NORTH ATLANTIC LANDSCAPE CONSERVATION COOPERATIVE GRANT
2012 PROGRESS REPORT

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

Grant Number and Title: **NALCC 2012-07 Revisions to the Northeast Aquatic Habitat Classification.**

Grant Receipt/Organization: The Nature Conservancy

Grant Project Leader: Dr. Mark Anderson

Were planned goals/objectives achieved last quarter? We applied and received and extension on this grant to develop a lake classification. The extension was approved and the grant extended to 9/30/14

NALCC Conservation Need Addressed: Supporting a Standardization of Terrestrial and Wetland Habitat Classification and Mapping that Includes Characterization of Climate Sensitive Systems.

Progress Achieved: (For each Goal/Objective, list Planned and Actual Accomplishments)
This quarter we focused on developing the datasets necessary to map the four classification variables agreed upon by the steering committee.

Baseline Attributes:
For every lake, we compiled lake buffer statistics on the condition of each lake shore, as well as baseline information such as the bedrock geology, landcover, baseflow index, securement, and amount of impermeable surfaces. We also calculated statistics on the number of lakes that were dammed or had an associated dam, and determined some geographic and type queries for the lake dams.

State-based information:
We designed a draft classification table for the NHD lakes, and the steering committee approved of this classification scheme, which classifies lakes by whether they are a lake or a pond, the trophic class, the alkalinity class, and the temperature class. Next, we requested data from every State and they responded by sending in their available data regarding these variables. We spend a considerable amount of time on data cleanup and equalization to bring the state databases into a useable form – first, state tables had to be made into points using their latitude and longitude, after which the data had to be spatial joined to the national hydrography lakes, and manually checked to make sure that the join worked well. After that, the attributes for each lake had to be manipulated such that each national hydrography lake only had one entry for each predictor variable, and finally the lakes had to be classified using the predictor variable data. We focused on the following four variables:

1.   **Size:**
Developed maximum depth attribute by integrating sampled data and the EPA (Holliter) model. Developed and mapped threshold for pond vs. a lake split using max depth as a proxy for the light penetration 30ft for oligotrophic systems, 20ft for mesotrophic systems, 10ft for eutrophic systems to define the pond/lake split.

2.   **Trophic State:**
Developed Chlorophyll-a dataset using sample data from the states integrated with available data from the EPA SPARROW model. We are still in the process of creating a separate model for non-sampled waterbodies in the Great Lakes and Ohio/Mississipian drainages. When dataset is ready with will attribute each lake with

oligotrophic, mesotrophic, eutrophic, or hypereutrophic category based on thresholds for Chlorophy-a published in the National Lake Assessment.

3. **Buffering Capacity:**
We developed an ANC and alkalinity estimate for every lake using sample data from the states and Federal sources. We have also attributed the lakes with bedrock geology at multiple scales so that we can model the unsampled lakes into one of three classes: high > 1000 ANC µeq/L or 50 alkalinity mg/L, moderate 250-1000ANC or 12.5-50 alkalinity mg/L, low <250 ANC µeq/L or 12.5 mg/L

4. **Cold or Very Cold Habitat present:**
We developed a dataset of placing every sampled lake into one of four quantitatively defined temperature classes: Very cold, Cold, Cold-Cool and Warm based on state-based temp and dissolved oxygen profiles. We are building a predictive model for the unsampled lakes.

Difficulties Encountered:
None, this project is moving along very fast.

Activities Anticipated Next Quarter:
Goals for the upcoming Quarter include:
- Complete the final classification and mapping of lakes by the four variables and present the results to the steering committee for review.
- Complete the final product.

Expected End Date:
September 31, 2014

Costs:
      Funds Expended Previous to this Report: $5,666.12
      Amount of NALCC Funds Requested within this Report: $19,195.30
      Total Approved Budgeted NALCC Funds: $25,252
      Are you within the approved budget plan?   Yes, but barely
      Are you within approved budget categories? Yes

Signature:

Mark Anderson
Director of Conservation Science
The Nature Conservancy, Eastern Division

Date: July 30, 2014