

# Workshop Descriptions

## **Conservation, Ecology and Identification of Mid-Atlantic Crayfishes**

Instructor: Zachary Loughman, Ph.D., West Liberty University ([zloughman@westliberty.edu](mailto:zloughman@westliberty.edu))

There are more than 350 species of crayfish in North America with around ½ currently threatened with population decline or extinction. This workshop will review crayfish biology, distribution, and ecology specific to the Mid-Atlantic region. Focus will be placed on the major anatomical characteristics used to differentiate crayfish species and key concepts associated with their taxonomy. Special attention will be made to learn how to differentiate between non-native and native species and discuss the history and potential future for crayfishes in the Mid-Atlantic region. Identification keys will be provided and attendees will have the opportunity to key out live and preserved specimens of regional crayfish species. **Participants will need to bring a magnifying glass to participate in the identification portion of the workshop.**

## **Fish Health Investigations: An introduction to Field Methodologies and Emerging Techniques**

Instructor: Vicki Blazer, Ph.D., United States Geological Survey ([vblazer@usgs.gov](mailto:vblazer@usgs.gov))

The Fish Health workshop at the PA/WV American Fisheries Society meeting will provide a general overview of what is involved in a fish health investigation with relevant case studies from both Pennsylvania and West Virginia. We will cover the use of visible lesions, organosomatic indices, histopathology, plasma analyses and identification/culture of pathogens. The methods, advantages, disadvantages, uses and misuses of each will be discussed. Participants will also be introduced to emerging and cutting edge techniques that are being incorporated into current fish health investigations including immune function, gene expression and molecular identification of pathogens. Discussion and topics will also cover broad considerations for fish health including sampling design and other ecological factors affecting the study organisms that need to be considered.

## Introduction to R and techniques for analysis of ecological communities

Instructor: George T. Merovich, Jr., PhD, Juniata College ([merovich@juniata.edu](mailto:merovich@juniata.edu))

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 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 analyses for summarizing information contained in ecological dataset (i.e., site by species and environmental datasets). The workshop is targeted to anyone with little experience in R, but needing to analyze ecological datasets efficiently. **Attendees should bring a laptop with R installed and capable of downloading and installing customized packages, like vegan. Practice datasets will be available, but participants could bring their own.**