

Title: Habitat Suitability Index models with the *ecorest* package in R

Abstract: Habitat Suitability Index (HSI) models are widely used in environmental planning to estimate the ecosystem benefits or costs of projects. Users often implement HSI models with ad hoc spreadsheet-based approaches, but these may be prone to numerical errors and other shortcomings. The common structure of HSI models, however, provides an opportunity to develop a consistent, error-checked index modeling calculator adaptable to a variety of USACE applications. That tool is the *ecorest* package in R, developed by ERDC researchers to increase the efficiency, transparency, and reproducibility of performing habitat modeling as well as decrease the likelihood of computational errors. The *ecorest* package can be used to quickly apply 351 of the HSI models developed by the U.S. Fish and Wildlife Service in the 1980s (i.e., the “blue book” models), but is flexible enough to carry out any user-defined HSI model, including custom models developed for specific projects. It also has functions for annualizing benefits and cost data and performing cost effectiveness and incremental cost analysis (CEICA). In this short course, we will introduce the major functionality of the *ecorest* package and demonstrate how it can be used for two different HSI modeling scenarios, one that using a blue book model and another that uses a custom HSI model. This session should give attendees the tools to begin efficiently conducting their own HSI models in R.

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Bio: Ed Stowe is an ORISE Postdoctoral Fellow with the U.S. Army Engineer Research and Development Center (ERDC) Environmental Lab. He holds a B.S. in Biology from Yale University and a PhD in Ecology from the University of Georgia. His research focuses on using quantitative tools and models to evaluate the effects of management and restoration activities on freshwater fish and other organisms.