

Immersion Lecture: Macroecology - Incorporating Scale Into Understanding Changes in Diversity

Time of Event:

Monday, August 31, 2015 - 13:15 to 14:00

Video:

In this second of two lectures on macroecology, Dr. Brian McGill reflects on the difference measures of diversity that are used in macroecology, and how to relate these smaller-scale measures to global change. He frames the question around the impact of climate change on biodiversity and notes that measures of changes in biodiversity will differ depending on the spatial scales over which they are measured. He notes that one challenge for macroecology is to communicate the spatial dimensions of measuring biodiversity change to policy makers and the public, who think about conservation of diversity in terms of temporal scale. He then introduces the concept of allometric scaling as a means of understanding changes in species richness and abundance over space and time. He distinguishes between isometric scaling, which occurs when proportional relationships are preserved over time, and allometric scaling when relationships between multiple variables do not change proportionally over time. He notes that allometry is used in macroecology to characterize changes in species composition and richness as measures of biodiversity that reflect human conservation concerns.

Reading List

Bettencourt, L.M.A., Lobo, J., Helbing, D., Kühnert, C., and West, G.B. 2007. Growth, innovation, scaling, and the pace of life in cities. *Proceedings of the National Academies of Sciences*, 104(17), 7301–7306.

May, R.M. 2001[1973]. *Stability and complexity in model ecosystems*. Princeton, NJ: Princeton University Press. Read pages 10–12 (“What use are general models?”).

McGill, B.J., Dornelas, M.A., Gotelli, N.J., and Magurran, A.E. 2015. 15 forms of biodiversity trends in the Anthropocene. *Trends in Ecology and Evolution*, 30(2), 104–113.



[Brian McGill](#) ^[1] is a Professor in the School of Biology and Ecology with a joint appointment with the Climate Change Institute at the University of Maine. He received his BA in Mathematics from Harvard (1988) and his PhD in Ecology and Evolutionary Biology from the University of Arizona (2003). Prior to coming to the University of Maine in 2010, he was an Assistant

Professor at McGill University and the University of Arizona. His research focuses on understanding the patterns and processes controlling the distribution abundance of organisms at medium to large scales, to lead to more predictive theories of how distribution and abundance will change under anthropogenic global change, especially climate change and land cover change. He also works on ecoinformatics as a methodology to perform experiments at larger scales, using large census data sets and remote sensing databases.

Event type:

Immersion Speaker

Event Attendance:

Private Working Group

Source URL:

<https://www.sesync.org/events-announcements/fri-2016-02-12-1528/immersion-lecture-macroecology-%E2%80%93-in-corporating-scale-into>

Links

[1] <http://www.brianmcgill.org/>