

**US Army Corps
of Engineers®**



Engineering With Nature Design Short Course

Welcome.

Tuesday, September 13, 2022 1pm-5pm
Westin Long Beach, Long Beach, California

Summary

- Engineering With Nature® (EWN®), in partnership with Coastal Zone Foundation, is leading a four-hour course on designing natural-based infrastructure for increased coastal resilience. The course will include a series of technical presentations that cover a broad range of topics related to natural infrastructure (NI), including an overview of the EWN program, an introduction to NI applications in coastal wetlands and beaches, an overview of EWN Beneficial Use best practices, a description of available EWN design and modeling tools and materials, a review of the NNBF guidelines, and case studies describing the use of EWN Engineering tools.

OBJECTIVES

- 1) Provide participants with an overview of the EWN[®] program, including its strategic program elements, R&D efforts, partnerships, policy efforts, and real world applications.
- 2) Demonstrate how NI promotes coastal resilience, flood risk reduction, and ecosystem services.
- 3) Introduce participants to EWN[®] tools, materials, and solutions.
- 4) Share the innovative research being conducted within the EWN program.
- 5) Extend the opportunity for others to get involved.

Intro to the Presenters

- Dr. Amanda Tritinger (USACE)
- Dr. Burton Suedel (USACE)
- Dr. Jackie Brower (Moffatt & Nichol)
- Dr. Arye Janoff (USACE)
- Tiffany Cheng, PE (USACE)
- Margaret Owensby (USACE)

Intro to Attendees?

Who are you?

What's your background/interest?

What do you hope to get out of this course?

Favorite ocean/estuary creature?

Agenda

Time	Topic/Action	Lead/Speaker
1300 - 1320	Opening remarks Short Course Introduction to EWN – Strategic Program Elements, Research and Development at ERDC, Partnerships, Policy Efforts, Application around the Nation - Pass Out Exam Materials Sign In	Amanda Tritinger USACE/ERDC
1320 - 1350	Introduction to NI in Coastal Wetlands Overview of Mangroves, Salt Marsh, Oysters - EWN Applied Research, Outcomes, Lab Studies, Modeling capabilities, and Case Studies - Show Mangrove Flume Video 5 to 10 minutes for questions	Burton Suedel USACE/ERDC
1350 - 1420	EWN Shoreline Protection Introduction and site evaluation and design considerations for 1) beach, dune, and berm creation, nourishment for beach stabilization on the coast, and; 2) Living shorelines for shore protection in Estuarine Environments. 5 to 10 minutes for questions	Jackie Brower Moffatt & Nichol
1420 - 1450	EWN Beneficial Use Best Practices: Overview of the San Francisco Proving Ground District strategic sediment placement pilot project and EWN engineering tools 5-10 minutes for questions	Arye Janoff San Francisco District, USACE
1450 - 1505	Break 15 minute break	

Time	Topic/Action	Lead/Speaker
1505-1535	EWN Engineering Tools Overview of available NNBF tools and project examples of how NNBF engineering tools are used. 5 minutes for questions	Tiffany Cheng San Francisco District, USACE
1535-1620	EWN Engineering Design/Modeling Overview of EWN design and modeling tools, materials, and tutorials. 10 minutes for questions	Margaret Owensby, & Amanda Tritinger USACE/ERDC
1620-1640	Natural and Nature-Based Feature (NNBF) Guidelines and Other EWN Strategic Communications 5 minutes for questions	Burton Suedel, & Amanda Tritinger USACE/ERDC
1640 - 1700	Closing remarks Where to find out more, and how to get involved. Exit test	Amanda Tritinger USACE/ERDC

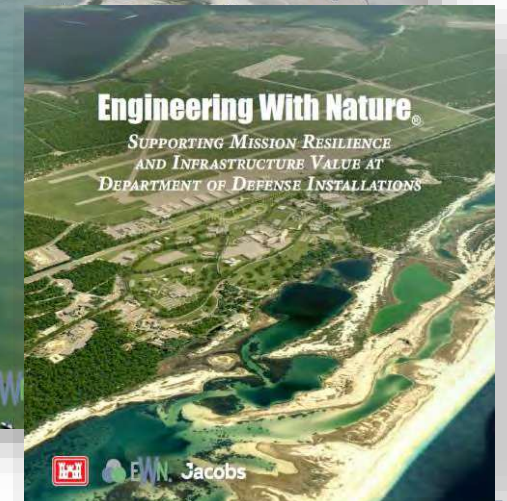
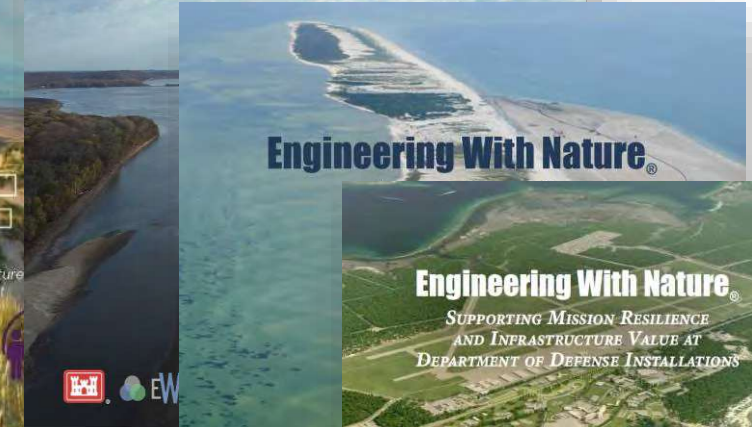
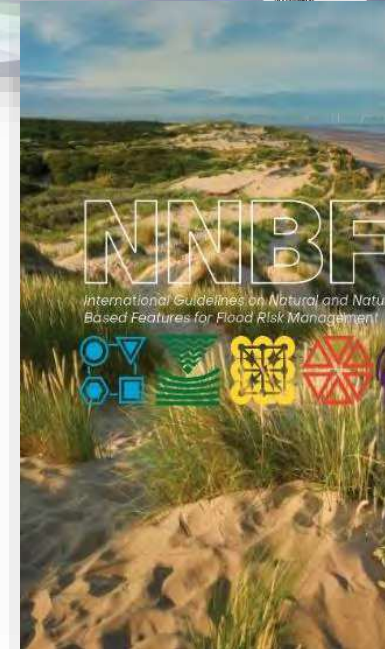
Engineering With Nature®



...the intentional alignment of natural and engineering processes to efficiently and sustainably deliver economic, environmental and social benefits through collaboration.

Key Elements:

- Science and engineering that produces operational efficiencies
- Using natural process to maximum benefit
- Broaden and extend the benefits provided by projects
- Science-based collaborative processes to organize and focus interests, stakeholders, and partners



www.engineeringwithnature.org



The EWN[®] Approach: Innovation in Practice



Policy development

- Engagement with policymakers
- USACE policy/procedure development

Engagement, partnering, and teaming

- Within USACE, e.g., EWN Proving Grounds
- With other organizations inside and outside government

Research

- Innovations in practice
- Taking the “long view”
- Establishing future targets and conditions
- Tools for delivery

On-the-ground projects and demos

- Across the spectrum of applications and project development (i.e., from planning to operations)

Strategic communications

- Individual research papers
- Visionary products, e.g., EWN Atlas
- Education, e.g., academic curricula, training

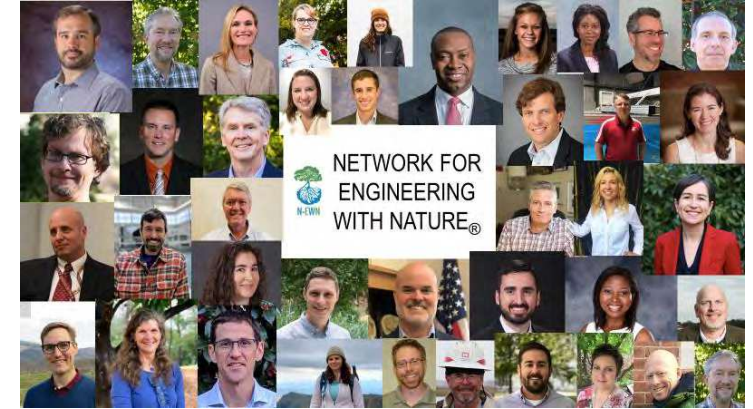


Engagement and Partnering: The Network for Engineering With Nature (N-EWN)

- Large scale network is needed for innovation / knowledge acceleration
- Driven primarily by research community
- Aligning research with the needs of practice
- Grounding research in real projects
- EWN education: curricula and training
- Experiential learning for students – systems thinking, cross-disciplinary training
- Types of partners
 - Research – academic, private
 - Industry practitioners
 - Users and project owners
- Freely flowing communication and knowledge sharing



THE WATER INSTITUTE
OF THE GULF



<https://ewn.el.erdc.dren.mil/n-ewn.html>

<https://n-ewn.org/>

EWN® R&D Projects: (some of)

- EWN Atlas Volume 1 and 2
- Engineering Guidance for Natural and Nature-Based Features – International Guidelines!
- Remote sensing research for EWN Design and Application
- Incorporating EWN into Existing Infrastructure
- Synthesizing Beneficial Use of Dredge Material (BUDM) Efforts Undertaken by USACE into EWN ProMap
- Maximizing the Long-Term Function of Coastal Islands Derived from EWN Efforts
- Characterizing Engineering Performance of NNBF Combined with Conventional Measures
- Wave Attenuation of Coastal Mangroves During Extreme Water Levels at Near Prototype Scale
- EWN CStorm Modeling Toolkit
- Implementing Sustainable Dredged Sediment Management Practices for Supporting Coastal Wetlands
- Coastal Carbon Capture via Beach Nourishment: Pilot Deployment of Olivine Sands as a Tool for Mitigating Climate Change
- Quantifying Engineering With Nature® (EWN®) Benefits Associated with Large-Scale Levee Setback Projects
- Quantifying the Efficacy of Floating Vegetated Canopies for Shoreline Protection
- Computational Modeling of Manmade Oyster Reefs: Life-cycle, Wave Attenuation, Performance, and Reliability
- Engineering With Nature® (EWN®) Jekyll Island “Sand Motor”
- Guidance for Modeling EWN® Watershed Management Methods using GSSHA
- Remote Sensing of Back-Bay Establishment Following Sediment Nourishment
- Comprehensive Benefits Evaluation for Nature-Based Solutions
- Identification of Opportunities for Beneficial Use of Dredged Material Within Atlantic Intracoastal Waterway
- And more...



On the GROUND Demonstration Projects

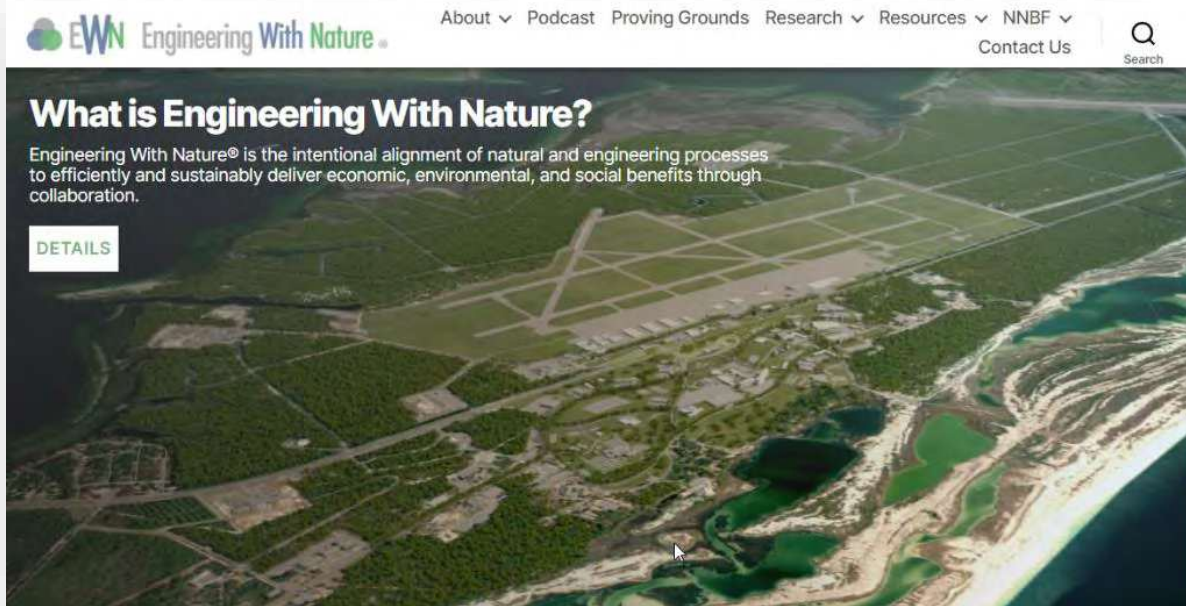
EWN[®] : *USACE Proving Grounds*

- Galveston District
- Buffalo District
- Philadelphia District
- Mobile District
- San Francisco District
- St. Louis District
- South Pacific Division

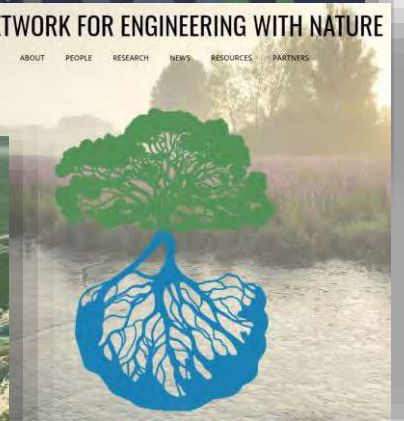
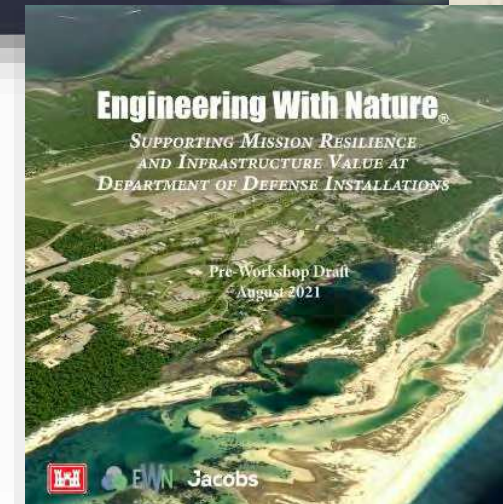
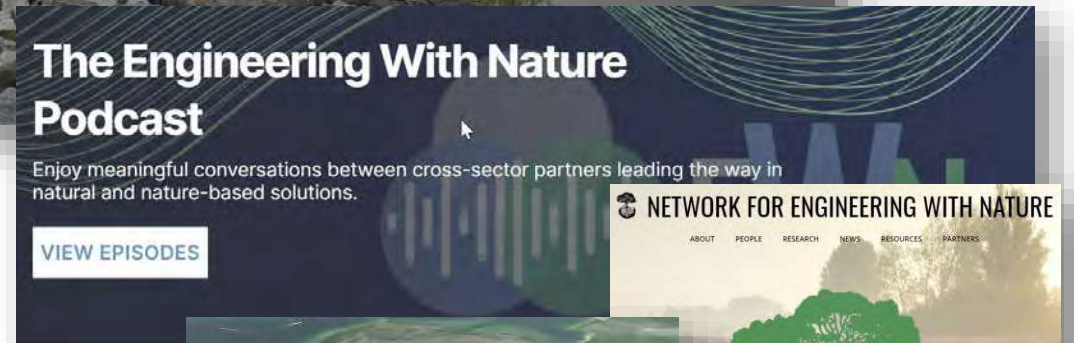


Engineering With Nature®

Let's Begin!



USACE Engineering Research & Development Center
Coastal and Hydraulics Laboratory
email: Amanda.S.Tritinger@erdc.dren.mil



N-EWN.org