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## Influence of Land Use System on Diversity and Abundance of Insects in Akure Forest Reserve, Ondo State Nigeria

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### Abstract

The study was carried out to assess the effect of land use system on insect diversity and abundance. Three land use (fallow land, cocoa agroforestry land, and untouched forest land) were selected for field work within Akure forest reserve. An hectare block were centrally demarcated in each of the forest type. The block was divided into twenty plots of 20 m × 20 m in size. Ten plots were randomly selected where insects collection and enumeration of tree took place. The enumeration entails identification of all woody plants with diameter at breast height (dbh) of at least 10 cm. Monthly collection of insects with sweep net and hand peaking were used in each selected plot.

A total of 13,578 insects were collected and identified from the three land use: 5,182 from fallow land, 5,884 from cocoa agro forestry land and 2,492 from untouched forest land. The identified insects belonged to a total of 30 families and are distributed among 15 orders. Within fallow land a total of 5,184 insects belonging to 8 orders and 46 families; while cocoa agro forestry land consist of 5,884 insect that are distributed within 10 Orders and 50 families; and untouched forest land contain of 2,490 insects distributed within 10 orders and 56 species. The families and order with highest number of individual insects are Lepidoptera (4,000) and Orthopetera (1,260). These insects are mainly defoliators. Shannon-weaver diversity index for insects species for the three land use system were 2.306, 2.448, and 3.622 for fallow land, cocoa agro forestry land and untouched forest respectively. There was a significant difference in tree species diversity in the habitats. The species with highest frequency in the studied habitats The species with highest frequency per hectare is *Cordia platythrsa* (6) in fallow land, *cocoa* (50) in cocoa agroforestry land *celtis zenkerii* in untouched forest land.

A total of 14, 26, and 41 species of tree were identified in the fallow land, cocoa agroforestry land and untouched forest respectively.

**Keywords:** Abundance, agroforestry and defoliator, diversity