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Habitat Factors Influencing the Distribution of Herpestidae Species in Kumana National Park, Sri Lanka

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Abstract

Four mongoose species (Mammalia: Herpestidae) are present in Sri Lanka: Brown mongoose (*Urva fuscus*), Grey mongoose (*Urva edwardsii*), Stripe-necked mongoose (*Urva vitticollis*), and Ruddy mongoose (*Urva smithii*). This study focused on identifying habitat variables that affect the occupancy of these mongoose species in Kumana National Park (KNP). We conducted a camera trap survey using 13 camera trap stations throughout KNP, with each station considered a sampling point for collecting data on species presence/absence and associated habitat variables. These habitat variables include a range of biotic and abiotic factors that serve as covariates influencing mammal occupancy at specific locations. These covariates include canopy cover, litter depth, Euclidean distance to water body and recreational road. Occupancy analysis was performed using the likelihood method, with binary values indicating detection histories; '1' represented presence, and '0' represented absence. Each 30-day survey was divided into two 15-day sampling periods totaling up to 19 sampling periods. Occupancy was analyzed with PRESENCE version 2.13.47 software, and habitat preference for each species was determined based on average occupancy probability. Throughout the study, all four mongoose species were recorded in KNP. However, only the Brown mongoose, Stripe-necked mongoose, and Ruddy mongoose were detected by camera traps. Grey mongoose was only observed via direct observations. According to the study, the average occupancy probability values for the Brown mongoose, Stripe-necked mongoose, and Ruddy mongoose were 0.33, 0.71, and 0.92, respectively. The highest occupancy probabilities for the Brown mongoose and Stripe-necked mongoose were recorded in dry mixed evergreen forests, with values of 0.37 and 0.79, respectively. In contrast, the Ruddy mongoose showed its highest occupancy in tropical thorn forests, with an occupancy probability of 0.99. Litter depth negatively affected the occupancy of Brown mongoose while the Euclidean distance to the nearest waterbody negatively affected the occupancy probability of Brown mongoose. Ruddy mongoose occupancy was positively correlated with the euclidean distance to recreational roads, and the presence of small nocturnal mammals positively influenced the occupancy of both the Brown mongoose and Stripe-necked mongoose in KNP. These results offer useful information on the habitat preferences and environmental factors influencing mongoose presence in KNP. This helps in better understanding the ecological roles and conservation needs of mongoose species in Sri Lanka. Such information is important for creating focused management plans to protect mongoose habitats and support biodiversity in the park.

Keywords: *Camera trapping, Hepestidae, Occupancy*