

## **One or Three: Empirical data facilitates conservation of musk deer suggesting only one species of musk deer in Western Himalayas.**

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### **Abstract**

Musk deer species are poorly studied throughout their distribution range due to their elusive nature and occurrence in inhospitable habitats of high-altitude Himalayas (>2500m). Past distribution records based on ecological studies with few photographic and indirect evidence, provide inadequate information on species distribution which leads to uncertainty in defining the presence of specific taxonomic units of musk deer in Western Himalayas. Consequently, species-oriented conservation is hampered due to lack of species-specific investments in monitoring, protecting and tracking illegal poaching of musk deer for Musk pod (“*a preputial gland in a sac under the abdominal skin of male musk deer, used for making perfumes, medicines and for religious purposes as well*”). The present study was conducted in Lahaul–Pangi landscape of Himachal Pradesh and Uttarkashi district of Uttarakhand. We used camera trapping (255 cameras), transect surveys (220 trails), non-invasive DNA sampling (40 samples) and geospatial modelling (279 occurrence records) to verify the geographic presence and map suitable habitat of Kashmir musk deer. All captured images confirmed a new record of Kashmir musk deer (*Moschus cupreus*) followed by genetic based identification in Uttarakhand and Himachal Pradesh with predicted suitable habitats in Western Himalayas. Surprisingly, other species of musk deer (*e.g.*, Himalayan musk deer and Alpine musk deer supposed to occur in the landscape) were not captured in any of the studied sites. Since the population of KMD is declining at an alarming rate, future conservation plans and management needs to be evaluated accordingly. The identified suitable habitats should be prioritized for conservation and management planning.