Spatial behaviour of an Alpine marmot population within a high human activity area in eastern Alps

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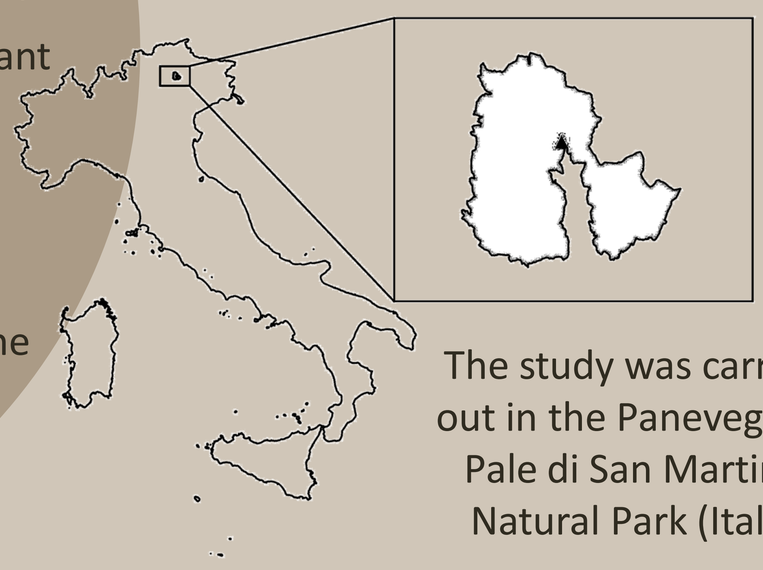
BACKGROUND

Alpine marmots are **key species** for highly seasonal Alpine ecosystems. Given the strong relationships between rodents and ecosystems, it is important to investigate rodents' **spatial ecology**.

Their home range carateristics in the eastern Italian Alps still lacking compared to other alpine areas in Europe

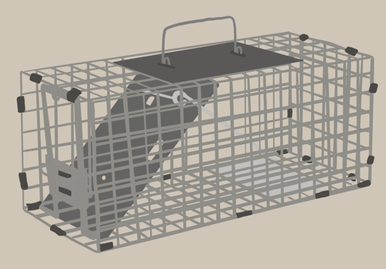
WHAT IS THE INDIVIDUAL HOME RANGE SIZE?

WHAT ARE THE DRIVERS THAT AFFECT THE HOME RANGE SIZE?



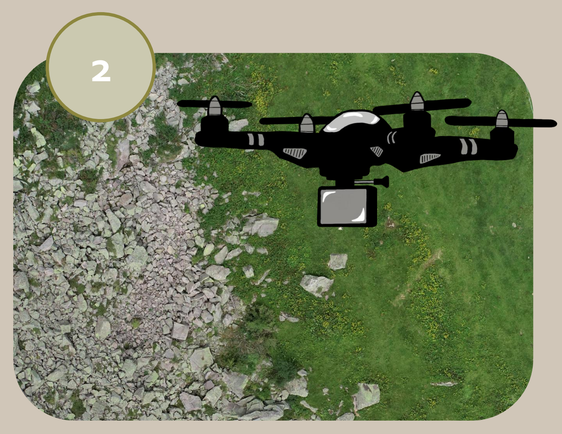
The study was carried out in the Paneveggio-Pale di San Martino Natural Park (Italy)

METHODS



1

Spring **C**apture-**M**ark-**R**ecapture using live traps + colored **ear tags**

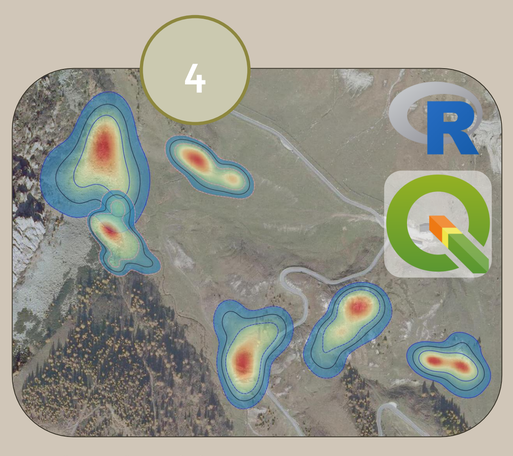


2

By **drone flights**, we got a raster map with a pixel size of 2.5 cm

3

Each family group was scanned every 5 minutes with **spotting scopes**

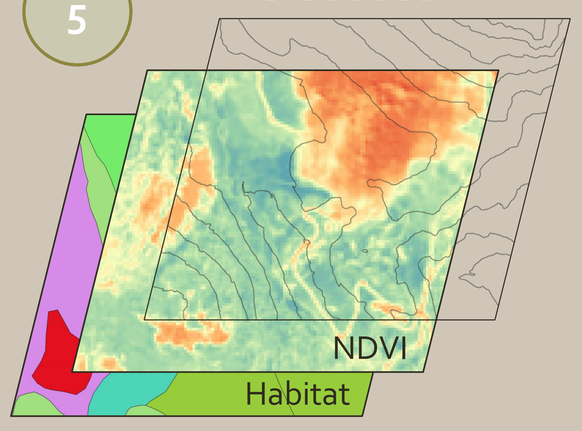


4

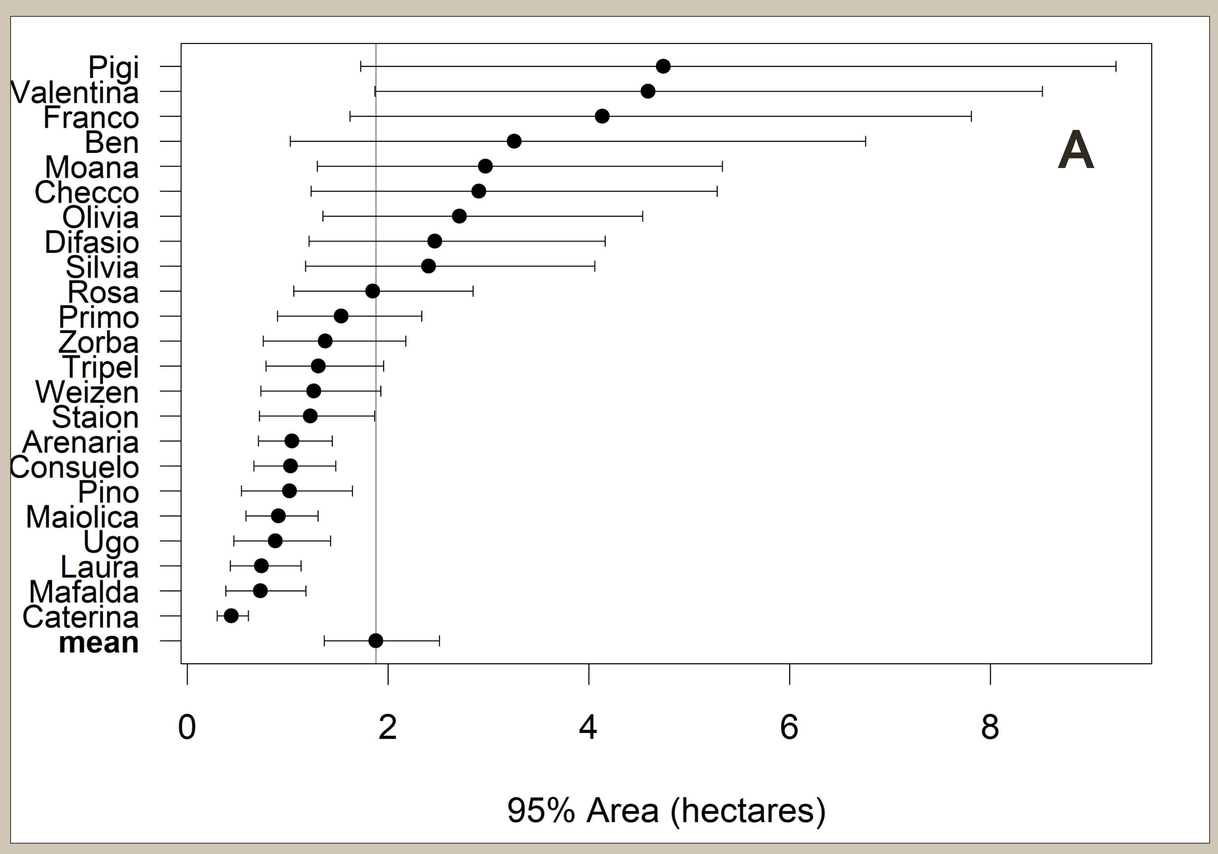
Individual home ranges were calculated by **pHREML** [1] of continuous-time movement (package ***ctmm*** [2]) at 95% coverage level

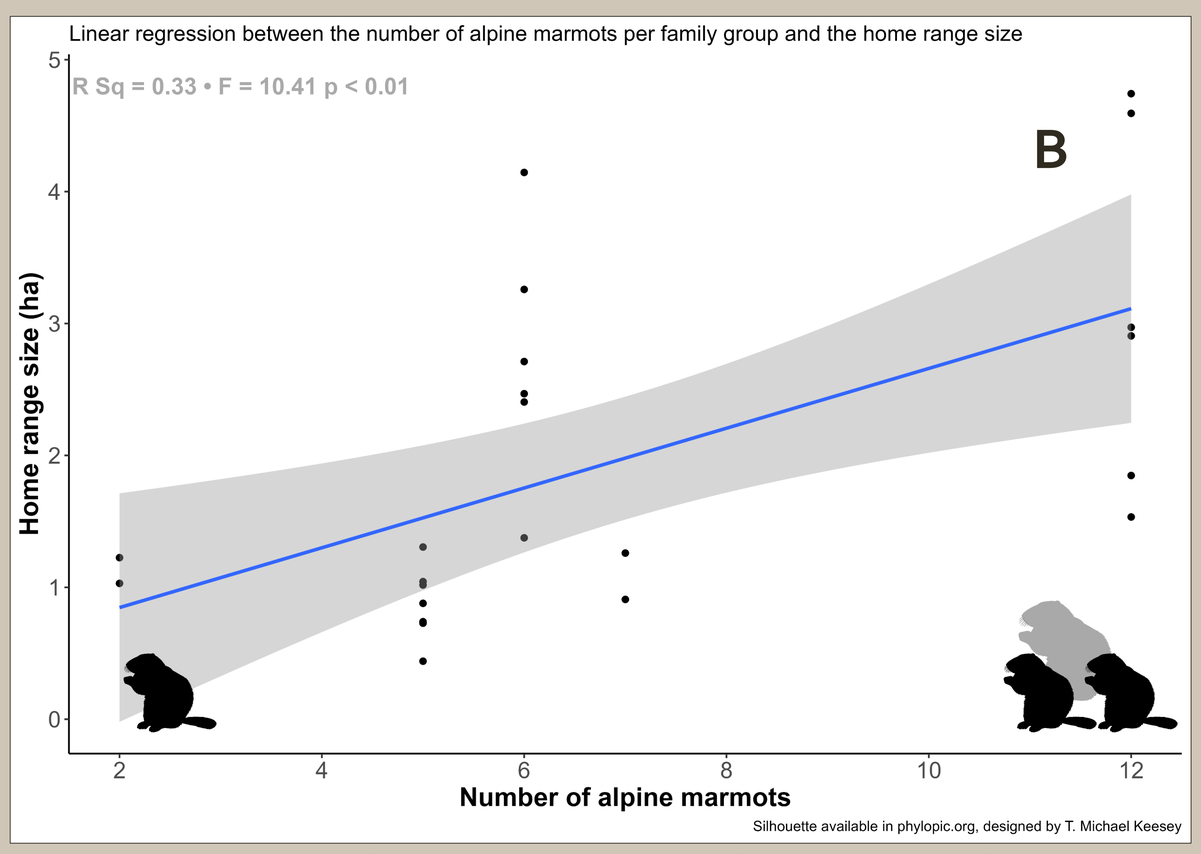
Explanatory variables were added

5



RESULTS





A total of **4028** fixes were collected during 46 scan sessions. Individual home range varied from 0.88 to 4.74 ha for males and from 0.44 to 4.59 ha for females (median 1.97 and 1.04, respectively). The mean home range area of an average individual is **1.88 ha** (CI: 1.36-2.51) (panel A). As the number of individuals per family group increased, the estimated home range size also increased (panel B).

FUTURE DIRECTION: Disentangle the contribution of both environmental variables (i.e., forage quality) and human activity, which are able to shape the alpine marmot home range size.

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Parco Naturale Paneveggio Pale di San Martino

REFERENCES

[1] Fleming CH, Noonan MJ, Medici EP, Calabrese JM (2019) Overcoming the challenge of small effective sample sizes in home range estimation. *Methods Ecol Evol* 10:1679–168
[2] Fleming CH, Calabrese JM (2019) ctmm: Continuous-Time Movement Modeling. R package version 0.5.6. https://CRAN.R-project.org/ package=ctmm

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