REQUEST FOR EXTENSION OF GRANT PERIOD for NALCC 2011-07: Assessing Priority Amphibian & Reptile Conservation Areas (PARCAs) and Vulnerability to Climate Change in the North Atlantic Landscape Conservation Cooperative

Justification for grant period extension:

1) **Data Acquisition Delays** – PARCA delineation across the NALCC has been more time-intensive and complicated than initially anticipated due to time constraints of data managers authorized to share the data, and challenges associated with collecting, organizing, and synthesizing species occurrence data from 12 disparate state sources. Once received, data were in a variety of formats, of inconsistent quality, and required >18 months to interpret, edit, and reformat into a single, compiled dataset to use in model-building. Data from two states were received in late August 2014, and currently are being reviewed and combined into the previously compiled dataset. We continue to seek additional data for common species to use in calculation of the richness metric. While digital range maps spanning the NA-LCC region are available, state-level occurrence maps using state-focused units (e.g., township, county, quad), will provide the finer resolution desired to improve accuracy of the richness metric. These data have been received for 7 states (ME, VT, NH, MD, VA, MA, RI) and we are awaiting similar data from other states (CT, DE, NY, NJ, PA). We also are evaluating the information gained from these state-focused datasets, to determine agreement between the region-extent and state-extent richness metric, which will help us determine sensitivity of PARCA delineation to the richness metric data source.

2) **Premature Departure by Principal Investigator** -- Dr. Allison Moody, a post-doctoral scientist hired to lead University of Maine's efforts at modeling, delineating, and soliciting feedback on draft PARCAs resigned from her position in mid-August 2014 with ~2 weeks notice and within ~4.5 months from the project end date. The remainder of the PARCA team has since developed a transition and work plan for completing the analyses by redistributing tasks and responsibilities among other team members and an undergraduate student assistant. The unexpected departure of Maine's modeling scientist has created significant delays and loss of momentum. The team evaluated alternatives for completing the project and determined that transferring the tasks to Dr. Sutton would facilitate completion of the project at a lower cost than hiring a replacement post-doc. This approach also avoids the delays associated with advertising and filling a new position via the University hiring process. Beginning late fall 2014, Dr. Sutton has agreed to dedicate 1/3 of his time to completion of the UMaine team's tasks.

3) **State review of Draft PARCAs**—Given Dr. Moody's departure from the project and tasks to be completed, there is insufficient time to adequately engage state experts in review of the draft PARCAs by the current project end date. Extension of the project end date will permit the team to develop and carry out a process for PARCA review and revision that engages stakeholders in person and remotely. The team plans to combine on-site and web-based meetings following mail/e-mail distribution of draft PARCA boundaries so that expert feedback can be incorporated into the PARCA

evaluation and revision process. The team anticipates that this process will be underway in early summer and completed by the end of August 2015.

4) **Value-added Analyses** --In the course of our research, the PARCA team has identified analyses that will enhance the rigor and quality of the final products. These analyses will evaluate sensitivity of the PARCA delineation process and will inform subsequent similar efforts. For example, we are a) examining threshold metrics and values for determining suitable habitat predicted by priority species models; b) examining effects of priority species model weighting in the PARCA delineation; c) developing and contrasting approaches for modeling herpetofauna richness across the Northeast in the absence of a pre-existing GAP dataset (as was used in the SE PARCA project); d) comparing and exploring the application of either the Designing Sustainable Landscapes project's index of ecological integrity (IEI) as a landscape viability metric or the Theobald approach to landscape-level assessments of ecological integrity (http://www.montana.edu/lccvp/documents/theobald2013.pdf), similar to what was used in the South Atlantic LCC PARCAs project; and e) evaluating alternative equations (including the SE PARCA formula) for calculating a metric that synthesizes priority species and richness data from which draft PARCAs are delineated. These evaluations were not specified in the original project proposal, but the team believes that including these analyses during our species distribution model development process will greatly enhance the final products.

Proposed new timeline for grant extension to June 30, 2016 (including reporting)

Date	Action
November 30, 2014	Complete contract revision to transfer funds to Tennessee State University (reassignment of PARCA modeling responsibilities following Post-Doctoral resignation)
May 31, 2015	Draft PARCAs distributed for state expert review; includes PARCAs delineated with alternative models for evaluation
June 30, 2015	Draft PARCA evaluation period ends
October 1, 2015	PARCA delineations finalized
December 31, 2015	PARCA GAP Analysis completed
March 31, 2015	PARCA Vulnerability Assessment completed
June 30, 2016	All grant objectives completed

Accomplishments resulting from the grant to date:
The team has presented research progress updates and results summaries at the following venues and submitted one manuscript for journal publication:

Moody, A.T., C.S. Loftin, P.deMaynadier, B Sutton, K. Barrett, and P. Nanjappa. Assessing priority amphibian and reptile conservation areas in the North Atlantic Landscape Conservation Cooperative. Presentation at the 2013 Northeast Partners in Amphibian and Reptile Conservation annual meeting, 24-26 July, Branchville, NJ.

Moody, A.T., B. Sutton, C. Loftin, P. deMaynadier, K. Barrett, and P. Nanjappa. 2013. Assessing priority amphibian and reptile conservation areas (PARCAs) in the NA-LCC and determining vulnerability of these areas to climate change. LCC Webinar, 29 August.

Sutton, W.B., K. Barrett, A.T.Moody, C.Loftin, P. deMaynadier, P. Nanjappa. 2014. Determining Vulnerability of Priority Amphibian and Reptile Conservation Areas in the North Atlantic Landscape Conservation Cooperative to Climate Change. Presentation at the 70th Annual Northeast Association of Fish and Wildlife Agencies, April 13-15, Portland, ME.

Moody, A.T., B. Sutton, C. Loftin, P. deMaynadier, K. Barrett, and P. Nanjappa. 2014. Assessing priority amphibian and reptile conservation areas in the North Atlantic Landscape Conservation Cooperative. 2014. Presentation at the 70th Annual Northeast Association of Fish and Wildlife Agencies, April 13-15, Portland, ME.

Sutton, W.B., K. Barrett, A.T.Moody, C.Loftin, P. deMaynadier, P. Nanjappa. 2014. Determining Vulnerability of Priority Amphibian and Reptile Conservation Areas to Climate Change in the Northeastern United States. Presentation at The Wildlife Society Annual Conference, October 25-30, Pittsburgh, PA.

Sutton, W.B., R. Barrett, A.T. Moody, C.S. Loftin, P. deMaynadier, and P. Nanjappa. Changes in climate niche and climate refugia of conservation priority salamander species: a case study from the northeastern United States. submitted to Forests.

Proposed new budget:

Current funds:

- UMaine (Loftin): retain $2000 to pay undergraduate research assistant; transfer $27,000 to Sutton at Tennessee State University
- Tennessee State University (Sutton): receive $27,000 from UMaine for 1/3 time salary over 18 months for Sutton
- Clemson University (Barrett): no change
- AFWA (Nanjappa/deMaynadier): no change

Requested new funds:

- **Tennessee State University (Sutton): $15,000** ($12K toward 1/3 time salary over 18 months, $3K travel for state expert review meetings)
- UMaine (Loftin): **$0**
- Clemson University (Barrett): **$0**
- AFWA (Nanjappa/deMaynadier): **$0**

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