

Genetic Diversity and Conservation of Mexican Forest Trees¹

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Over the last 200 years, humans have impacted the genetic diversity of forest trees. Because of widespread deforestation and over-exploitation, about 9,000 tree species are listed worldwide as threatened with extinction, including more than half of the ~600 known conifer taxa. A comprehensive review of the floristic-taxonomic literature compiled a list of 4,331 recorded tree species in Mexico. The highest diversity of pine and oak worldwide is located in the Mexican temperate forests. Because species diversity and genetic diversity are often positively associated, there is expectation of very high trans-specific genetic diversity exists in Mexican tree species. Contrasting with its high species and genus richness, studies of genetic diversity within Mexican forest trees are rather scarce, and often biased to particular families, like the Pinaceae. Moreover, even within those particular families the available surveys have a penchant for a specific genus. The markers used in most of these studies include the traditional and “universal” isozymes and chloroplast microsatellites and, to a lower extent, the anonymous ISSRs, AFLPs, and RADPs. Additional studies on more varied taxa, using more advanced technologies and markers are needed. Because of the poor comparability of the genetic diversity estimates among the studied Mexican tree species, it is extremely difficult to discern general trends across species or regions. We therefore recommend that genetic diversity should be measured across species with an identical type of genetic marker, surveying similar numbers of loci, individuals, and populations, and while using identical indices of genetic diversity.

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