Recommendation of Technical Review Panel to the North Atlantic Landscape Conservation Cooperative Steering Committee for funding project under RFP Topic 1:

Consistent Assessment of River Corridor and Floodplain Ecosystems and Cultural Resources Vulnerable to Flooding

Summary Recommendation

The Technical Review Panel and North Atlantic LCC Staff recommend that the Steering Committee select the proposal titled *River Corridor Assessment for the North Atlantic Region* submitted by Christine Hatch and John Gartner, University of Massachusetts Amherst, to receive the full funding amount ($99,999) requested under the August 2015 North Atlantic LCC Request for Proposals (RFP).

Background

On June 16, 2015, the North Atlantic LCC Steering Committee approved a science need developed by the North Atlantic LCC Technical Committee to apply a consistent assessment of river corridors and floodplains throughout the region in order to prioritize conservation actions. North Atlantic LCC staff then worked with members of the Technical Committee and other partners to develop an RFP to solicit projects to address this science need. On August 12, WMI announced the RFP widely. Three proposals were submitted in response to the RFP, which closed on September 18, 2015.

Review Process

Scott Schwenk, North Atlantic LCC Science Coordinator, chaired the Technical Review Panel with Megan Tyrrell, North Atlantic LCC Coastal Resilience Coordinator. Reviewers consisted of volunteers from the LCC Technical Committee as well as recommended experts with a wide range of geographic and agency experience. The review panel consisted of the following nine members:

Reviewers	Organization
Amanda Babson	National Park Service
Scott Cuppett	New York State Department of Environmental Conservation
Lisa Havel	Atlantic Coastal Fish Habitat Partnership
Mike Kline	Vermont Department of Environmental Conservation
Eric Kreusch	National Park Service
Scott Schwenk	North Atlantic LCC
Megan Tyrrell	North Atlantic LCC
Kevin Wagner	Maryland Department of the Environment
Jed Wright	U.S. FWS Gulf of Maine Coastal Program

Following an initial screening by WMI, the proposals were reviewed by the full panel. The reviewers scored the proposals according to a set of criteria listed in the RFP and were

encouraged to provide comments that explained their reviews. On October 19, seven of the panelists discussed the proposals by teleconference and reached consensus on the recommendation.

Results of the Reviews

Six reviewers scored the proposal by the University of Massachusetts, Amherst as their top ranked proposal and this proposal also received the highest average score overall.

Strengths identified for the UMass proposal were that it builds on an existing, active partnership, the River Smart task force. Furthermore, there is high overlap between the River Smart's ongoing considerations and the topics described in the RFP- such as user needs. The proposal also described an approach that combines remotely sensed data with field data collection and it had a strong match component. Limitations of the UMass proposal included comparatively vague descriptions of the ecosystem services and wildlife habitat components. Products that will be produced are not as clearly described as they could be, and the cultural resource components are not well-defined. Finally, the task force representatives in River Smart currently are from only three New England states (MA, NH and VT).

The proposal by the Nature Conservancy was favorably viewed for its plans to build on its Active River Area concept and for its comprehensive discussion of ecosystem services, including wildlife benefits. It also proposed to cover the entire NA LCC geography. Limitations identified for the TNC proposal included that the cultural resources component was confined to a pilot study area (Connecticut River Watershed) and this component could have been more clearly described. The proposal did not define the partners who would be involved and the outreach plans were not described. Concerns were also raised about how widely used the product would be and whether the intensive flood modeling in the pilot study area would be applicable elsewhere.

The NatureServe proposal was recognized for its strength in building on an existing riparian delineation model and datasets. This existing model can be applied at a large geographic scale. The description of ecological integrity was appealing to the reviewers and the outreach efforts for the whole project are well-defined. Limitations of the NatureServe proposal were that it proposed to examine only the 50 year floodplain. Other reviewers noted that the ecological integrity component was thoroughly considered but only would be applied in a few watersheds and that the advisory team to date only represented four states. Finally, there were concerns about the usefulness of the tool kit for the target audience.

Following discussion, the consensus among reviewers was that the proposal by the University of Massachusetts was the strongest overall and that it should be recommended for selection. If the UMass project is selected, reviewers recommend that several issues be considered prior to finalizing the project scope of work and during performance of the project.

- Reviewers sought more clarity on the geographic scope for the project and more information about how the focal areas (mountainous, coastal and low relief) will be chosen to insure broad applicability.
- Reviewers requested that UMass to provide more information and justification of how their toolkit is chosen and organized.
- Recommend broadening representation on the River Smart task force to better represent the entire North Atlantic LCC region
- Would like to see an improved consideration of wildlife benefits and ecosystem services.
- Finally, reviewers would like to see more specifics on the spatial products that would be developed and their practical applications throughout the Northeast.

Supplemental Information:

Proposal Review Criteria
1. Degree to which the project addresses the priority themes and products described in the Request for Proposals. In summary, this is to apply consistent assessment of river corridors and floodplains throughout the region to prioritize conservation action 2. Scientific and technical merit 3. Programmatic capability and feasibility. Are project objectives/goals clearly defined, measurable, and connected to specific milestones/deliverables and timelines? Will/can proposed methods accomplish/produce the project's objectives/goals, deliverables, and timelines? 4. Engagement of partners - demonstrating commitment to participation and buy-in by partners across region. 5. Demonstration that products will be accessible and useful in conservation and resource management decision-making. 6. Degree to which project builds upon, rather than duplicates, existing efforts. 7. Geographic scope. Priority will be given to projects that encompass the full North Atlantic LCC region (cultural component may be at a smaller extent). Projects confined to a small portion of the LCC region (e.g., single state or watershed) will not be considered eligible. 8. Leveraging of other resources (not required but encouraged).
Deliverables requested in the RFP
1. Assemble a technical advisory team of topical experts including state agency experts and arrange regular meetings to review progress and draft products. 2. Undertake a regional needs assessment to identify user requirements for spatially explicit datasets that can be used to assess, protect and restore floodplains and river corridors. 3. Identify methods and tools to assess ecological and geomorphic processes that determine the condition of river corridor ecosystems, including floodplains, throughout the Northeast Region. Components could include (but are not limited to): biological diversity, forest floodplain size and condition, resilience, invasive species threats, extent of human development and population density, and ecosystem services values (including mitigation of downstream flood risks to human life, property, and cultural resources). Derived products would include a prioritization of river corridor ecosystems for conservation values as determined by a user-weighted scoring system.

4. To the extent possible, undertake a mapping of river corridors and floodplains throughout the Northeast region or subregions, including zones subject to flooding inundation or flooding erosion, which could involve both assembling existing information as well as developing a new mapping product.

5. Compilations of projections of peak streamflows (to select watersheds or region-wide as available) and analysis on how they affect conservation prioritization and prioritization of cultural resource preservation.

6. A detailed summary of threats facing floodplain ecosystems across the Northeast and recommended conservation strategies for conservation partners to mitigate current and future threats. A sub-summary of flooding vulnerability to National Register of Historic Places across the Northeast or for select watersheds as methodologically appropriate.

7. A plan showing how results will be communicated to: State Fish and Wildlife Agencies, Tribes, Federal agencies such as the National Park Service, Conservation NGOs, State Historic Preservation Offices, State Natural Heritage programs, and Tribal Historic Preservation Offices.

Abstracts from each proposal

Hatch and Gardner, UMass

River Corridor Assessment for the North Atlantic Region

An urgent need exists to uniformly assess river corridors, including floodplains, and to prioritize areas for protection across the North Atlantic landscape. These are daunting tasks since there are not a well-defined methods to delineate and assess scores of diverse river corridors in this region. The RiverSmart research group at UMass Amherst has made meaningful strides toward a uniform assessment of North Atlantic river corridors having assembled a task force of river specialists, analyzed ecologic and geomorphic threats, scrutinized the wide-ranging approaches to assess riparian habitats, and performed initial evaluations in diverse watersheds. In this project, we will build on this base. During the first year, we will develop 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 method will be tested and reviewed by our task force first in characteristic watersheds—mountainous, coastal and low-relief. 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 and prioritize protection areas. The results will be disseminated by two reports, presentations to the NALCC, and collaboration with our 30-member task force, who can further disseminate and use our findings. Overall this project will lead to a comprehensive evaluation of river corridors and floodplains in the North Atlantic region that can be updated as improved climate predictions emerge and as land use in changes.

Anderson et al., TNC
Consistent Assessment of River Corridor and Floodplain Ecosystems and Cultural Resources Vulnerable to Flooding

The goal of this project is to develop a NALCC-wide blueprint for floodplain conservation based on wildlife values and natural benefits, and to use a pilot study within the Connecticut River watershed to refine the model and estimate the range of flood impacts to cultural resources within floodplains. For the blueprint we will develop region-wide maps of the active river area with continuous estimates of stream confinement. To estimate natural benefits we will develop models of erosion risk, deposition risk and flood storage. To estimate wildlife values we will use measures of size, condition, and degree of current flooding, plus inventory of floodplain forest occurrences and rare species locations to identify important areas for floodplain conservation. For the pilot study, we will establish a study area within the Connecticut River watershed where a detailed flood model (Hydrologic Engineering Center's River Analysis System, HEC-RAS) is available. We will compare the output of the HEC-RAS model with the regional outputs in order to refine and calibrate the regional work. Finally, we will model flooding under various climate conditions and compare this with the locations of historic structures to estimate the range of potential impacts to cultural resources. The results will be a report and query tool to identify exemplary floodplains for natural benefits and wildlife values throughout the NALCC, and a report on transferability of the pilot study to other watersheds. This work will be guided by a regionally representative steering committee.

Smythe et al., NatureServe
Northeast Floodplain Mapping, Assessment, and Prioritization Toolkit

Recent floods in the Northeast underscore the importance of understanding riparian systems in order to improve management, better protect public safety, and reduce flood losses. We propose a floodplain assessment project that will (a) better map areas at high risk for inundation (Year 1), (b) assess the functional integrity of ecosystems and vulnerability of cultural assets within those areas (Year 2), and (c) provide a suite of tools to support prioritization of floodplain resources. Our team integrates floodplain modeling and ecological resilience expertise to evaluate inundation risk and prioritize management strategies for biodiversity and cultural resources.

Our project will operate at two scales. Region-wide, we will apply customized models (Abood et al. 2012, 2015) to identify areas at highest risk of inundation, given both historic peak flows and future projections. Within those floodplains, we will identify at-risk cultural resources and natural ecosystems. For a selected set of HUC-12 units in focal watersheds, we will demonstrate a more detailed assessment of flood risk (using finer-scale data and more precisely-honed alternative scenarios) and perform a 3-tiered approach to assessing ecological resilience of floodplains (Faber-Langendoen et al. 2012).

These watershed assessment products will support development of a toolkit to facilitate replication of our methods, and identification of conservation priorities, elsewhere in the region. This toolkit will include (1) a customizable floodplain modeling tool, (2) a spatial framework for site prioritizations, and (3) EIA methods for on-the-ground assessment of candidate priority sites.