

SPATIAL AND TEMPORAL PATTERNS OF MEDIUM- AND LARGE-SIZED MAMMALS ACROSS ITALIAN CITIES

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Introduction

Mammals are among the most threatened vertebrates by **urbanization**, yet they also exemplify how wildlife can **adapt** to human-dominated landscapes, making them key indicators for **urban biodiversity** monitoring and human-wildlife coexistence [1,2]

GOALS

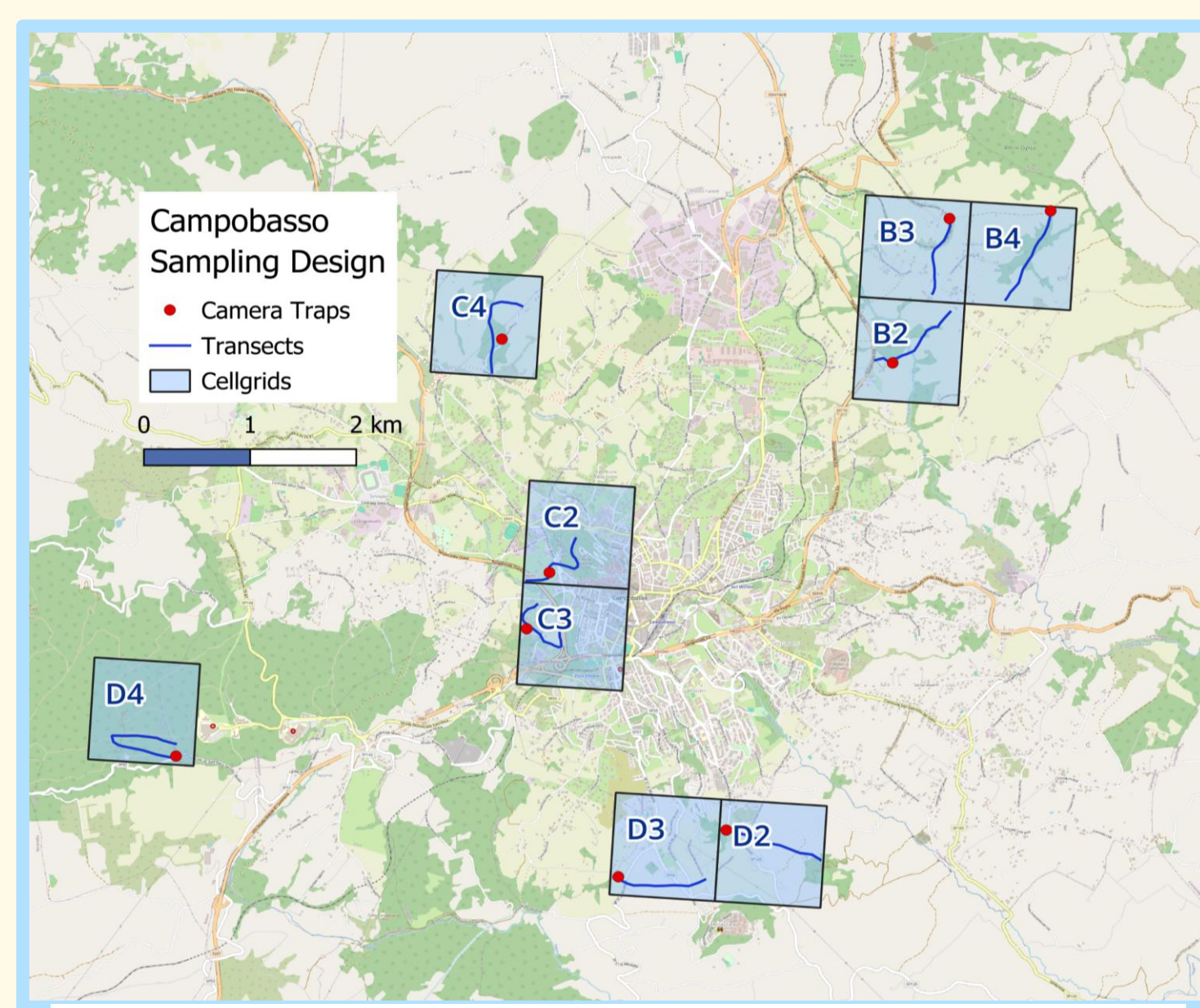
1. Identifying a **cost-effective protocol** for the **long-term monitoring** of medium- and large-sized mammal assemblages in Italian urban areas
2. Characterizing the medium- and large-sized mammal **communities** thriving in Italian cities
3. Understanding species' responses to **environmental and anthropogenic factors** at different **spatial scales**

Methods

We tested **two** complementary sampling designs defined by NBFC and UWIN initiatives in five Italian urban areas of different size and urban structure (Naples, Rome, Campobasso, Florence, Milan)

Grid sampling design

A grid-based design in which each cell is categorized according to a combination of two gradients: green area surface (A-D) and green area fragmentation (1-4) [3]



58 camera traps in MI, FI, RM, NA, CB



Transect sampling design

Two perpendicular transects crossing an impervious cover gradient in different types of green areas [4]



30 camera traps in CB

Results & Discussion

Grid sampling design

8759

Trapping days

17996

Independent detections

12

Wild mammal species

DATA COLLECTION

Transect sampling design

9500+

Trapping days

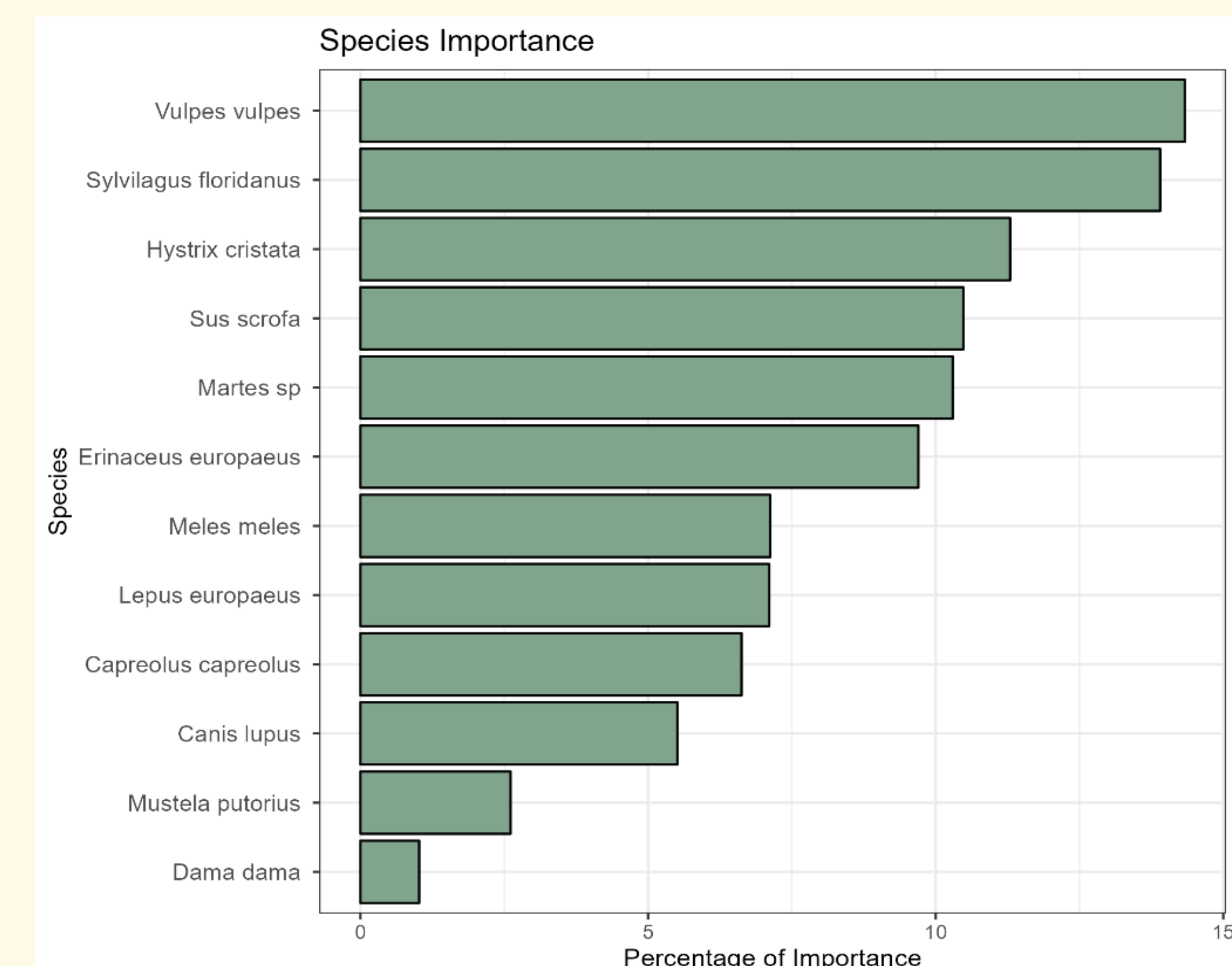
5000+

Independent detections

Data are currently being cleaned and processed!!

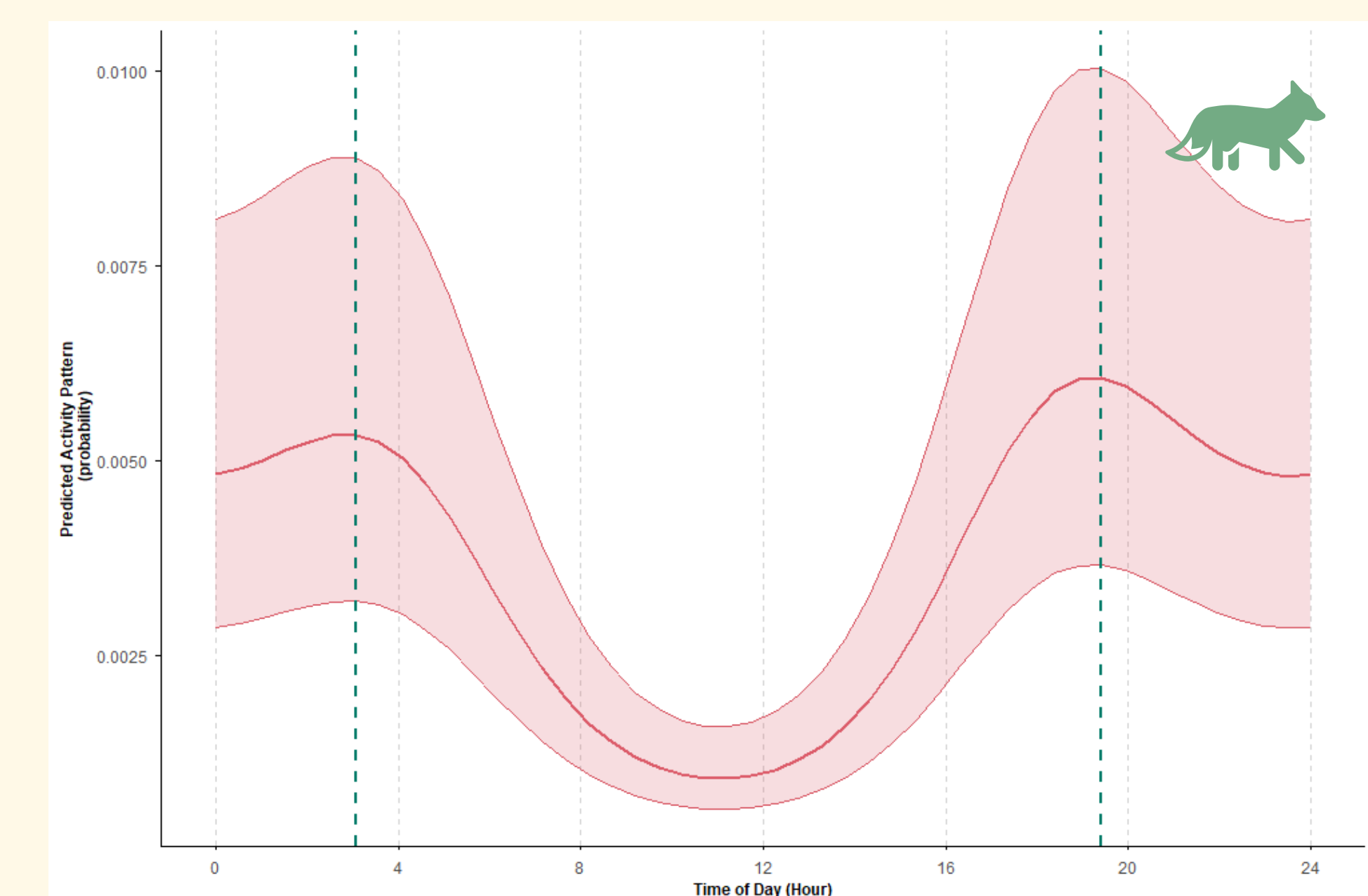
Spatial analysis

- ❖ PERMANOVA revealed no significant difference in species composition in cells differing by **green cover or fragmentation**
- ❖ Significant differences among cities ($p = 6e-04$) → **Milan** is the most divergent city
- ❖ Random Forest models identified red fox and Eastern cottontail rabbit as the most influential species (>28% cumulative importance), confirming that the most **widespread species** drive inter-city differences.



Temporal analysis

- ❖ Preference for **nocturnal activity** of each species' was compared among cities and in response to environmental variables (i.e. imperviousness, tree cover density, land cover, human population density) with **Temporal Resource Selection Functions**
- ❖ Nocturnal activity of the red fox **differed among cities** but was **not influenced** by any environmental variable.
- ❖ **Trigonometric GLMMs** were used to describe species' diel activity
- ❖ Red fox activity was not affected by environmental variables, peaking before 4am and before 8pm



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