ABSTRACT

TITLE:	Determining Potential Glacial Refugia for Ostrya Knowlyonii Across the Southwester Us as Inferred Through Chloroplast Haplotype Analysis
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ABSTRACT: Knowlton Hop-Hornbeam (Ostrya knowltonii) is a small understory tree that is a member of the ancient Arcto-Tertiary flora extending across the Northern Hemisphere. According to the fossil record Ostrya once had an almost continues distribution in North America. Today Ostrya knowltonii exhibits a highly disjunct distribution across the southwestern United States and northern Mexico likely as a result of past climatic conditions. We investigated patterns of genetic relatedness and variation among populations across the region to uncover phylogeographic patterns relevant to past distribution and migration of the species. Ten populations of Ostrya were sampled with DNA from five individuals from each population extracted. Two non-coding chloroplast DNA regions, psbA-trnH and ndhF-rpl32 were amplified using the polymerase chain reaction. The sequences from the two chloroplast DNA plastid regions were then analyzed and reduced to haplotypes projected in geographical space. Four haplotypes were identified in psbA-trnH and five haplotypes in ndhF-rpl32. Similar geographic patterns were observed for both regions. The eastern portion of the range in southeastern NM and western TX shared identical haplotype structure. Similar haplotypes were also seen in the Colorado River drainage and adjacent areas of northern AZ. Slight haplotype differentiation was noted into southeastern UT, central AZ, and Chihuahua in northwestern Mexico. The diversity of haplotypes is principally fixed in individual populations pointing to long-term isolation. Limited haplotype sharing in the region of highest population abundance points to persistence of ancestral haplotypes within individual refugial regions.