

<b>Presenter</b>	S. Kyle McKay US Army Engineer Research and Development Center, Environmental Laboratory
<b>Type</b>	oral presentation
<b>Category</b>	<b>Ecological Benefits</b>
<b>Title</b>	<i>How do we Measure Ecosystem Restoration Success?</i>
<b>Abstract</b>	<p>Although ecosystem preservation, restoration, and management have become topics of great concern in recent decades, the ability to consistently and robustly quantify the benefits, goods, and services provided by ecosystems has remained elusive. The U.S. Army Corps of Engineers (USACE) spends more than \$500M annually on aquatic ecosystem restoration. The return on that investment has not been meaningfully quantified, due in part to difficulties in characterizing environmental outcomes. Past techniques for measuring success were largely subjective and rested in the hands of “professional judgment”, and while these techniques may be somewhat effective, they are often unrepeatable, may express agendas, and are difficult to integrate into programmatic guidelines. As a major land holder, environmental manager, and funding source of many restoration projects, the USACE has a significant interest in advancing the field of Environmental Benefits Analysis (EBA). As such, a multi-year, multi-million dollar program has been initiated to holistically incorporate EBA into a consistent framework for scientific valuation of projects and programmatic decision making. A key component to assessing environmental benefit is the development of robust metrics to evaluate projects from both scientific and societal perspectives while working in the context of larger project and programmatic objectives and constraints. Results of a multidisciplinary, interagency meeting focusing on metric development and application for ecosystem restoration projects will be summarized and proposed approaches for establishing metrics offered. An approach will be presented that considers the total value of ecosystem outputs for decision-making at scales ranging from alternative-project comparison to project performance tracking to regional/national/global environmental management. Choice of appropriate metrics will be integrated into a decision analytic framework, and the importance of setting clear and complete objectives highlighted. An iterative three-step metric development process will be presented based on: 1) selecting metrics based on a logical hierarchy of natural, constructed, and proxy metrics, 2) evaluating results based on desirable properties of metrics, and 3) documenting and archiving metric development and application. This work is significant in that metrics measure progress toward goals and objectives of ecosystem restoration projects, raise awareness and understanding, and support decision making.</p>