

Study of the presence of the zoonotic enteric bacterial pathogens – *Salmonella* spp., *Escherichia coli*, *Campylobacter* spp. – in sympatric wildlife and livestock ungulates in alpine ecosystem

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Final Degree Project

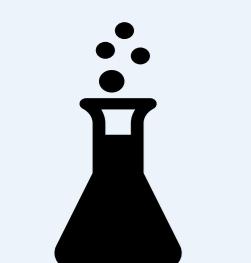
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INTRODUCTION AND OBJECTIVES

Zoonoses are infections that can be transmitted between animals and humans. The transmission of zoonotic pathogens between wildlife and livestock is becoming increasingly important since wild ungulates are becoming more abundant and widely distributed throughout Europe.

The purpose of this study was to investigate whether zoonotic enteric pathogens - *Salmonella* spp., *Escherichia coli* and *Campylobacter* spp. - are shared between free-ranging livestock and sympatric Pyrenean chamois (*Rupicapra pyrenaica*) and to identify their species in a natural environment in the Catalan Pyrenees.

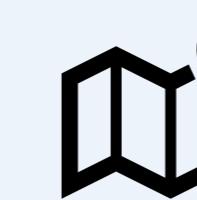


MATERIALS AND METHODS

Faecal samples from chamois, cattle, sheep and horse were collected between February 2016 to November 2017. In total, 215 samples were analysed.

Species	<i>Rupicapra pyrenaica</i>	<i>Bos taurus</i>	<i>Ovis aries</i>	<i>Equus caballus</i>
Total	72	74	39	30

Table 1: Number of sampled individuals separated by species



LOCATION OF THE STUDY

Samples were collected in 4 distinct locations (Nuria, El Catllar, Fontalba, Vallter-Costabona) from the National Hunting Reserve of Freser-Setcases (NHRFS); and from one sheep farm (Serrat)

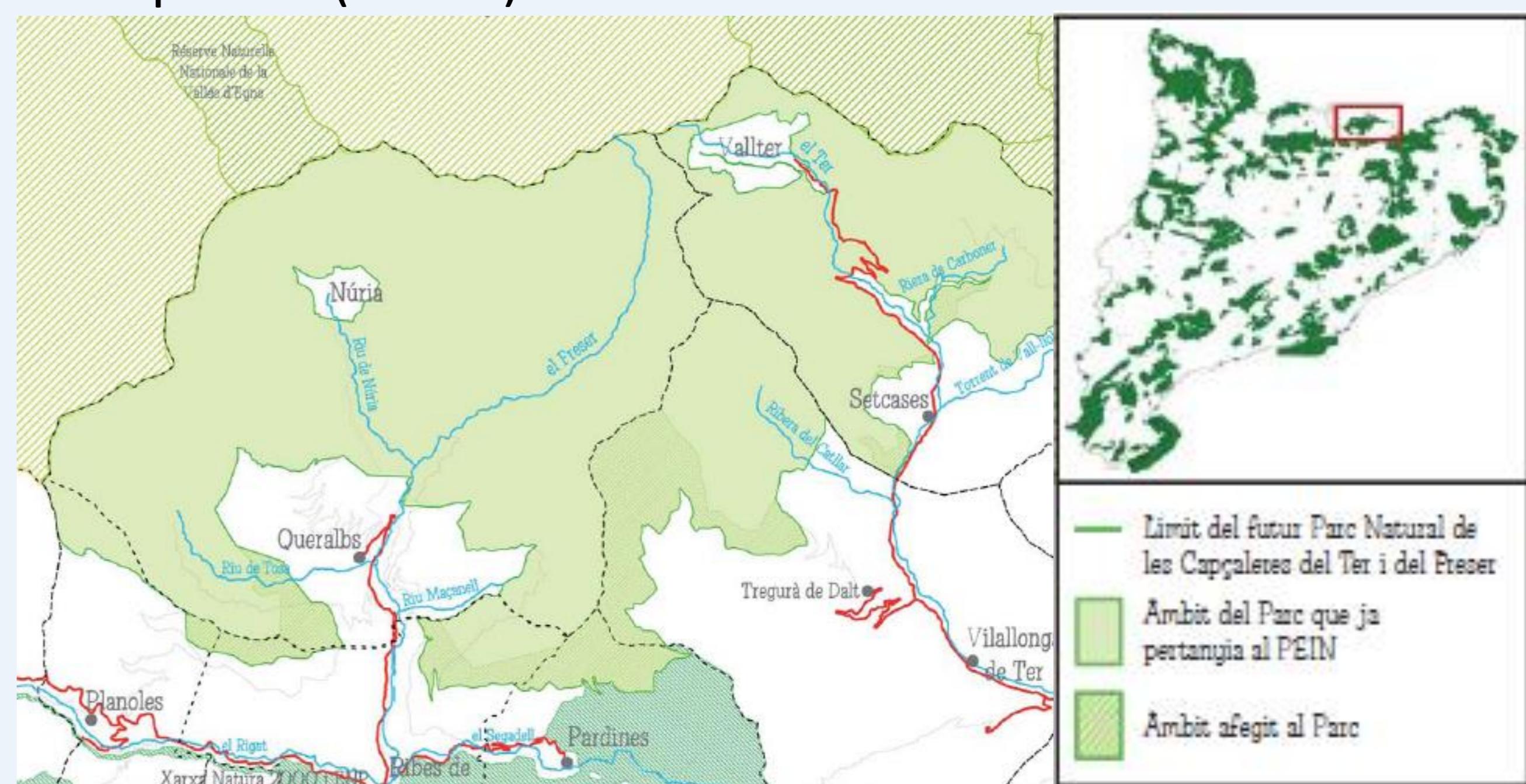
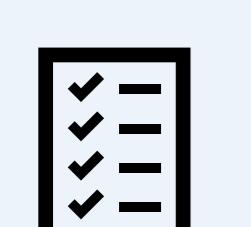


Figure 1: Geographical location of the study



ENTERIC PATHOGENS IDENTIFICATION

SPECIES				
ESCHERICHIA COLI	✗	✗	✗	✗
SALMONELLA SPP.	1	✗	✗	✗
C. JEJUNI	✗	15	3	✗
C. COLI	✗	2	✗	✗

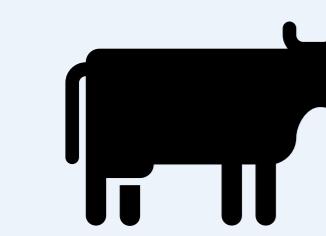


RESULTS

PREVALENCE OF ENTERIC PATHOGENS



Pyrenean chamois → 1.38%



Domestic ungulates → 13.98%



Figure 2: Multiplex PCR of campylobacter strains.

A high genetic diversity was observed among isolates, since almost all *Campylobacter* positive individuals carried a single and unique genotype.



CONCLUSIONS

- ✓ Cattle (*Bos taurus*) appear to carry the highest prevalence of *Campylobacter* (22.97%), being the *C. jejuni* species very predominant over *C. coli*.
- ✓ The Pyrenean chamois that had been diagnosed as *Salmonella* positive was positive to the diagnosis of *Salmonella enterica* Newport.
- ✓ Sheep (*Ovis aries*) and horse (*Equus caballus*) do not seem to play an important role in the transmission of zoonotic enteric bacteria in our study area.
- ✓ There is no trace that transmission of zoonotic enteric pathogens between wild and domestic ungulates exist, although it is not discarded that it may happen in the future if common grazing areas continue to be shared.