

# Tree Population Dynamics in A Protected Rainforest Ecosystem in Urhonigbe Forest Reserve, Edo State, Nigeria.



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## Abstract

A study on tree population structure and ecosystem disturbance was conducted in Permanent Sample Plot (PSP) 82, Urhonigbe Forest Reserve, Nigeria. Urhonigbe Forest Reserve is located in the tropical rainforest zone and covers an area of 30,791ha. PSP 82 is an experimental plot established by Forest Research Institute of Nigeria in 1954. The plot which measures 122m x 122m (or 1.5ha) and sub-divided into 16 sub-plots (30m x 30m each) is surrounded by a 4.4ha buffer. Tree data were collected by the Forest Research Institute of Nigeria in 1956, 1959, 1961, 1973, 1978 and 1982. The data were analysed using different indices. Thirty-Nine families consisting of 98 genera and 119 species of trees and shrubs ( $\geq 15$ cm gbh) were encountered in 2001. The total number of individual trees and shrubs (including *Callamus sp.*) increased from 1037 in 1999 to 1152 in 2001. While species diversity increased marginally, similarity was very high. The most important family in the PSP was Caesalpinioideae while Rhizophoraceae was least. But the most important ten families and ten species in the PSP accounted for approximately 75% and 54% of total important value ranking respectively. Among the species encountered during the study, twenty-seven (or 23%) were mono-specific genera. The rarity of species like *Antiaris toxicana ssp. welwitchii*, *Diospyros nigerica*, *Orchocosmus africanus*, and *Uvariopsis dioica* in the plot might not be unconnected with light climate and gap status, poor fecundity and genetic isolation. While the stage of succession corresponds to the early successional stage of forest growth cycle, the structure of the vegetation symbolizes secondary regrowth given the absence of matured individuals and the preponderance of saplings, poles, and young trees.

**Keywords:** Tree demography, species guild, mortality, recruitment, forest regrowth