



Seewiesen Colloquia

Speaker invited by Research Group Baldwin:

Thursday, 17 March 2016, 13:00 h, in House 4, Lecture Room

Radiating despite a lack of character: closely related, morphologically similar, co-occurring honeyeaters have diverged ecologically

Dr. Eliot Miller

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The 75 species of Australian honeyeaters (Meliphagidae) are morphologically and ecologically diverse, with species feeding on nectar, insects, fruit, and other resources. We investigated ecomorphology and community structure of honeyeaters across Australia. First, we asked to what degree morphology and ecology (foraging behavior) are concordant. Second, we estimated rates of trait evolution. Third, we compared phylogenetic and trait community structure across the broad environmental gradients of continental Australia. We found that morphology explained 37% of the variance in ecology (and 62% vice versa), and that recovered multivariate ecomorphological relationships incorporated well-known bivariate relationships. Clades of large-bodied species exhibited elevated rates of morphological trait evolution, while members of Melithreptus showed slightly faster rates of ecological trait evolution. Finally, ecological trait diversity did not decline in parallel with phylogenetic diversity along a gradient of decreasing precipitation. We employ a new method (trait fields) and extend another (phylogenetic fields) to show that while species from phylogenetically clustered assemblages co-occur with morphologically similar species, these species are as varied in foraging behavior as those from more diverse assemblages. Thus, although closely related, these arid-adapted species have diverged in ecological space to a similar degree as their mesic counterparts, perhaps mediated by competition.

Who is Eliot Miller?

- 2014 PhD University of Missouri, St. Louis, USA
- 2014 PhD Macquarie University, Australia
- 2014 NSF Post-doctoral Fellowship, University of Idaho, USA
- 2016 Post-doctoral Fellowship, Lab of Ornithology, Cornell University, USA

Selected publications:

- Miller, E.T., Zanne, A.E. and Ricklefs, R.E. 2013. Niche conservatism constrains Australian honeyeater assemblages in stressful environments. **Ecology Letters** 16: 1186-1194.
- Mast, A.R., Olde, P.M., Makinson, R.O., Jones, E., Kubes, A., Miller, E.T. and Weston, P.H. 2015. Paraphyly changes understanding of timing and tempo of diversification in subtribe Hakeinae (Proteaceae), a giant Australian plant radiation. **American Journal of Botany** 102: 1634-1646.
- Miller, E.T., Farine, D.R. and Trisos, C. H. 2015. Phylogenetic community structure metrics and null models: a review with new methods and software. **bioRxiv**: 025726.
- Miller, E.T. and Greeney, H.F. 2008. Clarifying the nest architecture of the Silvicultrix clade of Ochthoeca chat-tyrants (Tyrannidae). **Ornitologia Neotropical** 19: 361-370.