

Development of a Rapid Assessment Protocol for Aquatic Passability of Tidally Influenced Road-Stream Crossings: Phase I

Project Director: Scott Jackson, Extension Associate Professor,

Institution: University of Massachusetts Amherst

Contact Information: Department of Environmental Conservation
Holdsworth Hall
University of Massachusetts
Amherst, MA 01003
(413) 545-4743 (v); (413) 545-4358 (fax)
email: sjackson@umass.edu

Other Principal Investigator: Allison Roy, Research Assistant Professor, Department of Environmental Conservation, University of Massachusetts Amherst, aroy@eco.umass.edu

NALCC Funds Requested: \$75,000

Brief Project Description:

Over the past year as part of a project funded by the North Atlantic LCC a unified protocol was developed for the rapid assessment of stream crossings focusing on aquatic connectivity. This protocol and an effort to coordinate and support crossings assessments throughout the region is being launched in June 2015 as the North Atlantic Aquatic Connectivity Collaborative (NAACC). The protocol developed for the NAACC is for non-tidal streams and rivers. It is not suitable for tidal crossings because it does not account for the bi-directional flow and daily variations in depth and velocity that are typical of tidal streams. Aquatic organism passage through road-stream crossings on tidal streams is of critical importance not only for fish and other organisms that live in coastal marshes and estuaries, but also for diadromous fish that must pass through the tidal portions of streams to reach important habitat further upstream. We propose to begin development of a rapid assessment field protocol for the assessment of aquatic organism passage at road-stream crossings on tidal streams that can be integrated into the larger NAACC initiative. This first phase of the process will focus on assembling information on the organisms and issues that should be addressed by such a protocol, the convening of an expert technical advisory committee to provide input and critical review of the materials developed as part of the project, and development of a draft field assessment protocol and scoring system for road-stream crossings on tidal streams.

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Project Proposal

Introduction

As long linear ecosystems streams and rivers are exceptionally vulnerable to fragmentation. Recently much attention has been focused on the role of road-stream crossings (bridges and culverts) on the movement of aquatic organisms and semi-aquatic wildlife. Over the past year as part of a project funded by the North Atlantic LCC a unified protocol was developed for the rapid assessment of stream crossings focusing on aquatic connectivity. This protocol and an effort to coordinate and support crossings assessments throughout the region is being launched in June 2015 as the North Atlantic Aquatic Connectivity Collaborative (NAACC).

The protocol developed for the NAACC is for non-tidal streams and rivers. It is not suitable for tidal crossings because it does not account for the bi-directional flow and daily variations in depth and velocity that are typical of tidal streams. Aquatic organism passage through road-stream crossings on tidal streams is of critical importance not only for fish and other organisms that live in coastal marshes and estuaries, but also for diadromous fish that must pass through the tidal portions of streams to reach important habitat further upstream.

Geographic Scope of the Project: Tidal rivers and streams from Virginia to Maine

Start and End Dates: October 1, 2015 to March 30, 2017

Methods

We propose to begin development of a rapid assessment field protocol for the assessment of aquatic organism passage at road-stream crossings on tidal streams that can be integrated into the larger NAACC initiative. This first phase of the process will focus on assembling information on the organisms and issues that should be addressed by such a protocol, the convening of an expert technical advisory committee to provide input and critical review of the materials developed as part of the project, and development of a draft field assessment protocol and scoring system for road-stream crossings on tidal streams.

Task 1 Literature search compilation of a report on the extent of available information on organisms affected by and problems and issues associated with road-stream crossings on tidal streams and rivers. Included in the report will be:

- A summary of existing protocols suitable for crossings on tidal streams.
- A list of species (fish, other aquatic organisms, and semi-terrestrial wildlife) from throughout the geographic area that are likely to be affected by crossings on tidal streams
- A compilation of known capabilities (swimming ability, jumping ability, timing of movements, etc.) of species likely to be affected by crossings on tidal streams

- A compilation of needs and issues (depth, velocity, turbulence, substrate, perches, drops, scour, physical blockages and other barriers, exhaustion, timing, predators, etc.) for the species likely to be affected by crossings on tidal streams

We will coordinate with the The Nature Conservancy and NH Coastal Program who will be conducting a literature search for protocols addressing crossings on tidal streams. The information in this report will be shared with the Technical Advisory Committee and posted on the NAACC web site, and will serve as the basis for developing a rapid assessment protocol and scoring system.

Task 2 Convene a Technical Advisory Committee (TAC). This committee will include experts on the fish and other organisms (e.g. terrapins) likely to be affected by crossings on tidal streams as well as experts on coastal ecosystems such as salt marshes and estuaries. The TAC will be used as a source of information for the extent of our knowledge report, will provide input on, and critical review of, the draft protocols and scoring system.

Task 3 Develop a draft rapid assessment protocol to evaluate aquatic passability at road-stream crossings on tidal streams suitable for field testing

Task 4 Develop a draft scoring system for rating the passability of crossings on tidal streams

Measurable Products/Deliverables

- Extent of our knowledge report
- Draft rapid assessment protocol suitable for field testing
- Draft scoring system

Schedule for the Work:

Task 1: October 1, 2015 – September 30, 2016

Task 2: January 1, 2016 – March 30, 2017

Task 3: October 1, 2016 – February 28, 2017

Task 4: January 1, 2017 – March 30, 2017

Budget

	Total
UMass	
Personnel	
Salaries	
PI: Scott Jackson (1 mo)	8,198
Melissa Ocana (2.25 mo)	9,970
Research Associate (7.33 mo)	30,541
Fringe Benefits	15,008
Travel	1,500
Total Direct Costs	65,217
Indirect Costs (15%)	9,783
TOTAL	\$75,000