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Spatiotemporal Habitat Use of Family Viverridae in Kumana National Park, Sri Lanka

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Abstract

Viverrids (Civets) are medium-sized mammals belonging to the order Carnivora. There are three species of civets in Sri Lanka namely, Common Palm Civet (*Paradoxurus hermaphoditus*), Ring-tailed Civet (*Viverricula indica*) and Golden Palm Civet (*Paradoxurus aureus*). A study was conducted in Kumana National Park (KNP) during August 2022 and March 2023 to examine the activity patterns and spatial habitat use of viverrids. Habitat types within the park were identified based on a preliminary survey and analysis. Trail cameras (29 trap stations) equipped with passive infrared sensors were deployed following a systematic approach within four square kilometre plots in KNP. A total of 44 footages of viverrids were documented across the survey period. The time and date of each Viverrid footage were employed for the activity analysis using kernel density estimation. The habitat preference was calculated using the relative abundance index (RAI). Vegetation, physical and food abundance parameters at each camera station were obtained to assess the occupancy (ψ) of civets within the study area. Throughout the study, all civet species were present and the RAI of Ring-tailed Civet within the study site had the highest value (RAI=1.74) among the Viverridae family. Golden Palm Civet was rarely observed within the park exhibiting a low relative abundance (RAI<1). The study findings indicated that all civet species showed predominantly nocturnal behaviour in the dry zone (Activity>0.20). Interestingly, the ring-tailed civet exhibited a higher preference for the tropical thorn habitats which provided the food and cover from the predators. In contrast, the other civet species preferred the seasonal grasslands. The occupancy analysis unveiled the ring-tailed civet has a significant correlation with the Canopy cover (CC) and the Euclidian Distance to the Water (edw). According to these findings, the most significant vegetative and physical parameters for selecting a habitat by the Viverrids in the wild were the canopy cover and the Euclidean distance to the water. The current study provides insight for the activity patterns and habitat associations of the civets present in a dry zone national park. The current study can be used as a supplement for in-situ and ex-situ conservation programs aimed at rehabilitation and reintroduction of the civets.

Keywords: Activity, Camera trapping, Civets, Kumana, Occupancy