INTRODUCTION: Vector-Borne diseases

- Emerging and Re-emerging diseases
- Vector borne diseases: 60% are zoonotic diseases, wildlife reservoir of 70% of them
  
  *Jones et al., 2008*

50% Reportable Diseases are Vector-Borne diseases

*Buena-Mari et al., 2009*
**BTV: definition and importance**

- BTV belongs to the genus *Orbivirus* (Fam. *Reoviridae*)
- Affects to domestic and wild ruminant species

**Temporal distribution of BTV in Spain (12402 outbreaks)**

BTV has circulated in Spain during the last decade

**BTV: spatial distribution**

- Different BTV serotypes in Europe
- BTV-1 and BTV-4 in Spain

**Europe (2016)**

Presence of *Culicoides imicola*
SBV: definition and importance

- SBV belongs to the genus Orthobunyavirus (Fam. Bunyaviridae)
- Affects to domestic and wild ruminant species

SBV: origin and spreading

- November 2011
- July 2013

SBV is not a reportable disease

Underestimated data?
Coxiella burnetii: definition and importance

- Coxiella burnetii is a multi-host pathogen in the family Coxiellaceae
- Affects to a high range of domestic and wild species
- Causes Q Fever, an emerging zoonotic disease

Coxiella burnetii: epidemiological situation

- Increasing the risk of outbreaks in livestock
- New strain
- Naïve populations
- Low risk of outbreaks
- Studies are still limited

Potential hosts

Epidemiological situation

Studies are still limited

González-Barrio, 2015a
INTRODUCTION: The domestic-wild interface

The domestic-wild interface is frequent in central and southern Spain

OBJECTIVE

Determinar la exposición del ganado bovino y los ungulados silvestres del Parque Nacional de Doñana frente al virus de la Lengua Azul, virus de Schmallenberg y Coxiella burnetii, evaluando el riesgo de transmisión entre especies

To determine the exposition to Bluetongue virus, Schmallenberg virus and Coxiella burnetii in cattle and wild ungulates in Donana National Park, assessing the risk of transmission between species.
Material and Methods

Study area: Donana National Park
Sampling

440 ungulates

- 130 Cattle (Marismeña breed)
- 101 Red deer (Cervus elaphus)
- 102 Fallow deer (Dama dama)
- 99 Wild boar (Sus scrofa)

Year 2015

Laboratory analyses

Commercial ELISAs

Endocranial venous sinuses puncture

Jiménez-Ruiz et al., 2016

RESULTS AND DISCUSSION

- Management practices
- Individual data
- χ² Pearson
- Fisher’s Test

P < 0.05
BTV exposure in wild ruminants from Andalusia (ELISA)

García-Bocanegra et al., 2011 (2006-2010)
Arenas-Montes et al., 2013 (2011-2012)
Arenas-Montes et al., 2016 (2011-2014)*

*Hunting areas seroprevalence in red deer 61.2% (14/29 hunting areas)

% BTV Individual Seropositivity

Andalusian OUTBREAKS?
Risk of BTV transmission

African reintroductions
Natural wildlife reservoirs
Prevention
Monitoring
Higher Culicoides activity (García-Bocanegra et al., under review)

- High widespread SBV
- Natural reservoir?
- Limited contact/epidemiological risk
- Supported by experimental infections

**Recent circulation of BTV**
- 6 SBV+ young animals
- 35 BTV+ and SBV+

**SBV Seroprevalence in wild ungulates in Andalusia 2006-2015**

- SBV+ young animals: 6
- BTV+: 35
- SBV+: 19
- P<0.01

**SBV activity in Andalusia**

- 2006-2010: 0%
- 2010-2011: 0%
- 2011-2012: 3.3%
- 2012-2013: 23.7%
- 2013-2014: 17.0%
- 2014-2015: 12.6%
- 2015: 13.4%

**Hunting seasons**

- 2006-2010: 0%
- 2010-2011: 0%
- 2011-2012: 3.3%
- 2012-2013: 23.7%
- 2013-2014: 17.0%
- 2014-2015: 12.6%
- 2015: 13.4%

**Andalusia**

- DNP

**High Culicoides activity (García-Bocanegra et al., under review)**
The results obtained indicate a high exposure to BTV (except vaccinated cattle) and SBV in ruminant species in Donana National Park. In contrast, the low seropositivity found against *Coxiella burnetii* suggests a limited contact with the ungulate species analyzed in the study area.

The results obtained suggest that wild ruminants may act as natural reservoirs of BTV and SBV in Southern Spain, which indicates the importance of monitoring wildlife in control programmes of shared vector-borne diseases.
35e Rencontres - Encuentro - Incontro
Cofrentes (Muela de Cortes), Valencia, España.
1 - 4 juin-junio-giugno 2017

Gracias, Merci, Grazie!