ABSTRACT

TITLE:	Ecological Niche Modeling of the Genus Ostrya (Betulaceae): Past, Present, and Future Range Projections in the American Southwest and Northern Latin America
AUTHOR(S):	McCauley , Ross A. ; Vecchio, Lucas
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ABSTRACT: Ostrya is a genus of generally small understory tree which exhibits a widespread distribution throughout the Arcto-Tertiary region. In North America, the distribution of Ostrya is ubiquitous throughout the extensive deciduous forest of the east. To the west, Ostrya exhibits a highly disjunct distribution throughout the desert southwest, western Texas, and northern Mexico. The genus continues its range south through the discontinuous high elevation cloud forests through Mexico south to Honduras. The disjunct distribution of Ostrya is hypothesized to be relictual, representing the remnants of a once widespread ancient deciduous forest that has been diminished by the action of continental climate shift since the last glacial period. To evaluate this hypothesis regarding past distribution we produced a set of ecological niche models using georeferenced localities of current populations and paleoclimate projections for the last inter-glacial (~120,000 - 140,000 years BP) and last glacial maximum (22,000 BP). We also modeled the potential for population persistence into the near future (2070) under two distinct climate projections. The potential for refugia was observed in the (current) desert southwest region of North America during the Last Glacial Maximum while northern Latin American habitats exhibited widespread habitat suitability. This pattern closely follows the current distribution of likely refugia across the American Southwest. Future models predict that potential habitat in the western U.S. may expand however these same models predict a further reduction of suitable habitat across the cloud forest regions of northern Latin America.