

Richness and Roost Preference of Insectivorous Bats in Tea Agro-Ecosystems in Sri Lanka

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Abstract

Insectivorous bats play a significant role in suppressing aerial insect pests in agro-ecosystems all over the world. However, occurrence of bats depends on the availability of insect prey and availability of day roosting spaces in or close proximity to agricultural lands. Tea (*Camellia sinensis*) is the major export crop grown in Sri Lanka, and contributes 0.8% of GDP in 2015. Accordingly, a study was designed to determine which of these bats occur and roost in tea plantations themselves, and the types of structures they depend on. Six tea plantations were selected to represent tea growing agro-ecological zones of WL1, WM2, WU2, WU3, IU2 and IU3 in Sri Lanka. The study was conducted during September 2016 to December 2017. Capturing of bats were done using mist nets, a harp trap, and a hand net. Eight species of insectivorous bats were recorded, representing five families include *Rhinolophus rouxii*, *Rhinolophus beddomei*, *Hipposideros speoris*, *Hipposideros lankadiva*, *Megaderma spasma*, *Pipistrellus ceylonicus*, *Pipistrellus coromandra* and *Miniopterus fuliginosus*. Three species (*R. beddomei*, *H. lankadiva* and *M. spasma*) were only recorded from roosting structures and did not capture inside tea plantations during night. *Rhinolophus rouxii* was the most common bat which recorded from all sampling sites. Total of 22 day roosting structures were recorded and majority were geomorphic 13 (59%). Out of the roosting structures in this category, caves were the most commonly occupied roosts by bats (69%). Vegetative roosting structures were the next more occupied roost category and anthropogenic roosts were the least occupied category. There are 46 species of insects identified as pests in tea plantations in Sri Lanka which represent six orders (Lepidoptera, Coleoptera, Isoptera, Heteroptera, Diptera, and Hemiptera). Estimated crop loss due to insect pest is given as 8% in general. Those insects are commonly eaten by the bats which, are recorded from tea plantations. Although protecting bat roosting structures is crucial for their conservation, it is challenging in view of existing tea management practices. Therefore, natural roosts should be maintained, protect and essential to introduce artificial bat boxes and houses. Protecting of bat roosts can help to suppress insect pests and increase tea production.

Keywords: Agro-ecosystems, Bat conservation, Chiroptera, Day roosts, Pest control

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