NORTH ATLANTIC LANDSCAPE

CONSERVATION COOPERATIVE GRANT

2013 PROGRESS REPORT

Quarter: (circle one) 2013 1st (2013 2nd) 2013 3rd 2013 4th

Grant Program, Number and Title: Grant 2011-07; **ASSESSING PRIORITY AMPHIBIAN AND REPTILE CONSERVATION AREAS (PARCAS) AND VULNERABILITY TO CLIMATE CHANGE IN THE NORTH ATLANTIC LANDSCAPE**

Organization: Association of Fish and Wildlife Agencies, University of Maine (USGS MCFWRU), Clemson University

Project Leader: Priya Nanjappa

Were planned goals/objectives achieved last quarter? **YES**

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

Objective 1: *Work directly with state fish and wildlife agency personnel throughout the NA-LCC states to gather data toward PARCA criteria review and proposed conservation area identification.*

UMaine: The occurrence data has been received from most states, and we will use the NEPARC meeting in July to follow-up in person with the states from which we are missing data (Connecticut and Pennsylvania). These data are currently being collated to into a unified format and will be used to develop species distribution models.
UMaine and Clemson: The teams have discussed the work session to be held at the NEPARC meeting and are developing exercises that will allow stakeholders, including state agency and academic employees, to review and discuss our methods, and results to date, at the meeting.
AFWA: Nanjappa has made multiple attempts to follow-up with Connecticut and Pennsylvania state contacts as well.

Objective 2*: Provide spatially-explicit maps of current and future climatic suitability for priority amphibians and reptiles in the NA-LCC region, and then use these data a) to rank species vulnerability to climate change based projected losses in the species' ranges, and b) to identify areas within the NA-LCC where either there are high losses of vulnerable species or there is high potential for climatic refugia for priority species, and c)*

identify species for which this Objective cannot be completed due to gaps in current known distributional data and thus identifies priorities for species data acquisition.

UMaine: Moody has created spatially-explicit maps of currently suitable habitat for priority species using Maxent. Several methods for delineating PARCA boundaries have been proposed and will be presented to experts for input at the NEPARC meeting in New Jersey in July.
Clemson: Barrett and Sutton have constructed climatic niche models for all target (high priority) amphibians and reptiles within Maine (state selected as a pilot area for PARCA assignment). In addition, these models have been used to evaluate future climatic suitability for these same species (mid-century). We have also acquired species locality data for all priority species (~60 species) in the northeastern United States using species locality databases (i.e., HerpNet and BISON). We have evaluated the accuracy of these data and have removed data points that appear to be inaccurate or cannot be validated. All data files have been organized with a similar format to maintain relevant metadata (e.g., locality information, data source, point accuracy, GPS coordinates, state and county information). These data will be used to construct current climate niche models and subsequent climate suitability analyses for all priority species. Further, Sutton and Barrett have identified species that lack distribution data throughout the known geographic range for each of the northeastern priority species. Two species in particular, the Wood Turtle (*Glyptemys insculpta*) and the Rainbow Snake (*Farancia erytrogramma*) lack adequate locality to determine species vulnerability. They have completed an Excel spreadsheet detailing the number of distribution points, geographic areas where points are lacking, and a ranking of predicted vulnerability assessment accuracy for each priority species.

***Objective 3**: Summarize these results with respect to species occurring on lands under current state and federal management.*

UMaine and Clemson: Data layers containing location of and jurisdictional information for conservation lands in each state throughout the northeastern United States have been downloaded to allow for this future summarization. As we complete species distribution models, we summarize species vulnerability results across state and federally managed lands.

***Objective 4:** Conduct an analysis of candidate PARCAs to help identify those highest priority conservation areas supporting reptiles and amphibians in the Northeast that are not currently protected.*

This objective has not yet been addressed. However, the UMaine and Clemson teams developed a work plan to facilitate coordination between the teams for sharing analyses and to identify points in the PARCA delineation process for exchanging ideas and analyses.

***Objective 5**: Incorporate climate vulnerability projections into final PARCA analysis, including a ranking of high priority current and future conservation areas.*

This objective has not been fully addressed, but we have developed a vulnerability framework to assess exposure, sensitivity, and adaptive capacity of each proposed PARCA based on an array of spatially-explicit climate, landscape, and species locality data layers. We have acquired all data sources including projected landuse, projected climate and precipitation change, sea-level rise, species locality, protected areas, natural landscapes, and digital elevation model data layers. We will use this framework to rank PARCAs on a scale of high – low vulnerability.

Objective 6: *Communicate results to key state, federal, and NGO partners via publications and a Northeast regional workshop.*

UMaine and Clemson: An introductory presentation and afternoon work session have been scheduled for the Northeast Partners in Amphibian and Reptile Conservation Meeting in New Jersey in July 2013.

Difficulties Encountered:

We still have not heard from two states (Connecticut and Pennsylvania) regarding data. Moody and Sutton plan to engage with contacts from these states at the NEPARC meeting in person in hopes of convincing them to allow us access to their data, and to learn more about any concerns or determine how we can still collaborate with them. Nanjappa continues to follow-up with these state contacts as well.

Activities Anticipated Next Quarter:

1) (All) Continue monthly progress update conference calls among the team
2) (Clemson) For species with sufficient data, we will continue to build climatically-based niche models.
3) (UMaine) Continue review of Maine priority species and habitat/climate associations with experts in the state (university, agency, and non-agency herpetologists)
4) (Clemson) Test vulnerability framework and make necessary adjustments to determine PARCA vulnerability
5) (UMaine and Clemson) Present pilot to partners at NEPARC meeting in view of soliciting experts to review the larger PARCA project
6) (UMaine) Complete species models and draft PARCA delineations for Maine.
7) (UMaine) Contract with herpetologists to develop species-variable list for all species to be modeled in NA-LCC region. Develop initial species models with species-variable list.
8) (UMaine) Develop protocol for use by state biologists to assess the initial PARCAs.

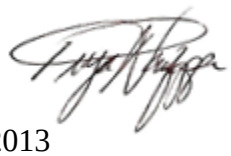
Expected End Date: Dec. 31, 2014

Costs:

Total life to date expenses (include this quarter): **$119,515.32** (2013 Q1: $95,556.73 + 2013 Q2: 4,476.91 Clemson University + 19103.28 UMaine + $378.40 AFWA)

Total Approved Budgeted Funds: **$315,902**

Are you within the approved budget plan and categories? YES

Signature: 

Date: 8 August 2013