NORTH ATLANTIC LANDSCAPE CONSERVATION COOPERATIVE GRANT
2014 PROGRESS REPORT

Quarter: (circle one)   2014 1st 2014 2nd 2014 3rd (2014 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 CONSERVATION COOPERATIVE**

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

Project Leader: Priya Nanjappa

Abstract: Please provide a short (1-2 paragraphs) abstract that addresses EACH of the following: the objectives of your project, accomplishments to date, future plans and timelines with an estimate for when the project will be completed.

Were planned goals/objectives achieved last quarter? NO

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.*

All: Focus during this quarter has been to 1) develop the request for contract modification to address departure of the UMaine Post-Doc in mid-August 2014, 2) evaluate the PA and DE datasets received in late summer, and 2) calculate amphibian and reptile richness from state-level common species data, where available. Details are provided below:

1) The team developed documentation for a no-cost extension and revision of team responsibilities (attached) and submitted it for consideration by the USFWS and WMI in November. The project team discussed the proposal with USFWS and WMI representatives in a conference call in mid-December. A new contract (Tennessee State University with Dr. Bill Sutton) and contract revision (UMaine) were submitted in late December to WMI, and these currently are being finalized. Sutton will be assisting UMaine in completion of the UMaine tasks beginning late January 2015. Loftin and deMaynadier have drafted an analysis and task plan for transitioning these activities to Sutton. During late January 2015, Sutton will meet with deMaynadier and Loftin to plan tasks to complete in the first and second quarters of 2015. Sutton will present a seminar about the Clemson team's reptile and amphibian vulnerability assessment analyses in the University of Maine-Department of Wildlife, Fisheries, and Conservation Biology's seminar series during this visit.

2) The UMaine team received Delaware data in late July and Pennsylvania data in late August. The DE data contain only amphibian records, and we are awaiting confirmation that those are the only records available for the project. Pennsylvania data include records for both reptiles and amphibians; these data will be converted from polygons to point locations following protocols used to convert other states' data to point occurrences for inclusion in the data set used for developing the Species Distribution Models.

3) The UMaine team continues to seek state-level common species data to use in calculation of the richness metric. While digital polygon-based range maps spanning the NA-LCC region are available, state-level occurrence maps using state-focused units (e.g., township, county, quad), provide the finer resolution desired to improve accuracy of the richness metric. These data were received for 7 states (ME, VT, NH, MD, VA, MA, RI), and we have developed maps of reptile and amphibian richness to township (ME, VT, NH, RI), quad (MD), quad block (MA), and county (VA). We have explored state-level common species data availability for other states (CT, DE, NY, NJ, PA). NY, PA, and NJ have state Herp Atlas projects with web-based mapping tools, so we are pursuing access to the datasets used to create these maps. CT and DE do not have a Herp atlas projects with available common species data; thus, we will use Natureserve range maps for common species in CT and DE. We will compare richness calculated from state-focused datasets to that calculated from the rasterized Natureserve range-maps that span the region, which will help us determine sensitivity of PARCA delineation to the richness metric data source. This comparison will be completed by April 2015.

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.

Clemson: Sutton and Barrett have completed this task except for the species in which gaps exist in the data. Thus far, we have modeled climatic distributions for nearly 60 species and have published data for salamanders in a recent publication cited below:

Sutton, W. B., K. Barrett, A. T. Moody, C. S. Loftin, P. G. DeMaynadier, and P. Nanjappa. 2015. Predicted changes in climatic niche and climate refugia of conservation priority salamanders in the northeastern United States. Forests 6:1-26; doi:10.3390/f6010001.

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

UMaine: The Maine team will be using the PAD-US layer to identify protected areas. No work has been completed for this objective at this time. This objective will be addressed in mid-2015 based on draft PARCAs.

Clemson/TN State: This task will be achieved in early spring. Our goal is to use climatic projections and identify federal and protected lands that provide areas of high climatic suitability.

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. This objective will be addressed in mid-2015 based on draft PARCAs.

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

Clemson/TN State and UMaine: In progress. Clemson/TN State are ready to apply the vulnerability framework to candidate PARCAs as soon as they are identified by the UMaine team. This analysis will be addressed in summer 2015.

Sutton presented the draft vulnerability analysis framework at the Wildlife Society Meeting in Pittsburgh PA in October 2014.

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

No additional progress to report during this quarter; UMaine will solicit feedback from key state, federal, and NGO partners on draft PARCAs during summer 2015. Plans for distributing the draft PARCAs and receiving feedback will be developed in late spring 2015.

See also Difficulties Encountered below.

Difficulties Encountered:
The UMaine team is compiling state-level common species richness data for evaluation with the range map data to determine which data will be used in the richness metric calculation. Although we have secured data for 7 states, we do not have common species data for the other 5 states. NY, PA, and NJ have state atlas programs and web-portals for creating county or quad-level maps in pdf form, so presumably the common species data that we seek do exist. Given the area of these states, securing these data is priority and we will continue this effort.

On October 21, 2014, the team is submitted an extension request for the project for consideration by the NA-LCC., in great part due to the sudden departure of the UMaine postdoc, Dr. Allison Moody, as well as due to delays in receiving data. On December 16, 2014, members of the team held a conference call with members of the NA-LCC to discuss the request, and it was subsequently approved for no-cost extension through June 30, 2016. Arrangements are underway to amend UMaine's agreement to divert funds to Sutton at Tennessee State University (formerly part of Clemson team).

Travel and holiday schedules delayed development of the contract modifications, however, these now are underway and anticipated to be in place by the end of January 2015.

Activities Anticipated Next Quarter:
1) (UMaine) Loftin will continue to work with an undergraduate research assistant to develop the common species dataset and evaluate approaches for developing the richness metric to use in the PARCA delineation. This effort (development of the maps and evaluation of the alternative richness calculations) should be completed by April 2015.
2) (UMaine) Finalize transfer of most of the remaining project funds to Sutton at Tennessee State University to assist with completing the remaining project tasks, and complete an updated Scope of Work.
3) (UMaine/TN State) Loftin and deMaynadier are working with Sutton to develop a plan for completing the transfer of funds and an analysis task list and calendar for completing the project. This plan will be completed in early February 2015.

Expected End Date: Revised end date, approved by NA-LCC, is **June 30, 2016**.

Costs:
Total life to date expenses (include this quarter): **$263,436.21** (Q3: $261,375.38 + 2014 Q4: $0 Clemson University + $458.76 UMaine + $1602.07 AFWA)

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

Are you within the approved budget plan and categories? YES

Signature:

Date: 1/22/2015