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Home range and core area analysis of Temminck's Pangolin to inform reintroduction sites for trafficked animals

Pangolins are the most trafficked mammal taxon worldwide and African pangolin species have been increasingly targeted. Their scales, like rhino horn, are comprised of keratin and increasingly used in traditional medicine and they are viewed as a culinary delicacy in China and Vietnam. This is in addition to threats such as climate change, electrified fencing and bush clearing. To date there have been few studies on these nocturnal and elusive species making conservation and in-situ re-introduction of confiscated trafficked live pangolins very difficult. Here we focus on home range (HR) and core area (CA) analysis of Temminck's pangolin (Smutsia temminkckii) in a fenced private nature reserve in Namibia, which is part of a larger project studying their basic ecology. Fourteen individuals were GPS/UHF tagged and returned hourly location data from July 2019 to April 2020. The CReSS-SALSA (Complex Region Spatial Smoother with Spatially Adaptive Local Smoothing Algorithm) method was chosen for the HR and CA estimation as it can respect the shape of the reserve and the internal fenced lodge area and allow for the correlated nature of the observed locations. We found no significant difference between HA or CA sizes in the growing vs non-growing season, however there was much greater variability in the growing season. We found that there were significant differences between male and female HR and CA sizes in the growing season (10 females, 4 males). Male HR's and CA's were estimated to be significantly larger than females. Little is known to what extent pangolin share space however the HR and CA estimation for these individuals can be used to assess spatial overlap. In both growing and non-growing seasons we found that male HRs overlap with multiple female HRs suggesting a polygamous mating system and, interestingly, during the growing season there were no female-female HR or CA overlaps. The results inform reintroduction sites for trafficked pangolins into suitable habitat, especially decisions about multiple releases on the same site. The next steps are to identify commonalities in space use such as burrow or prey density, in different types of habitat and more than one season.