

## Improving Ecological Modeling Practices

February 20, 2020

Q&A Session

*This PCoP webinar provided an overview of the advancements being made in ecological model development, and how these models are being applied in USACE feasibility studies.*

*Planning teams often assume that the relatively rapid feasibility study timeline (typically three years) precludes ecological model development and certification. This is a common misconception. This webinar provided an overview of recently developed and implemented tools, guidelines, and methodologies that improve the way USACE develops ecological models and aligns development, certification, and project planning. Case studies demonstrate that model development and certification are not only possible within USACE Planning timelines, but also valuable to decision-making.*

*The webinar was being presented by Dr. Kyle McKay (ERDC-EL), Dr. Todd Swannack (ERDC-EL), and Nate Richards (ECO-PCX Model Review Manager).*



### Resources Referenced During Webinar:

[McKay S.K., Richards N., and Swannack T. 2019. Aligning ecological model development with restoration project planning. ERDC EMRRP-SR-89. U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi.](#)

[Herman B., McKay S.K., Altman S., Richards N.S., Reif M., Piercy C.D., and Swannack T.M. 2019. Unpacking the black box: Demystifying ecological models through interactive workshops and hands-on learning. Frontiers in Environmental Science, 7, 122. doi: 10.3389/fenvs.2019.00122.](#)

*This summary of the Question / Answer session of the webinar is not a transcription; questions and responses have been edited and reordered for clarity.*

### Developing Collaborative Models

#### **Can the Ecosystem Restoration Planning Center for Expertise (ECO-PCX) or the Engineer Research and Development Center (ERDC) support project delivery teams (PDTs) in collaborative model development?**

Yes. Currently, our facilitators include representatives from ERDC, the PCX, and other technical USACE experts. We are actively growing the number of people who would be willing to facilitate these workshops, including facilitators from outside the ECO-PCX. These facilitators can serve as an “honest broker” in controversial projects and avoid a perception of bias in model development. Contact Nate Richards for more information.

#### **Is collaborative or interactive model development based solely on an individual’s or a group’s perception?**

The preliminary information we gather is from the PDT and other partners. Using this approach, we refine and screen the data down to the most important information needed in the model based on the

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study or evaluation objectives. Once a model framework is developed, it's always important to validate the decisions using empirical data, literature, or more refined science.

### **Model Certification**

#### **Does a model need to be certified or approved by the PCX if it is being used to assist decision-making in project operation for a constructed project?**

Certification or formal approval is typically necessary if the model is being used to assist in decision-making. The need to go through the formal approval and model certification process is determined on a project-by-project basis based on factors such as the context of the project, decision requirements, and complexity of the approach. However, it is important to note that all models, including uncertified models, are reviewed. The information, results, and analysis that we use in our feasibility reports always undergo a technical review, in addition to quality control and quality assurance reviews. Please follow up with Nate Richards with any specific project related questions.

### **Ecosystem Restoration Modelling Tools and Resources**

#### **Where can a PDT find models that the ECO-PCX has certified or approved?**

The [Planning Assistance Library \(PAL\)](#) contains all approved and certified ecological models as well as associated documentation, spreadsheets, and memos. To access the library, use the same login information as the Planner Database. Once in the library, you can go to advanced search (top right). In the advanced search pane go to the bottom of the screen and check the box to include ecosystem restoration models in your search. You can add additional queries such as model type, certification status, and habitat type. Type in your keywords for the model you're searching and the matched models will come up. Model information, documentation, and application software is available for download. If you have questions, either Nate Richards or Erin Rooks (IWR) is available to assist.

#### **Is there a tool that shows a rough habitat modeling schedule running parallel to a 3-year feasibility study schedule?**

Nate Richards referenced a [Technical Note](#) at the beginning of the presentation which discusses aligning model development with the typical 3-year USACE feasibility study timeline and decision milestones using a USACE restoration project in Proctor Creek, Georgia as the example.

#### **Is there a user-friendly search function for the EcoRest R package?**

Yes, a user interface is currently being developed for the package via a web application (planned release in summer 2020). This app includes a drop-down menu where users can scroll through and select a model of interest. The models are arranged in alphabetical order by species, although the interface searches by character string as well.