



Engineering With Nature[®] to Increase Infrastructure Resilience

May 4, 2023, 10:30 a.m.



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Engineering With Nature to Increase Infrastructure Resilience

Moderator: Hollie Janson Schmidt, Jacobs

Agenda:

- **Leveraging Engineering With Nature® (EWN®) to Support Military Readiness and Installation Resilience**
 - **Dr. Burton Suedel**, Research biologist, U.S. Army Engineer Research and Development Center
- **Engineering With Nature® (EWN®) for the Department of the Navy**
 - **Hollie Janson Schmidt**, Global Senior Director, Sustainability & Climate Response – Americas, Jacobs
- **Implementing Nature Based Infrastructure (NBI)**
 - **Sam Whitin**, National Service Line Program Manager for Coastal Resilience, EA Engineering, Science, and Technology
- **Intentional Alignment of Engineering and Natural Processes**
 - **Scott Pippin**, Public Service Associate; Strategic Operations And Planning Assistance, University of Georgia Institute for Resilient Infrastructure Systems (IRIS)



Introduction



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2023

San Antonio,
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Dr. Burton Suedel



Research biologist, Environmental Laboratory, U.S. Army Engineer Research and Development Center



Dr. Burton Suedel, a research biologist with the U.S. Army Engineer Research and Development Center's Environmental Laboratory, is recognized by ASTM International for leading a diverse group of individuals from public companies, trade groups, government agencies and environmental consultancies to develop a guide for risk-based corrective action for contaminated sediment sites. The ASTM International's Distinguished Service Award was bestowed upon Suedel Oct. 28, 2020.



Leveraging Engineering With Nature[®] (EWN[®]) to Support Military Readiness and Installation Resilience

Burton C. Suedel

US Army Corps of Engineers, Engineer Research and Development Center, Vicksburg, MS, USA

JETC San Antonio, Texas
4 May 2023



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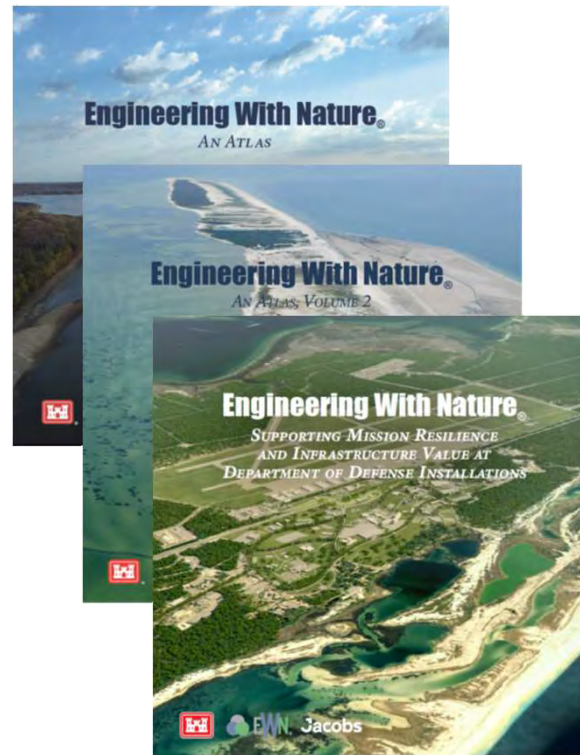
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Engineering With Nature®

...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
- Increase and diversify infrastructure value
- Science-based collaboration to organize and focus interests, stakeholders, and partners



“We absolutely want to do more engineering with nature everywhere we work across the Corps, you have my commitment.”
— LTG Scott A. Spellmon, 55th Chief of Engineers to the House Committee on Transportation & Infrastructure, Water Resources & Environment Subcommittee (24 June 2021)

www.engineeringwithnature.org



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EWN at DoD Facilities

- DoD faces complex set of challenges related to developing and sustaining the infrastructure needed for mission resilience in the face of a changing climate
- Natural infrastructure (or nature-based solutions) can address both challenges and opportunities
- Focus on conserving, restoring, and engineering nature for the benefit of people, human systems, and the ecosystems we inhabit
- Hazards: coastal and inland storms, flooding, extreme heat, drought, wildfire, earthquakes, infectious diseases, pandemics, and invasive species
- The effects of sea level rise are observed with more and more frequency



Top: Tyndall's coast; Bottom: Coastal dune habitat at Tyndall Air Force Base (Photos by Jacobs).



Military Installation Resilience: Built + Natural Infrastructure

“Built and natural infrastructure are both necessary for successful mission preparedness and systems and readiness.”

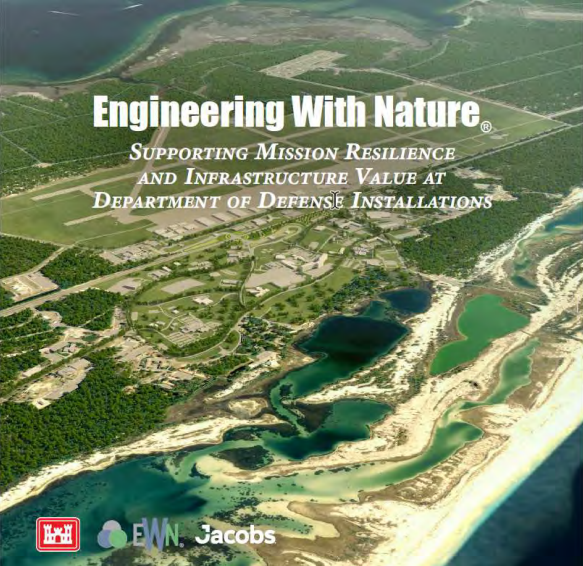


Engineering With Nature for the Department of Defense (DoD)

“Developing and integrating the natural infrastructure associated with DoD’s 26 million acres of land and water, as a part of our strategies and systems, will enable us to reduce risks, build resilience, and support the well-being of DoD service members and civilians.”

With our partners, the U.S. Army Corps of Engineers (USACE) is pursuing nature-based solutions through the Engineering With Nature (EWN) initiative.”

By: William L. Miller, Director, Commanding General for Military Programs and International Operations, U.S. Army Corps of Engineers



46 | The Military Engineer - January-February-2022

www.engineeringwithnature.org » About

Department of Defense Climate Adaptation Plan

September 1, 2021

To National Climate Task Force
and Federal Chief Sustainability Officer

LINE OF EFFORT 3: RESILIENT BUILT AND NATURAL INSTALLATION INFRASTRUCTURE



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International Guidelines on the Use of Natural and Nature-Based Features for Flood Risk Management

Goal: Draw together collection international expertise, across sectors, to develop guidelines for using NNBF for flood risk management while expanding and diversifying project value through economic, environmental and social benefits.

- Published NNBF Guidelines 16 Sept 2021:
 - ▶ Multi-author: government, academia, NGOs, engineering firms, construction companies, etc.
 - ▶ Addressing the full project life cycle
 - ▶ Guidelines in 4 Parts
 - Overarching Topics
 - Coastal Applications
 - Fluvial Applications
 - Conclusions

https://ewn.erdcdren.mil/?page_id=4351



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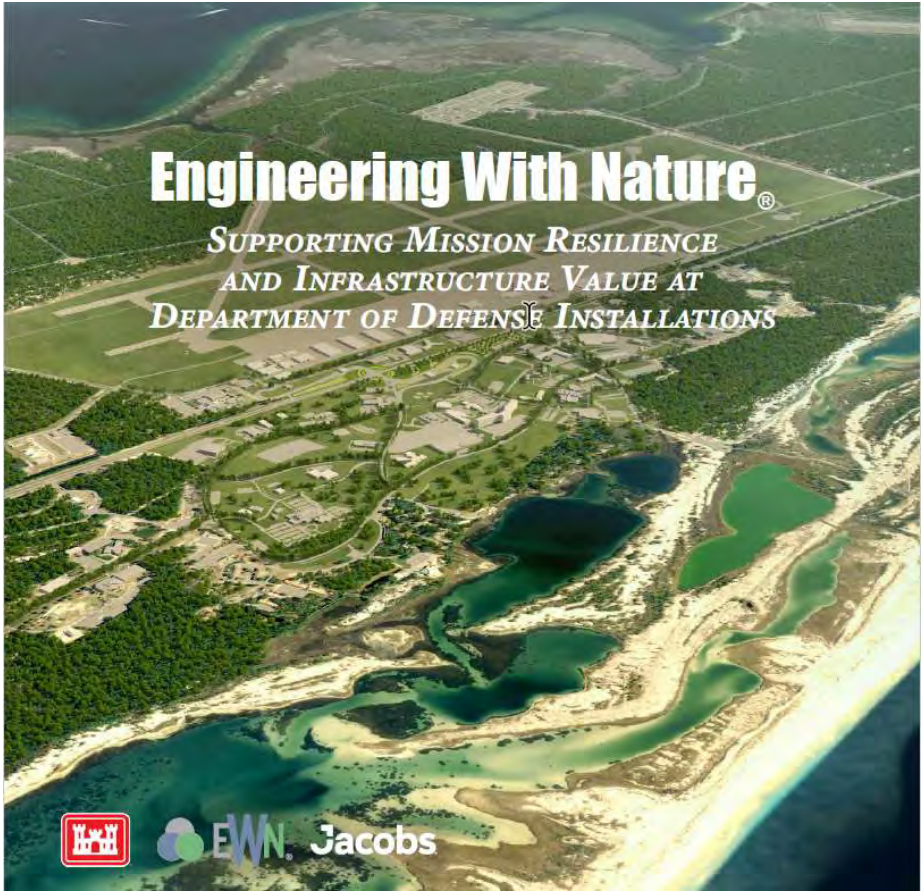
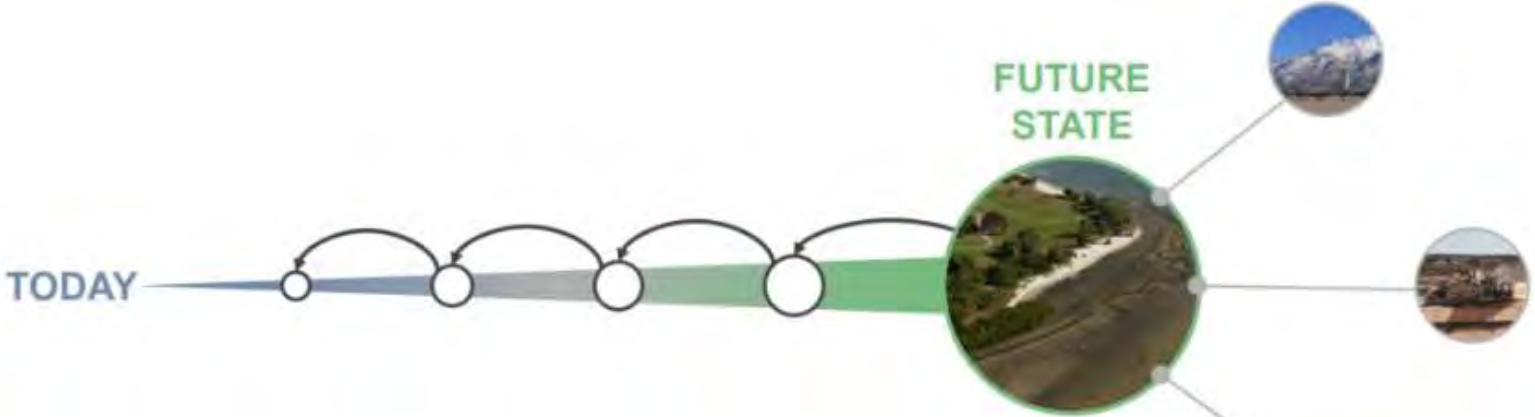


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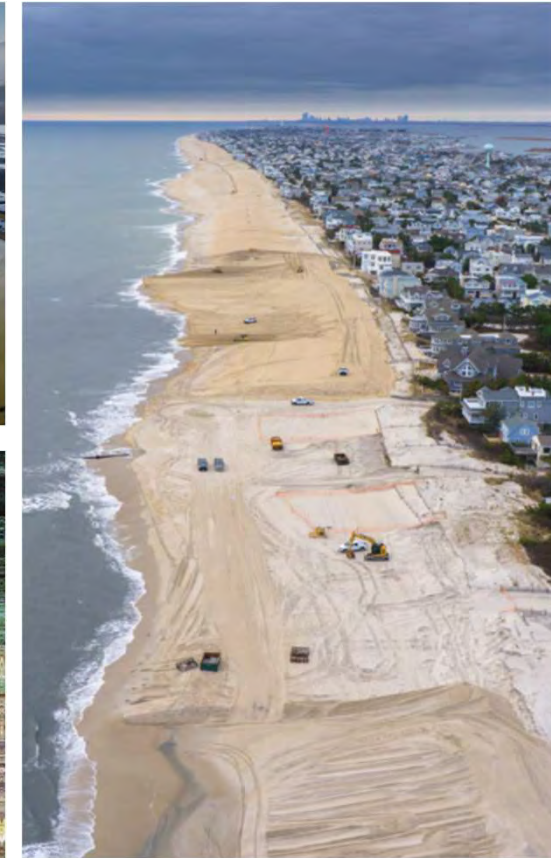
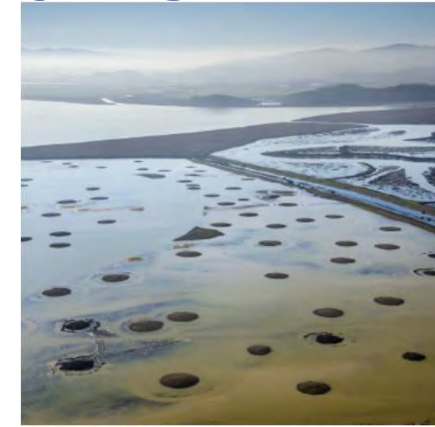
Engineering With Nature for the Department of Defense (DoD)



EWN Book Available at www.engineeringwithnature.org
Please use 'Contact Us' feature to request copy.

NNBF: Overarching Observations

- Natural features and landscapes have always contributed to flood resilience.
- The function and success of FRM measures and systems are related to scale.
- Sustainable FRM systems will include combinations of conventional, natural, and nature-based elements.
- The flexibility and adaptability of NNBF are useful for achieving flood resilience.
- NNBF can increase and diversify the value provided by infrastructure.
- Innovation in practice will be key to addressing future problems and opportunities.
- Policies need to be developed to guide and expand the use of NNBF.
- Coordination, collaboration, and partnership will fuel successful implementation of NNBF.



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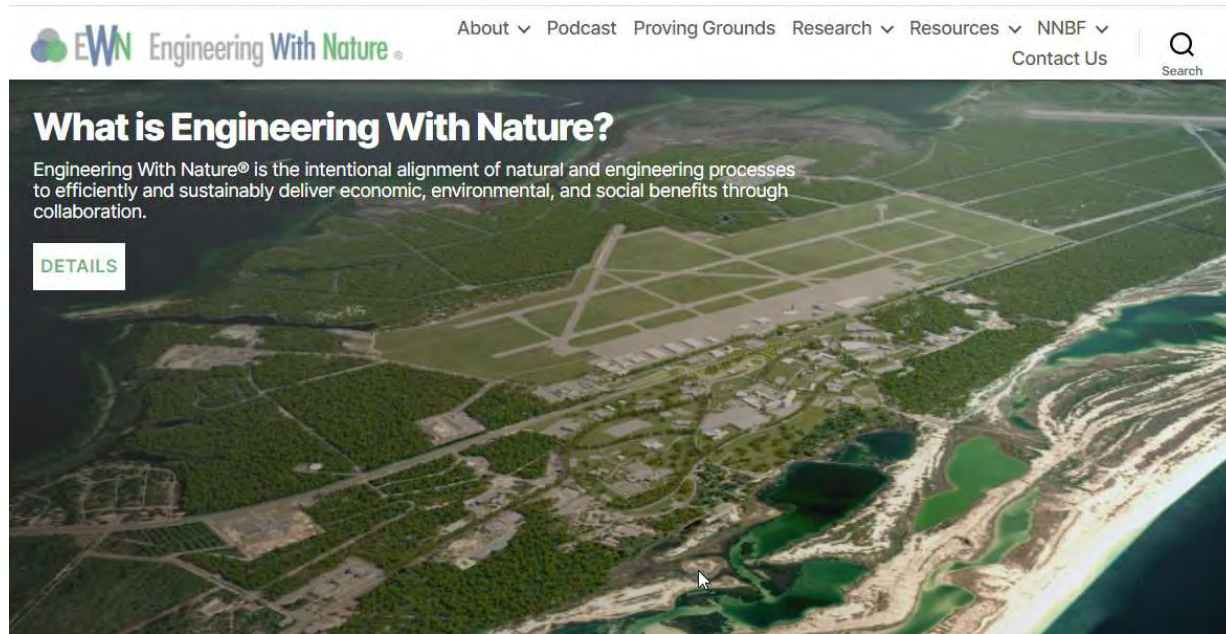
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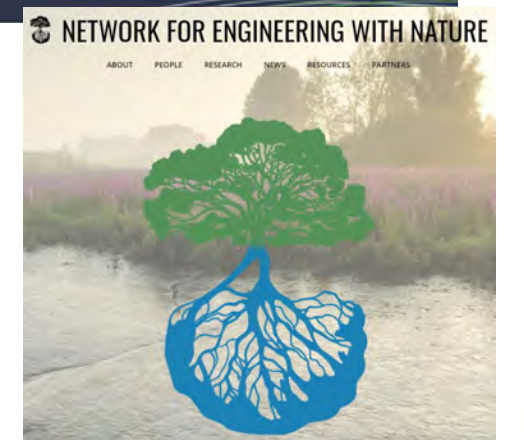
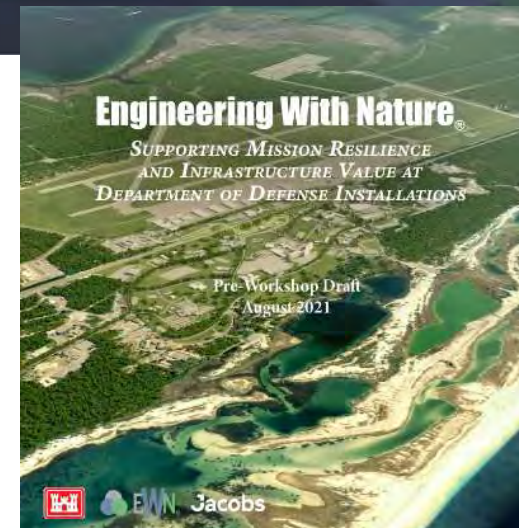
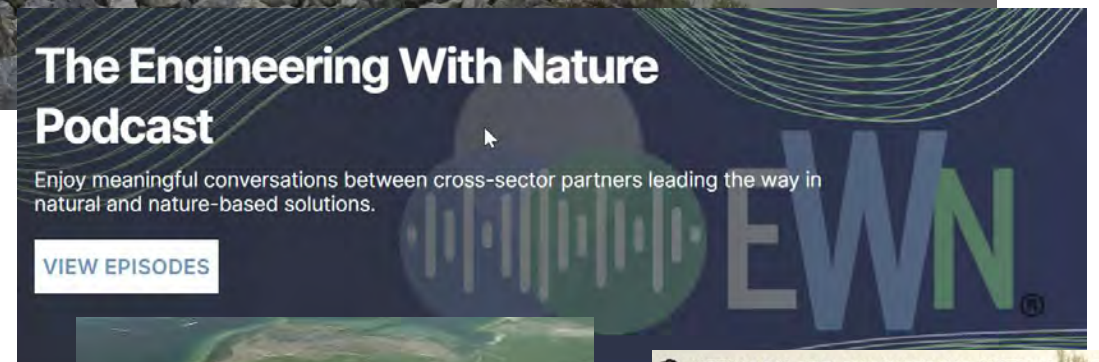
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Questions?



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