

# Monitoring tick exposure and Rickettsiales in hunters and hunting dogs: a citizen science approach

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## INTRODUCTION

Following the evidence of high prevalence of *Rickettsia* spp. in *Dermacentor marginatus* from wild boars in hunting areas of southern Italy (SgROI et al., 2020 Transbound Emerg Dis), this study aimed to assess the occurrence of spotted fever group rickettsiae (SFGR) in ticks collected from hunters and hunting dogs sharing the same environments.

## MATERIALS & METHODS

From October 2020 to May 2021, wild boar hunters (n=316) were involved in tick collection from themselves and their dogs (n=315) in regions of southern Italy (Fig. 1). All ticks were morphologically identified and molecularly screened by the partial amplification of *gltA* gene for *Rickettsia* spp. (Labruna et al., 2004 J Clin Microbiol) and the positive samples were further tested via *ompA* gene for the SFGR (Regnery et al., 1991 J Bacteriol). Finally, positive samples to *ompA* gene were sequenced.

## RESULTS & CONCLUSIONS

Twenty-nine hunters (i.e., 9.2%; 95%CI: 6.5-12.9) and 134 dogs (i.e., 42.5%; 95%CI: 37.2-48.1) were infested by at least one tick. A total of 281 ticks was collected, 48 (17.1%) from hunters and 233 (82.9%) from dogs, being *D. marginatus* (n=252; 89.7%) the most prevalent, followed by *Rhipicephalus sanguineus* sensu lato (n=21; 7.5%), *Rhipicephalus turanicus* (n=5; 1.8%) and *Ixodes ricinus* (n=3; 1.0%). Forty-four ticks scored positive to *Rickettsia* spp. (Fig. 2) (i.e., 15.6%; 95%CI: 11.9-20.4), being 38 (86.4%) *Rickettsia slovaca*, 2 *Rickettsia raoultii*, 2 *Rickettsia monacensis* and 2 *Rickettsia aeschlimannii*, respectively. Sequences displayed 100% of query coverage and 99-100% of percentage identity to those available on GenBank. This study revealed a high risk of exposure to ticks and SFGR species for hunters and dogs during hunting activities. Hunters to monitor the circulation of ticks in rural areas may be an effective application of the citizen-science approach, cooperating towards public health stakeholders.

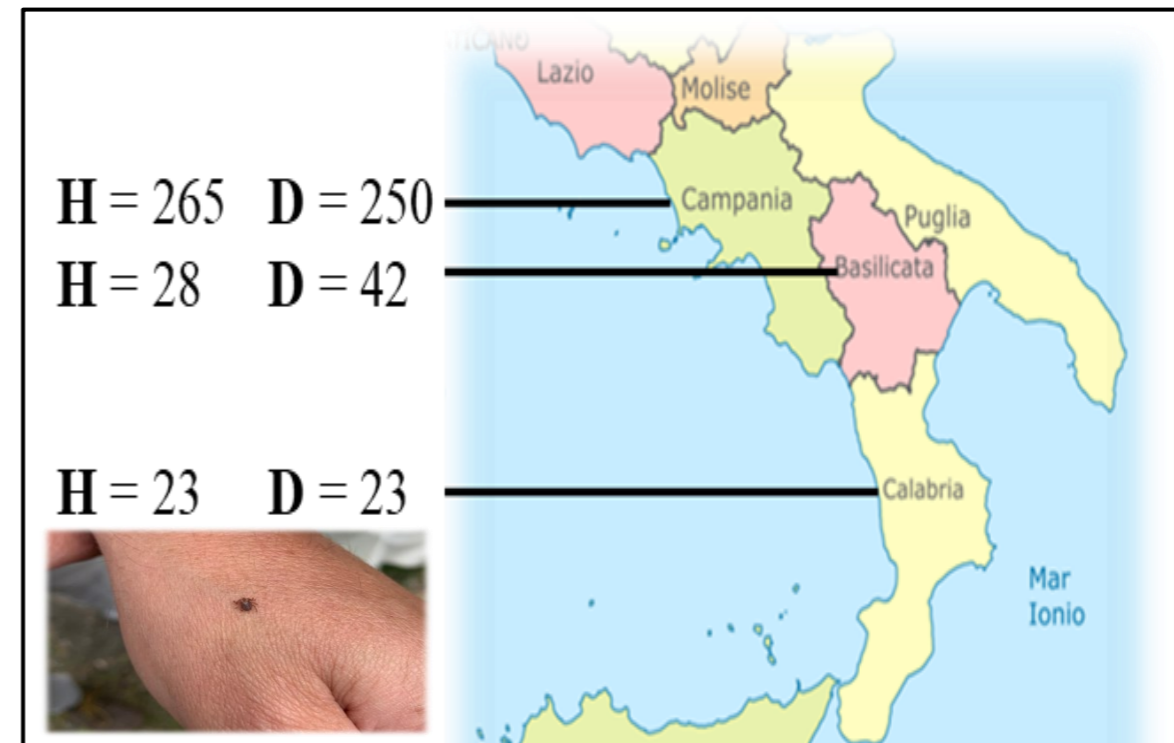


Fig. 1 - Study area, southern Italy (H=hunters; D=dogs).

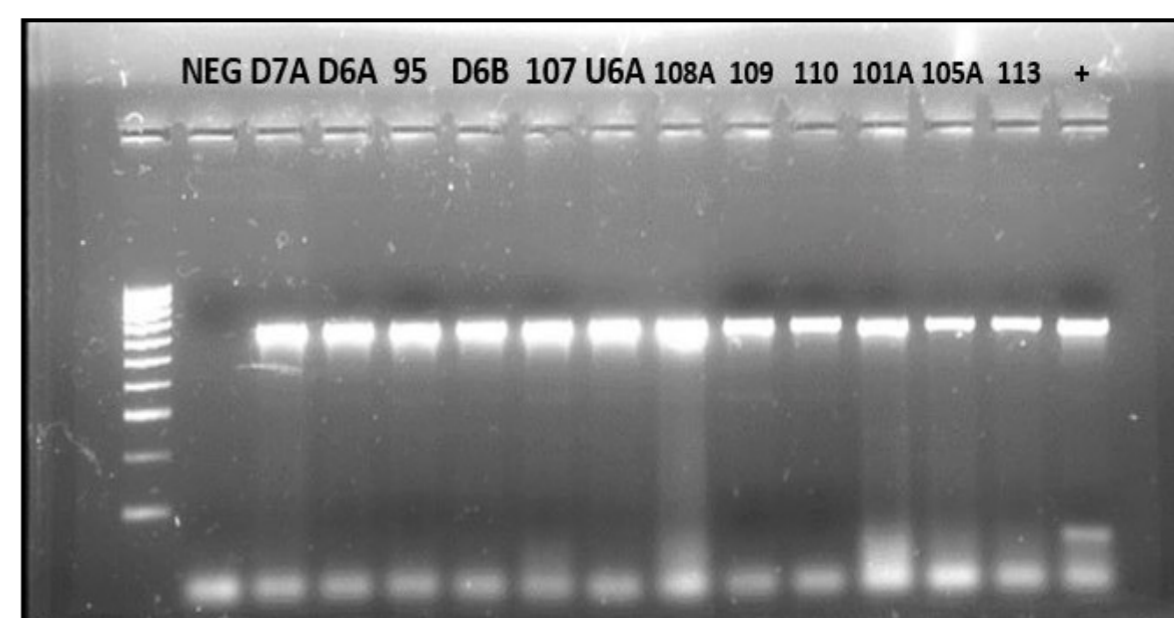


Fig. 2 - End-point PCR for the detection of SFGR DNA in ticks.

## References

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