



U.S. Fish & Wildlife Service

# National Conservation Training Center

Conserving the Nature of America

## CSP4230 - Design and Analysis of Biological Monitoring

Course Code	<b>CSP4230</b>
Course Title	<b>Design and Analysis of Biological Monitoring</b>
Description	<p>Emphasis is placed on developing skills in the design of monitoring studies and analyses of species/habitat status or trends, as well as identifying factors influencing status or trends. A goal of the course is to build a working knowledge of uncomplicated but useful sampling designs, based on the 'what', 'why', 'when', 'where' and 'how many' of sampling. Participants will analyze data collected in such a framework for status or trend assessment.</p> <p>During field and lab exercises, learners will develop and apply sampling designs, collect data, and make estimates of a population characteristic (e.g., density or abundance) with confidence intervals.</p> <p><b>OBJECTIVES</b></p> <ul style="list-style-type: none"><li>• Develop critical monitoring and design skills, based upon reliable analytical techniques that are integrated with statistical sampling theory and field implementation;</li><li>• Practice a variety of sampling designs and subsequent data analysis with a field exercise.</li><li>• Introduction to Generalized Random Tessellation Sampling (GRTS) and Balanced Acceptance Sampling strategies for spatial coverage.</li><li>• Examine ways to address imperfect detection such as double observer sampling, adaptive sampling, distance sampling and occupancy modeling.</li><li>• Evaluate power of sampling designs to detect trends or make point estimates with a desired level of precision.</li><li>• Generate point estimates of population characteristics and develop confidence intervals by classic normal data techniques and by bootstrapping</li><li>• Apply occupancy modeling to determine proportion of area (POA) occupied by a species and change in POA over time.</li><li>• Use BACI designs for impact assessment.</li><li>• Model detectability and adjust estimates to account for imperfect detectability.</li></ul> <p><b>PREREQUISITE</b></p> <p>Making Sense of Biological Data with R and Statistical Modeling for Conservation or equivalent experience with R and statistical background. Consult with course leader with requests for bypassing course prerequisites.</p> <p><b>TARGET AUDIENCE</b></p> <p>Biologists who 1) make status assessments for reasons such as evaluating the influences of management actions or potential changes in the environment, and 2) monitor species or habitat changes over space or time.</p>
Delivery Method	Instructor Led
Non-FWS Fee	\$1,195.00
Instructional Hours	36
Credits/CEUs	3.0
Course Content Contact	Eric Tsakiris; <a href="mailto:eric_tsakiris@fws.gov">eric_tsakiris@fws.gov</a> ; 304-876-7430; <a href="mailto:eric_tsakiris@fws.gov">eric_tsakiris@fws.gov</a>
Curriculum Category	<b>Statistics and Modeling</b>
Course Frequency	Once per year
Registration Link	Register in DOI Talent
DOI TALENT Course Type	ILT

College Credit Name	Semester Hours
College Credit Value	2

**Schedule: CSP4230 - Design and Analysis of Biological Monitoring**

Start	End	Session Information	Location	Session Contact
9/9/2018	9/13/2018	For registration questions: sharon_howard@fws.gov For course content questions: eric_kelchlin@fws.gov Class begins at 8:00am on the first day and ends at noon on the last day	National Conservation Training Center (NCTC)	sharon_howard@fws.gov