

## Training Announcement

### National Conservation Training Center



### Data Analysis I: Concepts and Procedures using R (CSP4200)

Course Dates: March 14-18, 2011  
Location: National Conservation Training Center (NCTC)  
Shepherdstown, WV

#### Course Description/Course Overview:

Data Analysis I: Concepts and Procedures using R course will explore the application of analytical approaches and techniques to provide the student with a fundamental background necessary for the modeling of biological and environmental data. In an age of limited resources, it is becoming increasingly important to monitor and model wildlife populations and the environment in which they live. As such, biologists are asked to utilize efficient sampling design and modeling strategies. Statistical methods form the backbone of most, if not all, approaches to understand data. Consequently, the purpose of this course is to enhance the scientific capacity of participants. Skills gained include thinking from a statistical perspective, increased performance in balancing risks, and improved scientific decision-making. Additional instructional goals are enhanced statistical problem-solving capabilities, more efficient communication with statisticians, more in-depth assessment of reports and studies in the literature, and strengthened aptitude to continue developing statistical skills after this class is over. Research has shown that effective statistical training involves a high level of interaction among participants and the instructor. The National Conservation Training Center is well known for its state of the art training facilities and interactive courses.

Participants in this course have generally had some basic training in statistics (a course or two in undergraduate or graduate education). Although many participants have such experience, such experience is not necessary for taking this course. We begin the course discussing fundamental principles including random variable types and probability distributions, sampling and population distributions, bias, precision, the Central Limit Theorem, making estimations from samples, and hypothesis testing. Other topics include exploratory data analysis techniques, descriptive statistics (e.g., measurements of central tendency and dispersion), data transformations, power analysis, and univariate parametric and nonparametric inferential statistics: Z-tests, one sample, two sample, and paired T-tests, sign test, Wilcoxon rank sum test, and an introduction to categorical data analysis. Participants will use computers to describe data sets, simulate random variable and sampling distributions, Type I & II error rates, and confidence intervals, perform power analysis of experimental designs, and analyze data using inferential statistical procedures. The general approach is a topic presentation by an instructor, followed by a instructor-led computer exercise, followed by a “independent” class computer exercise applying the concepts learned on biological data. Participants are encouraged to discuss data in which they are currently engaged with. Although this interaction is encouraged, the purpose of the course is not of a ‘consulting’ nature.

Instructor: Dr. Timothy J. Robinson (University of Wyoming, Laramie Campus)

Who Should Attend: The course is designed for individuals who are competent in basic biology and are interested in developing and/or strengthening their ability to utilize statistical tools in research, management, and decision-making.

Course Length: 4 ½ days/36 hours

Course Objectives: The objectives of this course are to develop the ability to defend rationale of data interpretations (including the setting of Type I and II error rates); calculate statistical power; use data description techniques; identify assumptions of inferential statistical methods and use proper alternatives if required; interpret results of statistical

procedures; and provide participants the necessary background to be successful in *Data Analysis II: Ecological Modeling using R*.

Cost: There is no tuition fee for FWS, NPS, and BLM personnel. Tuition is \$1150 for non-FWS participants.

How to Apply: Register online at <https://doilearn.doi.gov/>. Non-DOI employees should click on “**Public Catalog Login**” then type the course code (**CSP4200**) in the Search box. Then click on the course title.

Questions: Please contact Dr. Joe W. Witt ([joe\\_witt@fws.gov](mailto:joe_witt@fws.gov)) or So Lan Ching ([solan\\_ching@fws.gov](mailto:solan_ching@fws.gov)), Division of Conservation Science and Policy, at 304/876-7447 or 304/876-7771.