

(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.**

*Department of Natural Resources, Faculty of Applied Sciences, Sabaragamuwa University,  
Belihuloya, Sri Lanka  
\*thilini4411@gmail.com*

**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