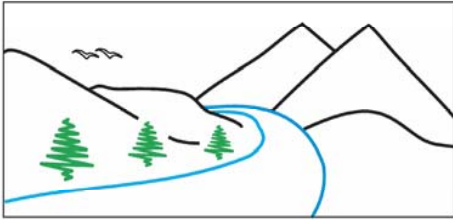


**NRESi**



"Our environment is our future"

## RESEARCH COLLOQUIUM SERIES

# Dr. Jun Zhu

Department of Statistics  
University of Wisconsin - Madison



**THURSDAY**

**April 3, 2008**

**3:30 - 4:30**

**LECTURE THEATRE**

**6 - 205**

LIGHT  
REFRESHMENTS  
SERVED AT 3:20 PM

## Statistical Modeling in Forest Entomology: Space, Time and Multiple Species

Ecological data in forest entomology often involve multiple species across space and over time. Of particular interest is the impact of two bark beetle groups on tree mortality and the subsequent gap formation over time in a plantation of Wisconsin. Traditional Markov random field models are extended to account for both spatial and temporal autocorrelation, as well as multiple response variables. A Bayesian hierarchical modeling approach is adopted for statistical inference and Markov chain Monte Carlo algorithms are devised for obtaining the posterior distributions of model parameters. Model checking and comparison are performed based on posterior predictive distributions.