



Team EcoMod News

Model Certification Reviews



When a model is submitted to be certified for USACE planning purposes it undergoes a peer review, much like when a publication is submitted to a scientific journal. The Ecosystem Restoration Planning Center of Expertise (ECO-PCX) coordinates this certification, and utilizes experts throughout USACE to complete these reviews. EcoMod’s Iris Foxfoot and Emily Russ have participated in reviewing R Packages for USACE districts and ERDC research teams. This includes QA on the code itself and guidance documents. Reviewers give feedback on policy compatibility, technical quality, system quality, and usability. Additionally EcoMod can consult on the submission process.

September 2024

NextGen Webinar Dates

- October 16th Data Visualization Showcase
- November 20th Mariana Perez-Rocha

Team member spotlight

Iris Foxfoot

When Iris Foxfoot responded to a job advertisement to code the Floristic Quality Assessment (FQA), she was excited to use her background in R coding to participate in ecological research. She had discovered this love of coding while working as a research assistant and obtaining her Master’s degree. Since completing the FQA project, she has worked on a variety of ecological systems, including oysters, mussels, and coral reefs, and has gained more coding knowledge with Python and NetLogo. Her favorite aspect of working with the EcoMod team is the opportunity of interagency collaboration (she has worked with NOAA and USGS) and loves to see the impact USACE makes on environmental restoration. In that vein, she is excited to visit field sites to better study the ecosystems she models.



Unit Testing

Our collaborator Amanda Catlett from ITL provides a vital piece of expertise for model development: unit testing.

Unit Testing is a software development practice that involves testing individual units or parts of a codebase to ensure that it works as intended. Our team is using unit testing so that we can have GenVeg incorporated into the Python library Landlab. We are utilizing the PyTest, NumPy testing, and unittest libraries for our testing. This allows us to know the code is working as intended and returning what is needed to run our model. Unit Testing can be used in *any* project where there is code to help ensure its accuracy and longevity. Ideally, unit tests should be made as code is written but can be written after the fact. Next, she will be taking her testing expertise to the NESSI model with Thomas Huff.

```
# Test calculate_derived_params functions
def test_max_vital_volume(example_input_params):
    assert_almost_equal(
        create_species_object(example_input_params).calc_volume_cylinder(
            area=0.070685835,
            height=example_input_params["BTS"]["morph_params"]["max_height"]
        ),
        0.053014376
    )
```

Expertise



EcoMod team members all have unique expertise that provides USACE benefits beyond project research. Two recent examples include Candice Piercy participating in a guidance planning meeting with top ERDC leaders, and Thomas Huff presenting a modeling seminar to Texas A&M. The relationships we develop with partners lead to exciting and unexpected collaborations, which furthers our modeling outreach mission. As Dr. Huff puts it: ‘Participating in workshops and short courses is a great way to share the knowledge we are generating at ERDC and within the EcoMod team and get to know the next generation of managers that will be applying that knowledge’.

Model Spotlight– SAMPL

Survey Analysis for Monitoring Population Levels (SAMPL) is a spatially-explicit, agent-based model designed to simulate and compare ecological sampling techniques for estimating the density of populations and for optimizing detection rate. SAMPL features four built-in sampling techniques commonly used in field-based ecological sampling; simple random sampling, transect sampling, adaptive cluster sampling, and timed search. We were excited to include our April DA intern Rachel Rosenberg in this project!

Model available on Github <https://github.com/EcoModTeam/SAMPL>