



NIMBioS

National Institute for Mathematical
and Biological Synthesis



NIMBioS Interdisciplinary Seminar

Dr. Matthew Spencer

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NIMBioS Sabbatical Fellow**

3:30 p.m.* , Tuesday, November 27, 2012

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

“Measuring the rate of succession and the growth space of a community”

Succession can be defined as directional change in the composition of a community, where composition is the set of relative abundances of all species (non-negative numbers that sum to 1). There are many statements in the ecological literature about rates of succession and how they might be affected by changes in the environment. However, although measures of the rate of succession which could be used to evaluate such statements have been proposed, these existing measures do not make ecological sense.

Consideration of Maguire's extension of Hutchinson's niche concept leads to the idea that a population will grow exponentially if its environment is not changing in any way that matters to individuals. Hence, if the environment is not changing in a way that matters to any species in a community, each species will grow exponentially at a species-specific rate. A measure of rate of succession should be constant in such cases, but existing measures are not. I derive a new measure which behaves in the required way, and is based on the sum of squared differences in growth rates among species. Geometrically, the set of growth rates for all species in a community can be represented as a point in a real space called the growth space. I will describe some of the properties of the growth space.

**Join us for refreshments at 3 p.m. in the 1st 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.

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