

## ***Diversity of Amphibians in Pallethalawinna and Lower Hanthana, Sri Lanka***

B.V.D.S. Baddevithana<sup>1\*</sup>, W.M.K.Wijesundara<sup>2</sup>

<sup>1</sup>*Department of Zoology, Faculty of Science, University of Peradeniya, Peradeniya, 20400, Sri Lanka*

<sup>2</sup>*Youth Exploration Society of Sri Lanka, Royal Botanical Garden, Peradeniya, 20400, Sri Lanka*

*\*supun.baddevithana@sci.pdn.ac.lk*

Amphibians are recognised as bioindicators due to their sensitivity to environmental changes. Therefore, assessing amphibian diversity can be used to evaluate the overall health of the ecosystem. Hence, this study compared amphibian diversity in two different habitats: a home garden in Pallethalawinna (disturbed habitat) and a secondary forest in lower Hanthana (undisturbed habitat) in the wet zone of Sri Lanka. Equivalent efforts were made in both localities (80 human hours in each) to observe amphibians using direct visual encounters from early July to late December 2022, with observation from 19.00–23.00 h. Alpha diversity metrics, including Shannon-Wiener, Margalef's Richness, and Simpson's Indices, were calculated. Beta diversity was assessed using pairwise comparison of amphibian diversity in the two habitats. *Pseudophilautus popularis* was the most abundant species (21%), while *Hylarana gracilis* and *Ichthyophis glutinosus* were identified as the rarest (0.3%). Shared species across both localities included *Pseudophilautus popularis*, *Pseudophilautus rus*, and *Duttaphrynus melanostictus*. Lower Hanthana exhibited the highest number of species ( $S = 12$ ), indicating the presence of more microhabitats compared to Pallethalawinna ( $S = 5$ ). The highest diversity was observed in Lower Hanthana ( $H' = 2.186$ ,  $D_{Mg} = 2.048$ ,  $1/D = 7.977$ ), compared to Pallethalawinna ( $H' = 1.479$ ,  $D_{Mg} = 0.843$ ,  $1/D = 4.051$ ). Species were more evenly distributed in Pallethalawinna ( $J = 0.919$ ) than in Lower Hanthana ( $J = 0.880$ ). Bray-Curtis cluster analysis revealed a 35% similarity in amphibian composition between the two sites. Lower Hanthana contained ten endemic species, two of them are critically endangered (*Pseudophilautus rus* and *Pseudophilautus zorro*) and five were vulnerable, emphasising its conservation significance. Pallethalawinna harboured two endemic species, one of which is critically endangered (*Pseudophilautus rus*). The findings of this study underline the importance of minimising encroachment of natural habitats for agricultural lands and human settlements to uphold the distribution and diversity of amphibians.

**Keywords:** Amphibian Diversity, Alpha Diversity, Beta Diversity, Habitat Conservation