Article: Population genetics of the critically endangered species Dipterocarpus littoralis (bl.) Kurz (dipterocarpaceae) endemic on nusakambangan island, Indonesia.

Abstract

Dipterocarpus littoralis Blume is a critically endangered dipterocarp species found only in Nusakambangan Island, Central Java, Indonesia. Patterns of genetic diversity and population genetic structure of adults and saplings in two extant populations (Kali Jati and Solok Besek) were estimated using ten microsatellite markers. A total of 39 alleles were found, with two and four alleles being unique in adult and sapling populations, respectively. Allelic richness and heterozygosity were similar between adult (Ar = 3.00; He= 0.423) and sapling (Ar = 3.25; He= 0.441) populations. Inbreeding coefficients in saplings were positive in both populations and statistically significant in Kali Jati, while those in adult populations were not significantly different from zero, indicating excessive inbreeding and selfing in the sapling populations. Genetic differentiation of the sapling populations (FST = 0.036) was slightly lower than in the adult populations (0.050), but only significantly so for saplings. This study revealed that D. littoralis has low genetic diversity in both adults and saplings. Similarly low values in allele richness and heterozygosity suggest that reductions of population size have been ongoing for long periods in this species. Significant genetic differentiation between sapling populations but not adult populations indicates that recent fragmentation is further accelerating the isolation process.

Keywords: Dipterocarpus littoralis, microsatellite, genetic diversity, genetic differentiation

Reference: