



## NRES WEEKLY NEWS

April 7 - 11, 2008

A newsletter for faculty, staff and students  
who participate in the  
Natural Resources & Environmental Studies Institute  
and NRES Graduate Programs

COMING EVENTS

NRESI COLLOQUIUMS: April 3rd AND April 4th

DR. JUN ZHU

DEPARTMENT OF STATISTICS, UNIVERSITY OF WISCONSIN-MADISON

### STATISTICAL MODELING IN FOREST ENTOMOLOGY: SPACE, TIME & MULTIPLE SPECIES

THURSDAY

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 auto correlation, 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.

Thursday, April 3, 2008

3:30 - 4:30 pm

Lecture Theatre, 6-205

DR. CHRIS WALLIS, NRESI, UNBC

### DISCOVERING HOW PINES COMBAT DISEASES

FRIDAY

Pines use both constitutive and inducible defenses against pathogen attack that mediate resistance to disease. Austrian pine (*Pinus nigra*) is typically attacked by fungal pathogens *Diplodia pinea* and *D. scrobiculata*, and is an ideal model system for the study of local and systemic inducible chemical defenses in a conifer. *D. pinea* is a common tip blight pathogen of Austrian pine that, on occasion causes stem cankers. *D. scrobiculata* is a closely related but less aggressive pathogen.

Groups of Austrian pines were exposed to three different fertility regimes were treated by either infecting the trees with *D. pinea*, mock-infecting the trees, defoliating the trees with an insect folivore (*Neodiprion sertifer*), or leaving the trees uninfected. As a measure of systemic resistance, half of the trees were challenge-inoculated with *D. pinea* two weeks after the initial treatment was applied. In two experimental replicates, prior fungal infection lead to systemic induced resistance to the second challenge inoculation. The response was characterized by increased phenolic levels. Insect defoliation increased resistance to the fungal pathogen in one of the trials. Fertility treatments did not affect resistance and only moderately affected defense compound production. A second experiment was conducted to determine the role of terpenes in effective defense responses to pathogens. It revealed that terpenes play important roles in limiting disease progression only once a pathogen is firmly established. A third study that focused on the chemical signal that pines utilize to propagate systemic resistance responses following pathogen infection showed that the signal might be a phenolic compound.

*Dothistroma septosporum* is a fungal pathogen that is moving into new areas of British Columbia and which threatens lodgepole pine (*Pinus contorta*). Research into this association at UNBC will involve development of a lodgepole pine/*D. septosporum* model pathosystem for examination of factors that influence the formation of an effective defense response against pathogens. In particular, the impact of water, nutrient, or light availability on host susceptibility will be explored. Such climatic factors will be emphasized because climate change may have an impact on the success of this pathogen in lodgepole pine-dominated forests.

Friday, April 4, 2008

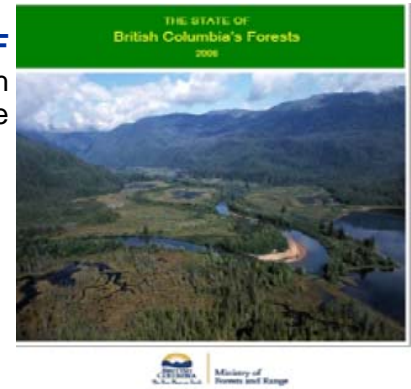
3:30 - 4:30 pm

Lecture Theatre, 7-150

**Tom Niemann, RPF**  
Forest Practices Branch  
BC Ministry of Forests and Range

### **The State of British Columbia's Forests—2006**

Tom Niemann, Ministry of Forests and Range, will present on the ministry's report *The State of British Columbia's Forests—2006*, for which he was the project manager and author. He will discuss its content and potential uses, along with plans for the next edition, which may include opportunities for UNBC involvement. The report presents information on indicators of sustainable forest management, along with ministry assessments of indicator state, trend and information adequacy. It is a highly accessible online tool for faculty and students that provides concise text, graphics, data tables and many links for environmental, economic, social and governance indicators. Elements of the report have been adopted by Ontario and Quebec for their state of forests reports.



**Friday, April 11, 2008**

**3:30 - 4:30 pm**

**Lecture Theatre, 7-150**

Light refreshments will be served

## TRAVEL

**Kathy Lewis** travelled to Edmonton, Alberta to act as the External Examiner for a PhD thesis defense at the University of Alberta. The defense was held Wednesday April 2<sup>nd</sup>.

**Ken Otter** will be in Vancouver this week to test the new remote radar system for tracking bird migration. He will be testing it on the delta marshes near the Reifel bird sanctuary/Canadian Wildlife Service's Pacific lab. On Friday, he will be leading a workshop on radar tracking for avian migration at the Canadian Wildlife Service.

## CONGRATULATIONS

Congratulations to **Zoe Meletis** who was one of three recipients of the 2008 Environmental Management Advisory Committee (EMAC) awards for Student Environmental Leadership for graduate students at the Duke University Marine Lab in Beaufort, N.C. The recipients were selected for the honor in recognition of their work to launch the Marine Lab's Green by Design Course and its "Green Wave" student association, which works with Marine Lab administration to promote sustainability on the Pivers Island campus. For more information see <http://www.nicholas.duke.edu/news/ns-dumlawards.html>

## PUBLICATIONS

**García, O.** Dimensionalidad en los modelos de crecimiento [Dimensionality in growth models]. Cuadernos de la Sociedad Española de Ciencias Forestales 23, 19-25. 2008.

**REMINDER:** Share your information about recent publications, grants, and/or other honours you may have received with others interested in NRES issues.

**PLEASE EMAIL ALL INFORMATION AND MATERIAL TO ELISSA ZEMLAK: [zemplak@unbc.ca](mailto:zemplak@unbc.ca)**