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Volcanism and Rodent Evolution: ecological interactions in different geological provinces in America discussion from a workshop

Adolfo Pacheco Castro^{1,2}, Joaquín Arroyo Cabrales³, David Fox⁴, Samantha Hopkins⁵, and Catherine Badgley⁶

¹Centro de Geociencias, Universidad Nacional Autónoma de México, Querétaro, Mexico (apacheco@geociencias.unam.mx)

²Facultad de Ciencias Naturales, Universidad Autónoma de Querétaro, México

³Laboratorio de Arqueozoología, Instituto Nacional de Antropología e Historia, México (arromatu5@yahoo.com.mx)

⁴Department of Earth and Environmental Sciences, University of Minnesota, USA

⁵Department of Earth Sciences, University of Oregon, USA

⁶College of Literature Science and The Arts, University of Michigan, USA (cbadgley@umich.edu)

Terrestrial biodiversity is higher in topographically complex regions than in low relief ones, and this diversity evolved over millions of years along elevation gradients with disequilibrium of climatic conditions and biological interactions. Also, the mountainous complex is heterogeneous, consisting of orogenic and volcanic mountains with different geological and climatic features. However, there has not been an investigation in regard how a volcanic environment may have influenced ecosystem changes or faunal evolution to. Rodents are an excellent model to explore these questions because they are the most speciose clade of mammals and many species live in montane regions. Hypotheses of the ecological evolution in different volcanic provinces in America were discussed during the Workshop on Volcanism and Rodent Evolution organized by the Research Group “Mammal diversification about dynamic landscapes of the North American Rodents Landscapes, Evolution & Ecology”. Workshop consisted of two modules: 1) origin and development of volcanic provinces in North America during the late Cenozoic with an emphasis on the geological process crucial to the ecosystem; 2) some examples of ecosystems in volcanic regions and evolutive patterns related to sky-island process. In both modules, we discuss the evolution of different lineages of rodents, fossil and extant species, and how we can distinguish the volcanic influence on their biodiversity. The topics were: speciation, endemism, genetic drift, geographic-range shifts, environmental sorting, and sky-island processes.