

**INSECT DIVERSITY IN A REGENERATED FOREST, ABANDONED
CHENA AND VEGETABLE AGRO-ECOSYSTEM IN DAMBULLA,
SRI LANKA**

**S.A.D. Thakshila¹, U.G.A.I. Sirisena¹, N. Geekiyanage¹, M.C.M. Iqbal², and
D.S.A. Wijesundara²**

¹*Department of Plant Sciences, Faculty of Agriculture, Rajarata
University of Sri Lanka, Anuradhapura, Sri Lanka.*

²*National Institute of Fundamental Studies, Hanthana, Sri Lanka.*

Insects are the most diverse group of organisms in the world and they play a major role in ecosystem diversity and sustainability. The composition of plants in an ecosystem could be a major determinant on insect community because plants provide food, habitats and shelter for insects. The effect of agricultural practices on the diversity of insect fauna is poorly understood in the local context, therefore, this study was conducted to assess insect diversity and abundance in three different ecosystems; regenerated forest, abandoned *chena* and a vegetable agro-ecosystem located in *Dambulla*, Sri Lanka. Soil dwelling insects and aerial insects were collected using ten pitfall traps (200 ml) and two light traps (12V, 1.5W) installed in each location. Samples were taken after 24 hours at one month intervals. The insect abundance was compared using Poisson regression analysis and the diversity was compared using Shannon diversity and Bray Curtis similarity indices. The evenness of families was assessed using Pielou's index. A total of 2923 insects belonging to 64 families and 11 orders were collected during the study. The highest soil dwelling and aerial insect diversity was recorded in the regenerated forest ($H' = 0.726, 0.986$), followed by abandoned *chena* ($H' = 0.498, 0.878$) and vegetable agro-ecosystem ($H' = 0.380, 0.782$). The evenness of the insect fauna of regenerated forest, abandoned *chena* and vegetable agro-ecosystem was 0.677, 0.536 and 0.442, respectively. Bray Curtis similarity index of insect community between regenerated forest and vegetable agro-ecosystem was higher ($D = 54.6\%$) in compared to vegetable agro-ecosystem and abandoned *chena* ($D = 25.6\%$). The insect abundance was significantly high ($p < 0.05$) in the abandoned *chena* and vegetable ecosystem in compared to regenerated forest, however, which was not significantly different over time. It is concluded that the regenerated forests can be used to restore and conserve the insect diversity.

Keywords: Agro-ecosystem, Conservation, Diversity indices, Insect fauna,
Regenerated forest