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: NALCC 2012-06: F11AC00223 MOD #3 NALCC 1420
                        Spatially explicit models for aquatic habitats

Organization: Downstream Strategies, LLC

Project Leader: John Boettner

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?

The third quarter milestone was to continue performing the assessments for a list of species. The project continues to be delayed due to several factors, including a delayed start in the contract, a longer than anticipated stakeholder recruitment process and facilitating the model(s) selection. While model development has been slowed, the project has been accumulating predictor variables across the region and developing datasets to be used in the modeling process.

A model —Winter Flounder— has been selected as the case study for the coastal assessments. A data development and processing plan has been developed and DS is working with several stakeholders to ascertain both response and predictor datasets. A preliminary model is set to be completed by the end of the 4ᵗʰ quarter. A methodology document has been developed, which is a working document that outlines the modeling process. Progress was made on selecting an inland species —Atlantic Salmon— and several stakeholder discussions took place, however it was decided by the NALCC to wait on this species and purse a possible brook trout and river herring model.

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

Due to the dynamic nature of the project, several of the goals were not reached during this quarter. However, in light of this setback, the project made progress on framework components that will make the project more efficient.
   1. Phase-one goals:
      a. Review and identify gaps
         i. Planned: DS will work with the NALCC stakeholders to identify a list of the predictor and response variables useful for documenting current conditions and assessing threats to the aquatic habitats of interest.
         ii. Actual:
            1. Q1: Have begun the process and developed a plan for identifying data needs across the NALCC region. This process has begun by reaching out to stakeholders and experts in the field to determine data availability and

procurement strategies.

    2. Q2: Presented the project overview at several meetings to a multitude of stakeholders across the region. Case study response and predictor variables were selected for the coastal portion of the project. The project team has begun to put together a methodology and approach that will be presented the coastal stakeholders

    3. Q3: Group decided on winter flounder as the case study species for the coastal assessment and has begun collecting and processing data for model development. Worked with Scott Schwenk to identify predicator datasets to be collected and processed for the NALCC region. Also, our project team connected with Ben Letcher's group at the USGS and has begun collaborative discussions about developing a Brook Trout model and sharing data.

b. Assess needs

  i. Planned: DS will work with the NALCC to determine the best approach to address the gaps identified in prior goal.

  ii. Actual:

    1. Q1: A plan was developed in coordination the NALCC project director, which outlines the step necessary to lead towards the first facilitated stakeholder meeting. These steps include a data needs assessment, formation of stakeholders and technical advisors, defining the preliminary modeling framework, defining draft biological priorities, developing and implement a survey, and setting the agenda and format for the stakeholder meeting.

    2. Q2: Several documents and tools where created and published to the project management website, these include:

      a. **Stakeholder contact database:** Over 100 categorized contacts housed online @ smartsheet.

      b. **Web-mapping application (ArcGIS online):** http://www.northatlanticlcc.org/projects/downstream-strategies-project/web-mapping-test

      c. **Midwest and Great Plains Assessment Models Data Summary**: The top five anthropogenic and top five natural variables from each model for each FHP and a regional model are summarized in this brief. This summary pinpoints only those variables that were most important in structuring the responses for each model. Across all models, each variable is tabulated for the number of times it is occurs as one of the most influential (top 5 of each category). This analysis presents the relative usefulness of the most important variables in structuring regional- and fhp-scale model responses.

      d. **Preliminary Framework Concept: Inland fish habitat modeling for the North Atlantic Landscape Conservation Cooperative**: Downstream Strategies is committed to a stakeholder-driven process to guide each phase of this project; we propose the following methodology as a potential template for much of the work for inland stream modeling. It is not our intention to dictate the process, but inform the NALCC stakeholders about a generalized methodology that has shown to be useful in the past, and that could be implemented for this project, should the stakeholders find that it would meet their objectives and expectations.

      e. **Incorporating future climate and land use changes into aquatic habitat assessments:** Case study that demonstrates how readily available downscaled climate change and land use development models can be incorporated into species distribution models to characterize potential

future changes in aquatic conditions to better inform long-term conservation and restoration planning at the catchment level.

    f. **Case Study: Analysis of scale on boosted regression tree fish habitat models:** Recent modeling efforts at the regional and FHP scale have indicated that smaller-scale models are likely necessary to pinpoint localized stressors. From discussions with experienced modelers and fishery professionals, HUC8 watersheds were agreed upon as the most appropriate scale. This report summarizes a case study that demonstrates the effect of scale on the assignment of stressors from predictive BRT models. Specifically, we modeled the same response at three different scales and for two separate HUC8 watersheds.

    g. **Project Brochure:** A two page brochure providing an overview of the NALCC aquatic habitat assessment project.

    h. **Proposed Methodology for Aquatic Assessments:** This document details a preliminary methodology that we will use to guide the modeling process. This document is a working document and will be updated as input is gathered and decisions on the methodology are made.

    i. **Draft Review of Priority Aquatic Species:** To inform the aquatic assessment project, Downstream Strategies (DS) completed an initial review of priority species across all states within the North Atlantic Landscape Conservation Cooperative (NALCC). This list is intended to show existing priority species across the region in order to inform stakeholders and the project team as we collectively decide on a subset of species to include in the assessment project. The review provided here is in no way comprehensive and should therefore be viewed as an initial WORKING list of species occurring most frequently on state and federal management plans throughout the NALCC. Additional priority species or other biological endpoints identified by stakeholders can be integrated into the matrix and used in the decision making progress.

    j. **Spreadsheet of Preliminary Priority Aquatic Species:** To inform the aquatic assessment project, Downstream Strategies (DS) completed an initial review of priority species across all states within the North Atlantic Landscape Conservation Cooperative (NALCC). This list is intended to show existing priority species across the region in order to inform stakeholders and the project team as we collectively decide on a subset of species to include in the assessment project. The review provided here is in no way comprehensive and should therefore be viewed as an initial WORKING list of species occurring most frequently on state and federal management plans throughout the NALCC.

    k. **Online project overview presentation:** Habitat Assessment Models and Decision Support Tools for Aquatic Habitats Fritz Boettner of Downstream Strategies presents on the North Atlantic LCC funded project to develop a decision support tool for an aquatic assessment of the Northeast. The presentation focuses on the development of a modeling methodology, process and outputs that came out of the modeling, and how stakeholders are needed for the project to be a success and develop quality assessment outputs. (http://applcc.org/resources/video-gallery-and-webinars/webinars/neighboring-lccs/habitat-assessment-models-and-decision-support-tools-for-aquatic-habitats)

3. Q3: Performed research and examined existing datasets to develop a proposed

framework and methodology for the Coastal Model.
      c. Report on findings
          i. Planned: Drafting of an assessment report and creating a PowerPoint presentation for key stakeholders and the NALCC.
          ii. Actual:
             1. Q2: Pieces of the report have been completed (listed above) and were submitted for review in Q2. All of these briefs are hosted on the project website.
             2. Q3: As mentioned above, method and framework document has been created

2. Phase-two goals:
    a. Coordinate Stakeholders: Several milestones have been reached regarding stakeholders:
        i. Q2: Stakeholder groups formed
           1. A project coordinators group has been developed, including representation from NALCC, USFWS, ACFHP, WVU, and DS. This group has been holding bi-monthly conference calls since May.
           2. The beginnings of a coastal/estuarine stakeholder group have developed, including the selection of case study species and key participants.
           3. Emily Greene and Julie Devers are leading the coastal and estuarine modeling portion, while Callie McMunigal is leading the inland modeling effort.
           4. Each of the leads has been pulling together key stakeholders and DS has been presenting (4-5 times) the project overview via webinars.
        ii. Q3: Technical stakeholder group has been established for the coastal assessment
    b. Develop model framework:
        i. Q2: A preliminary framework document has been written and will be modified during the case-study modeling process for both inland and coastal assessments.
        ii. Q3: Winter flounder was selected as the case study species for the Coastal assessments. A framework and methodology document has been provided to the project team and is being used as a working document for the team. A literature review was performed to drive the initial framework of the method document. Datasets, both predictor and response, are being collected and processed for use in the Winter Flounder model and other yet-to-be determined species.
    c. Buy-in from stakeholders: This is still in progress, but DS has given 4-5 presentations to a multitude of stakeholders
    d. Finalize process: Not accomplished
3. Phase 3, perform assessments: Not started

Difficulties Encountered:

Difficulties encountered during this project continue to be the time needed to organize and develop stakeholders and encouraging their participation. It was anticipated by the project team that it would be a quick exercise to get people involved and make decisions; this has proven to be more difficult. However, this problem is being managed well by the project coordinators and should be accomplished this quarter. A technical committee has been formed for the Coastal Assessment and we are working towards an inland group for Brook Trout. The delay in the project timeline has created budget issues, at this point in the timeline and budget, the hope was that our team would be developing and producing models, not discussing model selection and developing data.

Activities Anticipated Next Quarter:

- Perform case studies (both inland and coastal) and solicit feedback.
- Finalize frameworks (both inland and coastal).
- Select modeling endpoints

- Work plan/timeline developed to perform assessments.

Expected End Date: January 31, 2015

Costs:

Total life to date expenses (include this quarter): $72,616.02

Total Approved Budgeted Funds: $250,000

Are you within the approved budget plan and categories? Yes

Signature:

Date: October 14, 2013