# Population distribution and structure of *Afzelia* species in Southwestern Nigeria

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## INTRODUCTION

*Afzelia* species are one of the most threatened multipurpose tree species in Africa because of its socio-economic importance. The loss and fragmentation of tropical forests are among the greatest threats to plant diversity (Ouédraogo and Thiombiano, 2012). Some species undergo an increasing human pressure; others are endangered because of their overexploitation or by the lack of natural regeneration by seedling, or just simply as a result of the loss of their ecological environments. Therefore, investigation was conducted to assess the population distribution and structure of *Afzelia* species in three forest reserves of Southwestern Nigeria namely Omo Biosphere Reserve, Gambari Forest Reserve and Akure Forest Reserve.

## MATERIALS AND METHOD

- Systematic sampling method was used with 10% sampling intensity on a straight line alternating transect line in the study areas.
- Adults trees (dbh ≥ 10 cm) were measured within square plots of 2500m$^2$ sizes (50x50) in 125 plots in the three forest reserves.
- Nest transects of 50 x 0.5 m$^2$ was laid within each plot for total enumeration of the species at sapling stage (dbh ≥ 5 <10 cm)
- Another nest transects of 10 x 10 m$^2$ were established at the four corners of the 50x50m$^2$ plots to enumerate seedlings (dbh < 5 cm)
- Data were sorted to generate diameter size classes. ANOVA was used to show differences in tree dbh and variation in number of individual trees in each study area.
- Tree variables such as Blackman and Green indices, basal area, average diameter, height of Lorey and density were calculated and interpreted.

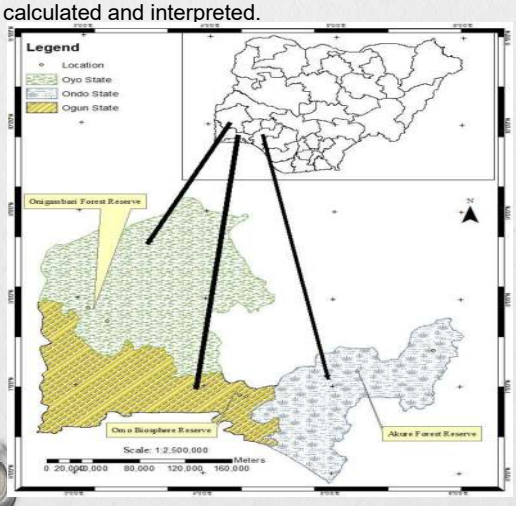


Fig.1: Map of Nigeria showing the locations of the forest reserves

## RESULTS

- Density (0.06), diameter (0.01 cm), basal surface area (0.01 cm), Lorey height (0.07 m) and Green index (0.03) were significant across locations
- Density (0.23), stand /hectare and stand diameter (cm) (0.01) were significant for regeneration status while basal surface area (cm$^2$) (0.00) was not significant for saplings.
- Diameter /hectare (0.01) and basal surface area (cm$^2$) (0.23) were significant for seedlings while stand density /hectare (0.01) was not.
- Shannon index (1.54), Simpson index (0.82), and Shannon Maximum diversity index (2.89) in Akure Forest Reserve was highest while Gambari Forest Reserve had the least (0.80 and 0.45, respectively).
- Gambari Forest Reserve had the highest value for species evenness (0.28).

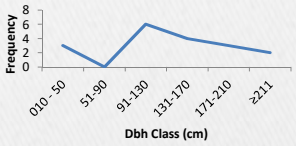


Fig. 2: Diameter distribution of tree in Omo Biosphere Reserve

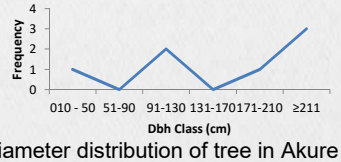


Fig. 3: Diameter distribution of tree in Akure Forest Reserve

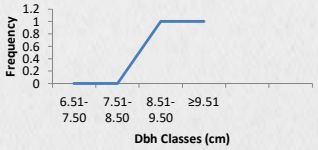


Fig. 4: Diameter distribution of tree stems in Gambari Forest Reserve

## CONCLUSION

The high diversity recorded from Akure Forest Reserve could be because of the management of the reserve under Forestry Research Institute of Nigeria (FRIN) which provided more security against illegal activities.

## REFERENCE

Ouédraogo, A., Thiombiano, A., (2012). Regeneration pattern of four threatened tree species in Sudanian savannas of Burkina Faso. *Agroforestry Systems* 86, 35–48.

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