



# NIMBioS

National Institute for Mathematical  
and Biological Synthesis



## NIMBioS Interdisciplinary Seminar

**Dr. Keenan Mack**  
NIMBioS Postdoctoral Fellow

**3:30 p.m.\*\***, Tuesday, October 16, 2012

*Hallam Auditorium, Room 206*  
*Claxton Education Building, 1122 Volunteer Blvd.*

### “Spatial dependence of positive and negative species interactions”

When species feedbacks are negative, they can facilitate the maintenance of diversity by favoring heterospecifics. The average strengths of these feedbacks can predict the relative abundance of species within a community, suggesting that feedbacks are an important driver of community composition. When species feedbacks are positive, the maintenance of these cooperative interactions requires mechanisms such as spatial structure to prevent non-cooperative individuals from invading. However, selection for increased dispersal can erode that structure. I used spatially explicit computer simulations to test how these dynamics depend on dispersal and interaction distance. Increasing dispersal and interaction scale decreased the slope of the relationship between average feedback and abundance. Likewise, the stability of mutualism relied on the ability of mutualists to evolve shorter dispersal than non-mutualists. These results show how the dynamics of feedbacks depend on spatial structure.

**\*\*Join us for refreshments at 3 p.m. *in the 1<sup>st</sup> floor visitor breakroom.***

For more information about this and other NIMBioS Seminars, visit

<http://www.nimbios.org/seminars>

.....

*The National Institute for Mathematical and Biological Synthesis (NIMBioS) brings together researchers from around the world to collaborate across disciplinary boundaries to investigate solutions to basic and applied problems in the life sciences. NIMBioS is sponsored by the National Science Foundation, the U.S. Department of Homeland Security, and the U.S. Department of Agriculture with additional support from The University of Tennessee, Knoxville.*