Paper No. 199-1
Presentation Time: 1:30 PM

BATS AND CLIMATE CHANGE: THE RED QUEEN AND COURT JESTER IN GREEN LACEWING EVOLUTION

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Understanding how one group of organisms replaces another and why it may then radiate to reach much greater diversity remains a vexing problem in evolutionary biology. We examine two turnovers documented in the fossil record of a common, cosmopolitan insect group, the green lacewings (Neuroptera: Chrysopidae). The first is consistent with early Eocene expansion in available eco-space following extinctions of Mesozoic taxa. The second is associated with two key adaptations in the subfamily Chrysopinae: 1) the appearance of a tympanum capable of detecting high frequency sounds such as those produced by echolocating bats, thereby diminishing the impact of a formidable predator (a Red Queen interaction), and 2) increased climatic tolerance coincident with the shift from a greenhouse to icehouse global climatic regime (a Court Jester effect). Together these create the potential for the dramatic range expansion and diversification of Chrysopinae in the Neogene. Today, Nothochrysinae is relictual, and the cosmopolitan Chrysopinae dominates the family with >97% of its >1200 species.

Session No. 199
T142. Topics in Paleoecology: Predation/Biotic Interactions, Fidelity/Taphonomy, and Community Ecology/Whole Organism Paleoecology II
Tuesday, 6 November 2012: 1:30 PM-5:30 PM

Charlotte Convention Center 217D
Geological Society of America *Abstracts with Programs.* Vol. 44, No. 7, p.474

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Previous Abstract | Next Abstract >>