

## **4.5 Impacts of burning a forest area and the burning followed by chena cultivation on the nest density, Species richness and community of ants in Kekirawa.**

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### **ABSTRACT**

Burning of forest areas for chena cultivation is a common practice in the dry zone of Sri Lanka. How ants respond to environmental disturbances such as burning of a forest area and burning followed by chena cultivation is not well-documented and this investigation was focused on investigating the differences in nest density and Species Richness of ants that inhabited 50 m × 50 m area of each of the three regions, a forest (F), a burned forest area (B) and a vegetable cultivation (C) in Kekirawa. Fifty, 0.5 m × 0.5 m quadrats were laid randomly throughout each region on the 30<sup>th</sup> January, 2009. The selected forest area and the cultivated area had been burnt prior to six days and two months, respectively. Number of ant nests observed in each quadrat and the ant species that inhabited each nest were recorded. Unknown ant species were preserved in 85% ethanol and identified in the laboratory. Air (F= 29<sup>0</sup>C, B = 30<sup>0</sup>C, C = 30<sup>0</sup>C) and soil temperatures (F= 27<sup>0</sup>C, B = 29<sup>0</sup>C, C = 30<sup>0</sup>C), soil pH (F= 5.8, B = 5.1, C = 4.9) and soil moisture% ((F= 4.5, B = 2.3, C = 4.2) of each location were also measured.

Significantly different nest densities, four, one and nine per m<sup>-2</sup> were recorded from the regions F, B and C, respectively (One way ANOVA, Tukey's test; p<0.05). Species Richness observed in F, B and C were 31, 11 and 29 and there were significant differences between the Species Richness of ants in F and B and that of B and C. The lowest nest density was observed at site B. Although the Species Richness of ants recorded from F and C were not significantly different (Chi- square test; p<0.05) the ant communities of F and C were different. A nest of a single species was observed most often in each of the quadrats laid in F and two to three nests within a quadrat were occasionally observed. A nest of single species was observed only in sixteen quadrats laid at B whereas no nests were found in other thirty four quadrats. Nests belonging to several ant species were observed in any quadrat laid at C. The nests of *Anoplolepis gracilipes* Jerdon, *Camponotus rufoglaucus* Jerdon, *Monomorium destructor* Jerdon, *Monomorium pharaonis* Linnaeus, *Pheidole* sp. 4, *Pheidole* sp. 5, *Polyrhachis* sp. 1, and *Solenopsis geminata* Fabricius were common to the three sites whereas nests of *Crematogaster (oxygyne)* sp.,

*Crematogaster* sp. 1, *Dorylus orientalis* Westwood, *Hypoponera* sp. 1, *Leptogenys ocellifera* Emery, *Pheidole* sp. 7, *Plagiolepis* sp. 1, *Tapinoma indicum* Forel and *Technomyrmex albipes* Emery were restricted to site F. The nests of *Camponotus compressus* Fabricius were observed only at B. *Camponotus irritans* F. Smith, *Camponotus sericeus* Fabricius, *Monomorium* sp. 3, *Pachycondyla* sp. 2, *Pheidole* sp. 2, *Pheidole* sp. 3, *Plagiolepis* sp. 2, *Solenopsis* sp. 1 and *Solenopsis* sp. 3 were restricted to site C. The results indicated that the ant community and their nest density differ in the lands that were subject to burning and burning followed by chena cultivation.

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