(090)

Behavioral Ecology of a Feral Population of Spotted Deer (*Axis axis*) in Suburban Lowland Wet Zone of Sri Lanka

Muhandiram, P.M.S.R.[1*], Hemachandra, I.V.D.[2], Liyanagama, S.[3], Dayawansa, P.N.[1]

[1]*Department of Zoology and Environment Sciences, University of Colombo, Colombo 03, Sri Lanka*

[2]*Field Ornithology Group of Sri Lanka, Department of Zoology, University of Colombo, Colombo 03, Sri Lanka*

[3]*Department of Wildlife Conservation, Battaramulla, Sri Lanka*

[*]*sanjeewarasika1994@gmail.com*

Abstract

The establishment of spotted deer population in the lowland suburban wet zone of Sri Lanka is an example of range expansion by the species into new habitats. A population of 393 individuals was reported in Homagama and Kaduwela in Colombo District in 2021, forming a novel opportunity to study behavioral adaptations to human-altered landscapes. The objective of the study was to investigate the patterns of behavior through the temporal, demographic, and habitat gradients to determine the adaptation mechanisms. Behavioral observations were conducted in six habitat types categorized into Agricultural (coconut, rubber and paddy cultivations), Residential (home gardens) and Natural (grassland and shrubland). Observations conducted during daytime (06:30 h-18:00 h) and nighttime (19:00 h-01:30 h). Systematic instantaneous sampling method was used to record feeding, moving, resting and alert behaviors of males, females and juveniles. Spotlight counts were used in nocturnal observations. In April 2021, observations were made with 1,011 individuals in three nighttime and five daytime counts. Feeding and moving were the most common behavioral patterns, while alert and resting were less common. However, significant temporal shifts in overall behavioral distribution occurred ($\chi^2(3)=58.6$, $p<0.001$). At night compared to daytime, both alert and feeding behaviors increased by 2.64 and 1.28-fold, respectively, while movement decreased by 1.94-fold and resting remained constant. Demographic groups exhibited a similar ranking of common behaviors (Feeding>Moving>Alert>Resting). However, males displayed vigilance levels dramatically higher than females ($\chi^2(3)=22.2$, $p=0.001$), suggesting sentinel behavior patterns. There was a significant difference in behaviors between the habitat types ($\chi^2(6)=44.6$, $p<0.001$) with natural habitats being more active in feeding in comparison with agricultural areas. This indicates that more detailed and habitat specific management may be necessary. The lack of osteophagia suggest that the suburban wet zone has more minerals than the dry zone. The lack of vocalizations could indicate an acclimatization to the noise of the suburbs. Spotlighting showed evidence of bias, as the deer tended to orient toward light source. This might have influenced the actual patterns of observed behaviors during the night, particularly alerted behaviors. These results illustrate plasticity of behavior which enables colonization in the suburbs and temporal and sex-specific variations serve as empirical evidence to the urban adaptation theories. To develop effective management strategies in the suburban setting, long-term monitoring is required to demonstrate the seasonal variability and the dynamics of human-wildlife conflict.

Keywords: *Urban wildlife, Behavioral ecology, Urban adaptation, Human-wildlife conflict, Suburban habitats*