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Assessment of Insect Biological Diversity of Various Land Use Systems in Peruvian Amazon

JITKA KRAUSOVA, BOHDAN LOJKA, ZBYNEK POLESNY, JANA LOJKOVA

Czech University of Life Sciences Prague, Institute of Tropics and Subtropics, Department of Crop Sciences and Agroforestry in Tropics and Subtropics, Czech Republic

Abstract

Tropical rain forest form one of the most precious ecosystems and provide habitat for more than 75% of all described plant and animal species. However, this unique ecosystem is disturbed by men causing biodiversity losses. This study is focused on the assessment of species diversity and richness in various land use systems around Pucallpa city (Peruvian Amazon). As the indicative group the class of Insecta was used. Our presumptions were that the species richness and diversity of secondary forest and agroforestry systems are higher than in monoculture cropping and degraded sites with weed vegetation. We supposed that in agroforestry systems there are fewer pests than in other localities. We also expected that ant species composition is helping to the pest control in the agroforestry systems.

Insects were collected on six localities (secondary forest, two types of agroforestry systems, cassava monoculture and two degraded sites covered by weed vegetation) by using 24h-pitfall traps and sweeping net. The insect morphological species were determined and data evaluated according to standard methods and indexes.

Our hypotheses were fully supported excluding the biodiversity. The species richness was highest in the secondary forest and agroforestry, but the values for biodiversity were highest in the secondary forest and surprisingly on degraded sites. The lowest biodiversity was found in the agroforestry systems. The values were probably distorted by the dry season and higher occurrence of antpotolerant and pest species on degraded soils. Those species can survive the dry season without high losses. According to the index of similarity, the species composition of secondary forest is highly similar to the agroforestry systems. Agroforestry systems can form insect species reservoir after forest disturbance and also help to the species conservation. This study forms a good scientific background for further monitoring ecological changes and summarises the momentous role of ants in the tropical ecosystem.

Keywords: Agroforestry systems, deforestation, insect biodiversity, primary and secondary rain forest, shifting cultivation, species richness