

云南金钱槭天然居群等位酶遗传多样性研究

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摘要: 云南金钱槭(*Dipteronia dyeriana*)是我国特有的国家Ⅱ级重点保护珍稀濒危植物,仅分布于云南的文山、屏边和蒙自三县交界地区。采用水平切片淀粉凝胶电泳等位酶分析方法,对采自三个县的天然居群的63个样品进行了遗传多样性检测。8个酶系统的13个等位基因位点分析表明,云南金钱槭的遗传多样性水平低,其平均多态位点百分率 $P = 15.4\%$,每位点平均等位基因数 $A = 1.2$,平均预期杂合度 $H_e = 0.064$,各居群都偏离Hardy-Weinberg平衡,杂合子过量,居群间的基因分化系数 $G_{ST} = 0.099$,遗传变异主要发生在居群内(90.1%),居群间分化较小,居群间遗传一致度较高($I = 0.985 \sim 1$),具有一定的基因流($Nm = 2.669$)。不加权对平均法(UPGMA)聚类可将4个居群分为两支,水头箐居群和马家寨居群亲缘关系最近,聚类后与黑洞居群形成一支再和中槽子居群聚类,这与其地理分布格局大致吻合。据此提出了关于云南金钱槭保育策略的建议。

关键词: 云南金钱槭; 等位酶; 遗传多样性; 生境片段化; 保育策略

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Allozyme-based Genetic Diversity of *Dipteronia dyeriana* in China

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Abstract: *Dipteronia dyeriana* Henry is a rare and endangered species restricted in a small adjacent corner of Wenshan, Pingbian and Mengzi counties of Yunnan, southwest China. The genetic diversity of four natural populations was estimated using allozyme markers. Thirteen loci of eight enzyme systems were scored for the analysis of population genetic diversity and structure. A low genetic diversity was observed in this rare species, with a mean percentage of polymorphic loci $P = 15.4\%$, an average number of alleles per locus $A = 1.2$, and an average of expected heterozygosity $H_e = 0.064$. All populations deviated significantly from the Hardy-Weinberg equilibrium. Very slight population differentiation was detected ($G_{ST} = 0.099$). Nei's genetic identity ranged from 0.985 to 1. Moderate gene flow was inferred ($Nm = 2.669$). According to the Unweighted Pair Group Method with Arithmetic (UPGMA) cluster analysis based on the genetic distance, Mengzi and Majiazhai populations are clustered in one clade and its genetic distances are positively related to the geographic distance. For conservation purpose, we strongly suggest strict protection of the natural populations of the species should be conducted, and *ex situ* conservation could be an effective supplement.

Key words: *Dipteronia dyeriana* Henry; Allozyme; Genetic diversity; Habitat fragmentation; Conservation strategy

云南金钱槭(*Dipteronia dyeriana* Henry)是槭树科(Aceraceae)金钱槭属的落叶小乔木或灌木,其现代分布区仅局限于云南东南部文山县老君山、蒙自县鸣鹭乡、屏边县和平乡交界处的狭小区域内,生于海拔1800~2400 m的林缘或林中。该植物是我国特产金钱槭属仅有的两个种之一,是研究槭树科植

物起源、系统演化、植物区系、地理分布、古地理和古气候等的重要树种^[1];鉴于其具有重要的科学价值,已被列为国家Ⅱ级重点保护野生植物^[2];现天然分布面积仅有21 hm²,按IUCN的濒危等级标准,云南金钱槭属于“极危种”(CR)^[3]。

近几年云南金钱槭的保护和研究已经得到学术

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