

ABSTRACT

The numbers of *Acacia drepanolobium* trees are declining over much of Africa and large mammals particularly more prone and vulnerable to loss of habitat owing to human settlement encroachment. In Ol pejeta conservancy a sanctuary for the protection of the endangered black rhino, there is significant browse and vegetation pressure on the habitat particularly on the *Acacia drepanolobium* tree population. This study aimed to investigate the *Acacia drepanolobium* and ants' interaction under different browsing intensities, determine effect of prescribed burnings on *Crematogaster* ants and *Acacia drepanolobium* interaction, investigate the tenancy dynamics of ants under varying morphological characteristics of *Acacia drepanolobium* trees, and finally to determine if *Crematogaster* ants' communities/ colonization on *Acacia drepanolobium* change over time. Twelve (12) randomly chosen plots (keyed in a waypoint on the GPS) with fifty or more *Acacia drepanolobium* trees were studied for the study as follows, two (2) in a Chimpanzee Sanctuary where elephant, giraffe and rhino are excluded (control), six (6) in the reserve and four (4) in the Ranch. Two (2) plots treated with prescribed burning (fire) were compared with two un-burnt plots. All data collected was fed and entered into Excel spreadsheet and Statistical Package for the Social Science version 20 for analysis. The data were then processed into quantitative tables to give a comparative analysis for response obtained. Size class distributions of the reserve, Ranch and control were compared by means of Analysis of Variance (ANOVA) and other relevant parametric statistics. The result shows that in Ol pejeta conservancy browsing levels has statistically significant effect on *Crematogaster* ants and *Acacia drepanolobium* interaction. There was a strong and notable distinction between the four acacia ant species in the overall extends and levels of tenancy while responding to varied browsing pressures; *Crematogaster mimosae* and *Tetraponera penzigi* were found to be the most abundant/frequently observed ant species occupying trees in the reserve where there is intensive browsing (Reserve) and the ranch with medium browsing intensity. From this research experimental evidence explains the ability of trees to re-induce greater spine and gall numbers and that ant tenancy in *A. drepanolobium* is influenced by the tree's morphological characteristics. The findings and results also indicated that prescribed burning significantly affected the type of ant inhabiting the *A. drepanolobium* tree. Going by the results of this paper, it was concluded that this mutualism is a key component of Ol pejeta biodiversity and ecosystem function. The study recommends that the results in this research should be used in determining

ecological factors that influence conservation sustainability and predict the consequences of heavy browsing pressure, morphological characteristics and prescribed burning on the health of *Acacia drepanolobium*.

Keywords: *Acacia drepanolobium*, Browsing, *Crematogaster* Ants, Guilds, Galls, Spines