

# 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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## 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

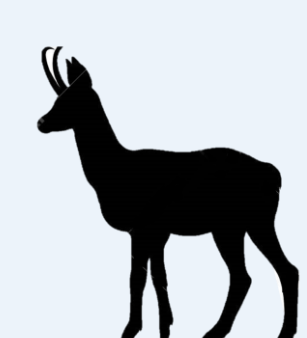
Faecal samples from **chamois, cattle, sheep and horse** were collected between February 2016 to November 2017. In total, **215 samples were analysed**.

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

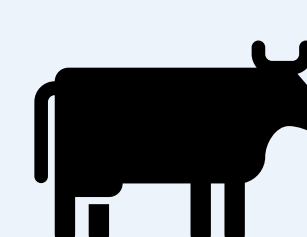
Table 1: Number of sampled individuals separated by species

## 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.

## 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)

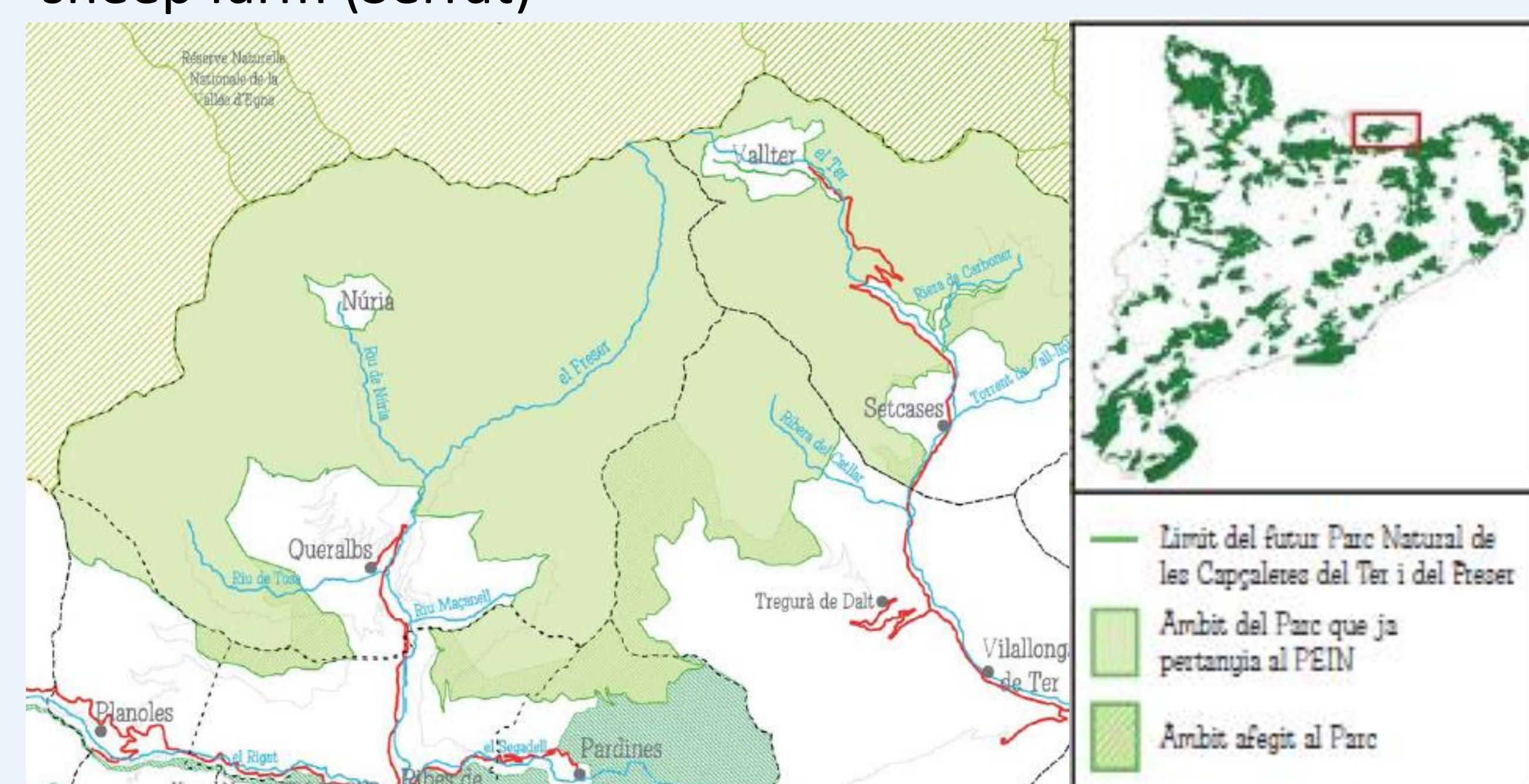


Figure 1: Geographical location of the study

## ENTERIC PATHOGENS IDENTIFICATION

| SPECIES          |   |    |   |   |
|------------------|---|----|---|---|
| ESCHERICHIA COLI | × | ×  | × | × |
| SALMONELLA SPP.  | 1 | ×  | × | × |
| C. JEJUNI        | × | 15 | 3 | × |
| C. COLI          | × | 2  | × | × |

## 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.