U.S. Army Engineer
Research and Development Center

Environmental Benefits Analysis (EBA)

Description of Research

ERDC researchers are collaborating with the Nation's subject-matter experts and key District, Division, and HQUSACE proponents to develop guidance and tools for assessing the environmental benefits of ecosystem restoration (ER) projects. The Environmental Benefits Analysis (EBA) Research Program is organized into seven technical themes:

- **Conceptual models** to link problems, restoration actions, predicted benefits, monitoring and management
- Empirical, stochastic and mechanistic **forecasts** of ecosystem response to hydro-geomorphic manipulation
- **Metrics** for assessing benefits in different ecosystem types, across regions, and at both the project and program scale
- Multi-criteria **decision analysis** to support risk-informed planning with explicit accounting of uncertainty and recognizing local needs while ensuring national interest
- **Environmental benefits quantification** spanning alternatives analysis and post-project monitoring to document the contribution to NER account
- **Ecosystem services** using economic principals to account for social, economic, and ecological benefits
- Tools for **programmatic assessment** at regional and national levels

Problem

Decision makers at HQUSACE and at the Office of ASA(CW) have noted deficiencies in the documentation of project benefits in Corps ER feasibility reports. In addition, OMB has questioned the demonstrated success of the agency's ER program. To address these concerns, this research seeks to improve benefit/output evaluation techniques with emphasis on scientifically based and peer-recognized metrics for the analysis of ER projects with the goal of comparing projects and computing aggregate benefits on a national basis in support of the Federal investment.

Expected Products

The ultimate goal of the EBA program is to provide to the Corps, its partners, and stakeholders the overall framework and analytical tools to account for the benefits of the Corps' aquatic ecosystem restoration projects and program. Specific products include:

- Brief guidance documents addressing specific topics of concern in the EBA process.
- Journal papers that introduce new technologies, procedures, or methods.
- Software models and analytical tools for the computation of benefits, quantification of uncertainty, data management, and decision support.
- Technical reports, research reports, and manuals.

These products will be distributed through a community-based web gateway that includes online analysis tools, web-based training modules, video clips, peer-to-peer discussion boards, and examples of successful projects.

Potential Users

USACE Division and District planners, project managers, Corps partners, and other public and private practitioners and decision makers involved in aquatic ecosystem restoration.

Projected Benefits

The major benefits to the Nation from the EBA program include:

- A means of accounting for the return on the investment (ROI) for ER programs
- The capability to compare ROI across diverse ecosystem types, scales, and geographic regions
- The ability to prioritize investments on the basis of derived benefits and ecosystem significance
- Cost savings through improved efficiencies in executing ER studies at the District level
- Greater confidence in the expected outcomes of Corps ER projects due to improved peer review and consistency in the application of methods, models, and techniques employed in ER project and alternative evaluations

ERDC Program Managers

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