Population structure and patterns of regeneration of Zambezi Teak (*Baikiaea plurijuga*) logged at different periods in Gwayi Forest, Zimbabwe

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ABSTRACT

Prudent management of natural forests requires information on their ecological status that can be estimated by monitoring population structure and regeneration especially in the presence of exploitation such as logging. A study was carried out to establish the relationship between logging time, population structure and regeneration potential of *B. plurijuga* in Gwayi Forest of Lupane district, Zimbabwe between March and April 2005. Basal diameter, number of seedlings, saplings, stumps per plot (their coppicing status), soil Nitrogen, soil Phosphorus, soil Potassium and pH were determined. Results of size class structure distribution in all the sampling areas showed a similar overall output pattern, represented with an inverse ‘J-pattern’ although it was significantly different among the three areas. Basal diameter size classes, richness, diversity, stump density, tree density, seedling density, sapling density, soil Phosphorus (ppm) and soil Potassium (me%) were not significantly different among the sampling areas (p > 0.05). pH and Nitrogen (ppm) varied significantly among the study areas (p< 0.05). Both CCA and DCA analysis on the data set revealed three different woody species associations based on species composition while Hierarchical Cluster Analysis showed seven floristic associations. Nitrogen and pH were the main variables that explained significant differences in species composition among vegetation associations. Results imply that logging had little impact on forest population structure, composition and regeneration potential, hence is sustainable. Adequate recruitment was taking place in all the sampled areas. However, logging could have been more intense in the area logged in 1999 than in the area logged in 1995. Results imply that low intensity of logging affects the population structure of *B. plurijuga* but not regeneration.
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