Introductory Workshop: Maximum-Likelihood Estimation and Hierarchical Models in Wildlife Ecology

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Imperfect observation is the general case in wildlife studies. Ecologists want to know how many individuals are present on a particular patch of landscape, or which patches are likely to be occupied by a particular species. But these two states, occupancy and abundance can only be perfectly observed under natural conditions in very special cases. More typically, we are unable to see and count all the individuals on a patch, and certain patches may be occupied without our being able to detect any individuals there. The result is that individual abundance is under-reported, and species distributions are underestimated. To correct this problem, ecologists and statisticians developed hierarchical models, which model both the imperfectly observed state, and our ability to observe this state.

We will develop a maximum-likelihood framework for hierarchical models from very simple probabilistic principles, using and explanation, a demonstration, and group exercises for producing maximum-likelihood estimates. Students should bring pencil, paper, and calculator or computer with computational software. The workshop will take about 2 hours to complete.

Bell Hall 130A
Friday, April 20, 2012, 10:30 AM

For more information, please contact the Colloquium Chair, Dr. Olac Fuentes, at ofuentes@utep.edu or 915.747.6956.