



NIMBioS

National Institute for Mathematical
and Biological Synthesis

“Community genetics and global change: Effects of tree genotype and atmospheric pollutants on population and community dynamics”

Dr. Emily V. Moran
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Tuesday, February 22, 2011
3:30 p.m.*, Room 403, Blount Hall, 1534 White Ave.

Community genetics aims to bridge the divide between population genetics and community ecology by recognizing how genetic variation in dominant plant species helps create the environment experienced by other species. Genetic variation in plants influences numerous community and ecosystem properties, and genotype-specific responses to global change may be expected to have cascading effects on higher-level traits such as herbivore communities, nutrient cycling and carbon storage. Given the complexity of the interactions involved, appropriate mathematical and statistical models must be developed in order to scale up to community and ecosystem properties. The first question to be addressed is: Can atmospheric pollutants (such as CO₂ or O₃) exert a measurable selective effect on woody plant over short timescales? As part of her NIMBioS post-doctoral work, Dr. Moran has been developing a hierarchical Bayesian model to test whether patterns of mortality in the AspenFACE experiment (in which replicates of multiple aspen clones were exposed to ambient, elevated CO₂, elevated O₃, and elevated CO₂ & O₃) indicate the existence of genotype x environment interactions. During the seminar, Dr. Moran will discuss her preliminary findings, which suggest that there are significant genotype x environment interactions in aspen mortality under elevated CO₂ and ozone, primarily due to differences in growth responses between aspen clones, as well as how such G x E interactions can affect the genetic composition of plant populations and how this may in turn affect the performance of herbivorous insects.

**Join us for refreshments in the NIMBioS Lobby on the 4th floor at 3 p.m*