Introduction to the R Software for Ecologists

Workshop Syllabus

Instructor: Grant Falvo <falvogra@msu.edu>

Workshop Description:

In this workshop attendees will be introduced to the R computing software. With the goal of getting early career scientists to become comfortable and competent R users, this workshop will enable attendees to streamline their data management and analysis pipelines in a reproducible and efficient manner. Attendees will learn enough of the basics of the R software from organizing a working directory, to installing packages, and manipulating data to be able to write their own scripts for their research needs. This workshop is designed for those that have no previous coding or R experience.

Workshop Learning Objectives:

- Attendees will learn how to independently navigate the R software environment as well as online community support resources to address their unique research needs.
- Attendees will learn best practices for writing efficient and reproducible R scripts that can streamline their data management and analysis pipelines.

Topics Covered:

- Installing and maintaining the R software and packages.
- Using R as a calculator, creating and using objects, and using available functions.
- Organizing and managing working directories, input/output files and datasets.
- Importing and manipulating data in a way that preserves raw data, documents manipulations and automates the workflow.
- Writing custom functions to automate unique and project specific tasks.
- Writing comprehensive, well documented and reproducible data management and analysis scripts.
- Using online community support resources to answer coding questions find solutions to common coding problems.

Workshop Format:

This workshop will be 3 hours in length and will require each attendee to have computer connected to the internet and loaded with the R and R studio software. Each topic will be introduced by the instructor, followed by a period of implementing the topics on each attendee's computer. We will work through coding examples during the workshop. We will use provided scripts and data as well as online resources.