

**Workshop Title:** Introduction to the R language for statistical computing with application to ecological data analysis

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**Location:** CVI Research and Education Center; Davis, WV

**Date and Time:** Sunday, March 7, 2010; 1pm – 5pm

This workshop is associated with *the 2010 Spring Technical Meeting of the American Fisheries Society* and the *Environmental Summit for the Mid-Atlantic Highlands* sponsored by the WVU Environmental Research Center

Information on the Environmental Summit can be found by following this [link](#).

R is an open-source programming language and environment for statistical computing. It is freely available for download from <http://www.r-project.org>. R is becoming very popular in the ecological fields because of its power and flexibility for data analysis, modeling, and graphics. R uses an object-oriented environment from a command line interface. Built in functions for statistical analysis are supported by documentation and help features. Numerous customized packages submitted by statistical gurus make R extremely extendable to specialized tasks. In this workshop we will introduce the beginner to R and the wealth of help-resources available for R users. After becoming oriented to the R environment, we will demonstrate the outstanding flexibility of R for classical and more modern statistical procedures and modeling ecological data. We will demonstrate basic statistical techniques and graphics using base and special-purpose packages. We will also demonstrate more advanced data modeling procedures such as model selection using AIC, and ordination and classification techniques for ecological datasets. No prior knowledge of R is assumed. Bring a laptop with wireless capabilities to actively participate in installing and using R, and acquiring customized packages.

#### Topics

- Acquiring and installing R
- Orientation to the R environment
- Acquiring and installing R packages
- Use of internal and external help documentation
- Entering data, acquiring data
- Exploratory data analysis
- Basic statistics and visualizing data
- ANOVA and regression
- Multiple regression and glm
- Model selection, AIC
- Multivariate exploration: data reduction and ordination, PCA
- Species and environmental relationships: ordination and classification (NMDS, cluster analysis, classification trees)
- Important Packages: Vegan, rpart, labdsv, mvpart, MASS, FSA?