

Biodiversity and Ecological Health

(99)

Micro-Habitat Preferences of Litter-Dwelling Land Snail Communities along an Elevation Gradient in the Upper Catchment of Walawe Basin in Sri Lanka**Athukorala K.A.T.M.* , Amarasinghege L.M., Perera S.J.**

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Abstract

Sri Lanka is reported with highly diverse and endemic land snail fauna. Nevertheless, it is greatly under sampled while data are scarce on their micro-habitat preferences, which are critical for land snail conservation decision making due to their limited mobility and high susceptibility to predation. Here we have investigated the micro-habitat factors that influence variation of species richness and diversity of land snail fauna along an elevation gradient from 100 m to 2,200 m, in order to see whether those malacofaunal communities differ significantly with the elevation dependent features of their micro-habitat. The investigation was conducted along a transect from Udawalawe to Horton Plains National Parks in the upper catchment of the Walawe basin in Sri Lanka, by collecting specimens through time restricted searches within twelve 10×10 m quadrats, from November 2017 to February 2018. Nine micro-habitat variables *viz.* soil moisture, soil pH, litter depth, soil temperature, air temperature, canopy cover, undergrowth cover, dead-wood content and tree density were measured for each quadrat. Correlation analysis followed by regression was used to establish the relationships between the micro-habitat variables and land snail species richness, diversity, percentage endemism and threatened percentage. The present study populated a database of 770 records of live land snails and shells of dead specimens, representing 33 species belonging to nine families, with 80% of species endemic to Sri Lanka, including a possibly undescribed Cyclophorid. Family Ariophantidae (13 species; 55.7%) represented the highest number of specimens including the most abundant species (*Euplecta acuducta*; 16.8%), followed by Glassulidae (5 species). The results of the present study reveals that micro-habitat variables directed by the elevation have influenced the land snail richness and diversity variation along the transect. Increasing litter depth ($r=0.71$; $p=0.01$) and tree density ($r=0.771$; $p=0.003$) were recorded to highly influence the species richness, while the land snail diversity (Simpson Index) had a strong relationship with the soil moisture content ($r=0.719$; $p=0.003$). Percentage species endemism of land snails was highly correlated with the soil moisture ($r=0.798$; $p=0.002$) and the soil temperature ($r=0.786$; $p=0.002$). Canonical Correspondence Analysis identified soil temperature, litter depth and soil moisture as the major micro-habitat variables associated with land snail distribution while indicator species have been identified for each micro-habitat variable.

Keywords: Land snail, Micro-habitat, Species diversity, Walawa basin