

Title: *Natural Infrastructure: Reducing risks and generating co-benefits along Coastlines and in Floodplains*

Description:

Conservation and restoration of floodplains and coastal habitats can contribute to risk reduction and provide an array of other benefits. Wetlands and connected floodplains can help reduce risk from flooding, and coastal habitats, such as oyster reefs and salt marshes, can reduce risk by dampening the effects of coastal storms and sea-level rise. Although grey infrastructure like levees, dikes, and flood walls are more commonly used to reduce risk, in some instances natural infrastructure alternatives alone or blended with grey infrastructure can be effective means to reduce the different types of risk. To catalyze more wide-spread use of natural infrastructure to benefit both people and nature decision-makers at multiple scales need tools and information that can guide the use of natural solutions that help reduce risk and provide additional benefits.

This workshop will be divided in to two parts. The first 90 minutes will consist of presentations describing the use and function of each of four analytical and decision support tools. For the second session attendees will be given the opportunity to attend an in-depth dive into the use a chosen tool. Each tool to be covered is briefly is described below:

1 - Resource Investment Optimization System (RIOS) Tool (Josh Goldstein, The Nature Conservancy).

RIOS provides a standardized, science-based approach to watershed management in contexts throughout the world. It combines biophysical, social, and economic data to help users identify the best locations for protection and restoration activities in order to maximize the ecological return on investment, within the bounds of what is socially and politically feasible.

2 – Floodplains by Design Tool (Kris Johnson & Chris Zganjar, The Nature Conservancy). *Floodplains by Design* is a collaborative effort to improve decision-making by providing information to align isolated objectives and integrate disconnected stakeholders. The *Floodplains by Design* tool is designed to support multi-objective decision-making in floodplains by providing data and data visualizations that can support multi-objectives and improve floodplain management. This tool has been developed both at a regional scale with state and federal agency partners, and at a local river reach scale, both of which will be demonstrated for the Puget Sound.

3 – Coastal Resilience 2.0 Tool (Christine Shepard, The Nature Conservancy). Coastal Resilience 2.0 is a suite of Apps developed to support coastal communities, government agencies and other stakeholders decision making related to hazard mitigation, risk reduction, climate adaptation and conservation planning. CR 2.0 includes visualizations of the current situation and future risk and Apps to help identify a suite of solutions that help reduce social and economic risks while maximizing the benefits that nature provides.

4 - Coastal Defense App in Coastal Resilience 2.0: Quantification of Coastal Protection Services (Greg Guannel, NatCap). The **Coastal Defense** tools in the Coastal Resilience 2.0 (CR2) platform quantify the protective services provided by nearshore natural habitats . These interactive web-based models compute the relative contributions of different coastal habitats in the impacts of waves and storms.

They can be used as standalone tools or in combination with other tools in the CR2 platforms to evaluate the relative effectiveness of different restoration or conservation strategies.

Workshop Audience:

Both sessions will present current research and practical tools and applications, and are intended to be of interest to scientists and practitioners alike, particularly those working on or near coastal and floodplain systems. Audience members will be exposed to the most current thinking on ecological, social, economic and policy implications of using natural infrastructure and the trade-offs associated with using it instead of or blended with grey infrastructure.

This session is meant to target the following audiences and learning objectives:

Business managers, engineers, scientists, or finance specialists that want to learn more about how they can include ecosystem services using available tools and reference case studies.

Scientists, economists, and engineers that want to learn about some of the latest ecosystem service tools available for coastal and floodplain risk mitigation – how they can be used, and results of use.

Government officials, staff, and policy makers that want to see how tools can be used to influence policy and decision makers, and case-studies that demonstrate how natural Infrastructure can work for communities.

Non-governmental organizations that would like to see a variety of tools and case-studies that illuminate the value of the co-benefits that are important to them.

Conference Themes Addressed:

Content Areas addressed in this symposium are the following: Economic and Non-Economic Valuation; Sustainability and Resilience; Adaptation and Climate Change; Tribal Goals and Resources; Public Policy, Science, and Practice; and Public-Private Partnerships and Inter-Agency Coordination.

Techniques and Approaches addressed will focus on Spatial Analysis Tools for Decision Makers.

Workshop Organizer:

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Qualifications of Organizer:

As Theme Lead for Natural Infrastructure in Central Science, Tim Boucher leads a group of scientists and economists that compares the costs and benefits of natural systems to artificial alternatives to inform decisions made by communities, governments and industry. Our research looks at where and how natural solutions may be effective and economical alongside or instead of “gray” solutions (e.g., levees, sea walls), with the goal of contributing the evidence base that can inform such investments. We also analyze and advance tools to assess natural infrastructure’s ability to meet engineering or other goals, as well as quantifying the conservation and societal benefits. Our scales of inquiry can roughly be grouped into three levels: broad global awareness (e.g., global analyses of potential risk or impact),

regional planning (e.g., influencing policy and prioritizing investments), to on-the-ground implementation at individual project sites (e.g., engineering design).

Tim Boucher has a Masters Degree in Geography from the University of Maryland, and has worked at the Nature Conservancy for 16 years in a variety of disciplines and applications – including GIS and Remote Sensing, carbon accounting and global prioritization. He has a Computer Science Bachelors degree from the University of Witwatersrand in South Africa.

Contact Information for Invited Presenters:

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