Seasonal patterns of density distribution of Ungulates in tropical deciduous forest of central India

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Abstract

1. Tropical deciduous forests show strong seasonal variations due to temporal dynamics of precipitation and temperature and therefore, resource availability for animals are also limited accordingly. Certain harsh environment even pushes animals to seasonal movements towards available resources. 2. We hypothesize that the density distribution of four sympatric ungulate species is structured by habitat covariates but more affected by seasonality. We then investigated density gradient of these species between contrasting season and correlated with environmental covariates. 3. We used distance-based density surface modelling with survey effort of 518 km in winter and 356 km in summer and with count data as a function of environmental variables in generalised additive modelling framework. We extrapolated seasonal abundance of each species and calculated coefficient of variation to ensure precision for the entire study area. 4. We observed a clear seasonal shift in the density distribution of all four species between summer (more abundant in valley) and winter (evenly distributed), significantly influenced by anthropogenic and topographic factors. Solitary species were congregated in larger groups during summer while group living species were in larger groups during winter. 5. Our study provides a clear understanding of species-habitat relationship as a function of seasonality in tropical forest and is useful in spatial prioritization of the habitats for relevant management inputs.

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