

NORTH ATLANTIC LANDSCAPE CONSERVATION COOPERATIVE GRANT 2016 PROGRESS REPORT

Quarter: (circle one) * 2016 1st * 2016 2nd 2016 3rd 2016 4th

Grant Program, Number and Title:

North Atlantic Landscape Conservation Cooperative grants program,
NALCC 2015 (6), River Corridor Assessment

Organization:

Department of Geosciences, University of Massachusetts, Amherst

Project Leader:

Christine Hatch (PI) and John Gartner (co-PI)

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.

Project Objectives. This projects aims to make a uniform assessment of North Atlantic river corridors. We are developing a multi-layered river corridor assessment method and conservation prioritization toolkit based on ecologic integrity, geomorphic processes, flood extents in a changing climate, and existing cultural resources. This toolkit will be tested first in three characteristic watersheds—mountainous, coastal and low-relief—and reviewed by our task force. In the second year, we will expand analysis to more river corridors across the North Atlantic region. We will quantitatively assess threats at regional and local scales to enable prioritization for protection of sensitive areas within the river corridors.

The project encompasses seven tasks. To date, we have assembled a Task Force, are actively adding new members, and are coordinating a meeting for mid-summer (Task 1). We have begun to assess regional data needs (Task 2) to integrate our geomorphic modeling with existing GIS-based ecologic modeling through meetings with Kevin McGarrigal, Brad Compton, and Scott Jackson (who work on the ecological assessment of river corridors as part of their Designing Sustainable Landscapes project), several meetings with Chris Duncan (a GIS specialist and adjunct professor at UMass Amherst), and compilation of previous needs assessment activities surrounding river corridors. We have worked on developing and applying a river corridor assessment method (Tasks 3 and 4) and begun to formulate how we will disseminate these tools to the public and stakeholder groups for maximum impact (Task 7). In this first quarter, we have drafted a manual for using GIS and remote sensing data to uniformly compute stream power and predict areas most prone to erosion or deposition along river corridors (this manual is currently entitled *Stream Power: Origins, Geomorphic Applications, and GIS Procedures*). In February, we submitted a paper to the peer-reviewed publication Journal of River Research and Applications (JAWRA) entitled *Defining the River Corridor: A participatory approach to incorporating geomorphic risks into flood management in Massachusetts, USA*. We have not yet done substantial work on compiling climate projects for hydrologic changes (Task 5). Initial work summarizing threats to river corridors across the region has begun (Task 6).

Were planned goals/objectives achieved last quarter?

Yes, see above.

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

Specific progress on project tasks includes:

- (1) Planned: Coordinate task force. Actual: Task force nearly complete, meeting planning ongoing.
- (2) Planned: Assess regional dataset needs. Actual: Initial assessment begun, ongoing in coordination with task force.
- (3) Planned: Develop river corridor assessment method. Actual: Early stages of planning methodology have begun. Key coordination meetings with programmers about GIS architecture to run the tools have contributed to method development.
- (4) Planned: Apply assessment to river corridors and determine protection priority areas. Actual: Once the tool is working, it can be overlain on layers containing priority protection areas for aid in decision-making.
- (5) Planned: Compile and test climate projections of changes in high flows, low flows, and temperatures. Actual: Ongoing.
- (6) Planned: Summarize threats to North Atlantic river corridors and floodplains. Actual: Ongoing. Initial compilation of known threats has begun.
- (7) Planned: Reporting and outreach. Actual: Ongoing. *Stream Power* manual nearing release, and discussions of the best approach for dissemination of materials is ongoing. *Defining the River Corridor* paper has been submitted to a peer-reviewed journal and will be revised.

Difficulties Encountered:

One of the greatest difficulties for this project is to integrate geomorphic, ecologic, and climate aspects of river corridor assessment at suitable spatial scales, and we have begun to address this difficulty by creating river corridor delineations and geomorphic hazard predictions at scales that can be meshed with the ongoing ecologic assessments undertaken in the Designing Sustainable Landscapes project.

Activities Anticipated Next Quarter:

In the next quarter we will apply river corridor delineations in three test watersheds, and further coordinate the next task force meeting, which will occur in the 3rd or 4th quarter. We will also revise and disseminate the stream power manual on the RiverSmart website, which had substantial revisions and improvements last month. RiverSmart is a synergistic project (PIs Hatch and Vogel) supported by UMass Extension, USDA-NIFA and USACE-IWR that has the goal of supporting resilience to river floods through science, policy, and community outreach. We will revise and resubmit the *Defining the River Corridor* paper.

Expected End Date:

February 2018

Costs:

Total life to date expenses (include this quarter): \$ 5,029.18

Total Approved Budgeted Funds: \$ 99,999

Are you within the approved budget plan and categories? Yes

Signature: John Gartner and Christine Hatch

Date: 4/29/2016