**Title**: Best practices in reproduceable R workflows for ecological data analysis and visualization

**Host**: Ecological Society of America: Great Lakes Chapter Regional Conference

**Location**: 2251 Business Ct, Kalamazoo Michigan, USA

**Date and time**: April 6th 2024, 12:00 – 1:40 PM EST

**Instructor**: Grant Falvo <falvogra@msu.edu>

**Materials**: Personal computer with R and Rstudio installed and updated <https://github.com/grantfalvo/Intro_to_the_R_Software_for_Ecologists>

**Objectives**: Attendees will be able to write code that processes data, conducts analyses and produces visual results for publication in an automated, efficient and reproducible manner.

**Lesson Plan**:

* Discuss the importance of creating automated, efficient and reproducible workflows
* Orient attendees to the Github repository hosting the workshop content
* Investigate the Bill et al. (2023) manuscript for R methods and links to data and workflow scripts
* (**Script 1**) Reproduce Bill et al. (2023)’s analysis by downloading the data they provide
  + Acquire their data
  + Reproduce Figure 2 in their manuscript
  + Reproduce one of their statistical models
  + Publish the output of the statistical model in a table and a figure
* Break
* (**Script 2**) Answer a novel research question with public data
  + Review code written to query the MODIS API
  + **Coding challenge**
    - Modify the existing code and write new code to answer your own research question
    - Choose new sites on Google Maps and add their information to your site database
    - Download the data and save it to your local machine
    - Run your statistical model and check it’s diagnostics
    - Output your results in a table and figure to share with the group
* Share coding challenge results with the group