



NETWORK FOR **ENGINEERING** WITH **NATURE**

PROJECT FACT SHEET

ENGINEERING FOR BIODIVERSITY AND ECOSYSTEMS

There is increasing recognition of the value of biodiversity in maintaining the services essential for a sustainable society and the flows that drive economic activity. However, we run a risk in valuing biodiversity solely for its utilitarian function in providing services of economic value. To avoid another decade of failed biodiversity conservation goals, we will need a fundamental shift in both approach and in mindset. This shift will come when biodiversity conservation and enhancement is broadly integrated into diverse governmental activities at multiple levels, including major infrastructure programs.

OBJECTIVE

In this project, we seek to lay the groundwork for a fundamental shift (a “deep intervention” in system thinking terms; Meadows 2008) to sustainability by increasing our understanding of how infrastructure projects can benefit biodiversity. Ultimately, we envision a future where the collective effect of USACE projects is to increase sustainability and to enhance rather than diminish biodiversity. We will work in two major areas: (1) riverine and (2) coastal. The team has nearly balanced expertise in these two areas.

APPROACH

- 1) Quantification and valuation of the historical loss of biodiversity due to large-scale grey infrastructure, and the potential for reversing or mitigating these losses.
- 2) A vision for incorporating biodiversity into the design of nature-based infrastructure for sustainable management of freshwater and coastal systems at a national scale.
- 3) A case study of how levee systems can be designed and managed for biodiversity.
- 4) A concept paper of how coastal structures such as breakwaters, levees, revetments, and jetties can be designed, constructed, and managed for biodiversity in coastal environments.
- 5) Coastal islands serve as integrators of nature and nature based features. These coastal features can include the beneficial use of dredged sediments, both via direct and strategic placement.
- 6) A study of the potential for biodiversity enhancement by “depressurizing” river systems.

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