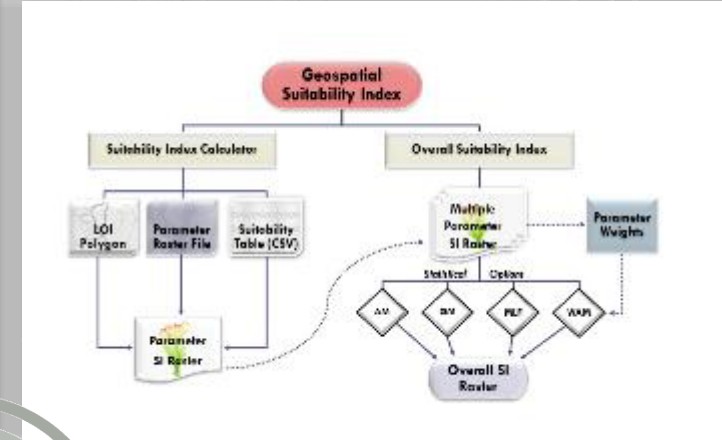# OVERVIEW OF THE:

ECOSYSTEM MANAGEMENT AND RESTORATION RESEARCH PROGRAM

Brook Herman, Ph.D.
Program Manager
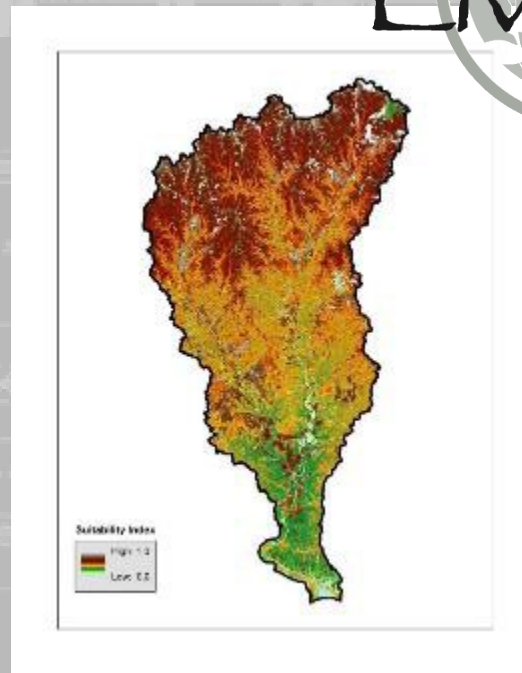
Planning Community of Practice
Date: January 27, 2022

EMRRP

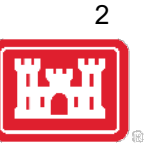US Army Corps of Engineers ®
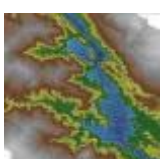
ERDC
ENGINEER RESEARCH & DEVELOPMENT CENTER

ECOSYSTEM MANAGEMENT AND RESTORATION RESEARCH PROGRAM (EMRRP)

Outline:

1. Program Background – Funding
2. Purpose/Focus Areas
3. How are Projects Funded
4. Website(s)
5. Examples Past and Ongoing Projects
6. Questions

ECOSYSTEM MANAGEMENT AND RESTORATION RESEARCH PROGRAM (EMRRP) – BACKGROUND

❖ **Civil Works ENV Business Line: General Investigations (GI)**

- Mindy Simmons – Business Line Manager (HQ)
- Jen Seiter-Moser– Technical Director (CEERD-EL)
- Brook Herman – Program Manager (CEERD-EL)

❖ **Aquatic and Floodplain Ecosystem Restoration and Management**

- ±$4M
- Decision/planning support
- ~14-20 Ongoing research projects

ECOSYSTEM MANAGEMENT AND RESTORATION RESEARCH PROGRAM (EMRRP)

PURPOSE:

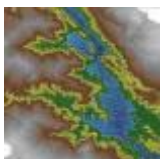Provide support to planning, design, construction and monitoring and adaptive management of aquatic ecosystem restoration projects through improving our fundamental understanding of the physical and biological processes and interactions within ecosystems, developing tools and guidelines to inform decision-making.
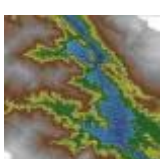
ECOSYSTEM MANAGEMENT AND RESTORATION RESEARCH PROGRAM (EMRRP)

FOCUS AREAS:

- Multi-objective Restoration
- Integrity & Sustainability
- Inland Resource Management
- Coastal Resilience & Function
- T&E and Invasive Species Management
- Modeling & Decision Making Tools
- Ecological Infrastructure

STATEMENT OF NEED (SON) PROCESS

"So – fill me in. Where are you running into a problem? What do you think would really help with that?"

❖ **Tactical R&D Ideas & Opportunities**
  ❖ Ground (bottom) - up
  ❖ Short to Mid-Term Needs: 3-5 years
  ❖ Submitted to BL: ENV, NAV, FRM
  ❖ Reviewed and Ranked
  ❖ Project Starts ~2-3 Years

❖ The **SON form** is available online, accessible from all three (ENV, FRM, NAV) Gateways
  ❖ https://gateway.erdc.dren.mil/son/index.cfm?Cop=Env&Option=Start

❖ **FY22 SON DEADLINE DEC 01**
  ❖ Update and resubmit SONs annually Dec 01 submission deadline, for reconsideration
  ❖ Sometimes highly ranked, but unfunded, SON will be automatically reconsidered next FY.

STATEMENT OF NEED (SON) PROCESS

❖TIPS and TRICKS
- ❖Work with other Districts, Divisions and HQ personnel to fully capture breadth of problem and opportunity.

- ❖Coordinate with CoP Leads and Research Area Review Group (RARG) Proponents to garner support during review and ranking.

- ❖Link R&D ideas to multiple regions (e.g., LRD and MVD) or nation-wide application and multiple mission areas. EMRRP – specifically Eco Restoration.

❖Brief is Best
- ❖Accurate title.

- ❖Description of the problem, including list of applicable or related guidance or policy.

- ❖Envisioned product.

- ❖Value Added

- ❖BL, CoP, Length of Effort, Type of Work (modeling, software, training, physical model, field experiment)
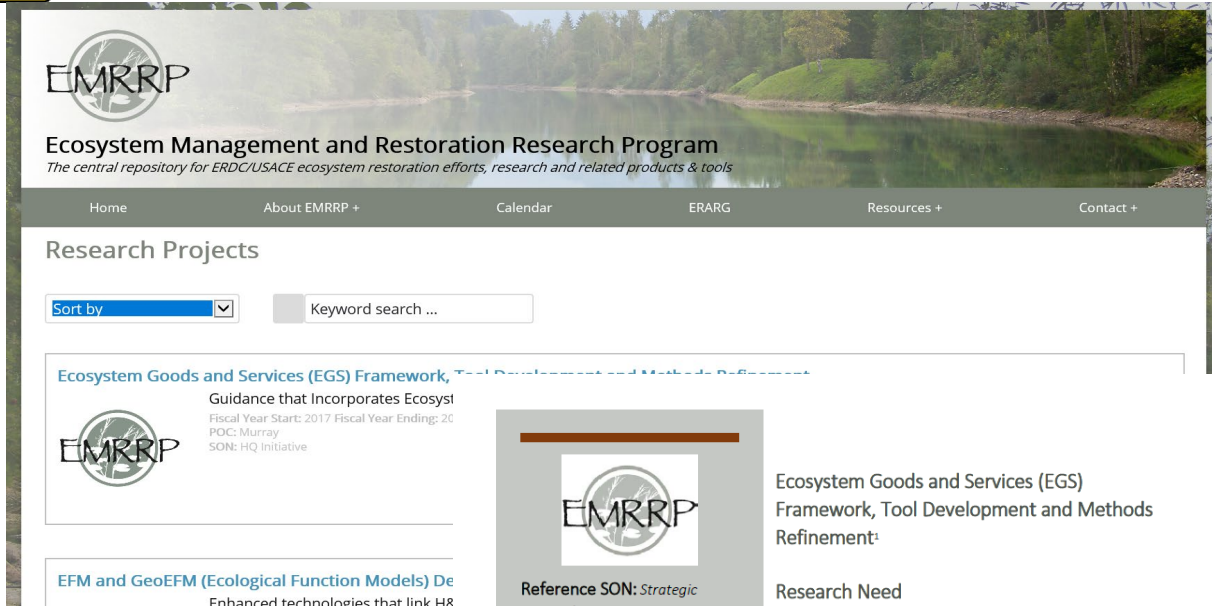
EMRRP WEBSITE: https://emrrp.el.erdc.dren.mil/programs.html

Video and image galleries

Searchable project archive – developing a program history, connecting the SONs to R&D efforts and products – creating visibility throughout R&D process
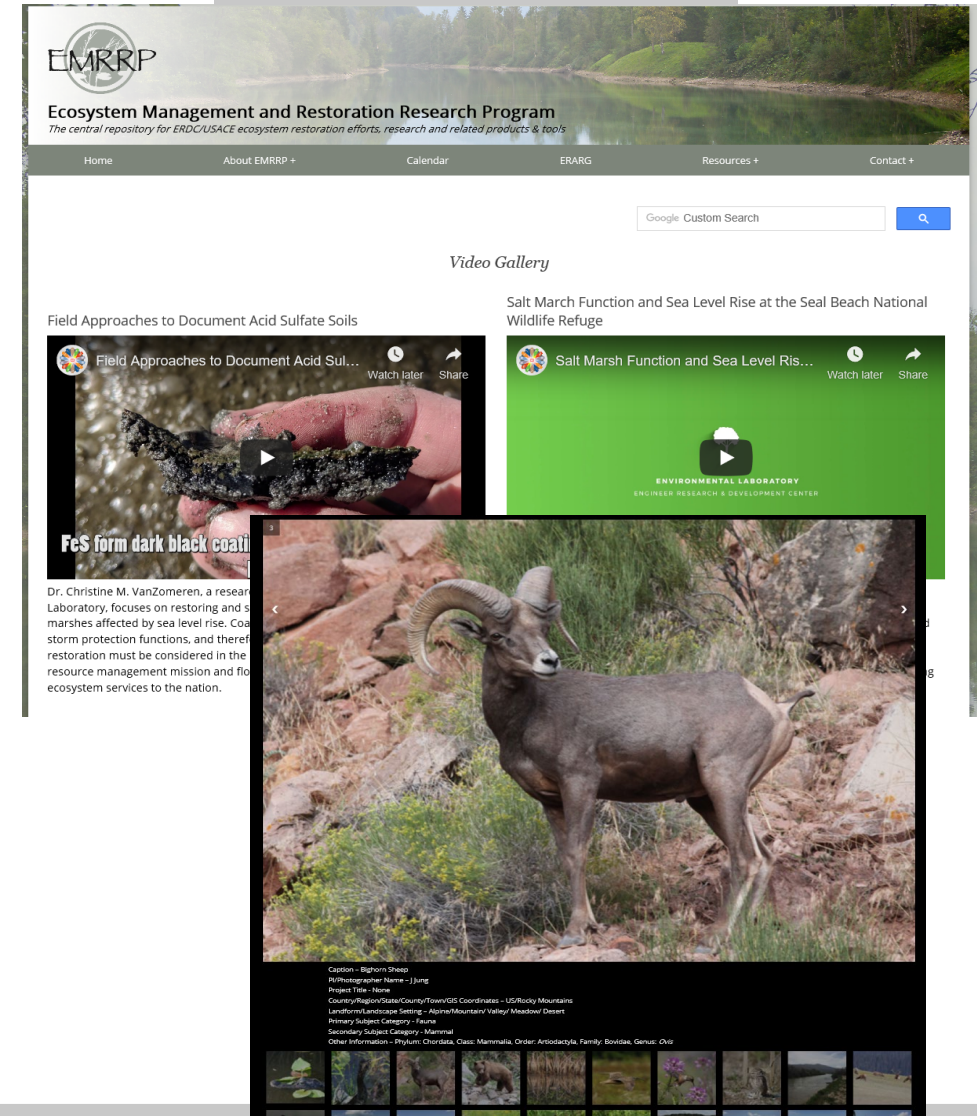
WEBSITE: MODELS AND APPLICATIONS

https://emrrp.el.erdc.dren.mil/models.html

Ecosystem Management and Restoration Research Program
The central repository for ERDC/USACE ecosystem restoration efforts, research and related products & tools

Home   About EMRRP +   Calendar   ERARG   Resources +   Contact +

Models and Applications

* Model is certified.

National Ecosystem Planning Center of Expertise (ECO-PCX)

ecorest: Conducts Analyses Informing Ecosystem Restoration Decisions

Purpose/Objectives: Three sets of data and functions for informing ecosystem restoration decisions, particularly in the context of the U.S. Army Corps of Engineers. First, model parameters are compiled as a data set and associated metadata for over 500 habitat suitability models developed by the U.S. Fish and Wildlife Service (USFWS 1980). Second, functions for conducting habitat suitability analyses both for the models described above as well as generic user-specified model parameterizations. Third, a suite of decision support tools for conducting cost-effectiveness and incremental cost analyses (Robinson et al. 1995).

Platform/Program: R-package (web application in development).

Applications/Considerations: Over 500 suitability models are preloaded, but users may also specify a model in a different format.

Contact Information for ecorest
Type: Index
Certification: Pending. National.
Users: USACE planners and engineers, consultants, other habitat applications.
Domain: All ecosystems.
POC: Kyle McKay, kyle.mckay@usace.army.mil
POC: Darixa Hernandez-Abrams

https://cran.r-project.org/web/packages/ecorest/index.html

EXAMPLE: ECOREST: CONDUCTS ANALYSES INFORMING ECOSYSTEM RESTORATION DECISIONS

https://cran.r-project.org/web/packages/ecorest/index.html
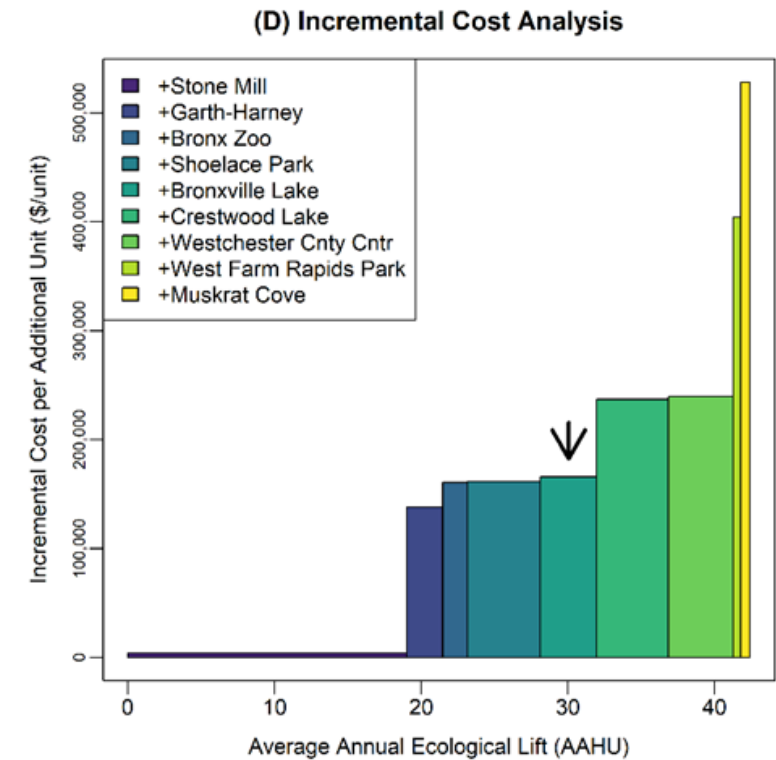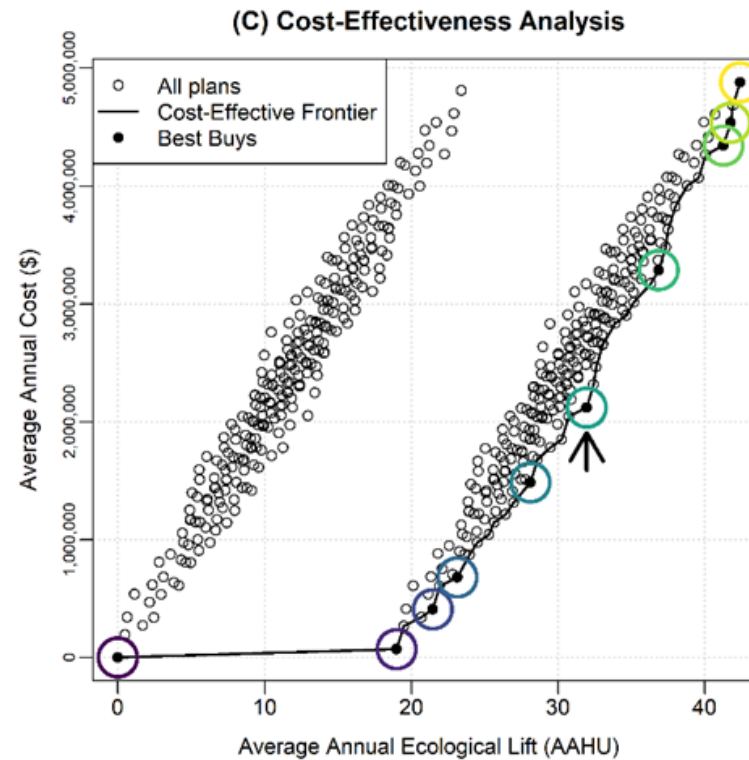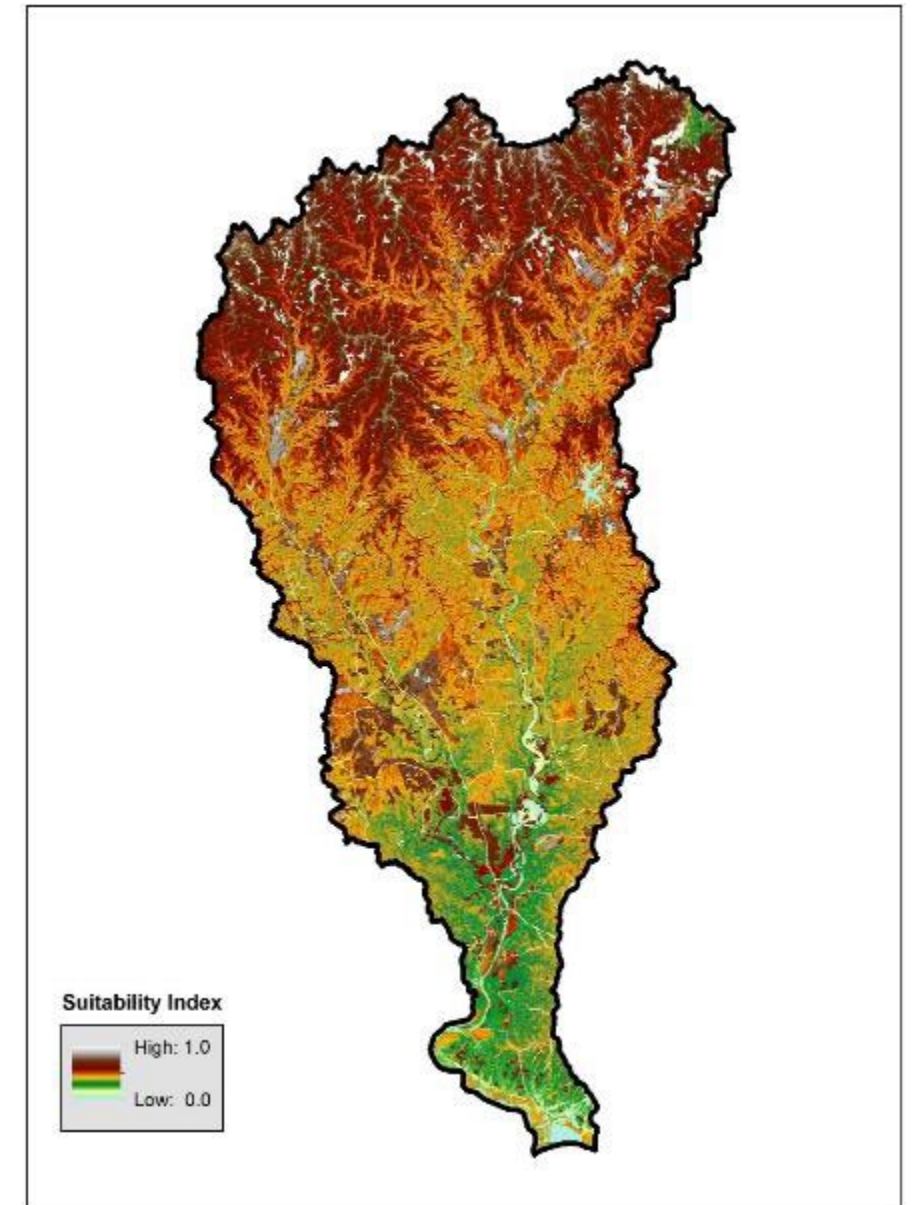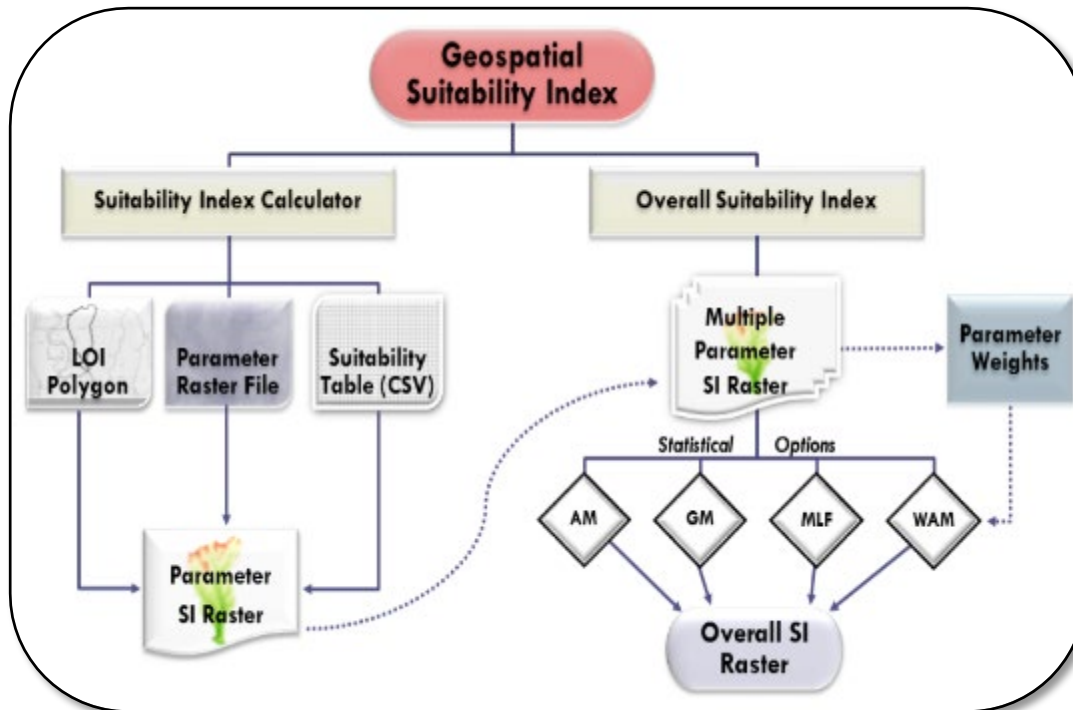

Figure Unpublished: McKay et al. 2021

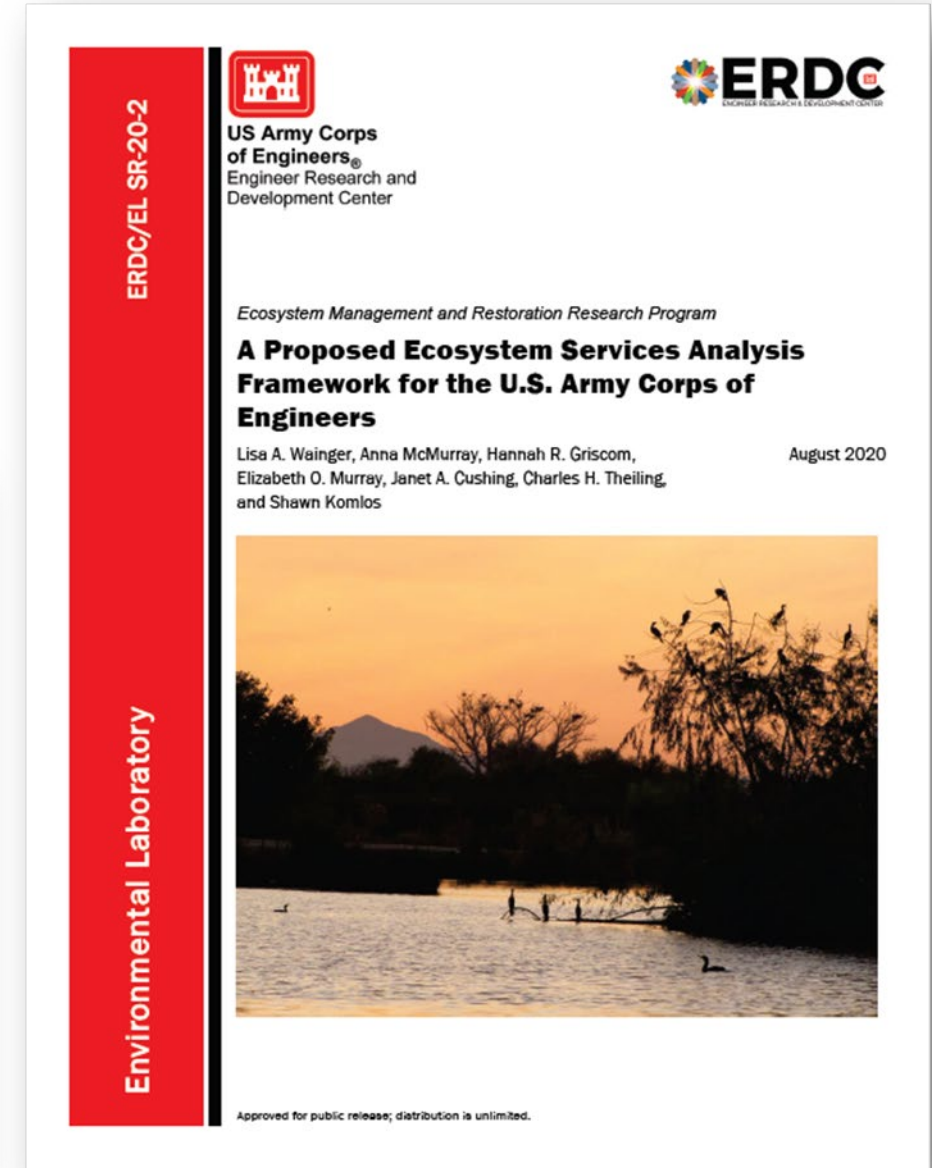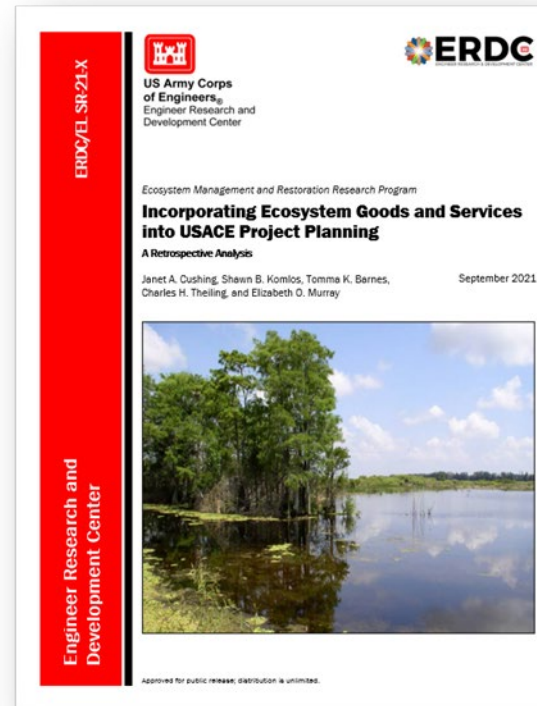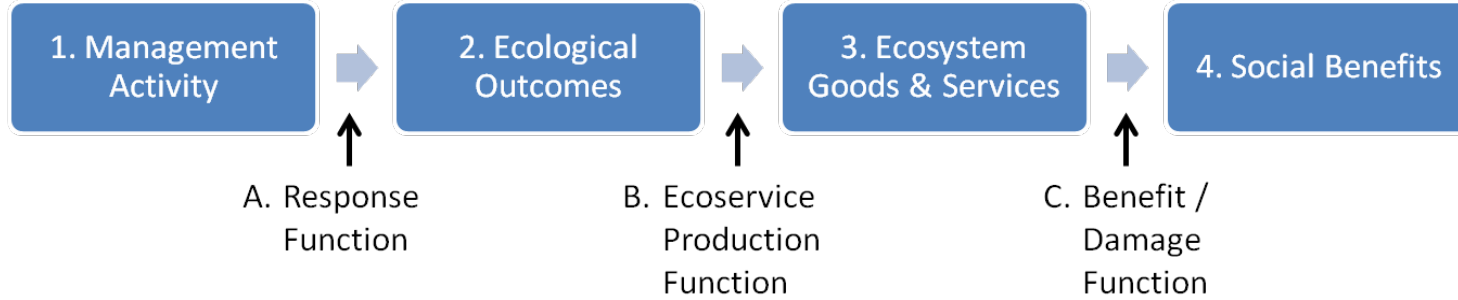# EXAMPLE: GEOSPATIAL SUITABILITY INDICES TOOLBOX (GSI TOOLBOX)

Geospatial Suitability Indices Toolbox (GSI Toolbox) and User's Guide: Saltus

Developed for planners, biologists, and engineers involved in ecosystem restoration projects, who already have familiarity with ArcGIS software, GIS analyses, and habitat suitability models.

EXAMPLE: ECOSYSTEM GOODS AND SERVICES

```
1. Management        2. Ecological        3. Ecosystem         4. Social Benefits
   Activity      →       Outcomes      →    Goods & Services  →
```

A. Response   B. Ecoservice   C. Benefit /
   Function   Production   Damage
                        Function   Function

National   Regional
Economic   Economic
Development   Development
(NED)   (RED)

Environmental   Other Social
Quality   Effects
(EQ)   (OSE)

ERDC/EL SR-21-X

US Army Corps
of Engineers®
Engineer Research and
Development Center

Ecosystem Management and Restoration Research Program

**Incorporating Ecosystem Goods and Services
into USACE Project Planning**

A Retrospective Analysis

Janet A. Cushing, Shawn B. Komlos, Tomma K. Barnes,   September 2021
Charles H. Theiling, and Elizabeth O. Murray

Engineer Research and
Development Center

Approved for public release; distribution is unlimited.

ERDC/EL SR-20-2

US Army Corps
of Engineers®
Engineer Research and
Development Center

Ecosystem Management and Restoration Research Program

**A Proposed Ecosystem Services Analysis
Framework for the U.S. Army Corps of
Engineers**

Lisa A. Wainger, Anna McMurray, Hannah R. Griscom,   August 2020
Elizabeth O. Murray, Janet A. Cushing, Charles H. Theiling,
and Shawn Komlos

Environmental Laboratory

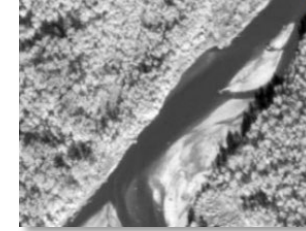Approved for public release; distribution is unlimited.

EXAMPLE: INTEGRATING FIELD AND REMOTE SENSING METHODS TO IMPROVE RIPARIAN AND AQUATIC VEGETATION MAPPING
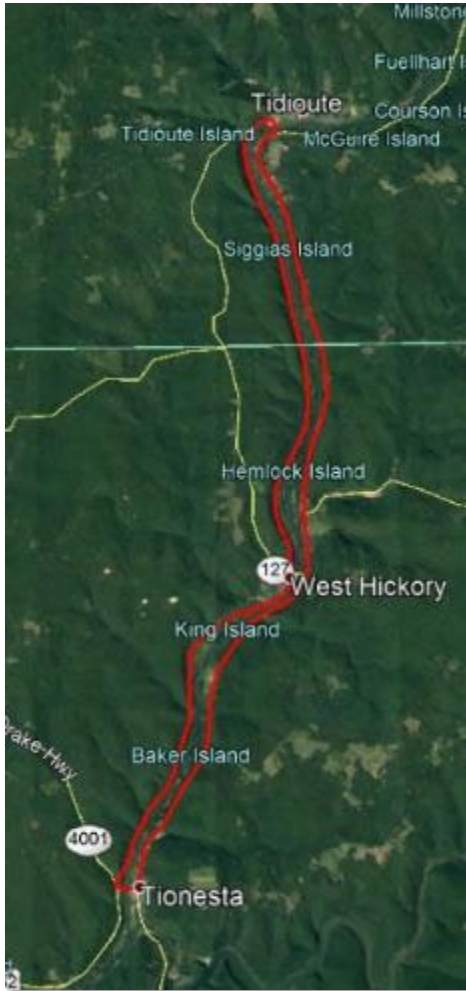
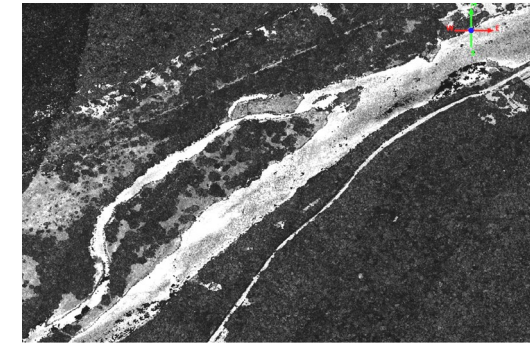Allegheny River Reach

Satellite and Airborne Data Resources

Satellite Imagery → **Riparian Forest Type Density Abundance Snags**

Airborne Lidar Reflectance

SAV Presence Density

QUESTIONS?

Brook Herman, PhD.
Program Manager – EMRRP

https://emrrp.el.erdc.dren.mil/index.html
https://gateway.erdc.dren.mil/son/index.cfm?Cop=Env&Option=Start