Reference SON: *2017-ER-12 Certified Habitat Models for Ecosystem Restoration*[1]

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Certified Habitat Models to Evaluate Ecosystem Restoration Projects[1]

Research Need

Corps biologists and planners must anticipate ecological impacts when preparing a project and developing alternatives. Biomonitoring represents a useful tool for determining environmental health, especially for assessing the effects of anthropogenic stressors (Di Battista et al. 2016). However, without knowledge of the biotic responses that are sensitive to manipulations of the physical environment that will result from the project, environmental assessments and monitoring efforts might prove ineffective. In addition, the environmental gradient of interest, which often comprises several habitat variables, must be properly identified for cost-effective collection of appropriate data. Habitat gradients are critical to understanding differences in faunal diversity and abundance between impacted and reference sites. USACE Districts and Divisions are constrained by both time and funding in their planning guidelines.

Project Purpose & Objectives

Using existing databases, this work unit will identify biotic responses and habitat parameters germane to Corps Civil Works activities. The ERDC has access to long-term monitoring datasets which could be analyzed with multivariate methods to develop models for ecosystem restoration. The first set in this project will be compile and summarize information on available databases. Next, a case study will be conduct where models will be developed using the available databases. Finally, an analytical framework will be developed that will provide guidance for developing other models using existing datasets.

Value of Research and Development (Payoff)

This effort will enable USACE biologists and planners to determine the most relevant ecological indicators to address specific project alternatives or to evaluate the utility of existing data, when available. Relevant empirical models provide objectively derived statistical parameters to rate habitat quality for a broad suite of aquatic and wetland biota. Use of

certified models expedites planning under the constraints of 3x3x3 paradigm.

Products

No products are known to have been produced.

[1]**Project Alias – Work Unit Documentation Title**: *HEC-EFM (Ecosystem Function Model)* **ERDCWiki Title:** *EMRRP: Ecosystem Functions Model*