

Título: Ecologia Filogenética de Comunidades

Carga Horária: 60 h / 4 créditos

Ementa:

Abordagens filogenéticas e funcionais em ecologia. Agrupamento e repulsão filogenética. Diversidade filogenética. Filobetadiversidade. Composição filogenética. Padrões filogenéticos em metacomunidades. O uso de árvores filogenéticas em ecologia. Métricas de estrutura e diversidade filogenética. Estrutura filogenética de comunidades. Sinal filogenético. Conservação filogenética de nicho.

Objetivos:

Introduzir conceitos fundamentais relacionados ao estudo de padrões filogenéticos em comunidades ecológicas. Discutir os recentes avanços no estudo de ecologia filogenética de comunidades e as perspectivas de avanços teóricos e metodológicos na área. Apresentar alguns dos métodos mais utilizados em ecologia filogenética, assim como soluções analíticas desenvolvidas pelo grupo de pesquisa em ecologia filogenética da UFRGS.

Conteúdos:

Porcentagem de aulas: Teóricas (60%) e Práticas (40%)

Forma de avaliação: Avaliação e apresentação de seminários;

Número de vagas: 20 alunos

Referências:

- Ackerly, D.D. (2003) Community assembly, niche conservatism, and adaptive evolution in changing environments. *International Journal of Plant Sciences*, **164**, S165-S184.
- Cavender-Bares, J., Keen, A. & Miles, B. (2006) Phylogenetic structure of Floridian plant communities depends on taxonomic and spatial scale. *Ecology*, **87**, 109-122.
- Cavender-Bares, J., Kozak, K.H., Fine, P.V.A. & Kembel, S.W. (2009) The merging of community ecology and phylogenetic biology. *Ecology Letters*, **12**, 693-715.
- Cavender-Bares, J., Ackerly, D.D., Baum, D.A. & Bazzaz, F.A. (2004) Phylogenetic overdispersion in Floridian oak communities. *The American Naturalist*, **163**, 823- 843.
- Duarte, L.d.S. (2011) Phylogenetic habitat filtering influences forest nucleation in grasslands. *Oikos*, **120**, 208–215.

- Emerson, B.C. & Gillespie, R.G. (2008) Phylogenetic analysis of community assembly and structure over space and time. *Trends in Ecology and Evolution*, **23**, 619-630.
- Kembel, S.W. (2009) Disentangling niche and neutral influences on community assembly: assessing the performance of community phylogenetic structure tests. *Ecology Letters*, **12**, 949-960.
- Kembel, S.W., Cowan, P.D., Helmus, M.R., Cornwell, W.K., Morlon, H., Ackerly, D.D., Blomberg, S.P. & Webb, C.O. (2010) Picante: R tools for integrating phylogenies and ecology. *Bioinformatics*, **26**, 1463-1464.
- Kembel, S.W. & Hubbell, S.P. (2006) The phylogenetic structure of a neotropical forest tree community. *Ecology*, **87**, 86-99.
- Kraft, N.J.B. & Ackerly, D.D. (2010) Functional trait and phylogenetic tests of community assembly across spatial scales in an Amazonian forest. *Ecological Monographs*, **80**, 401-422.
- Kraft, N.J.B., Cornwell, W.K., Webb, C.O. & Ackerly, D.D. (2007) Trait evolution, community assembly, and the phylogenetic structure of ecological communities. *American Naturalist*, **170**, 271-283.
- Kühn, I., Nobis, M.P. & Durka, W. (2009) Combining spatial and phylogenetic eigenvector filtering in trait analysis. *Global Ecology and Biogeography*, **18**, 745-758.
- Losos, J.B. (1996) Phylogenetic perspectives on community ecology. *Ecology*, **77**, 1344-1354.
- Losos, J.B. (2008) Phylogenetic niche conservatism, phylogenetic signal and the relationship between phylogenetic relatedness and ecological similarity among species. *Ecology Letters*, **11**, 995-1003.
- Pausas, J.G. & Verdú, M. (2010) The jungle of methods for evaluating phenotypic and phylogenetic structure of communities. *BioScience*, **60**, 614-625.
- Pavoine, S. & Bonsall, M.B. (2010) Measuring biodiversity to explain community assembly: a unified approach. *Biological Reviews*, no-no.
- Pavoine, S., Vela, E., Gachet, S., De Bélair, G. & Bonsall, M.B. (2010) Linking patterns in phylogeny, traits, abiotic variables and space: a novel approach to linking environmental filtering and plant community assembly. *Journal of Ecology*, no-no.
- Pillar, V. & Duarte, L.D.S. (2010) A framework for metacommunity analysis of phylogenetic structure. *Ecology Letters*, **13**, 587-596.
- Schweiger, O., Klotz, S., Durka, W. & Kühn, I. (2008) A comparative test of phylogenetic diversity indices. *Oecologia*, **157**, 485-495.
- Swenson, N.G. (2009) Phylogenetic resolution and quantifying the phylogenetic diversity and dispersion of communities. *PLoS ONE*, **4**, e4390.

Swenson, N.G. (2011) The role of evolutionary processes in producing biodiversity patterns, and the interrelationships between taxonomic, functional and phylogenetic biodiversity. *Am. J. Bot.*, **ajb.1000289**.

Swenson, N.G., Enquist, B.J., Pither, J., Thompson, J. & Zimmerman, J.K. (2006) The problem and promise of scale dependency in community phylogenetics. *Ecology*, **87**, 2418–2424.

Vamosi, S.M., Heard, S.B., Vamosi, C. & Webb, C.O. (2009) Emerging patterns in the comparative analysis of phylogenetic community structure. *Molecular Ecology*, **18**, 572-592.

Verdú, M., Rey, P.J., Alcántara, J.M., Siles, G. & Valiente-Banuet, A. (2009) Phylogenetic signatures of facilitation and competition in successional communities. *Journal of Ecology*, **97**, 1171-1180.

Webb, C.O. (2000) Exploring the phylogenetic structure of ecological communities: an example for rain forest trees. *The American Naturalist*, **156**, 145-155.

Webb, C.O., Ackerly, D.D. & Kembel, S.W. (2008b) Phylocom: software for the analysis of phylogenetic community structure and trait evolution. *Bioinformatics*, **24**, 2098- 2100.

Webb, C.O., Ackerly, D.D., McPeck, M.A. & Donoghue, M.J. (2002) Phylogenies and community ecology. *Annual Review of Ecology and Systematics*, **33**, 475-505.

Webb, C.O., Cannon, C.H. & Davies, S.J. (2008a) Ecological organization, biogeography, and the phylogenetic structure of tropical forest tree communities. *Tropical Forest Community Ecology* (eds W.P. Carson & S.A. Schnitzer), pp. 79-97. Wiley-Blackwell, Oxford.

Wiens, J.J., Ackerly, D.D., Allen, A.P., Anacker, B.L., Buckley, L.B., Cornell, H.V., Damschen, E.I., Davies, T.J., Grytnes, J.-A., Harrison, S.P., Hawkins, B.A., Holt, R.D., McCain, C.M. & Stephens, P.R. (2010) Niche conservatism as an emerging principle in ecology and conservation biology. *Ecology Letters*, **9999**.

Wiens, J.J. & Donoghue, M.J. (2004) Historical biogeography, ecology and species richness. *Trends in Ecology & Evolution*, **19**, 639-644.

Wiens, J.J. & Graham, C.H. (2005) Niche conservatism: integrating evolution, ecology, and conservation biology. *Annual Review of Ecology, Evolution, and Systematics*, **36**, 519-539.