

NORTHEAST REGIONAL CONSERVATION NEEDS GRANT QUARTERLY REPORT

Quarter: (circle one) 2014 1st 2014 2nd 2014 3rd 2014 4th

Grant Number: 2011-05

Grant Title: **Permeable Landscapes for Species of Greatest Conservation Need.**

Grant Receipt: The Nature Conservancy

Grant Contact Name: Mark Anderson

Report # (July 2014 through Sept 2014)

Were planned goals/objectives achieved last quarter? Yes, this has been a very productive quarter

Regional Conservation Need Addressed: RCN Topic 4: Identification of Regional Focal Areas and Corridors for the Conservation of Species of Great Conservation Need in the Northeast

Progress Achieved:

This quarter, we really started working with the climate data, refining models of climate gradients, velocity and local options, and running the circuitscape connectivity software on the climate models.

Downscaling the PRISM data for the Northeast

The most commonly available and widely used climate dataset is the PRISM dataset (developed out of Oregon State University). This is a baseline dataset that models average monthly and annual conditions over the most recent three full decades, and the 30 year normals are carefully developed and subjected to extensive peer review. However, the PRISM data has a 935 meter grid cell size, which is too coarse for our connectivity work and a mismatch with the natural lands and the landform datasets which are at a 30 meter scale. To fix this, we adapted a method used in the Pacific Northwest to downscale the PRISM temperature data using a spatial regression on the elevation, latitude, and longitude to 30 meter scale data that matches the DEM. This follows methods used by Wang et al (2012) in the Climate WNA mapper. The results (Tmin, and Tavg) look excellent and we will make them available for others to use, as this is the first time detailed climate data will be available for the east coast. It is a critical dataset for this project.

Climate Velocity and Climate Options

We researched the Climate Velocity work done by Solomon Dobrowski and contacted him to obtain the his national grids as well as intermediary grids showing AET velocity, Temperature velocity, and Water deficit. We also prepared grids that evaluated the range of climates in a local neighborhood (100 m, 1000m) based on the downscaled PSRIM data and the number of estimated micro-climates in a local neighborhood based on the landform models. We have been studying the correspondence of these datasets and testing their utility for connectivity modeling by examining their impact on the circuitscape models when they are added as a measure of resistance. It appears that some of these approaches will work well from integrating climate into the connectivity analysis.

Riparian Climate Corridors.

We started working on models to identify and prioritize riparian climate corridors: relatively intact riparian areas that cross large climate gradients. We had a series of web ex session with western researchers to understand what had already been done in this arena, and then focused on outlining an approach and developing a basic unit to summarize on. We tested the utility of using the NE stream classification, different stream lengths, river buffers, or the Active River Area models to give more meaning to the analysis, and we tried several different methods and units. We also evaluated whether the downscaled PRISM climate data had enough resolution to inform these models (it does). We also compiled some of the input datasets that we were lacking, including a new solar radiation grid created by David Theobald using google earth engine.

Upcoming Steps for next quarter:

The last quarter was a big one for this project and the next quarter is even bigger. We need to:

- Form a review committee, and get their feedback on the method and results
- Finalize the base hypothesis layers
- Run the Results through circuitscape, and analyze the results to identify key linkages, areas of diffuse natural flow, and areas of blocked flow
- Analyze and integrate results, Identify NALCC linkages
- Attribute and analyze the riparian climate corridors
- Start writing the report
- Start finalizing the datasets

Costs:

Amount of NALCC-funded expenses to date: \$ 29,564.24

Amount due now: \$ 13,548.42

Total Approved Budgeted NALCC Funds: \$49,868 (with match \$99,736)

Are you within the approved budget plan? Yes

Are you within approved budget categories? Yes



Signature: Mark Anderson, Director of Conservation Science

Date: October 28, 2014