

## NORTHEAST REGIONAL CONSERVATION NEED GRANT QUARTERLY REPORT

Grant Number: 2007-03

Grant Title: Identifying relationships between invasive species and Species of Greatest Conservation Need in the Northeast region.

Grant Receipt:

Grant Contact Name: Glen N. Stevens and Scott D. Klopfer

Report#- 9 (2010 4th Quarter)

Were planned goals/objectives achieved last quarter? Yes.

Regional Conservation Need Addressed: 2007 Priority RCN Topic 2, “Identify Invasive Species that Impact Species of Greatest Conservation Need in the Northeast.”

Progress Achieved:

The tasks slated for activity in this quarter were:

3. We will complete all SGCN and invasive species habitat assignments.
4. We will complete the initial pairwise comparison of individual GCN species and invasive species, as detailed in the proposal. This will populate the database that will be used to develop individual comparison reports that are the deliverables for this project.
5. We will begin final reporting activities. These include development of an interactive spreadsheet to allow users to generate their own analyses, a final report based on our regional and state analyses, and a website to facilitate delivery of project information and products.

The habitat assignments for 302 invasive species and 734 SGCNs were completed. This information was gleaned from websites and other sources and entered by a trained assistant. The assignments were reviewed for consistency and accuracy.

An algorithm was developed to calculate a “habitat score” for each pair of SGCN and invasive species. This score attempts to quantify the potential interaction between species sharing the same habitats. SGCNs that share habitats with invasive species are assumed to experience some potential threat from those species either directly or indirectly. Thus, where individual SGCNs share multiple habitats with an invasive species, the cumulative impact will be greater since there would be less opportunity for the SGCN to “escape” to other habitats. The score is calculated by multiplying the values for the SGCN and the invasive species in the same habitat then summing across all habitats (See example below).

SGCN	Woodland vole								1									1	
Invasive	Chinese Wisteria			1												1		1	1
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

These 2 species share only 1 habitat, thus the habitat score is determined by the sum of the interactions (in this case 1). This value is then entered into a matrix consisting of 302 columns (for each invasive) and 734 rows (for each SGCN). Using this approach we determined a score for all of the 221,668 potential interactions.

Upon examination of the resulting matrix it became clear that another step was needed to remove those SCGN x invasive interactions that were unlikely to result in any significant impact. There are obvious instances where invasive species do not pose a significant threat to an SCGN coexisting in space. To remove these problems, we developed an “applicability matrix”.

The applicability matrix was constructed similar to the habitat matrix with 302 columns and 734 rows. For each invasive species we identified the taxa, or in some cases individual SCGNs, that could be potentially impacted (either directly or indirectly) by the invasive. For example, brown headed cowbirds only impact avian SCGNs, so all other habitat coincidences are insignificant. We used a simple “1” or “0” to denote whether the interaction was significant or not and populated the entire matrix using available information.

The final habitat matrix was calculated by simply multiplying the habitat matrix with the applicability matrix. When applicability was deemed to be 0, the resulting value was 0 and was effectively removed from the summary calculation.

The final invasive species database that will be used for the rankings was created from the final habitat score matrix, specific invasive characteristics for each invasive species, and other related rankings by state or by taxa. We identified 4 major ways in which invasive species impact SCGNs, namely; displacement of SCGN (includes predation or infection), reduction in habitat (quality or quantity), drain on resources, or alteration of ecosystem processes.

We will use this database to produce the final rankings of importance for the invasive species as the final step of our analysis. We will accomplish this via a set of “rules” and related weighting values on each invasive species. This database will also be made available for manager to apply their own set of criterion to develop new lists based on changing importance, objectives, etc.

Tables, narratives, and figures are already in development for the final report. Final rankings and report synthesis will comprise the focus of our remaining work on this project.

#### Difficulties Encountered:

The only unanticipated activity encountered during this quarter was the need to apply additional time and resources to the development of the applicability matrix. However, this action will ensure the results of the analysis are more useful and the resulting rankings more accurate.

#### Activities Anticipated Next Quarter:

1. Complete the final ranking of invasive species at the regional and state levels using documented importance criteria and weighting.
2. Complete the final report providing all necessary background information, explanation of methodologies, and results.

#### Costs:

Are you within the approved budget plan? Yes

Are you within approved budget categories? Yes, expenses and matching funds have been used to support labor for the project.

Signature

A handwritten signature in black ink, appearing to read "Scott D. Klopfer", written over a horizontal line.

Date January 6, 2011

Scott D. Klopfer for Dr. Glen Stevens