Title: The role of areas of endemism, transitional areas, and Pleistocene climate change in the formation of North American Desert biodiversity.

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Abstract: Exacerbated rates of climate change have made it vital to understand how changing climates alter regional floral and faunal distributions in order to prescribe effective conservation strategies. Areas of endemism (areas that generate and maintain unique lineages through time) may be an improved approach to regional biodiversity conservation. Alternatively, regions between areas of endemism ("transitional areas") tend to have the highest species richness as the result of the intermixture of species dispersing out of two or more areas of endemism. Thus, these regions are often the focus of conservation efforts. However, conserving transitional areas may be inadvisable for conservation efforts because these regions are often only ephemerally rich during periods of environmental change, such as glacial of interglacial cycles. In order to gain an enhanced understanding of the evolutionary dynamics of areas of endemism and identify areas that may be most stable through climate change events in the North American deserts, we conducted a multi-organism evolutionary biogeographic analysis (Phylogenetic Analysis for Comparing Trees; PACT). This analysis allows us to further investigate the impacts of climate change on the evolutionary and distributional dynamics of North American desert biodiversity and provide more information for prescribing effective regional conservation strategies. Preliminary results suggest that areas of endemism in the North American warm deserts have more stably retained biodiversity through historical climate change than transitional areas; however, the Sonoran Desert acts as both an area of endemism for some organisms and a transitional area for other organisms during Pleistocene climate change. Expanding this analysis to include the Great Basin Desert (a cold desert) will provide an enhanced understanding of desert response across environmental gradients and may reveal more stability in Mojave biodiversity than previously observed.