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# A HAIR-TUBE SURVEY OF SMALL MAMMALS FROM SERRA DI IVREA (NW ITALY)



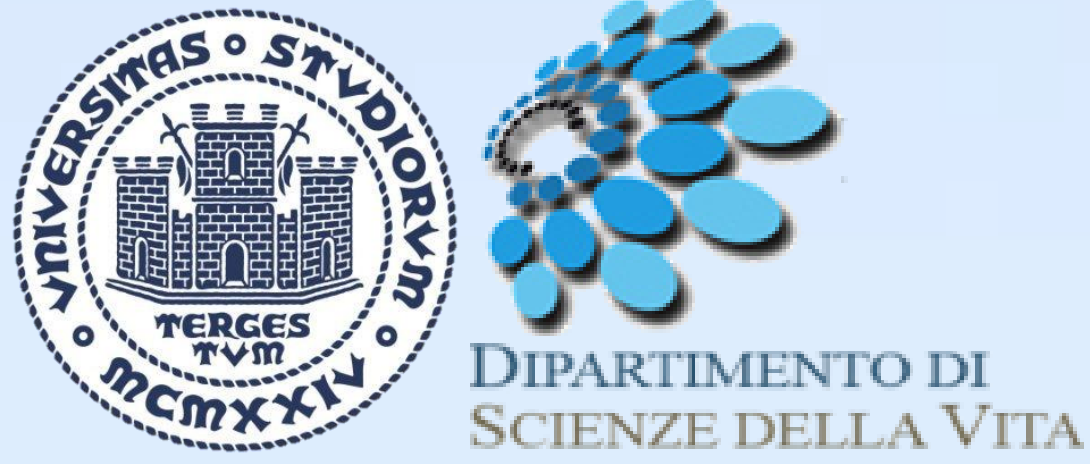
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## INTRODUCTION

Natura 2000 is the largest coordinated network of protected areas in the world and the main tool for biodiversity conservation within the European Union. Monitoring the protected habitats and species in all network sites by efficient survey methods is essential to plan effective conservation strategies. Small mammals, although including species of conservation interest and being major components of the food web, are often understudied. Through an intensive survey, we investigated the small mammal community of the Special Area of Conservation IT1110057 Serra di Ivrea (Piedmont, NW Italy).

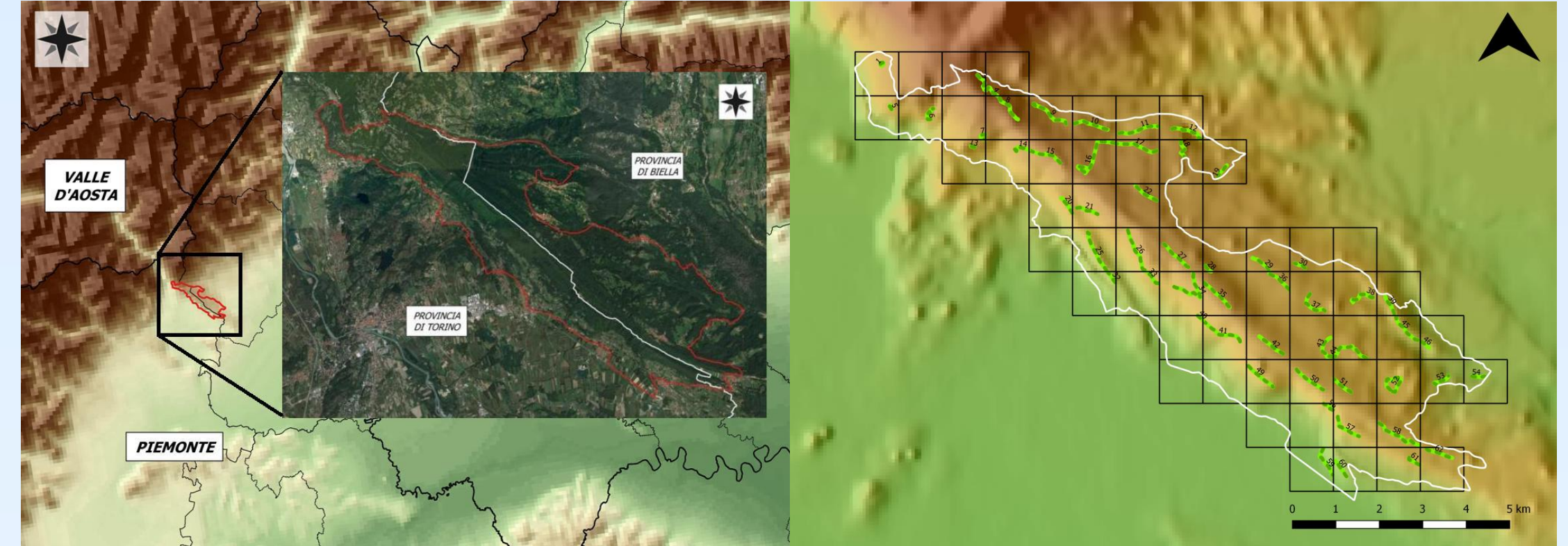


Figure 1 - The study area (on the left) and the linear transects (on the right)



Figure 2 – Hair-tubes of 60 mm and 30 mm



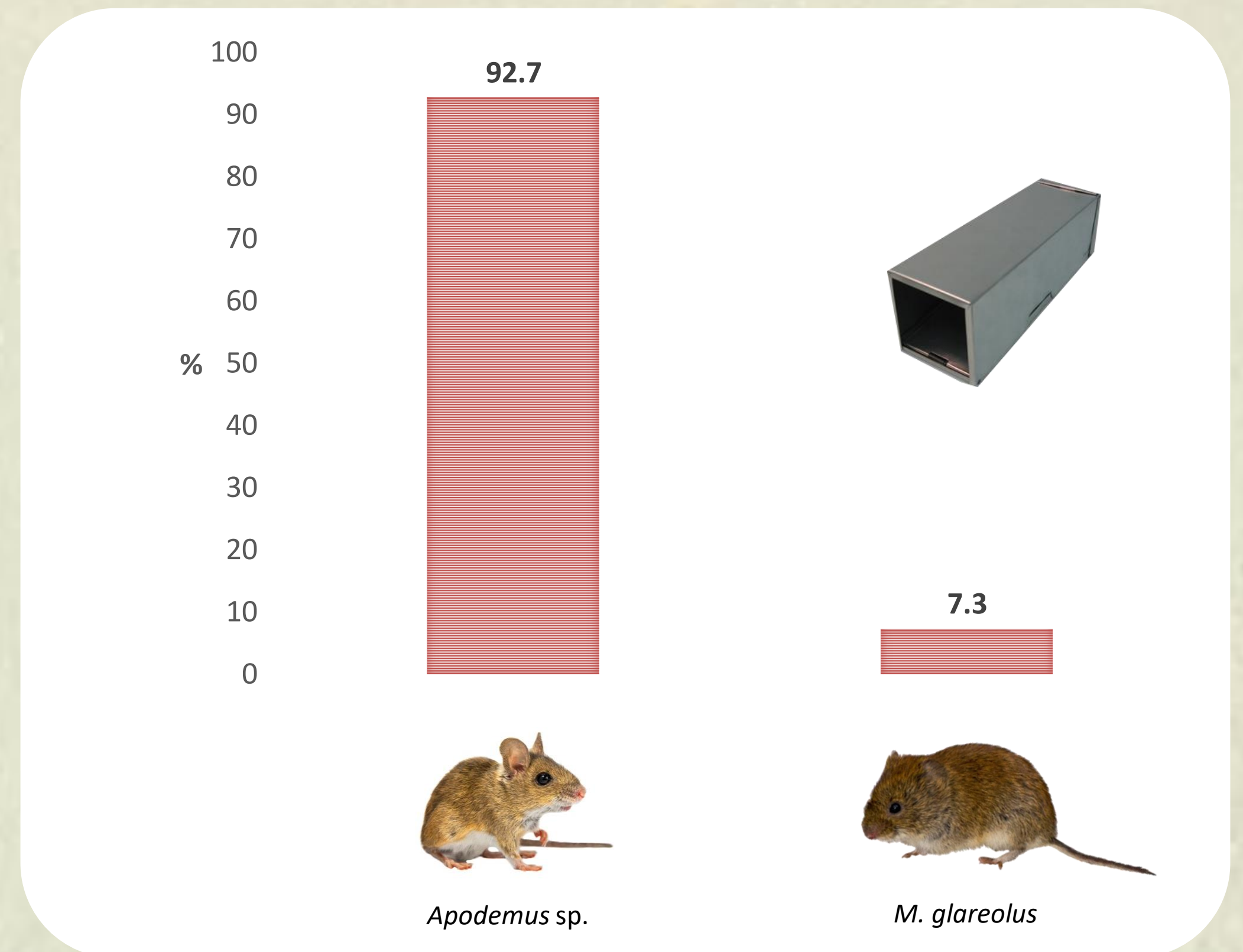
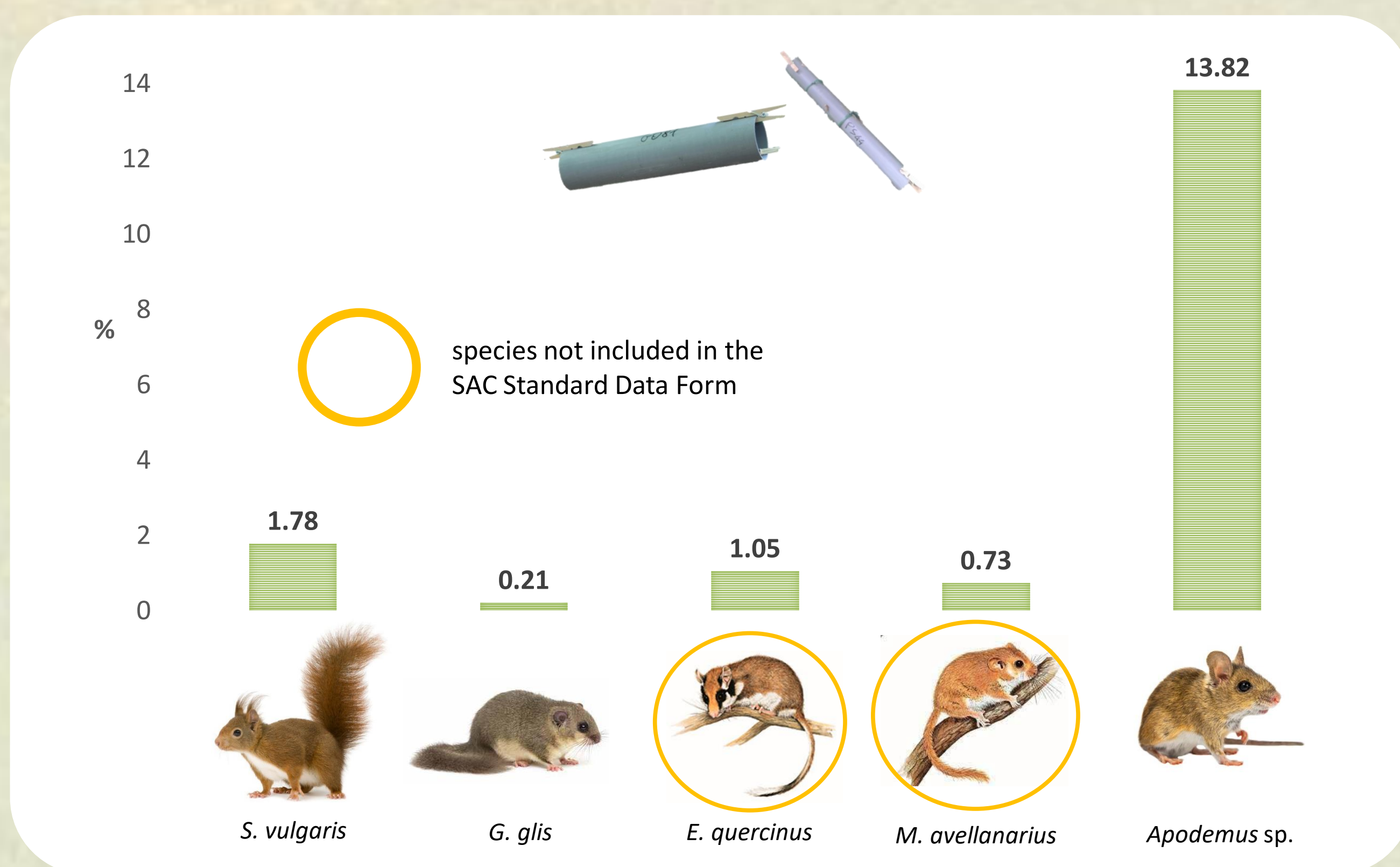
Figure 3 – Sherman traps placed along the transects

## METHODS

From mid-May to mid-June 2016 we collected small mammal presence data along 55 transects, where we set 955 hair-tubes of 60 mm (n = 369) and 30 mm (n = 586) in diameter [2], in a number proportional to each transect length. The largest hair-tubes were positioned on trunks or horizontal branches of trees (ca. 160 cm above ground level) about 100 m from each other, whereas the smallest tubes were tied to shrubs (ca. 80 cm a.g.l.) with 30 m spacing. A bait (hazelnut cream) was used to attract animals and an adhesive strip was attached at each end of the tube to collect the hairs. We checked the hair-tubes twice, with an interval of 15 days. We examined the hairs using a microscope (20x and 40x magnifications) and species were identified by comparing the characteristics of the cuticle scale pattern, medulla and cross-section of the hairs.

To collect information on ground-dwelling species, in September 2019 we carried out a four-nights capture session using Sherman traps (7.5 x 9 x 23 cm) [1]. We placed 10 traps at a distance of 10 m from each other [3] along each of three selected transects. Hazelnut cream was spread at the entrance of each trap, while seeds, a slice of apple and cotton were put at the bottom. Traps were checked daily and trapped individuals were sexed and weighted before being released at the site of capture.

## RESULTS



## DISCUSSION

Hair-trapping allowed to record a species not included in the SAC Standard Data Form, namely *Muscardinus avellanarius*, included in Annex 4 of the Habitats Directive, and also an elusive and understudied species such as *Eliomys quercinus*. Hair-tubes are a non-invasive and cost-effective method to get information on small mammal distribution. Anyway, considering the number of hair-tubes deployed, capture success was low, also for a potentially common species such as *Glis glis*, suggesting that a large trapping effort is needed for assessing spatial niche overlap between ecologically similar species and their habitat preferences. The simultaneous use of multiple survey methods may provide a more complete assessment of the small mammal community [4] and allow to collect more reliable data about the genus *Apodemus* and others ground-dwelling species such as *Myodes glareolus*.

## REFERENCES

- [1] Anthony N. M., Ribic C. A., Bautz R. & Garland T. Jr., 2005. Comparative effectiveness of Longworth and Sherman live traps. *Wildlife Society Bulletin*, 33 (3): 1018-1026. [2] Gurnell J., Lurz P.W.W., Shirley M.D., Cartmel S., Garson P.J., Magris L., Steele J., 2004. Monitoring red squirrels *Sciurus vulgaris* and grey squirrels *Sciurus carolinensis* in Britain. *Mammal Review*, 34: 51-74. [3] Sibbald S., Carter P., Poulton S., 2006. Proposal for a national monitoring scheme for small mammals in the United Kingdom and the Republic of Eire. *The Mammal Society Research report No. 6*, London. [4] Torre I., Guixé D. & Sort F., 2011. Comparing three live trapping methods for small mammal sampling in cultivated areas of NE Spain. *Hystrix. Italian Journal of Mammalogy*, 21 (2): 147-155.