Credit for Going Green: Developing Standards to Help Communities Reduce Stormwater Pollution through Buffers

Project Location

Great Bay Estuary, New Hampshire

Project Duration

October 2017 to June 2019

Project Lead

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Project Type

Science Transfer – Promoting the use of science

Project Partners

- Chesapeake Stormwater Network
- Great Bay National Estuarine Research Reserve
- Narragansett Bay National Estuarine Research Reserve
- New Hampshire Department of Environmental Services
- Roca Communications+
- University of New Hampshire Stormwater Center
- U.S. Environmental Protection Agency
- Waquoit Bay National Estuarine Research Reserve

Project webpage

nerrssciencecollaborative.org/project/ Riley18

Overview

Creating vegetated buffers along rivers and bays is a widely recognized strategy for protecting water quality. However, there has not been a way to quantify the ability of restored or constructed buffers to reduce pollution, or for communities to receive credit for using buffers under regulatory permits. As a result, buffers have not been considered alongside other water quality best management practices.

The Credit for Going Green project team worked with a panel of experts to generate science-based recommendations for calculating the pollutant removal rate of restored or constructed buffers in development, redevelopment, restoration, or other land-use change projects. Communities can use this information to receive pollutant removal credits under permits issued by stormwater permit programs. Municipal staff and boards can now better promote buffers to protect water quality, while achieving the other benefits that buffers provide, like enhancing habitat and protecting communities from flooding.

Volunteers work to build a buffer

Project Approach

This project built upon the Chesapeake Bay program's use of an expert panel process to quantify the water quality benefits of green infrastructure, and those estimation methods are now accepted by U.S. EPA Region 3 and used by Chesapeake Bay communities.

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A member of the Chesapeake effort served as mentor to incorporate lessons learned into the process used by the New Hampshire team. Both projects used a weight-of-evidence approach to synthesize expert opinions on a subject around which uncertainties existed due to missing or unattainable data.

The Credit for Going Green project team convened a panel with expertise in local and regional watershed hydrology, stormwater management, soil science, fish and stream ecology, and spatial understanding of nutrient attenuation. Over the course of six meetings, panelists reviewed existing data and literature, identified conditions under which buffers are most effective at pollutant removal, characterized the factors that influence that effectiveness, developed pollutant load reduction performance curves, and made recommendations for how to use these curves in models available for the Great Bay watershed.

The project team also established an advisory committee with representatives of intended users of project results, including local communities, New Hampshire Department of Environmental Services, and the U.S. Environmental Protection Agency. The committee provided input on the panel process, reviewed panel recommendations, and suggested ways to package and share findings. Project results have been shared widely through briefings with key user groups and trainings in New Hampshire, Massachusetts, and Rhode Island.

Products

- A technical memorandum and final report designed to help municipalities, engineers, and regulatory officials quantify pollutant removal rates for buffers with different widths, slopes, soils, and vegetation. In addition to presenting performance curves for nitrogen, phosphorus, and sediment removal, the technical memo includes case studies and considerations for applying the method.
- Guidance for the FAST expert panel process, which can be used to collaborate with experts and develop timely, science-based solutions to environmental problems, particularly when there are few comprehensive studies for a particular region.
- An outreach toolkit to help partners share project results within their organizations and throughout their professional networks via a variety of media, including web content, newsletters, and social media posts.

Benefits

The project produced trusted and reliable tools that enable regulators and communities to use buffers to meet water quality standards. For example:

- Consultants and municipal staff that participated in the project plan to use the new information to meet municipal separate storm sewer system (MS4) permit requirements.
- The New Hampshire Dept of Environmental Services plans to ask developers and consultants to use the new calculation methods if buffers are part of a proposed project.
- A critical regional effort to track pollutant loading to Great Bay (the Pollutant Tracking and Accounting Pilot Project [PTAPP]) is incorporating project findings into their accounting and reporting framework.

Additionally, the Great Bay region's experience with the FAST expert panel process demonstrated its effectiveness and applicability to other water quality issues with insufficient research. Partners in the northeast and across the reserve system have gained additional resources and a greater capacity to adopt an expert panel process to meet stakeholder needs on related issues.

What's Next

The project team will continue to promote the new tools to communities, consultants, and regulators across New England. The team also has plans to replicate the expert panel process to help quantify the benefits of other non-structural best management practices, such as catch basin cleaning, municipal leaf litter collection programs, and street sweeping.

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