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

TOPIC 3: LATITUDINAL GRADIENTS IN BODY SIZE

Bergmann's Rule

Northern mustelids

Ecological character displacement

Fasting endurance

Woodrats: a definitive test?

An optimum body size?

Influence of human harvest

Something to think about:

Contemplate how you would design a definitive experiment in order to test for Bergmann's Rule. What sorts of data would you require? Would you use data on only one species or several? What would you use as the competing 'null model'.

Required reading: NOTE: THE FOLLOWING URLS MAY REQUEST PAYMENT – IF SO, PLEASE ACCESS THE ARTICLES VIA THE LU LIBRARY E-JOURNALS WEBSITE

Gardner, J.L. et al. 2011. Declining body size: a third universal response to warming? Trends in Ecology and Evolution 26:285-291. https://people.anu.edu.au/robert.heinsohn/download/BodySize.pdf

McCauley, S.J. and K.E. Mabry. 2011. Climate change, body size, and phenotype dependent dispersal. Trends in Ecology and Evolution 26:554-555. http://izt.ciens.ucv.ve/ecologia/Archivos/ECO_POB%202011/ECOPO2_2011/McCauley%20y%20Mabry%202011.pdf

Bickford, D.P. et al. 2011. Climate change responses: forgetting frogs, ferns and flies? Trends in Ecology and Evolution 26:553-554. http://www.dbs.nus.edu.sg/lab/evol-ecol/documents/Bickford_etal_TREE_2011.pdf

Gardner, J.L. et al. 2011. Mechanisms and consequences of changing body size: reply to Bickford et al. and McCauley and Mabry. Trends in Ecology and Evolution 26:555-556. http://ac.els-cdn.com/S0169534711002011/1-s2.0-S0169534711002011-main.pdf?_tid=a519a3fa-9549-11e5-8830-00000aab0f02&acdnat=1448658104_e37dcf1171a3f352ba94ff31a98d4d2a

Workshop 3:

Allocate workloads and re-assess progress on the class term report.

Flesh out the theme and evaluate scholarship to date. At the end of class, select one of the following terms describing your self-assessment on this task (exceptional, outstanding, very strong, strong, moderate, insufficient). Do the same for the class as a whole. Submit both 'scores' to your GA before leaving. Answer the following questions:

What is the key question (then write it out clearly and succinctly)?

What do we need to learn (and make a list)?

What key references do we need to pursue (and make a list)?

What additional resources do we need (and make a list)?

When will we do what (write it out and distribute)?

Who does what when (make a list)?

Some related reading:

Allendorf, F. W. and J. J. Hard. 2009. Human-induced evolution caused by unnatural selection through harvest of wild animals. Proceedings of the National Academy of Sciences USA 106:9987-9994. http://www.pnas.org/content/106/Supplement_1/9987.full.pdf

Dillon, M. E., G. Wang, and R. B. Huey. 2010. Global metabolic impacts of recent climate warming. Nature 467:704-706. http://www.nature.com/nature/journal/v467/n7316/full/nature09407.html

Huston, M. A., and Wolverton, S. 2011. Regulation of animal size by eNPP, Bergmann's rule, and related phenomena. Ecological Monographs 81: 349-405. http://onlinelibrary.wiley.com/doi/10.1890/10-1523.1/pdf

Meiri, S. 2011. Bergmann's Rule – what's in a name. Global Ecology and Biogeography 20:203-207. http://onlinelibrary.wiley.com/doi/10.1111/j.1466-8238.2010.00577.x/pdf

Olalla-Tárraga, M. 2011. "*Nullius in Bergmann*" or the pluralistic approach to ecogeographical rules: a reply to Watt et al. (2010). Oikos 120:1441-1444. http://onlinelibrary.wiley.com/doi/10.1111/j.1600-0706.2011.19319.x/pdf

Watt, C. et al. 2010. "Bergmann's rule; a concept cluster?" in Oikos 119:89-100. http://onlinelibrary.wiley.com/doi/10.1111/j.1600-0706.2009.17959.x/pdf

Watt, C. and V. Salewski. 2011. Bergmann's rule encompasses mechanism: a reply to Olalla- Tárraga. Oikos 120:1445-1447. http://onlinelibrary.wiley.com/doi/10.1111/j.1600-0706.2011.19968.x/pdf

Ohlberger, J. 2013. Climate warming and ectotherm body size − from individual physiology to community ecology. Functional Ecology 27:991-1001. http://janohlberger.com/Homepage/Publications_files/Ohlberger-2013-Funct%20Ecol-1.pdf