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Assessing Habitat Occupancy of Chevrotains (*Moschiola meminna* and *Moschiola kathygre*) in Sri Lanka

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Abstract

Sri Lanka is home to two endemic chevrotain species: the Yellow-striped Chevrotain (*Moschiola kathygre*), predominantly found in the wet zone, and the White-spotted Chevrotain (*Moschiola meminna*), primarily inhabiting the dry zone. This study aims to evaluate the habitat preferences of these two species within their natural habitat via occupancy modeling. Wilpattu National Park (WNP) (Sep 2024-Apr 2025) and Sinharaja Forest Reserve (SFR) (Dec 2018-Aug 2019) were selected as study sites to represent Sri Lanka's dry and wet zones, respectively. Camera trapping was used as a sampling technique. A systematic random sampling method was applied to deploy camera traps across the study sites. Each camera trap location served as a sampling point to collect data on species presence or absence, along with associated habitat variables. During the study period, camera trap stations were relocated every 45 days. Each 45-day survey period was divided into 3-day sampling intervals to optimize detection probabilities within each interval. Occupancy analysis was conducted using a likelihood-based approach. Detection histories were developed using binary values, where species presence was recorded as '1' and absence as '0'. Data analysis was performed using the PRESENCE software package (version 2.15.9). The highest occupancy probability (0.816) was recorded from SFR based on the top occupancy model which was identified as the null model (ψ (). P ()). In SFR, there was no significant difference between the occupancy levels in different habitats, indicating that the species is both widespread and abundant within SFR. In WNP the occupancy probability was 0.38 having litter cover (LC), Euclidean distance to water (EDW) and relative abundance of leopards (RAILeo) (Total number of independent records/Total trap days×100) as covariates that contributed to the top model. All three covariates exhibited positive effects on occupancy probability. Among the three habitat types sampled in WNP, the highest occupancy probability was observed in tropical thorn forest (0.53) followed by dry mixed evergreen forest with an occupancy probability 0.44. Lowest occupancy probability was recorded in grasslands at 0.1. In SFR, the species shows high occupancy across all habitats. In WNP, occupancy is lower and dependent on habitat features therefore conservation should focus on site-specific management. In SFR, where habitat quality is already high and stable, efforts should aim at sustaining current conditions and preventing human-induced degradation such as illegal logging and trail expansion. In WNP, where habitat degradation and resource scarcity were evident, maintaining understory vegetation and leaf litter is crucial.

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