Spatial and temporal patterns of medium- and large-sized mammals across Italian cities

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Urbanization is a rapidly expanding global phenomenon that reshapes landscapes and profoundly impacts biodiversity. To investigate how this process influences wild mammal communities, we conducted a multi-city survey of medium- to large-sized mammals across five Italian cities: Milan, Florence, Rome, Naples, and Campobasso, as part of the National Biodiversity Future Centre (NBFC) – Spoke 5 national project.
We used camera trapping in a standardized multi-taxa sampling design shared among NBFC Spoke 5 research groups. The design is based on a grid cell system structured along categorized gradients of green cover and habitat fragmentation. In total, we sampled 58 1-km² grid cells covering 12 out of 16 possible categories across the five cities.
Overall, we accumulated 8,759 trap-days, and recorded 17,996 independent detections of 12 wild mammals, including 10 native and 2 alien species. Native species diversity was highest in Campobasso and lowest in Rome and Milan, while the greatest number of alien species was recorded in Florence.
PERMANOVA analyses revealed no significant differences among cell categories ($p=0.6142$), nor along gradients of green cover area ($p=0.1015$) or fragmentation ($p=0.3217$). Instead, differences among cities were primarily driven by variation in the relative frequencies of common species, such as the red fox (*Vulpes vulpes*). Future comparison with data collected under a new sampling design developed by the Urban Wildlife Information Network (UWIN) - of which Campobasso is the first Italian active member - will likely enable a more robust evaluation of the relationships between species distributions and spatial patterns of urban green areas.
Preliminary results from the analyses of activity patterns of the red fox in urban contexts, using a temporal resource selection framework, indicate differences in temporal preferences in Milan and Rome compared to Campobasso and Florence.