

NORTHEAST REGIONAL CONSERVATION NEEDS GRANT 2012 ABSTRACT

Quarter: (circle one) 2012 1st 2012 2nd 2012 3rd 2012 4th

Grant Number and Title: RCN Grant #2010-2 In-stream Flow Recommendations for the Great Lakes Basin of New York and Pennsylvania

Grant Receipt/Organization: The Nature Conservancy

Grant Project Leader: David Klein

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.

This project will employ the Ecological Limits of Hydrologic Alteration (ELOHA) framework in the Great Lakes drainage of New York and Pennsylvania to develop an objective, spatially explicit process for evaluating the ecological impacts of new withdrawals of water from the tributaries of Lakes Erie, Ontario, and the Upper St. Lawrence River. The goal is to provide the scientific information necessary to support development and implementation of in-stream flow standards for managing the Great Lakes surface and ground-waters of New York and Pennsylvania under the terms of the Great Lakes Compact.

Milestones for the first quarter of 2012 were achieved, including distribution to our 25-member Technical Advisory Team of a report that documents the flow requirements of carefully selected flow-dependent fish found in the Great Lakes tributaries and nearshore waters; three proposed schemes for classification of streams that will be reviewed by the technical advisors in our second expert workshop; and preliminary planning of this workshop, scheduled for June 2012. This project is on schedule to complete a final report in January 2013.

NORTHEAST REGIONAL CONSERVATION NEED GRANT

2012 PROGRESS REPORT

Quarter: (circle one)

2012 1st

2012 2nd

2012 3rd

2012 4th

Grant Number and Title: 2010-02

Grant Receipt/Organization: In-stream Flow Recommendations for the Great Lakes Basin of New York and Pennsylvania

Grant Project Leader: David Klein

Were planned goals/objectives achieved last quarter? This project is on schedule to organize a flow alteration-ecological response workshop with our Technical Advisory Team in June 2012 (step 5 in our project narrative).

Regional Conservation Need Addressed: This project will provide the information necessary to develop and implement science-based in-stream flow standards for managing the waters of the Great Lakes tributaries in New York and Pennsylvania under the terms of the Great Lakes Compact.

Progress Achieved: During the first quarter of 2012, our activities focused on following up progress in steps 2 and 3 in our project narrative, and making progress in steps 4 and 5:

Step 4: Characterize and classify baseline and current hydrologic conditions in the Great Lakes Tributaries of NY and PA to produce a classification of streams; simulation of baseline conditions; and assessment of flow alteration. The small number of stream gages that can be used as “reference gages” (lengthy, continuous records in watersheds that can be considered “least-disturbed”) in our project area has precluded use of a common approach to stream classification. Dr. Jason Taylor is evaluating alternate methods for stream classification, including AFINCH models and classifications combining size, temperature, gradient, and baseflow variables. Dr. Taylor has prepared alternative classifications to present to our Technical Advisory Team at the second expert workshop on June 14, 2012.

Step 5: Organize a flow alteration-ecological response workshop and assemble the relevant experts to refine specific hypotheses of ecological response to flow alteration, and define ... relevant existing data to test these hypotheses. As stated above, this workshop is scheduled for June 14, 2012, and we have selected a location and invited the technical advisory team. A revised synthesis report on the flow requirements of target fish species has been distributed for comment to the technical advisory team, and we are refining the agenda for this workshop.

Summary of Progress: (Provide a paragraph describing progress, work to come, and timelines)

We include below the narrative of progress during the 1st quarter prepared by Dr. Jason Taylor, Project Post-doctoral Associate at Cornell University:

Further progress on steps 2 and 3 of the Project Narrative included a second draft of the synthesis report on our list of flow-dependent fish species and their documented responses to hydrologic alteration; this draft was distributed to the project advisory group. This report was finalized after getting more information on several species through personal communication with several biologists. I am currently finishing a follow-up report on macroinvertebrate, mussel and other target groups to be distributed to the project advisory group before the upcoming June workshop. These two reports in addition to existing flow ecology hypotheses I have compiled from neighboring EFLOW projects will serve as the background for our upcoming Flow-ecology hypotheses workshop in June.

In pursuit of step 4 in our project narrative, I have tested several methods for classifying streams for the project area at different geographic scales (our project area: the Great Lakes drainage of New York and Pennsylvania; NY State; and the Northeast region) using the USGS Hydrological Integrity Assessment Process (HIP). This process is reliant on “reference gages” which are not well represented in our project area. While analyses at these various scales have produced reasonable classifications, it has not proved possible within our project area to use landscape variables to assign ungaged streams with high confidence to appropriate stream classes. This leads me to believe a suitable hydrologic classification cannot be achieved using the reference gage classification approach for our study area, so we are pursuing other options. Our first alternative approach is to use AFINCH (Analysis of Flows in Networks of Channels) models currently being developed by USGS Great Lakes Office to model expected natural monthly median flows for all streams and rerun a classification. However, these tools are not yet available to me and will probably not be ready in time for an analysis to be conducted before the June workshop. Our project management team has agreed that a GIS stream classification is probably the best option at this point. I have put together stream layers that separate streams into different classes using 3 different approaches:

1. Size, modeled temperature
2. Size, gradient, modeled temperature
3. Size, modeled temperature, modeled baseflow (from USGS GAP project)

These 3 alternative classification schemes will be presented to the project advisory group who will aid us in choosing the best approach and making any modifications to adjust based on expert knowledge of specific streams or areas.

Difficulties Encountered: Further delays in completion of the AFINCH modeling of stream flows within our project area has necessitated alternate approaches to stream classification, which will be evaluated by our project technical advisors at the upcoming workshop.

Activities Anticipated Next Quarter: As discussed above, the major activity of the current, 2nd, quarter of 2012 will be organization and implementation of the project’s second expert workshop, to focus on stream classification and framing hypotheses of flow alteration-ecological response for testing.

Expected End Date: This project is scheduled to conclude in January 2013 with flow recommendations for the streams of different types in the Great Lakes basin of NY and PA.

Costs:

Funds Expended to Previous to this Report:	\$ 12,990.30
Amount of RCN Funds Requested within this Report:	\$ 25,980.60
Total Approved Budgeted RCN Funds:	\$100,000.00
Are you within the approved budget plan?	Yes
Are you within approved budget categories?	Yes

Signature: *David Klein*

Date: April 30, 2012