**Title**

Genetic diversity of *Parkia biglobosa* (African locust bean) and its implications for conservation strategies

**Authors**

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**Abstract**

*Parkia biglobosa* has a large distribution range in Sub-Saharan Africa from Senegal to Uganda. It is an agroforestry tree well-known in West Africa for medicinal and food uses. Seeds, barks, roots and flowers are used to treat more than 80 diseases and complaints. Fermented seeds and pulp of fruits have highly nutritional and commercial values.

Understanding the level and distribution of genetic diversity of a widespread species such *P. biglobosa* is crucial for its conservation and sustainable utilization. The genetic diversity and population structure were investigated using height nuclear microsatellites developed for the species. The sampling included 80 populations from twelve countries in West and Central Africa between the latitudes 6°N and 15°N. The height SSR loci were highly polymorphic and did not show evidence of null alleles. A total of 208 alleles were revealed among the 1548 genotypes of *P. biglobosa*. The number of alleles per SSR locus was ranged from 17 to 42 with an average of 26 alleles per locus. The estimates of genetic diversity were moderate for the populations of extreme West Africa and Central Africa and were high to populations in the centre of West Africa. Individual-based assignment using admixture analysis of nuclear SSRs markers performed in STRUCTURE revealed strong genetically structured populations across *P. biglobosa* range in West and Central Africa. According to Bayesian clustering analysis, the most plausible population subdivision scheme was five. Analysis of molecular variance partitioned the molecular variation 9.1% among groups, 2.71% among populations within groups and 88.19% within populations. Overall, the genetic differentiation among populations was moderate (FST=0.118; P<0.001). In regard to the distribution of intraspecific diversity, we also discussed the implications for conservation and sustainable use of the species*.*

**Key words**: *Parkia biglobosa*, agroforestry, conservation, genetic diversity.