines)
To date, we completed our first winter's survey efforts, although much of it will need to be replicated next year, due to poor survey conditions of this year. We completed genetic species identifications for the 265 pellet samples collected for the detection study and used our results to optimize sampling conditions for the upcoming field season. We have established pellet plots on Stage Island and initiated a pilot study evaluating the utility of using pellet counts for a population index. Pellet plots will be counted and cleared in the fall and then left untouched until next April/May when they will be counted to evaluate the over-winter population. We identified two more polymorphic markers to increase the power of our genetic identification of individuals in Maine/New Hampshire and an additional two markers that are polymorphic in the other geographic regions of the species' range; this will be useful in our population estimation procedure. We have used these markers in a pilot evaluation effort for a few patches in Maine from which a large number of samples were collected in 2009 (prior to this grant). The precision of population estimates generated by this method will be evaluated by a rigorous study using systematic sampling scheme in our upcoming field season. In the winter of 2010-2011, we will focus intensively on sampling for population estimation.

Timeline for future work:
October – December 2010 – continued pilot genetic analyses for population estimation
October – November 2010 – count and clear pellet plots
January 15 – evaluation of current survey protocol based on year 1 data; given the poor sampling conditions of this past winter, we anticipate that this evaluation will benefit from updating with additional data after the second field season.
December 2010 – April 2011 – Survey detection sites in Maine and NH, as well as from any other participating states, to the extent that they are able to contribute.

April/May 2011 – count and clear pellet plots
April – December 2011 – genetic analyses of Year 2 samples; analyses for population estimation
March 31, 2012 – Final report complete – with final evaluation of optimal survey protocol, pellet count index, and baseline population estimates for multiple sites throughout the species' range. Additionally, guidelines for implementing these monitoring tools through the range will be developed and included in the final report, based on the final results of the 2-year study.

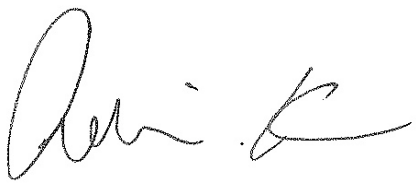
Difficulties Encountered: No difficulties were encountered during this quarter.

Activities Anticipated Next Quarter: We will continue with microsatellite DNA analyses to further the pilot population estimation. We will clear and maintain pellet plots on Stage Island with the help of partners at MDIFW and volunteers. We will conduct stem density counts for habitat characterization on detection sites, for use in covariates in the model being developed for the detection study. We will continue communication with our steering committee and partners to prepare for the 2010-2011 field season. A trip to NY is planned for November to discuss sampling details with partner Paul Novak.

Costs:

Funds expended previous to this report: $8034.95
Amount of RCN funds requested within this report: $9093.23
Total approved budgeted RCN funds: $49,004
Are you within the approved budget plan: YES
Are you within approved budget categories: YES

Signature:



Date: October 13, 2010