62

Using spatial capture-recapture methods to establish baseline abundance and density estimates of snow leopard in western Himalaya Nepal

Reliable estimates of animal abundance and density are central to species conservation. For snow leopard Panthera uncia, a large mammalian carnivore of Asian high mountains, lack of reliable estimates of its population status has been a key limiting factor for effective conservation planning. In fact, merely 2% of its distribution range has been surveyed adequately for its population state variables, which highlights both uncertainty over its estimated global population status and the need for more rigorous field-based assessments. We obtained the first-ever baseline estimate of the abundance and density of snow leopards in Shey Phoksundo National Park, Nepal. We deployed a total of 65 camera traps (Model HC550; Reonyx Inc, and Cuddeback IR) at 62 stations in the two study sites-Upper Dolpa and Lower Dolpa over an area of approximately 1000 km2 from November 2017 through April 2018. The spatial capture-recapture history of 23 unique snow leopards was prepared for the first 90 sampling occasions and included for analysis to adhere to the closure assumption. Spatially explicit capture-recapture analysis of camera trapping data showed snow leopard density of 1.24 (95% CI 0.58–2.54) and 2.51 (95% CI 1.36–4.60) adults per 100 square kilometers in Lower and Upper Dolpa, respectively. Overall, this study established reliable estimates of snow leopard abundance and density for Nepal's Shey Phoksundo National Park, which in addition to serving as a useful baseline measure for future monitoring has immediate implications for park level conservation planning.