

BIOL/ENST/NORT 3313: ECOLOGICAL STRUCTURE IN NORTHERN ENVIRONMENTS

TOPIC 2: LATITUDINAL GRADIENTS IN DIVERSITY

Diversity declines with latitude

Or does it?

Is there a simple analytical explanation?

Area's signal is strong

Diversity varies with productivity

Other null models

Cradles, museums, and 'out of tropics'

Speciation and extinction

Minimal models

The value of diversity: the dilution effect

Relationship with latitude

Something to think about:

Contemplate the relationship between species diversity and productivity. Does this relationship emerge from productivity differences in speciation and extinction?

Required reading:

Willig, M. L. and S. J. Presley. 2018. Latitudinal gradients of biodiversity: theory and empirical patterns. In: Dominick, A. D. and J. I. Goldstein (eds.) *The Encyclopedia of the Anthropocene* 3: 13-19. Oxford: Elsevier.

https://hydrodictyon.eeb.uconn.edu/people/willig/Willig_pdf/SJ_224_Willig_&_Presley_2018.pdf

Related reading:

Etienne, R. S. et al. 2019. A minimal model for the latitudinal diversity gradient suggests a dominant role for ecological limits. *American Naturalist* 194:E122-E133. <https://amnat.org/an/newpapers/Nov-Etienne.html>

Mittelbach, G. G. et al. 2007. Evolution and the latitudinal diversity gradient: speciation, extinction and biogeography. *Ecology Letters* 10:315-331. <http://dx.doi.org/10.1111/j.1461-0248.2007.01020.x>