

Mathematical Sciences Colloquium Series

Jay M. Ver Hoef, Ph.D.

Bayesian Hierarchical Models: From Trends to Ecosystems

Thursday, October 22, 2009

3:30 - 4:30 p.m.

Procrastinator Theater, Strand Union Building

Analyses of ecological data should account for the uncertainty in the process(es) that generated the data. Probability and statistics provide a framework that accounts for multiple sources of uncertainty, and a Bayesian hierarchical model allows for efficient and valid scientific inferences and forecasts. In this talk, Dr. Ver Hoef will provide several examples of hierarchical statistical modeling for ecological data. The simplest model is a trend model, where annual estimates have measurement (sampling) error, and there is additional variation in the true population fluctuation around the assumed trend model. This model is generalized for multiple sites in a more complex hierarchical model. A final example is an ecosystem model for Antarctic data, where he links sea ice extent, prey abundance, foraging effort, maternal weights, and pup growth for Antarctic fur seals. Dr. Ver Hoef will conclude with a general discussion of ecosystem models, including advantages and disadvantages of statistical vs. deterministic, simple vs. complex, and Bayesian vs. non-Bayesian models.

Jay Ver Hoef is a statistician in Fairbanks, Alaska, with the National Marine Mammal Lab (a research lab in the National Marine Fisheries Service of NOAA). He is a fellow of the American Statistical Association and past chair of the Section on Statistics and the Environment. His research interests are in spatial and Bayesian statistics, especially as applied to environmental data.

*Please join us for a
reception on October 21
4:00 - 5:00 p.m.
Hurst Room, 2-244 Wilson*

*Sponsored by the Department of Mathematical Sciences,
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and the Procrastinator Theater - ASMSU*

