
Poster Session 2 – Response to Human Induced Changes

105 Small mammal richness and diversity in the changing landscape of central Italy

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Most research on small mammal decline has focused on limited spatial and temporal scales, especially for the Mediterranean region. To better understand this process, its causes and contexts, a broader spatio-temporal scale approach is needed. In our study we hypothesized that: I) small mammal assemblages are changed through time and that the primary cause is land use and climate change; II) the biodiversity indices of small mammals are related to landscape predictors, especially to a mosaic of natural and anthropogenically influenced habitats. We used a recent extensive dataset about distribution, abundance and traits of small mammals derived by common barn-owl (*Tyto alba*) pellets, covering a 30-year time span. Through a framework of linear models we assessed the relationship between small mammal diversity (richness, Shannon index and functional diversity) and landscape variables (land use and landscape metrics) for 21 small mammal species (10 *Rodentia* and 11 *Euliphotypla*) occurring in a 10,000 km² area in central Italy. We also explored the variation through time (1980 – 2017) of nine guilds (i.e. herbivore arboreal forager diurnal, herbivore ground forager diurnal, herbivore ground forager nocturnal, insectivore fossorial, insectivore ground forager diurnal, insectivore ground forager nocturnal, omnivore arboreal forager nocturnal, omnivore ground forager nocturnal, and omnivore ground forager diurnal) selected by a FMDA (factor analysis of mixed data) from 18 qualitative and quantitative functional traits. On a temporal scale, we found a significant decrease in richness and diversity for carnivore species, while omnivores increased significantly and herbivores did not show a trend throughout time. On a spatial scale, richness, diversity and functional diversity of small mammals were higher and positively related to heterogeneous landscape, especially in combination with land use coverage and spatial arrangement of patches affecting each diversity in different ways. Our study provided insights into the complexities of small mammal responses, with an emphasis on community-level changes and can serve as a foundation to predict shifts and trends for future scenarios.

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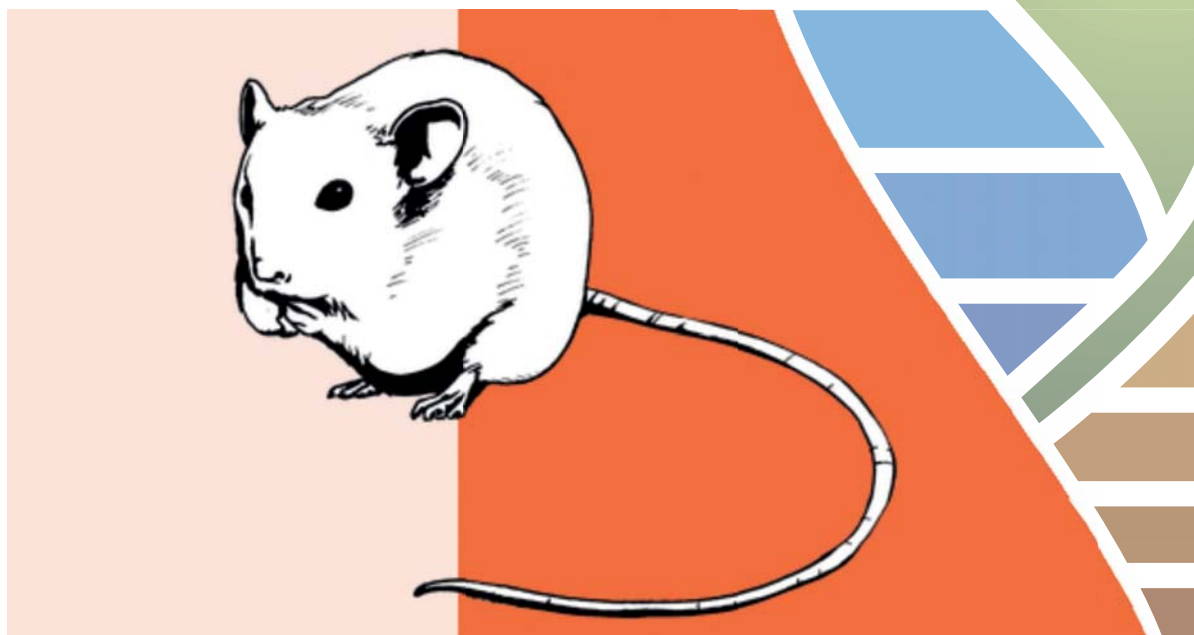
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