

**ACES 2018 Half-day Pre-Conference Workshop**  
**Monday December 3, 2018**

**Title: *Methods for Incorporating Ecosystem Services into Decision-Making: Conceptual Models and Benefit Relevant Indicators***

**Description:** The purpose of this workshop is to delve into specific ecosystem services assessment methods reviewed in the Federal Resource Management and Ecosystem Services (FRMES) Guidebook (<https://nespguidebook.com>), focusing on Ecosystem Service Conceptual Models (ESCMs) and Benefit Relevant Indicators (BRIs). The presentations will provide detailed explanations of ESCMs and BRIs and examples of how they are used to help build a common understanding of what it means to incorporate ecosystem services into decision making. This workshop provides an opportunity for the broader community to explore ecosystem service conceptual models and indicators in more depth with experts, using participant exercises to enhance the discussion and shared learning experience. Integrated question and answer sessions will provide opportunities to engage participating experts.

We ran a similar full-day workshop at the 2016 ACES conference where we had 101 registered participants from a wide range of institutions, such as federal agencies, consulting firms, and NGOs. We received great feedback from the community on the value of the conceptual model and BRI sessions, so we are focusing our 2018 workshop on these aspects of the FRMES guidebook. The National Ecosystem Services Partnership (NESP) has been involved in developing new resources focusing on these two topics, and will incorporate these into a refined and more tightly focused half-day workshop.

*What participants will learn during the workshop:*

I. Welcome

Participants will introduce themselves and the reason they are learning about ecosystem services methods to inform the others in the group and the lecturers about the various ways the participants expect to use ecosystem services information.

II. Overview and Introduction to NESP and the FRMES Guidebook

The presenters will introduce the audience to the National Ecosystem Services Partnership (NESP) and the NESP online guidebook resource. The focus will be on clearly defining ecosystem services, providing an overview of common methods that are described in the guidebook, and illustrating relationships among these methods. This introduction will also touch on a suite of other resources that may be relevant to users.

III. Ecosystem Service Conceptual Models (ESCMs)

We will then provide an overview of the initial scoping and framing steps used for understanding and assessing ecosystem services. This is the critical step of connecting changes in ecosystems to changes in the provision of services to the people who are affected by those changes (the beneficiaries). Participants will learn how these methods can be used as the primary tools of a decision process or as the starting place for more in depth assessment. Participants will be introduced to NESP resources that detail how and why you might build ESCMs, focusing on federal agency examples (NOAA and BLM).

Participants will engage in a hands-on small group exercise to build out causal chains and a conceptual map of ecosystem services affected by an example resource-management decision.

#### IV. Benefit Relevant Indicators (BRIs)

Next will be a discussion of Benefit Relevant Indicators (BRIs); what they are, how they are created, and why they are useful. This session will center on a [recent paper](#) that NESP experts published on BRIs. We will discuss why BRIs are a central component of ecosystem services analysis, and how BRIs differ from other types of indicators commonly (mis)used to quantify ecosystem services. The presentation will discuss how to develop simple BRIs, and also how to add social context data for more informative BRIs. It will provide ideas for where relevant data can be found and show a few examples. The presentation will show how BRIs can be used in alternatives matrices and efficiency frontiers to provide useful information for decision makers. The small group exercise will also explore the development of BRIs and non-monetary benefit indicators for a specific example.

#### V. Real world applications

Workshop participants will hear from two experts who have applied ESCMs and BRIs in their own work. Lisa Wainger will present results of a review of BRIs used as indicators of progress on achieving benefits (and for adaptive management) in large water body restoration programs. She will emphasize metrics used in the Chesapeake Bay Partnership, but also compare indicators across programs in the US to show how indicators are matched to local goals as a means to prioritize data collection and adaptive management effort. Sara Mason will discuss a project that used ESCMs to help prioritize lands for an agricultural retirement program in the central valley of California. She will focus on how an ESCM framework was used to incorporate environmental, biodiversity, and public health benefits into the program. This session will include allotted time for questions from the audience.

**Agenda:** This will be a 3.5-hour (half-day) workshop

Welcome	5 min
Overview and Introduction	20 min
ESCMs	40 min
BRIs	30 min
Exercise	75 min
Real World Applications	40 min

**Audience:** The target audience is quite broad as we hope to engage all actors that could potentially be involved in moving forward one of the many tasks necessary to advance the use of ecosystem services in decision making in the US and abroad. This would involve government actors, environmental NGOs, landowners, lawyers, environmental practitioners, foundations, academics, bridging institutions and many more. This workshop could be of interest to anyone who wants to understand ESCMs and BRIs, but may be particularly relevant to those who will be hiring experts to integrate ecosystem services into their projects or programs, or those who will begin doing such assessments themselves.

#### **Workshop Organizers:**

Lydia Olander, PhD (primary contact)

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**Qualifications:**

Lydia Olander, Ph.D. directs the National Ecosystem Services Partnership, which has been working for the last 8 years to support federal government efforts to incorporate ecosystem services into decision making. She also directs the Ecosystem Services Program at the Nicholas Institute for Environmental Policy Solutions at Duke University where she has worked on ecosystem services and environmental market policy since 2005. She has a doctorate in Biogeochemistry from Stanford University; a diversity of peer reviewed publications in science, policy and law; serves on the Environmental Advisory Board for the US Army Corps of Engineers; as a secretariat member of the Bridge Collaborative, and was a AAAS Congressional fellow in 2004-2005 working in the office of Senator Lieberman on a range of environmental issues.

Sara Mason, MEM works as a policy associate in the Ecosystem Services program at the Nicholas Institute for Environmental Policy Solutions at Duke University. She is one of the coordinators for the National Ecosystem Services Partnership, and has been involved in efforts to increase consideration of ecosystem services in federal decision-making. She has authored publications on the use of ESCMs, and is involved in multiple collaborative projects utilizing ESCMs and BRIs. Sara has co-designed and helped teach two graduate courses at Duke University, "Introduction to Ecosystem Services," and "Putting Ecosystem Markets Into Practice."

Katie Warnell, MEM works as a policy assistant in the Ecosystem Services program at the Nicholas Institute for Environmental Policy Solutions at Duke University. She has developed ESCMs in collaboration with experts at federal agencies and non-governmental organizations as part of her work to increase the consideration of ecosystem services in decision-making. She is currently involved in a collaborative project utilizing ESCMs and BRIs to standardize monitoring of coastal restoration project outcomes.

**Other Confirmed Workshop Speakers:**

**Lisa Wainger** ([wainger@umces.edu](mailto:wainger@umces.edu)), Ph.D. is a Research Associate Professor of environmental economics at the University of Maryland Center for Environmental Science. Her primary research interest is developing integrated ecological and economic analysis tools to communicate changes in ecological conditions in terms of socio-economic impacts. She currently serves as a special economics advisor to the US EPA Office of Research and Development and serves on the Executive Board of the Scientific and Technical Advisory Committee to the Chesapeake Bay Program. She has served on numerous other advisory panels for the White House Council on Environmental Quality, US Army Corps of Engineers, and the National Fish and Wildlife Foundation, among others. She received her BS in Earth Science from the University of California, Santa Cruz and her PhD in ecological and environmental economics at the University of Maryland, College Park, with support from a MacArthur Fellowship.