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Conservation of Reptile fauna of an Urban forest in Central hills

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Abstract

Udawattha Kele Sanctuary which is located in Kandy city, is situated in the intermediate zone of Sri Lanka. It is the only man made urban forest in Sri Lanka, which was declared as a sanctuary in 1938 and vested with the forest department. The forest is located between 7° 17' - 8° 19' Northern latitudes and 80° 38' - 80° 39' Eastern longitudes. It is 500m a.s.l and covers 257 acres with its moist semi evergreen type forest ecosystem. This forest ecosystem is known to harbor a rich composition of reptile fauna which represents 11 families. The present study was carried out to evaluate the species composition and to understand the distribution patterns of reptiles and to strengthen conservation strategies.

Field sampling started in September 2011 and continued up to December 2011. 40 Randomly located 10m x 10m plots were sampled in undisturbed upper, undisturbed lower, naturally disturbed and an abandoned single species *Mesua ferrea* plantation equally and the wet litter mass (Kg), litter depth (Cm), % canopy cover, % ground cover, number of fallen logs/plot, soil pH, soil moisture, soil temperature and atmospheric temperature were recorded. The natural disturbances have occurred due to soil erosion and tree falls. Twenty one different species of terrestrial reptiles were captured in plots over the study including 13 species of snakes, 3 species of gekkonids, 3 species of scincids and 2 species of agamids out of them 57% species were endemic to Sri Lanka.

Species distribution and habitat was positively correlated with the leaf litter and arboreal faunal abundance of reptilians. 20 species were observed at undisturbed sites, while disturbed sites supported 5 species and there were only 2 species present in plantation sites. The highest diversity of 3.911 (H'-Shannon) and species richness 20, were observed at undisturbed upper site. Assemblage composition was high in those sites compared to disturbed and *Mesua ferrea* plantation sites. In contrast, the *Mesua ferrea* plantation had the lowest species richness of 2, diversity of 0.543 (H'-Shannon) among the study sites. Soil moisture, wet litter mass, litter depth, number of fallen logs/plot, canopy cover and ground cover were significantly positive (<0.001) predictors of reptilian presence in plots.

There is an adverse effect on reptile faunal diversity and its abundance by large areas of single-species plantations in Udawattha Kele Sanctuary. Natural disturbances also have a negative impact on its reptile composition in comparing to undisturbed sites.

Furthermore, populations of *Sus scrofa affinis* and *Macaca sinica* has become a potential threat for their abundance. Especially *Sus scrofa affinis* feeds upon them, disturbing their habitats and breeding sites. In addition, it is recommended to increase and to maintain the sustainability of the forest ecosystem and its bio diversity by long term and short term urban forest management plans, and also to conserve and preserve the reptile fauna in this urban forest.

Key words: Udawattha Kele Sanctuary, conservation strategies, reptile fauna, *Mesua ferrea* plantation, urban forest management plans