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Zoonosis emergents transmeses per paparres, tendències i perspectives de futur

Zoonosis emergents transmeses per paparres, tendències i perspectives de futur.

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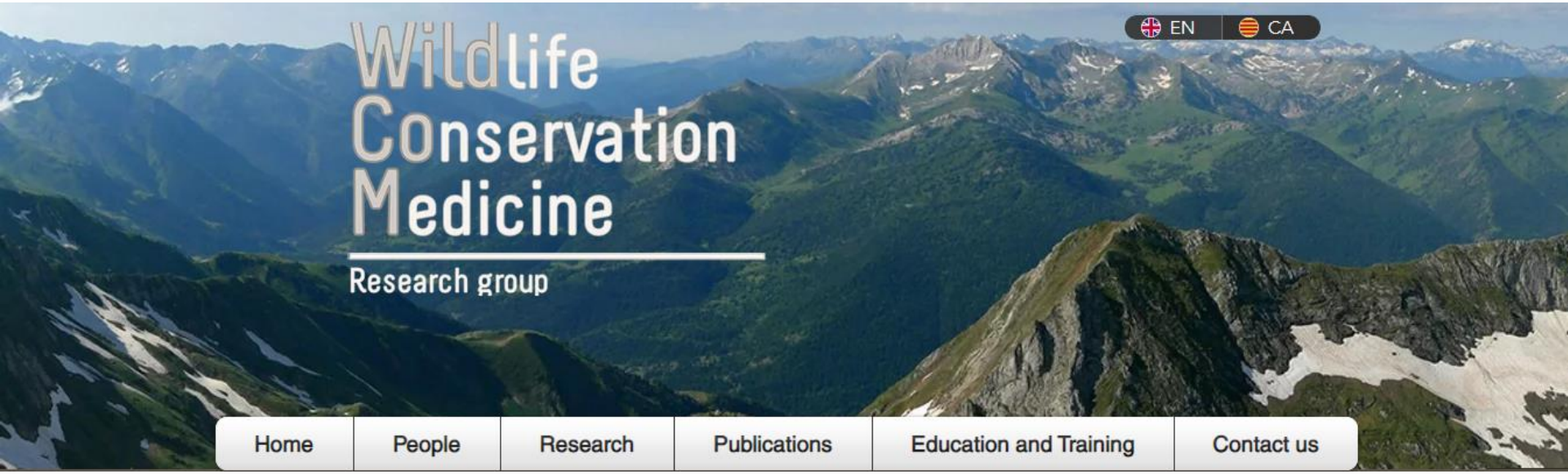
European Diplomate. European College of Zoological Mecicine - Wildlife Population Health Specialty

Investigador adscrit. Centre de Recerca en Sanitat Animal (IRTA-CReSA)

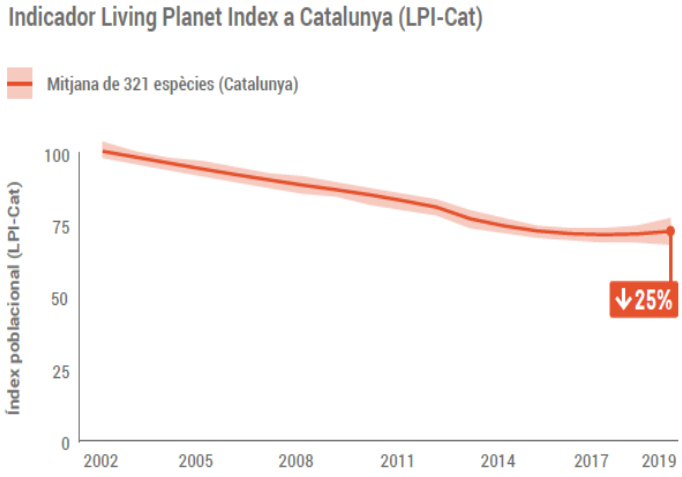


wildcom_barcelona

WildCoM_bcn

www.wildcomresearch.com

Equip especialistes *"Wildlife Population Health"*.
Ecologia de patògens a poblacions de fauna salvatge lliure.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Mitjana de 321 espècies (Catalunya)
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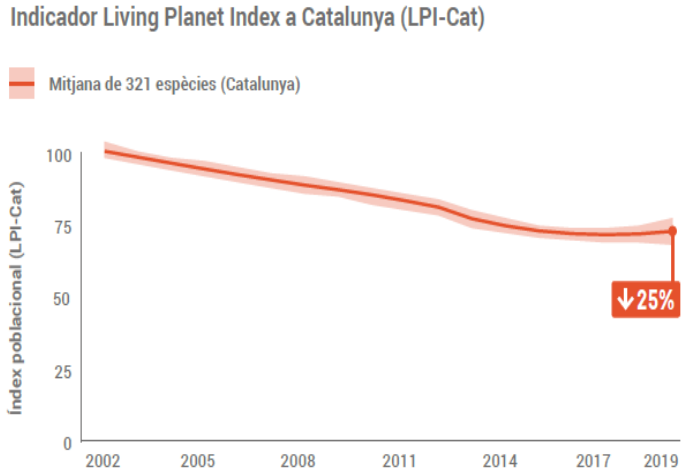
2002
2005
2008
2011
2014
2017
2019
↓25%


Indicador Living Planet Index a Catalunya (LPI-Cat)
Mitjana de 321 espècies (Catalunya)
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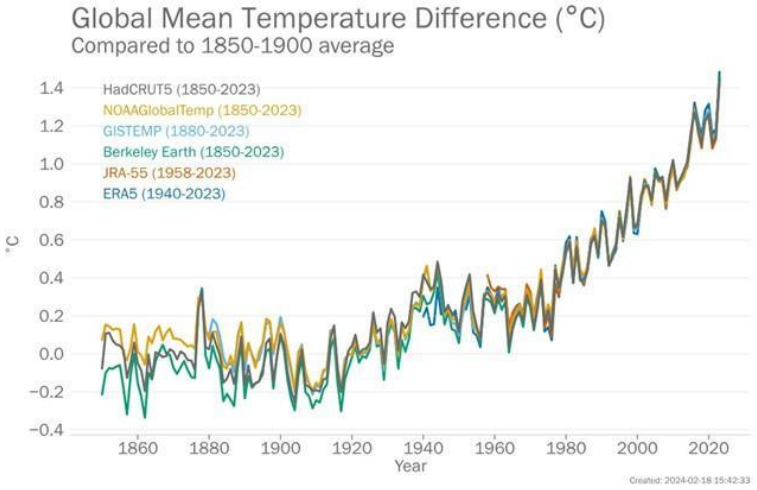
↓25%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Compared to 1850-1900 average
HadCRUT5 (1850-2023)
NOAAGlobalTemp (1850-2023)
GISTEMP (1880-2023)
Berkeley Earth (1850-2023)
JRA-55 (1958-2023)
ERA5 (1940-2023)
°C
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4
1860
1880
1900
1920
1940
1960
1980
2000
2020
Year
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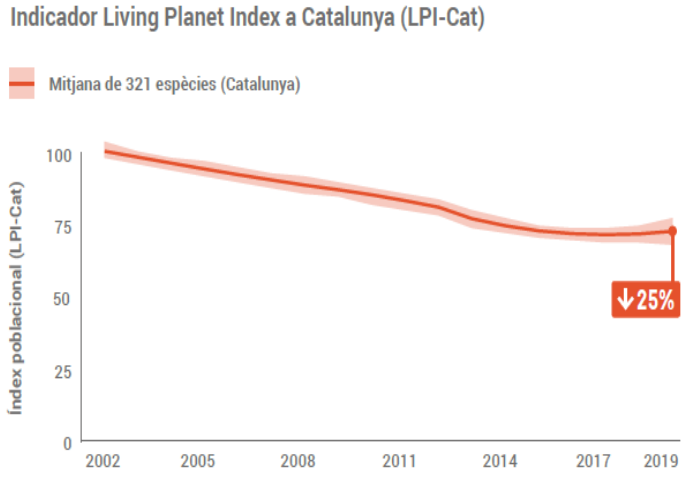
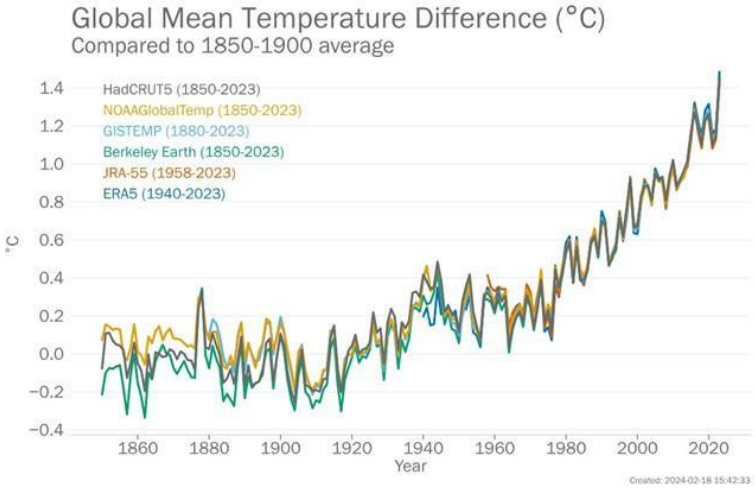
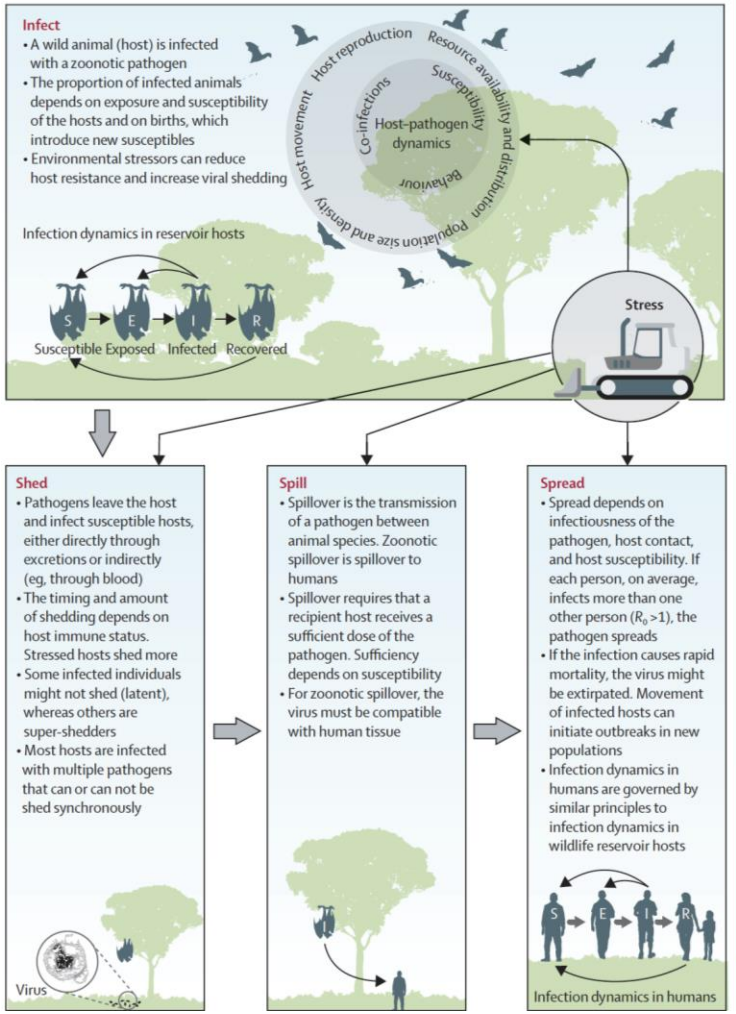
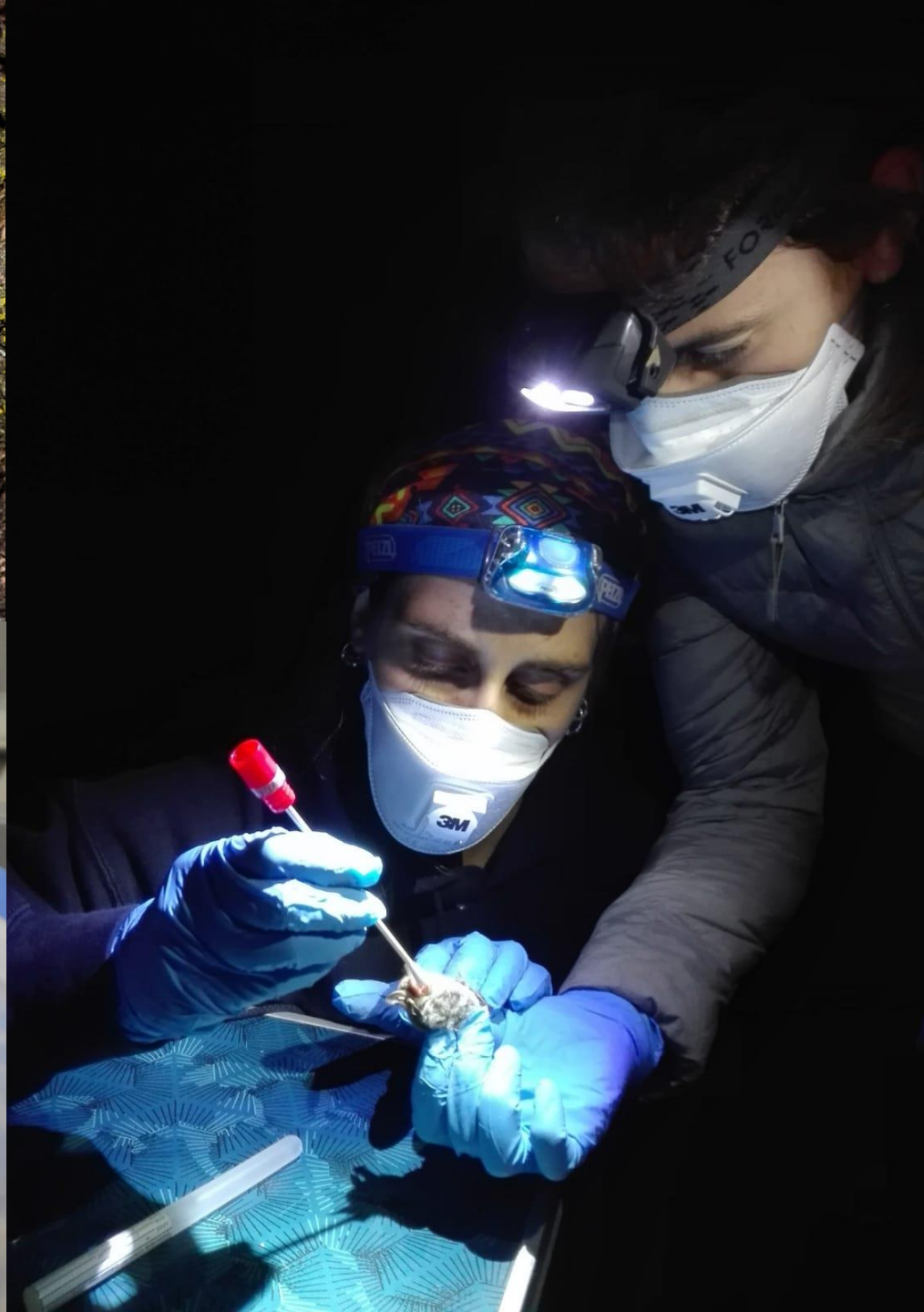






Plowright et al., 2021. Lancet Planet Health, 5(4):e237-e245


CTFC
Centre de Ciència i Tecnologia Forestal de Catalunya
ZSL
LIVING CONSERVATION
ZOOLOGICAL SOCIETY OF LONDON
RVC
Royal Veterinary College
University of London
UNIVERSITY OF CALGARY
UNIVERSIDAD COMPLUTENSE MADRID
UNIVERSITAT DE BARCELONA
CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS
Diputació Barcelona
nat
museu de ciències naturals de Barcelona
UAB
Universitat Autònoma de Barcelona
Wildlife Conservation Medicine
Research group
SEFaS
MUSEU DE CIÈNCIES NATURALS DE GRANOLLERS
IRTA
CReSA
Centre de Recerca en Sanitat Animal
SECEMU
UNIVERSIDAD D CÓRDOBA
CRARC
Generalitat de Catalunya
ZOO Barcelona FUNDACIÓ
CRAM
ICO
Institut Català d'Ornitologia
agents rurals
Hospital Clínic Veterinari UAB
Wildlife Ecology & Health
ZAWEC
ZOO ANIMAL WELFARE EDUCATION CENTRE
Societat Catalana d'Herpetologia



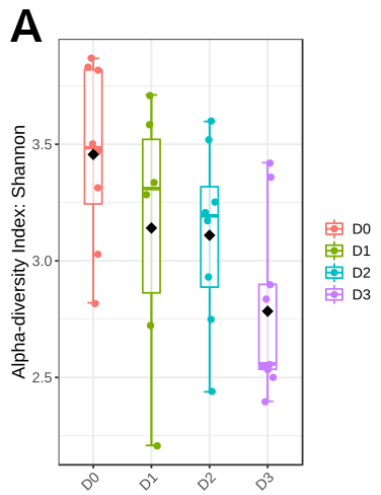
Lobato-Bailón et al. Animal Microbiome (2023) 5:7
https://doi.org/10.1186/s42523-023-00229-9

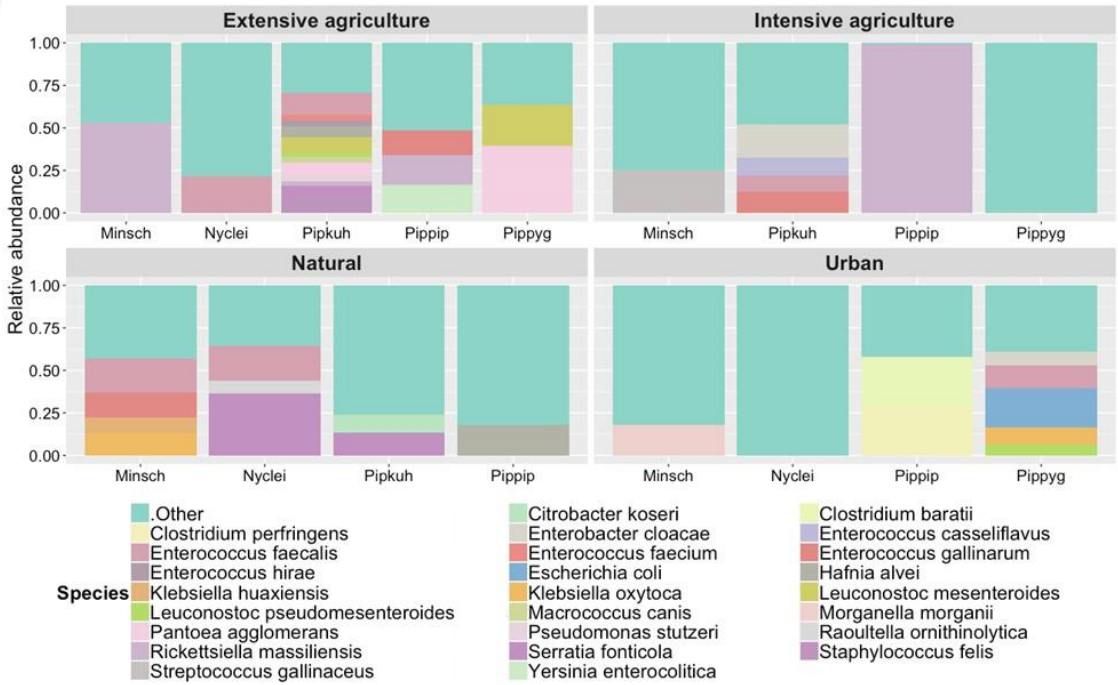
Animal Microbiome

RESEARCH Open Access

The fecal bacterial microbiome of the Kuhl's pipistrelle bat (*Pipistrellus kuhlii*) reflects landscape anthropogenic pressure

Lourdes Lobato-Bailón[1*], Manuel García-Ulloa[2], Andrés Santos[2], David Guixé[3], Jordi Camprodon[3,4], Xavier Florensa-Rius[3], Raúl Molleda[3,5], Robert Manzano[3], María P. Ribas[1], Johan Espunyes[1], Andrea Dias-Alves[1], Ignasi Marco[1], Lourdes Miqura-García[6,7], Jaime Martínez-Urtaza[2†] and Oscar Cabezón[1,8†]













CONTRATOS – ENCARGOS

- *Leishmania tarantolae / infantum* en reptiles de Mallorca
- *Streptococcus suis* porc senglars urbans Barcelona
- Avaluar la inclussió del coipú al Pla de Vigilància Sanitària de la Fauna Salvatge de Catalunya
- *Mycobacterium microti* micromamíferos Pirineos

Residència en *Wildlife Population Health*

3 anys acadèmics
Avaluació EZCM / 6 mesos
Examen ECZM

Formació transversal

- Anatomia patològica
- Epidemiologia
- Captura i maneig d'espècies salvatges
- Diagnòstic laboratorial: serològic, molecular
- Malalties infeccioses
- Ecologia de les malalties
- Coordinació d'equips
- Comunicació pública
- Desenvolupament d'un projecte
- Redacció científica: 3 articles científics


N
O
E
S
Department of Pathology and Wildlife Diseases, Nat. Vet. Inst. Uppsala, Sweden
Faculty of Veterinary Medicine, University Hannover, Germany
Zoological Society of London, UK
Royal Veterinary College, UK
Justus-Liebig-University Giessen, Germany
Veterinary Faculty University of Zagreb, Croatia
Faculty of Veterinary Medicine, Ghent University, Belgium
Veterinary Faculty, UAB, Spain

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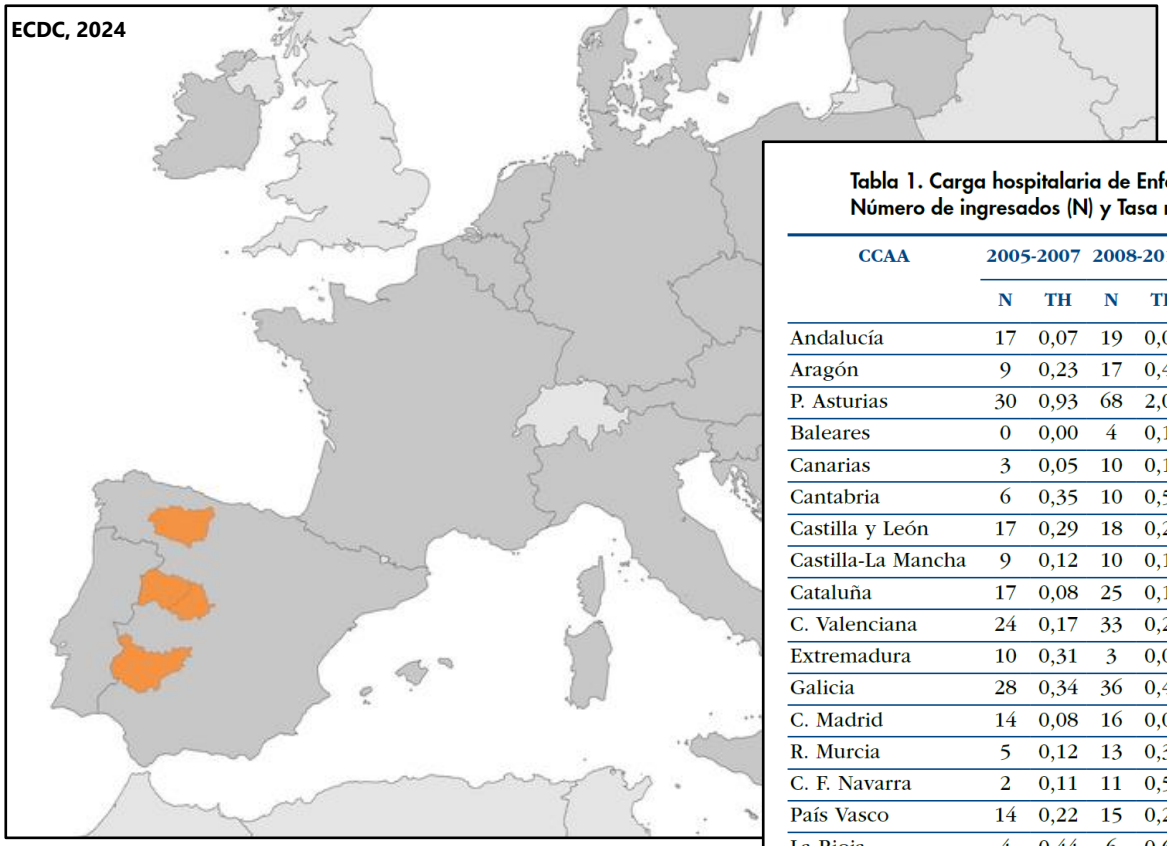


Tabla 1. Carga hospitalaria de Enfermedad de Lyme por CCAA, periodos trianuales y porcentaje de cambio. Número de ingresados (N) y Tasa media de hospitalización (TH) por 100.000 hab. España 2005-2019.

CCAA	2005-2007		2008-2010		2011-2013		2014-2016		2017-2019		% Cambio 2017-2019 vs 2005-2007*
	N	TH	N	TH	N	TH	N	TH	N	TH	TH
Andalucía	17	0,07	19	0,08	40	0,16	40	0,16	42	0,17	134,4
Aragón	9	0,23	17	0,42	18	0,45	12	0,30	17	0,43	84,4
P. Asturias	30	0,93	68	2,09	78	2,42	65	2,06	78	2,53	172,0
Baleares	0	0,00	4	0,12	8	0,24	3	0,09	8	0,24	92,9**
Canarias	3	0,05	10	0,16	5	0,08	3	0,05	8	0,13	150,0
Cantabria	6	0,35	10	0,57	5	0,28	18	1,03	16	0,92	160,8
Castilla y León	17	0,29	18	0,29	33	0,52	15	0,24	30	0,49	68,2
Castilla-La Mancha	9	0,12	10	0,13	12	0,16	8	0,11	10	0,14	16,1
Cataluña	17	0,08	25	0,11	42	0,19	40	0,18	67	0,29	268,4
C. Valenciana	24	0,17	33	0,22	29	0,19	30	0,20	50	0,34	101,0
Extremadura	10	0,31	3	0,09	5	0,15	2	0,06	2	0,06	-79,8
Galicia	28	0,34	36	0,43	50	0,60	67	0,82	71	0,88	159,6
C. Madrid	14	0,08	16	0,08	20	0,10	30	0,15	40	0,20	161,2
R. Murcia	5	0,12	13	0,30	11	0,25	13	0,30	18	0,41	232,1
C. F. Navarra	2	0,11	11	0,58	15	0,78	15	0,78	10	0,51	363,0
País Vasco	14	0,22	15	0,23	13	0,20	31	0,47	48	0,73	232,4
La Rioja	4	0,44	6	0,62	14	1,45	10	1,05	12	1,27	190,1
Ceuta	1	0,44	1	0,42	2	0,80	7	2,76	4	1,57	257,4
Melilla	0		0		0		0		0		
Total	**210**	**0,16**	**315**	**0,23**	**400**	**0,28**	**409**	**0,29**	**531**	**0,38**	**141,5**

Fuente: RAE-CMBD. Ministerio de Sanidad. España. Elaboración propia.

*Los valores de esta columna se han calculado considerando todos los decimales.

**El porcentaje de cambio de Islas Baleares se ha calculado respecto a 2008-2010; primer periodo en el que se registran hospitalizaciones en esta CA

Notícies

Si ens pica una paparra l'hem de treure amb cura al més aviat possible, sense trencar-la ni aixafar-la Unitat de Cultura Científica (UCC, Universitat de Saragossa)

Descarten virus nocius en la paparra que fa anys que s'estén a Catalunya: què fer si et pica

Un estudi de la Universitat de Saragossa en col·laboració amb la UAB descarta que les paparres "Hyalomma" capturades a Barcelona i Tarragona tinguin la febre hemorràgica de Crimea-Congo o altres patògens

LA VANGUARDIA

La Vanguardia en català

AL MINUTO / INTERNACIONAL / POLÍTICA / OPINIÓ

SUCCESSOS

La plaga de la paparra 'Hyalomma lusitanicum' envaeix Catalunya

• Un estudi assenyala que ara com ara no s'ha detectat el perillós virus Crimea-Congo

Un exemplar de Hyalommalusitanicum (Carlos Pradera.)

RAC1

SALUT

MINUT A MINUT A LA CARTA PODCA

Ad

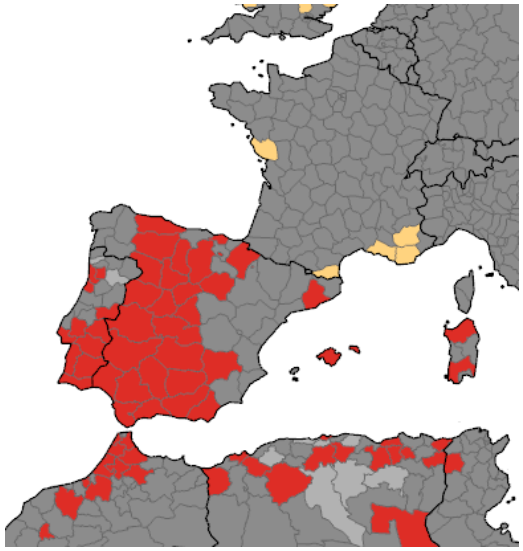
Paràsit

Alerta a Catalunya per una plaga de paparres que pot transmetre malalties greus: on s'ha detectat?

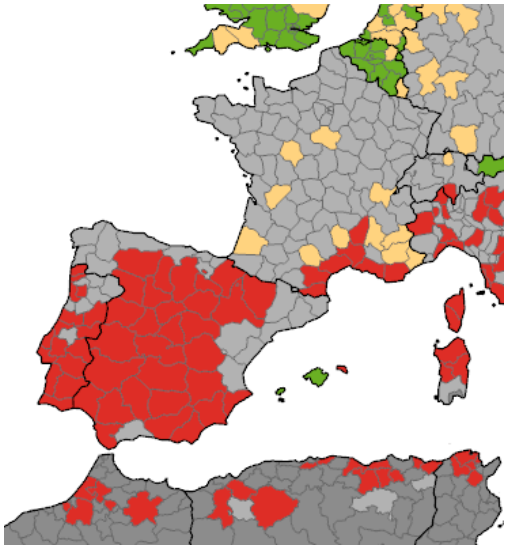
Els investigadors ja han detectat la presència del paràsit en vuit comarques catalanes, sobretot de l'àrea metropolitana de Barcelona

ecdc EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

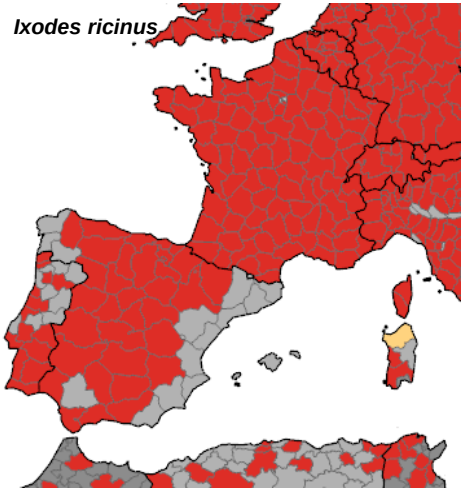
Hyalomma lusitanicum



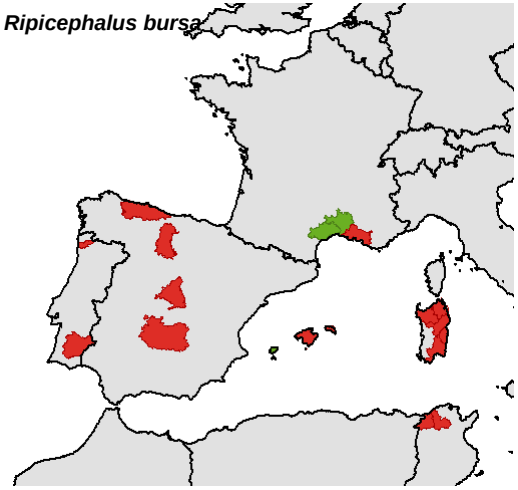
Hyalomma marginatum



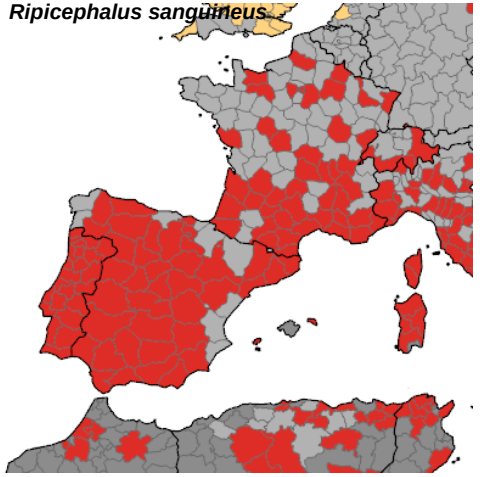
Ixodes ricinus



Ripicephalus bursa



Ripicephalus sanguineus



Veterinary Microbiology 286 (2023) 109892

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journal homepage: www.elsevier.com/locate/vetmic

Exploring the diversity of tick-borne pathogens: The case of bacteria (*Anaplasma*, *Rickettsia*, *Coxiella* and *Borrelia*) protozoa (*Babesia* and *Theileria*) and viruses (*Orthonairovirus*, tick-borne encephalitis virus and louping ill virus) in the European continent

Alberto Moraga-Fernández [a], Clara Muñoz-Hernández [a,b,*], Marta Sánchez-Sánchez [a], Isabel G. Fernández de Mera [a], José de la Fuente [a,c]

[a] Health and Biotechnology Research Group (SaBio). Institute for Game and Wildlife Research, IREC (CSIC-UCLM-JCCM), Ciudad Real, Spain
[b] Department of Animal Health, Faculty of Veterinary Sciences, Regional Campus of International Excellence "Campus Mare Nostrum", University of Murcia, 30100 Murcia, Spain
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ARTICLE INFO

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Molecular epidemiology
One Health
Tick-association
Vector-borne disease
Zoonosis

ABSTRACT

Ticks are the main vectors for the transmission of bacterial, protist and viral pathogens in Europe affecting wildlife and domestic animals. However, some of them are zoonotic and can cause serious, sometimes fatal, problems in human health. A systematic review in PubMed/MEDLINE database was conducted to determine the spatial distribution and host and tick species ranges of a selection of tick-borne bacteria (*Anaplasma* spp., *Borrelia* spp., *Coxiella* spp., and *Rickettsia* spp.), protists (*Babesia* spp. and *Theileria* spp.), and viruses (*Orthonairovirus*, and flaviviruses tick-borne encephalitis virus and louping ill virus) on the European continent in a five-year period (November 2017 – November 2022). Only studies using PCR methods were selected, retrieving a total of 429 articles. Overall, up to 85 species of the selected tick-borne pathogens were reported from 36 European countries, and *Anaplasma* spp. was described in 37% (159/429) of the articles, followed by *Babesia* spp. (34%, 148/429), *Borrelia* spp. (34%, 147/429), *Rickettsia* spp. (33%, 142/429), *Theileria* spp. (11%, 47/429), tick-borne flaviviruses (9%, 37/429), *Orthonairovirus* (7%, 28/429) and *Coxiella* spp. (5%, 20/429). Host and tick ranges included 97 and 50 species, respectively. The highest tick-borne pathogen diversity was detected in domestic animals, and 12 species were shared between humans, wildlife, and domestic hosts, highlighting the following zoonotic species: *Anaplasma phagocytophilum*, *Babesia divergens*, *Babesia microti*, *Borrelia afzelii*, *Borrelia burgdorferi* s.s., *Borrelia garinii*, *Borrelia miyamotoi*, Crimean-Congo hemorrhagic fever virus, *Coxiella burnetii*, *Rickettsia monacensis* and tick-borne encephalitis virus. These results contribute to the implementation of effective interventions for the surveillance and control of tick-borne diseases.

1. Introduction

Zoonotic pathogens cause over 60% of emerging infectious diseases and more than 70% of them have a wildlife origin (Jones et al., 2008). This is one of the reasons why wildlife species are considered to have a relevant role in the epidemiology of emerging pathogens, including those transmitted by vectors (Tomassone et al., 2018). These pathogen spillover phenomena are indicative of the need to apply a One Health perspective, in order to identify interactions between humans, domestic animals, wildlife and the environment (Gortazar et al., 2014; Jenkins et al., 2015). Among vectors, ticks are one of the most important vectors of pathogens with significant impact in humans and animals (Vayssier-Taussat et al., 2015). These hematophagous arthropods belong to the order Ixodida that currently comprises more than 950 species divided into three families: the Ixodidae (hard ticks, ~ 750 species), the Argasidae (soft ticks, ~ 218 species), and the Nuttalliellidae with a single species, *Nuttalliella namaqua*, which is restricted to the African continent (Mans et al., 2011; Dantas-Torres and Otranto, 2022). Both ixodid and argasid ticks are vectors of major medical and veterinary importance, as they can transmit a range of bacteria, protists, and

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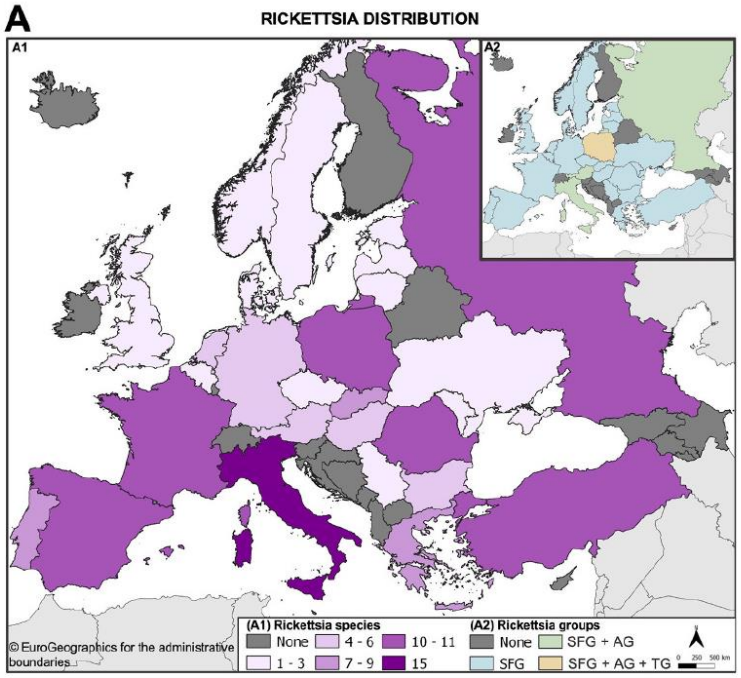
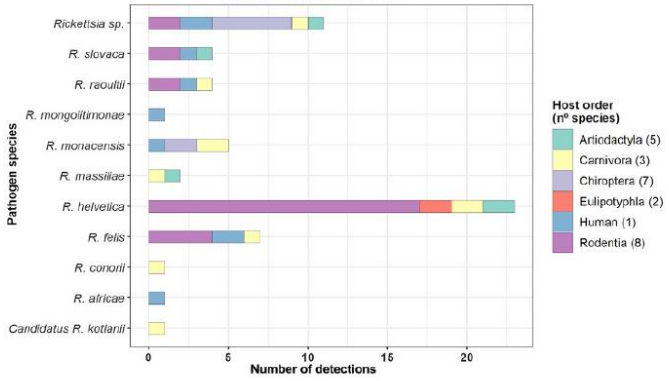
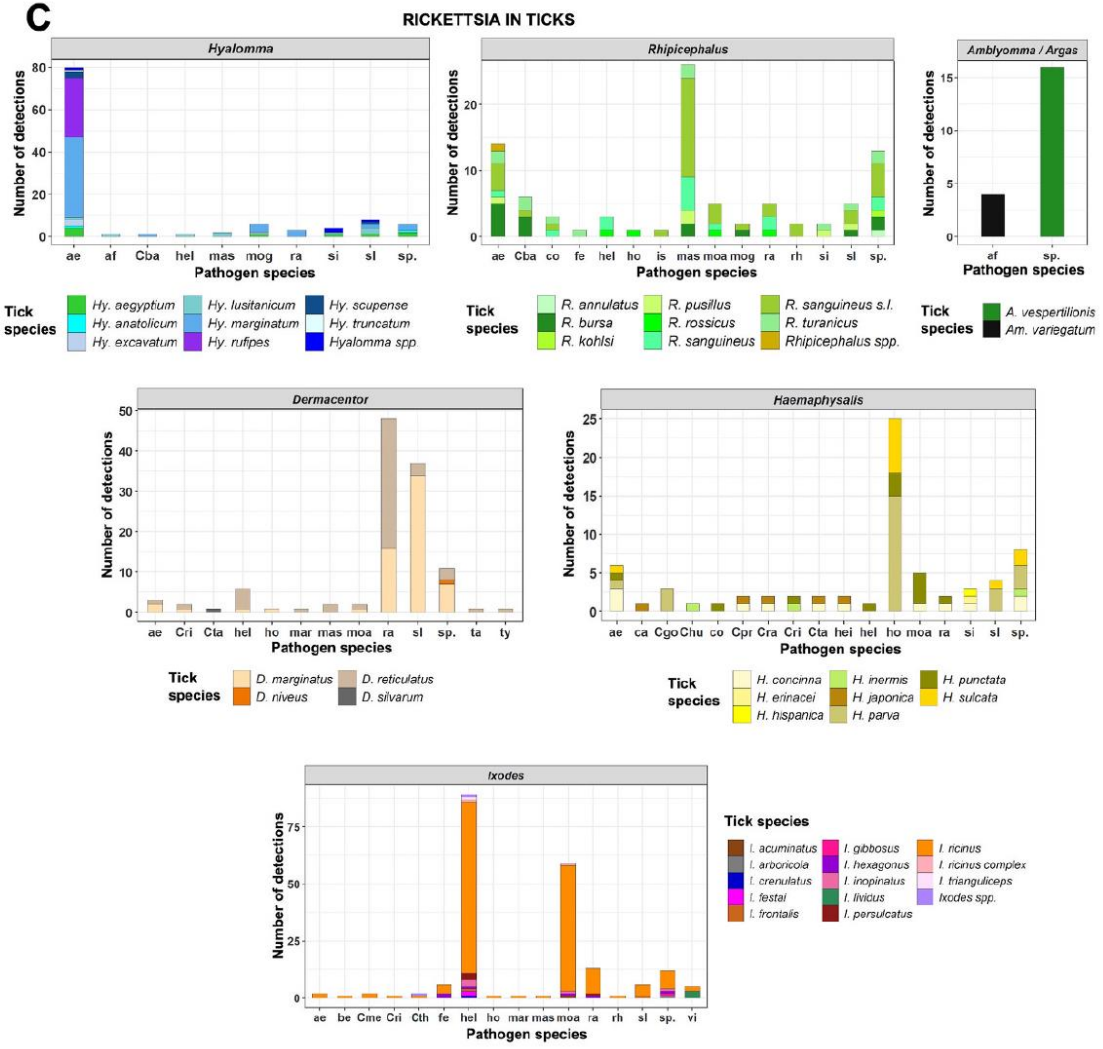
Available online 15 October 2023

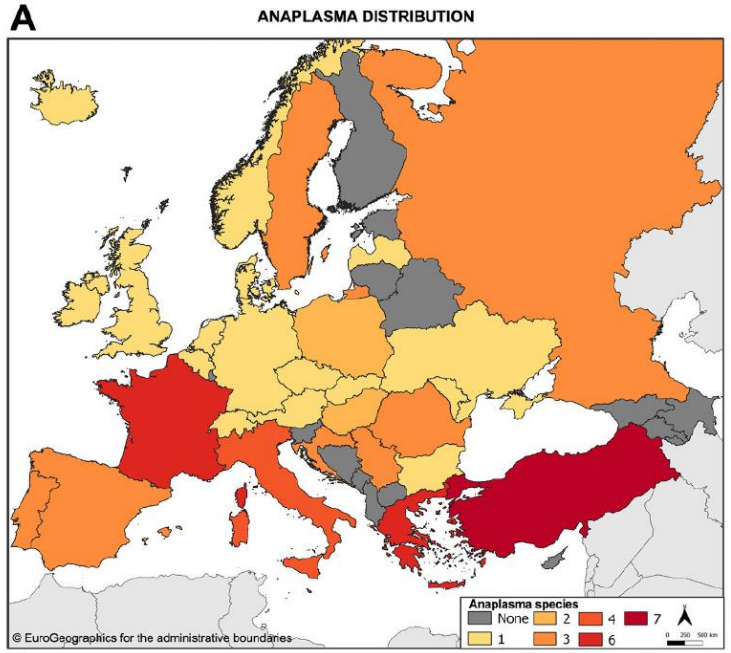
- 2017-2022
- zoonotic character
- wide host range or significance in Animal Health

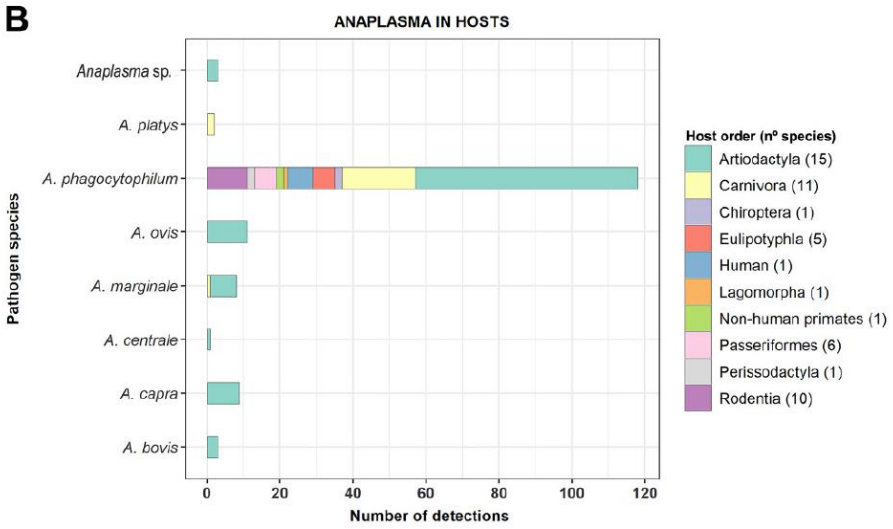
Rickettsia
Anaplasma
Coxiella
Borrelia
CCHFV - *Orthonairovirus*
TBEV – Flavivirus
Babesia
Theileria


A
RICKETTSIA DISTRIBUTION
A1
A2
© EuroGeographics for the administrative boundaries
(A1) Rickettsia species
None
1 - 3
4 - 6
7 - 9
10 - 11
15
(A2) Rickettsia groups
None
SFG
SFG + AG
SFG + AG + TG


B
RICKETTSIA IN HOSTS
Rickettsia sp.
R. slovaca
R. raoultii
R. mongoliitimonae
R. monacensis
R. massiliae
R. helvetica
R. felis
R. conorii
R. africae
Candidatus R. kotlanii
Pathogen species
Number of detections
Host order (nº species)
Artiodactyla (5)
Carnivora (3)
Chiroptera (7)
Eulipotyphla (2)
Human (1)
Rodentia (8)


C
RICKETTSIA IN TICKS
Hyalomma
Rhipicephalus
Amblyomma / Argas
Dermacentor
Haemaphysalis
Ixodes
Number of detections
Pathogen species
Tick species
Hy. aegyptium
Hy. anatolicum
Hy. excavatum
Hy. lusitanicum
Hy. marginatum
Hy. rufipes
Hy. scupense
Hy. truncatum
Hyalomma spp.
R. annulatus
R. bursa
R. kohlsi
R. pusillus
R. rossicus
R. sanguineus
R. sanguineus s.l.
R. turanicus
Rhipicephalus spp.
A. vespertilionis
Am. variegatum
D. marginatus
D. niveus
D. reticulatus
D. silvarum
H. concinna
H. erinacei
H. hispanica
H. inermis
H. japonica
H. parva
H. punctata
H. sulcata
I. acuminatus
I. arboricola
I. crenulatus
I. festai
I. frontalis
I. gibbosus
I. hexagonus
I. inopinatus
I. lividus
I. persulcatus
I. ricinus
I. ricinus complex
I. trianguliceps
Ixodes spp.


A
ANAPLASMA DISTRIBUTION
Anaplasma species
None
1
2
3
4
6
7
© EuroGeographics for the administrative boundaries


B
ANAPLASMA IN HOSTS
Anaplasma sp.
A. platys
A. phagocytophilum
A. ovis
A. marginale
A. centrale
A. capra
A. bovis
Pathogen species
0
20
40
60
80
100
120
Number of detections
Host order (nº species)
Artiodactyla (15)
Carnivora (11)
Chiroptera (1)
Eulipotyphla (5)
Human (1)
Lagomorpha (1)
Non-human primates (1)
Passeriformes (6)
Perissodactyla (1)
Rodentia (10)

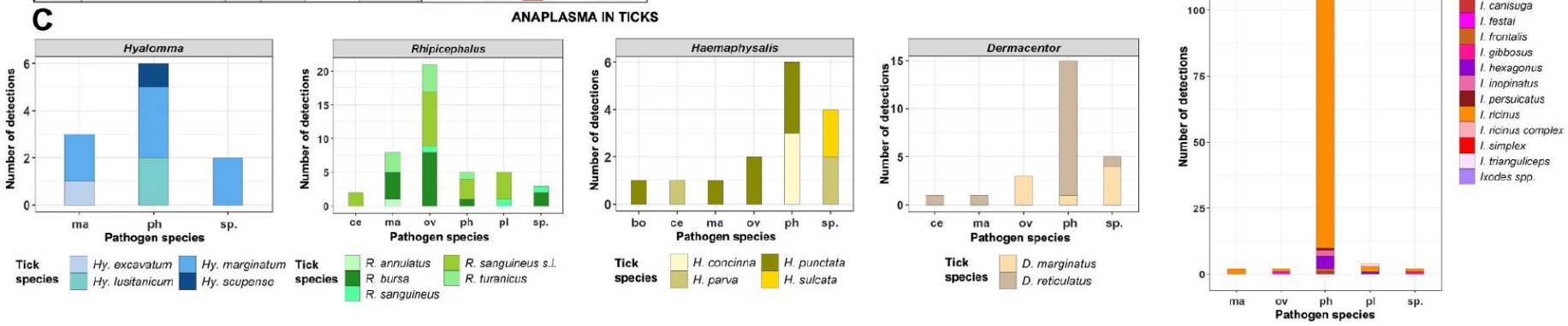
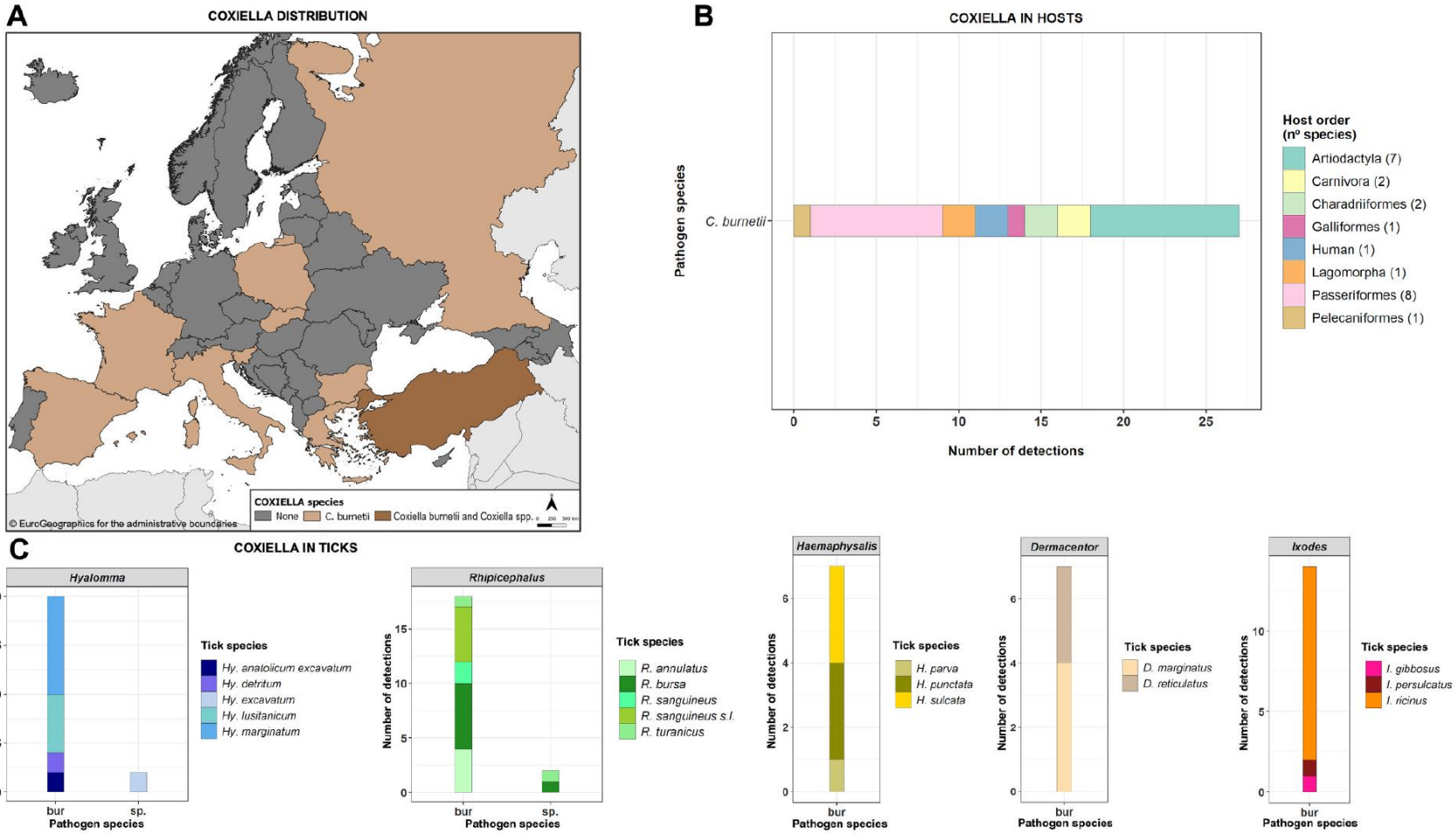
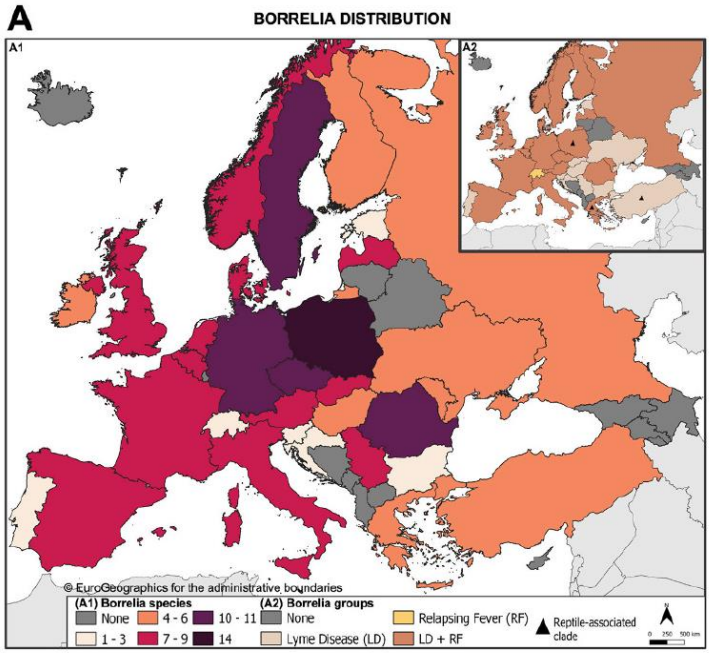
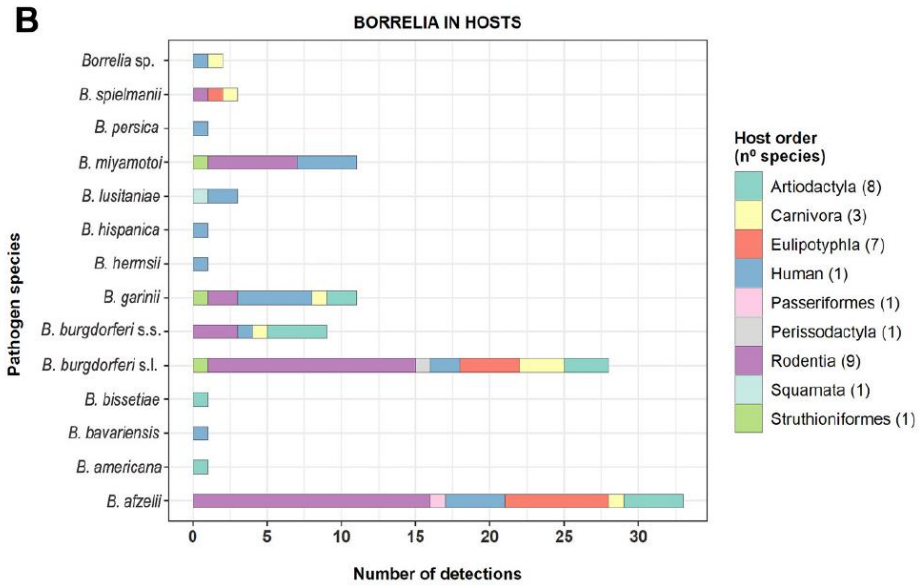
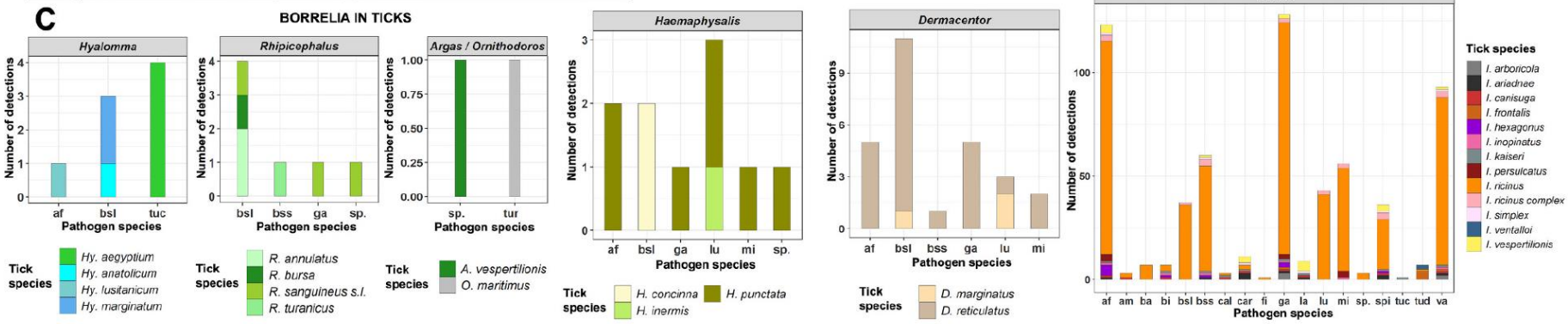

C
ANAPLASMA IN TICKS
Hyalomma
Number of detections
ma
ph
sp.
Pathogen species
Tick species
Hy. excavatum
Hy. lusitanicum
Hy. marginatum
Hy. scupense
Rhipicephalus
ce
ma
ov
ph
pl
sp.
R. annulatus
R. bursa
R. sanguineus
R. sanguineus s.l.
R. turanicus
Haemaphysalis
bo
H. concinna
H. parva
H. punctata
H. sulcata
Dermacentor
D. marginatus
D. reticulatus
Ixodes
I. canisuga
I. festai
I. frontalis
I. gibbosus
I. hexagonus
I. inopinatus
I. persulcatus
I. ricinus
I. ricinus complex
I. simplex
I. trianguliceps
Ixodes spp.

Fig. 3


A
COXIELLA DISTRIBUTION
COXIELLA species
None
C. burnetii
Coxiella burnetii and Coxiella spp.
© EuroGeographics for the administrative boundaries
B
COXIELLA IN HOSTS
Pathogen species
C. burnetii
Number of detections
Host order (nº species)
Artiodactyla (7)
Carnivora (2)
Charadriiformes (2)
Galliformes (1)
Human (1)
Lagomorpha (1)
Passeriformes (8)
Pelecaniformes (1)
C
COXIELLA IN TICKS
Hyalomma
Rhipicephalus
Haemaphysalis
Dermacentor
Ixodes
Number of detections
Pathogen species
bur
sp.
Tick species
Hy. anatolicum excavatum
Hy. detritum
Hy. excavatum
Hy. lusitanicum
Hy. marginatum
R. annulatus
R. bursa
R. sanguineus
R. sanguineus s.l.
R. turanicus
H. parva
H. punctata
H. sulcata
D. marginatus
D. reticulatus
I. gibbosus
I. persulcatus
I. ricinus


A
BORRELIA DISTRIBUTION
A1
A2
© EuroGeographics for the administrative boundaries
(A1) Borrelia species
None
1 - 3
4 - 6
7 - 9
10 - 11
14
(A2) Borrelia groups
None
Lyme Disease (LD)
Relapsing Fever (RF)
LD + RF
Reptile-associated clade


B
BORRELIA IN HOSTS
Borrelia sp.
B. spielmanii
B. persica
B. miyamotoi
B. lusitaniae
B. hispanica
B. hermsii
B. garinii
B. burgdorferi s.s.
B. burgdorferi s.l.
B. bissetiae
B. bavariensis
B. americana
B. afzelii
Pathogen species
0
5
10
15
20
25
30
Number of detections
Host order (nº species)
Artiodactyla (8)
Carnivora (3)
Eulipotyphla (7)
Human (1)
Passeriformes (1)
Perissodactyla (1)
Rodentia (9)
Squamata (1)
Struthioniformes (1)


C
BORRELIA IN TICKS
Hyalomma
Rhipicephalus
Argas / Ornithodoros
Haemaphysalis
Dermacentor
Ixodes
Number of detections
Pathogen species
af
bsl
tuc
bss
ga
sp.
tur
lu
mi
am
ba
bi
cal
car
fi
la
spi
tud
va
Tick species
Hy. aegyptium
Hy. anatolicum
Hy. lusitanicum
Hy. marginatum
R. annulatus
R. bursa
R. sanguineus s.l.
R. turanicus
A. vespertilionis
O. maritimus
H. concinna
H. inermis
H. punctata
D. marginatus
D. reticulatus
I. arboricola
I. ariadnae
I. canisuga
I. frontalis
I. hexagonus
I. inopinatus
I. kaiseri
I. persulcatus
I. ricinus
I. ricinus complex
I. simplex
I. ventalloi
I. vespertilionis

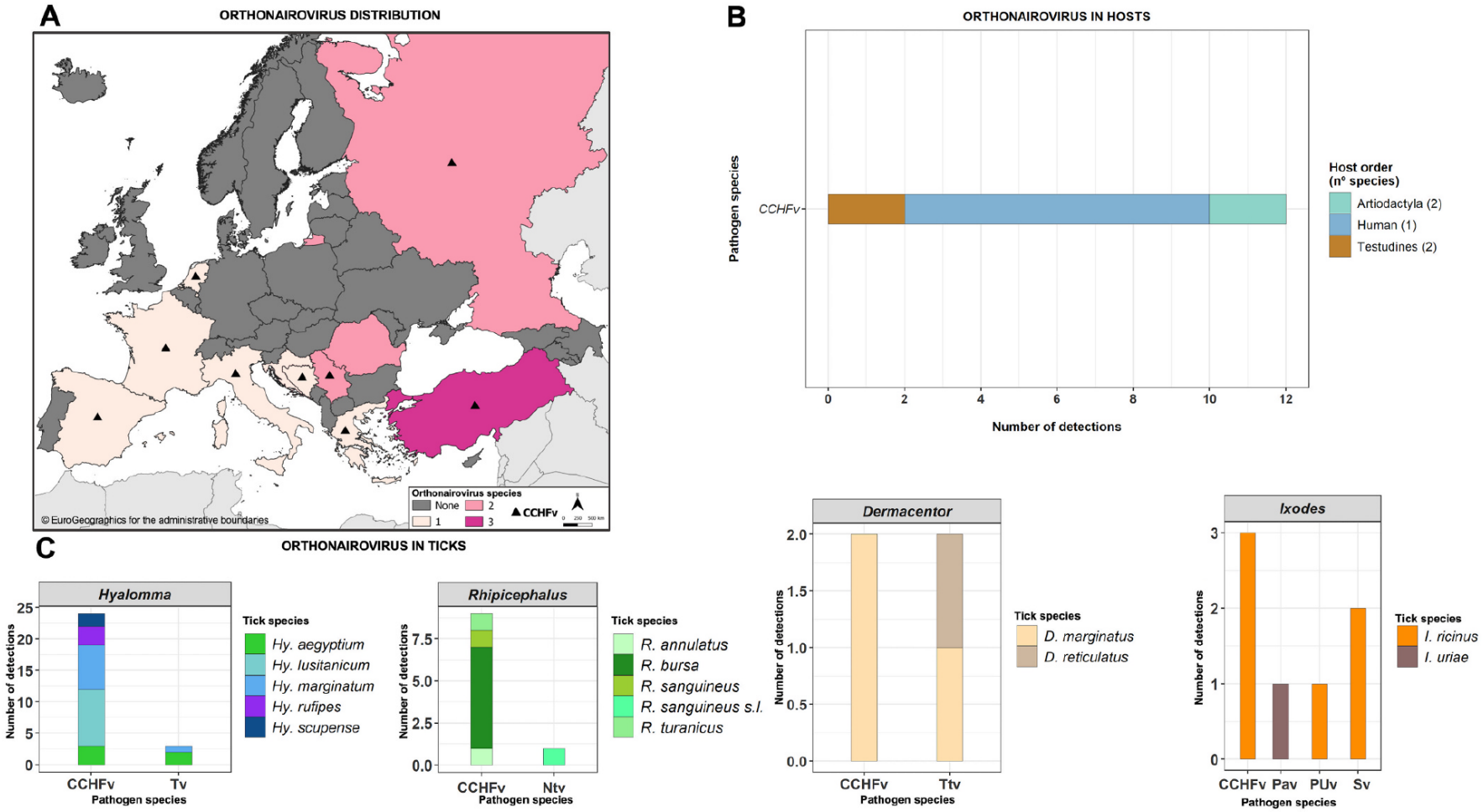


Fig. 9. A) Distribution of *Orthonairovirus* species in Europe. B) Host orders in which the different *Orthonairovirus* species have been described. C) Tick species in which the following *Orthonairovirus* species were reported: Crimean-Congo hemorrhagic fever virus (CCHFv), Nàyǔn tick nairovirus (Ntv), Paramushir virus (Pav), Pustyn virus (PUv), Sulina virus (Sv), Tacheng tick virus (Ttv), and Tamdy virus (Tv).

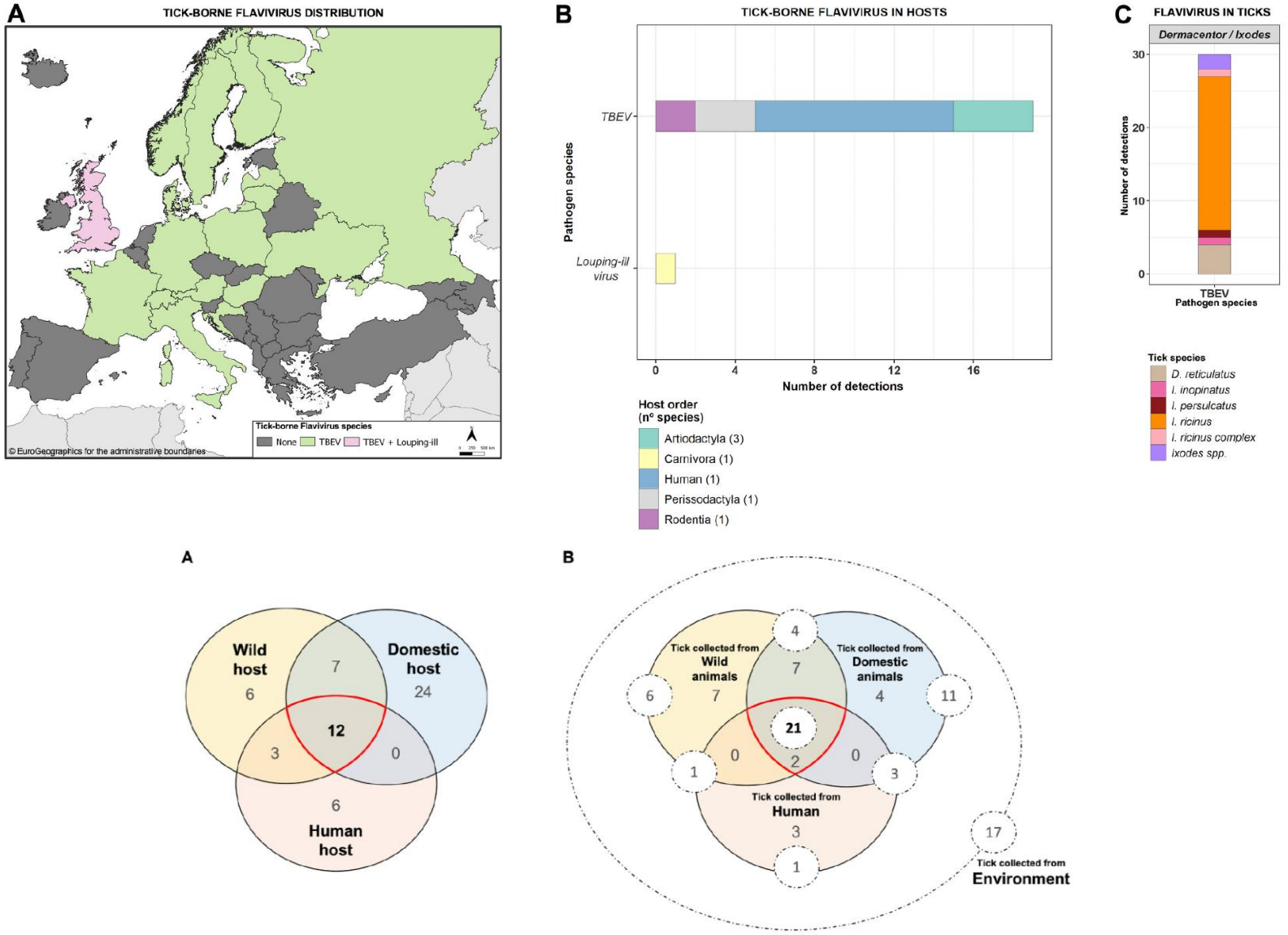
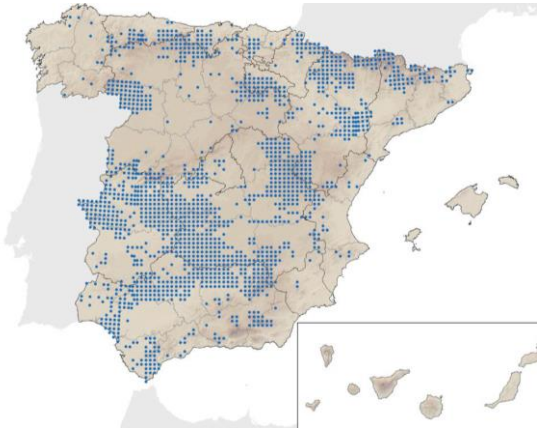
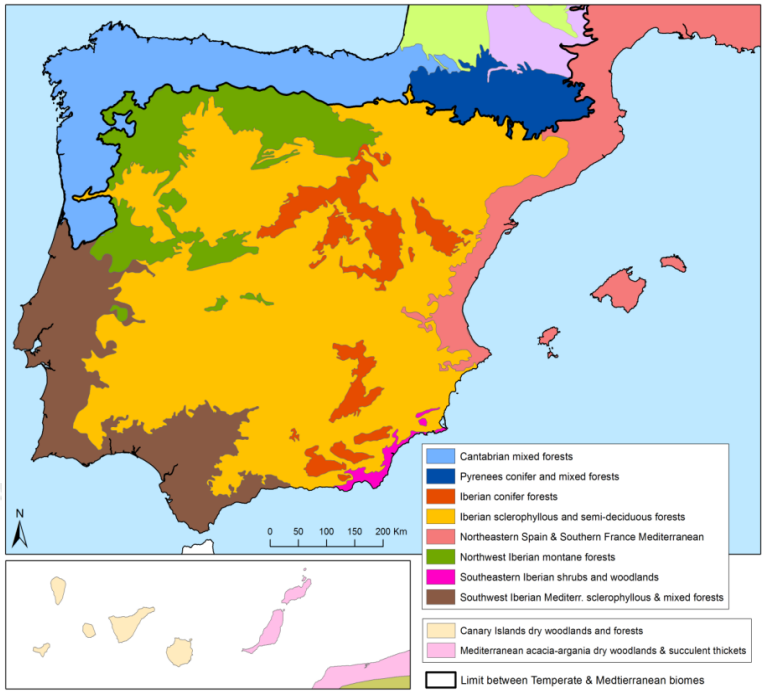
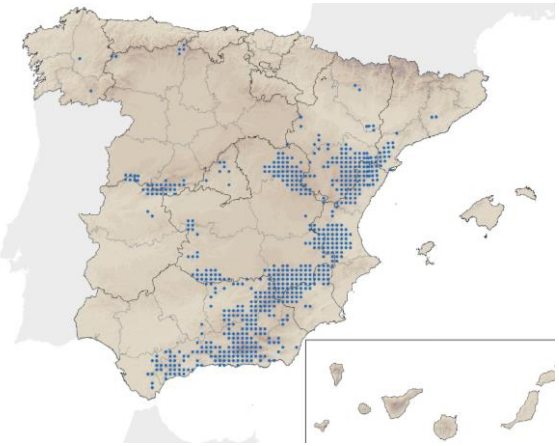


Fig. 10. A) Venn diagram of tick-borne pathogens interface reported in domestic/wild animals and humans. **B)** Venn diagram of tick-borne pathogens interface reported in ticks collected from domestic/wild animals, humans, and environment. "*Candidatus* Rickettsia species" and unclassified *Orthonairovirus* species were included in both analyses.



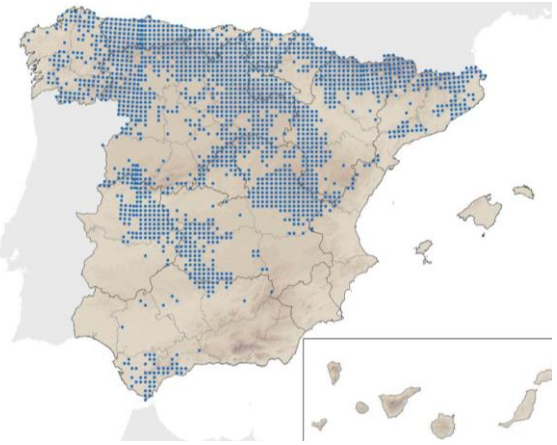
Cervus elaphus



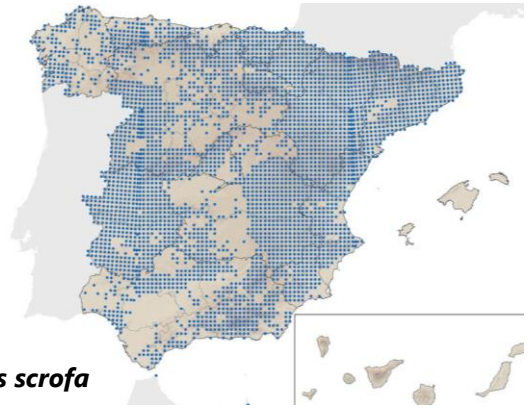


Capra pyrenaica

Dama dama



Capreolus capreolus



Sus scrofa

PID2021-126996OA-I00. Epidemiología del CCHFV en la ecorregión mediterránea del NE Peninsular. **Proyectos de generación de conocimiento. Plan Estatal de Investigación Científica 2021-2023.**

2023 CLIMA 00103. Understanding the impacts of climate change on vectors and vector-borne diseases in Catalonia: West Nile fever and tick-borne diseases. **Convocatòria AGAUR "Ajuts per finançar projectes de recerca per a la mitigació i adaptació al canvi climàtic".**

O1. Description of tick species distribution.

O2. Characterization of circulating CCHFV in Catalonia (North-Eastern Spain Mediterranean Ecological region). Risk factors.

O3. Use of NGS for TBP surveillance. Risk factors

PID2021-126996OA-I00. Epidemiología del CCHFV en la ecorregión mediterránea del NE Peninsular. **Proyectos de generación de conocimiento. Plan Estatal de Investigación Científica 2021-2023.**

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O1. Description of tick species distribution.

Description of the tick species and tick-borne diseases in Catalonia 2023_2024.

Reserves Nacionals de Caça

- Freser-Setcases
- Cerdanya-Cadí
- Vall de Boí
- Boumort
- Alt Pallars
- Ports de Tortosa i Beseit

Centres logístics i de processament de carn de caça

- Vedat Pirineus S.L. (Sort i Solsona)
- Càrniques Llorà S.L. (Hostalets de Balenyà)
- Senglars Girona S.L. (Fornells de la Selva)

Empreses de gestió de fauna urbana

- Estrateko S.L. (Barcelona)

Centres de Recuperació de Fauna Salvatge

- Torreferrussa
- Aiguamolls de l'Empordà

Ornitòlegs

Ambiental

Description of the tick species and tick-borne diseases in Catalonia oct'2023_feb'2024.

Reserves Nacionals de Caça

- Freser-Setcases
- Cerdanya-Cadí
- Vall de Boí
- Boumort
- Alt Pallars
- Ports de Tortosa i Beseit

Centres logístics i de processament de carn de caça

- Vedat Pirineus S.L. (Sort i Solsona)
- Càrniques Llorà S.L. (Hostalets de Balenyà)
- Senglars Girona S.L. (Fornells de la Selva)

Empreses de gestió de fauna urbana

- Estrateko S.L. (Barcelona)

Centres de Recuperació de Fauna Salvatge

- Torreferrussa
- Aiguamolls de l'Empordà

Ornitòlegs

Ambiental: 1.988 paparres


31


48


65

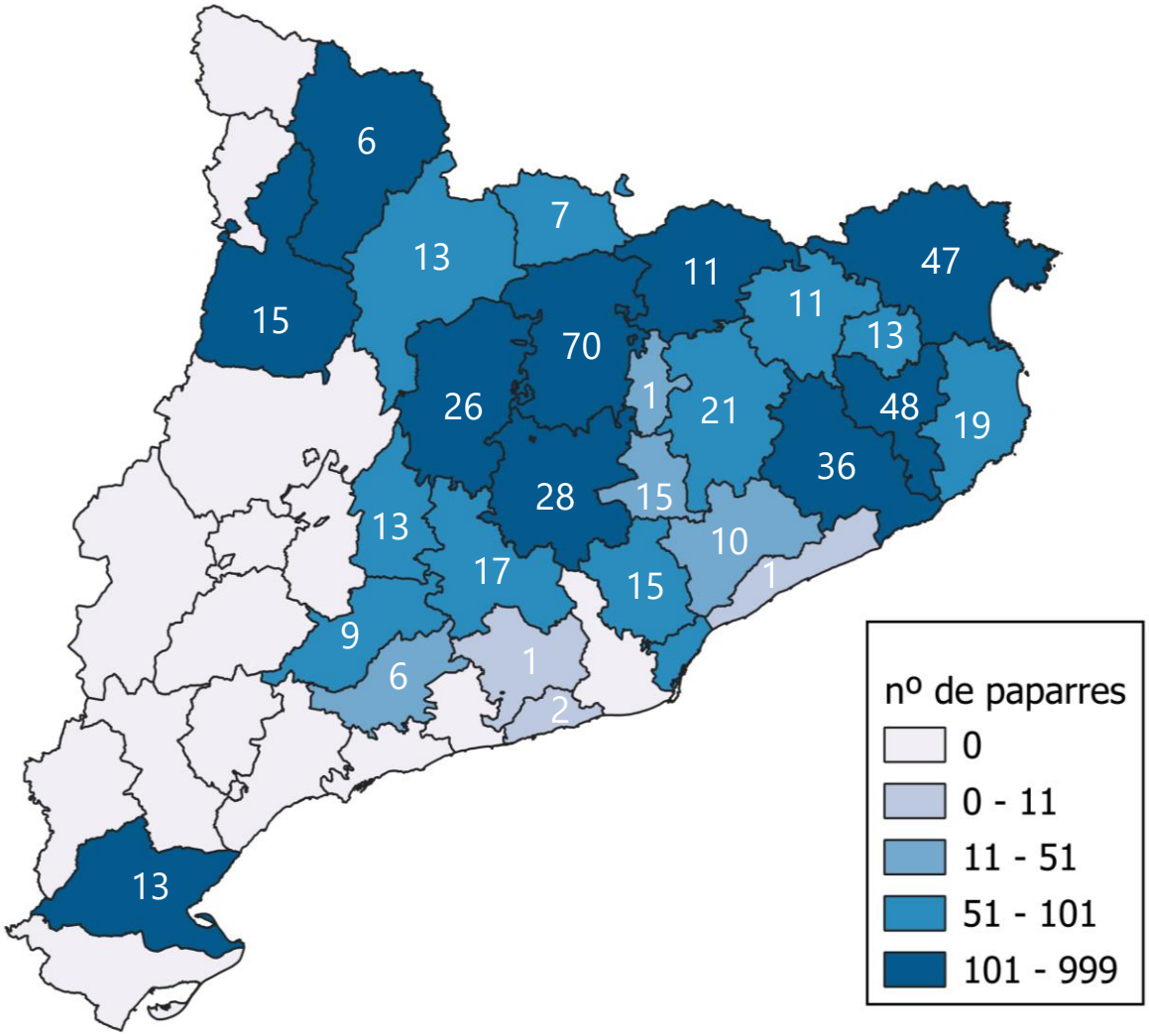

58

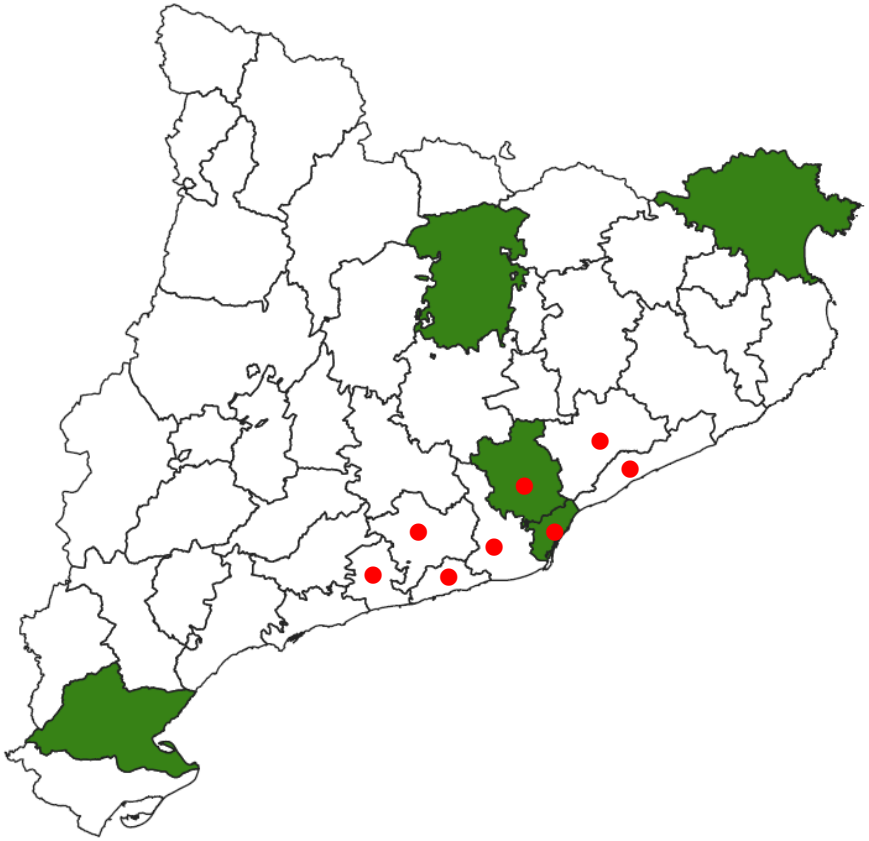

406

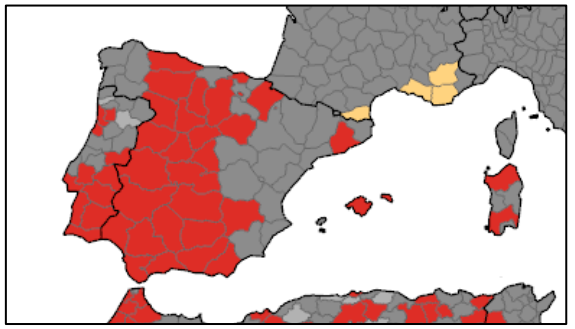

31

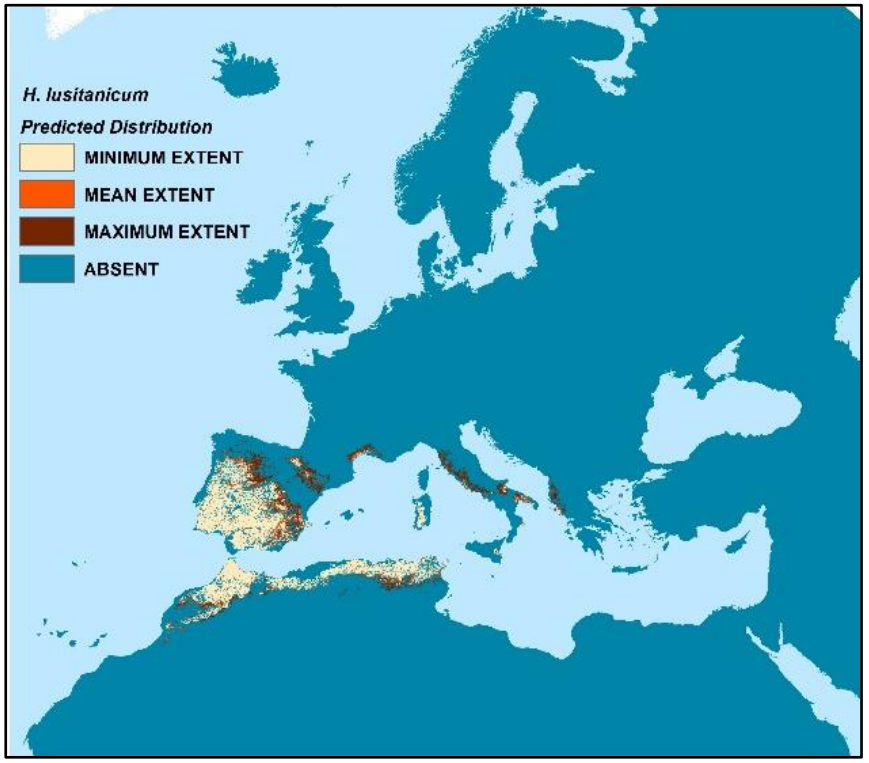

109

3.661	*Hy.lus.*	*Hy.mar.*	*Ix.ric.*	*Rip.bur.*	*Altres*		*Hy.lus.*	*Hy.mar.*	*Ix.ric.*	*Rip.bur.*	*Altres*
Alt Camp					21	**Gironès**		1		1	297
Alt Empordà	40	4	11	25	139	**Lluçanès**					19
Alt Penedès					2	**Maresme**					2
Alt Urgell			3	5	58	**Moianès**			18	1	27
Anoia			1		70	**Osona**			17		61
Bages		7	2	12	185	**Pallars**				3	
Baix Ebre	11	57		255	42	**Pallars Jussà**			1	97	21
Baix Empordà				1	70	**Pallars Sobirà**			71	245	199
Barcelonès	39				19	**Pla de l'Estany**			5		54
Berguedà	9		28	110	330	**Ripollès**			143	1	55
Cerdanya			33		58	**Segarra**					71
Conca de Barberà			6		53	**Selva**				1	245
Garraf					5	**Solsonès**			28	3	127
Garrotxa			3		56	**Vallès Occidental**	24		9		45

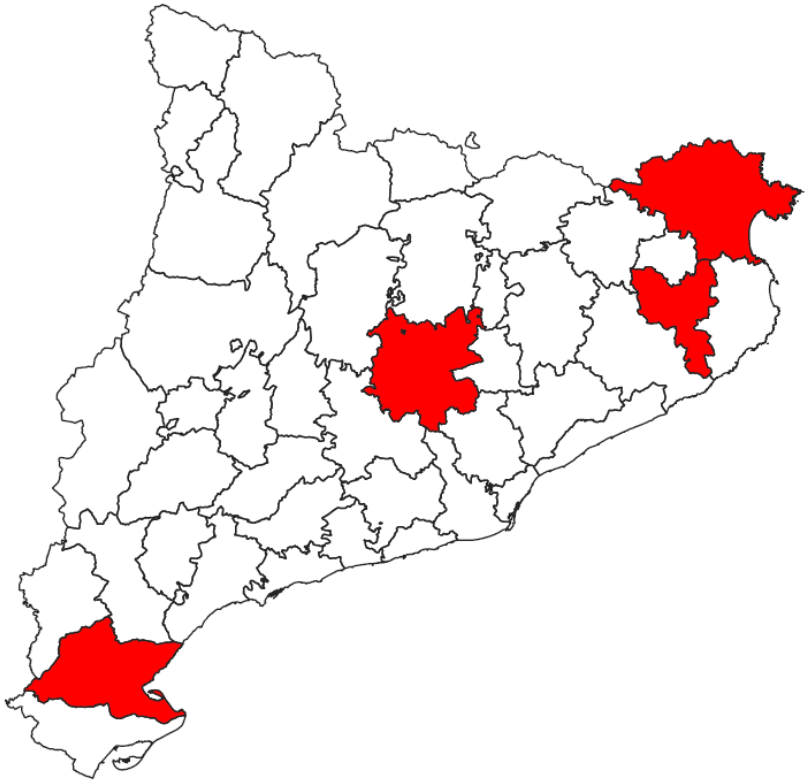

6
13
7
11
47
15
70
11
13
26
1
21
48
19
36
28
15
13
10
17
15
1
9
6
1
2
13
nº de paparres
0
0 - 11
11 - 51
51 - 101
101 - 999

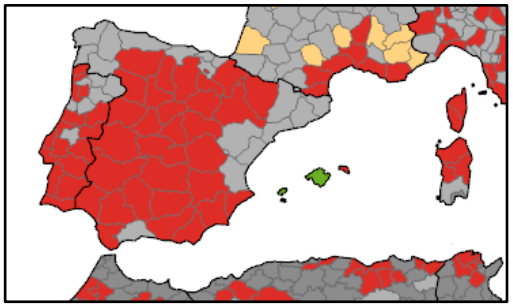


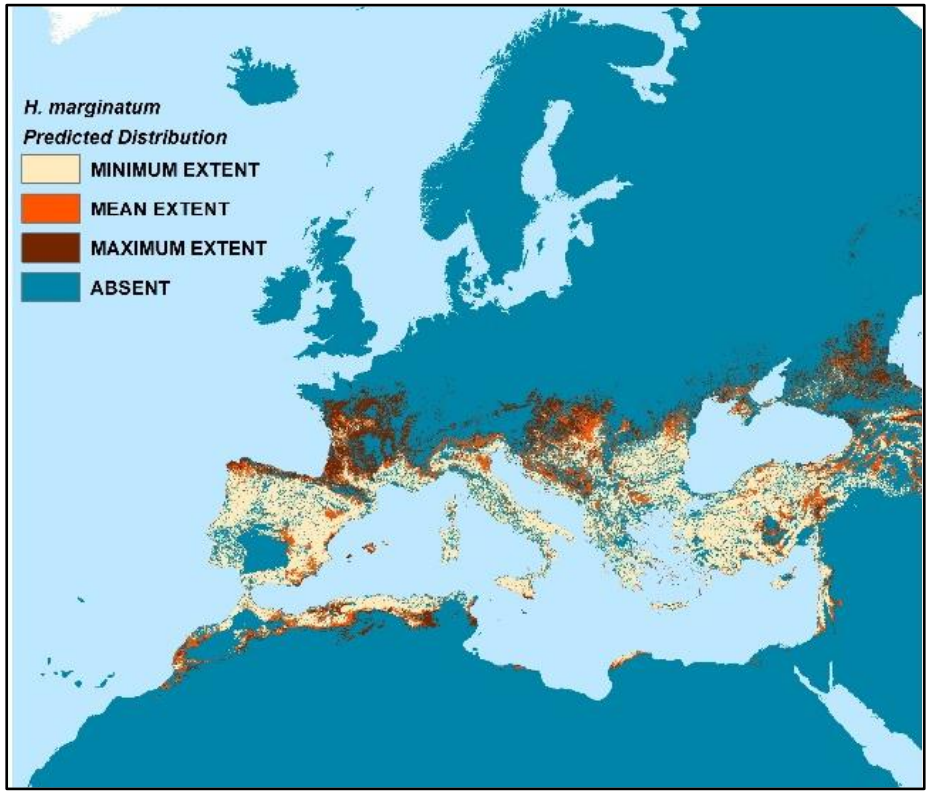




H. lusitanicum







H. marginatum

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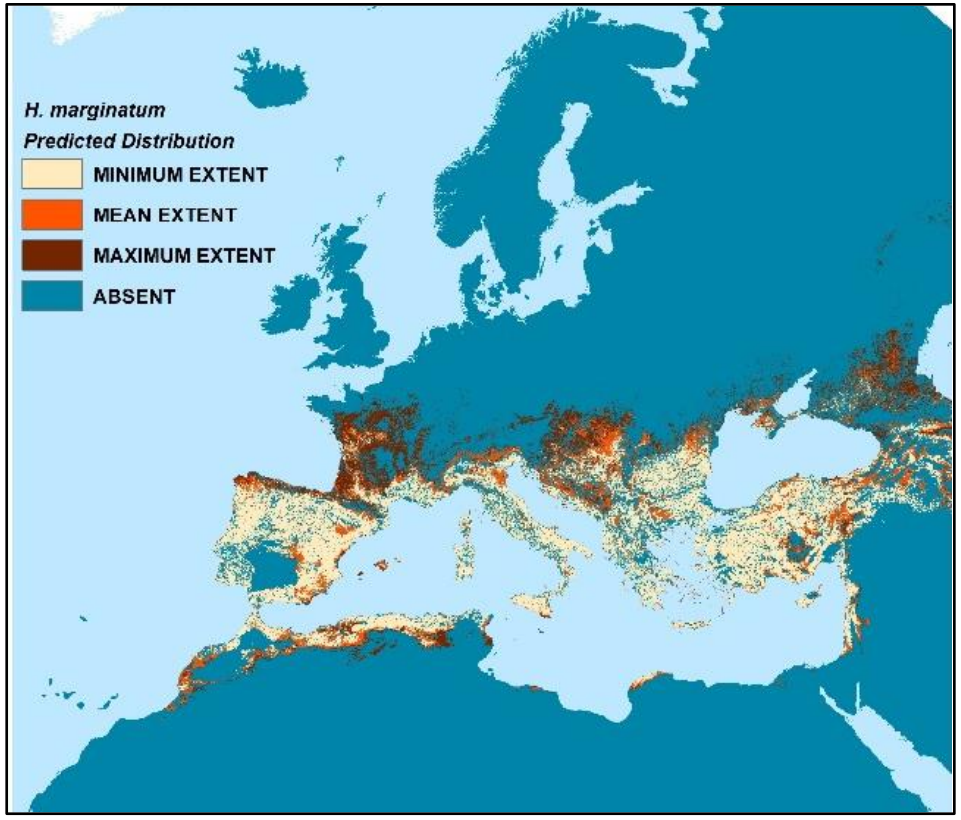
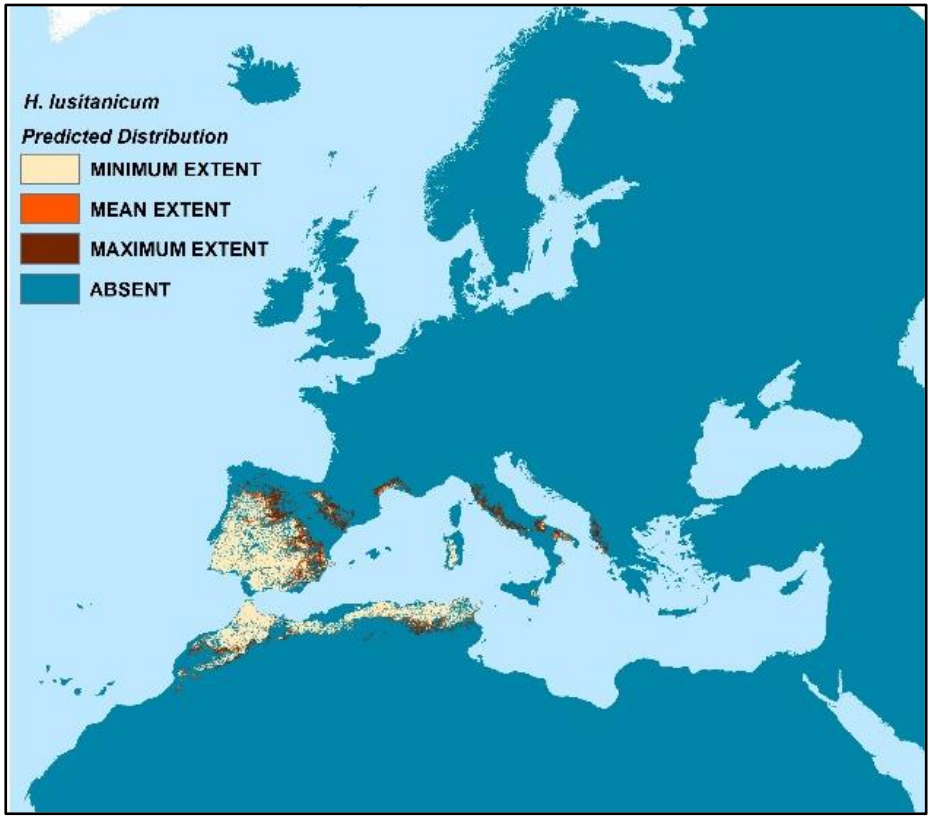
O1. Description of tick species distribution.

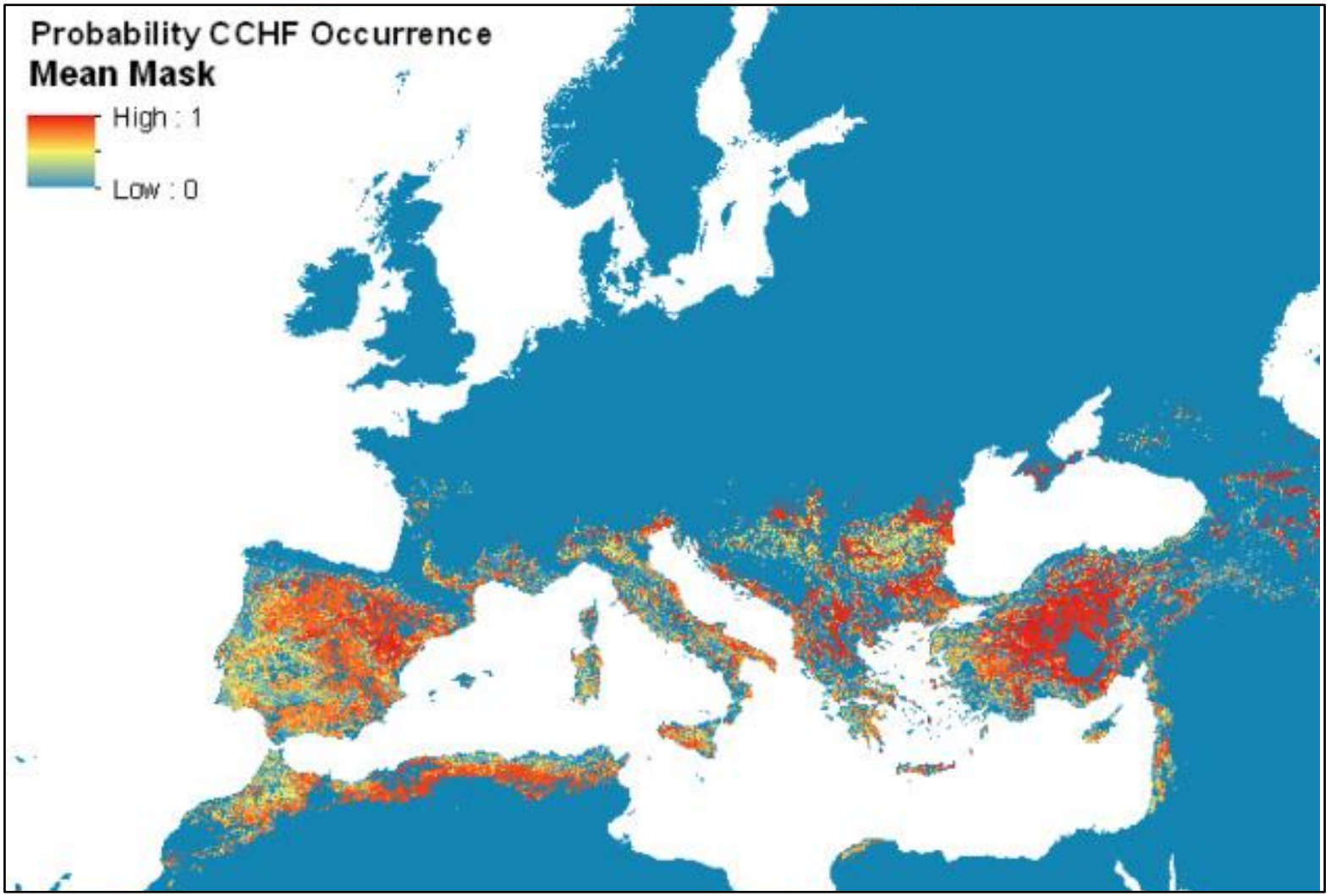
O2. Characterization of circulating CCHFV in Catalonia (North-Eastern Spain Mediterranean Ecological region).

(ECDC, 2024) Predicted vector distribution maps



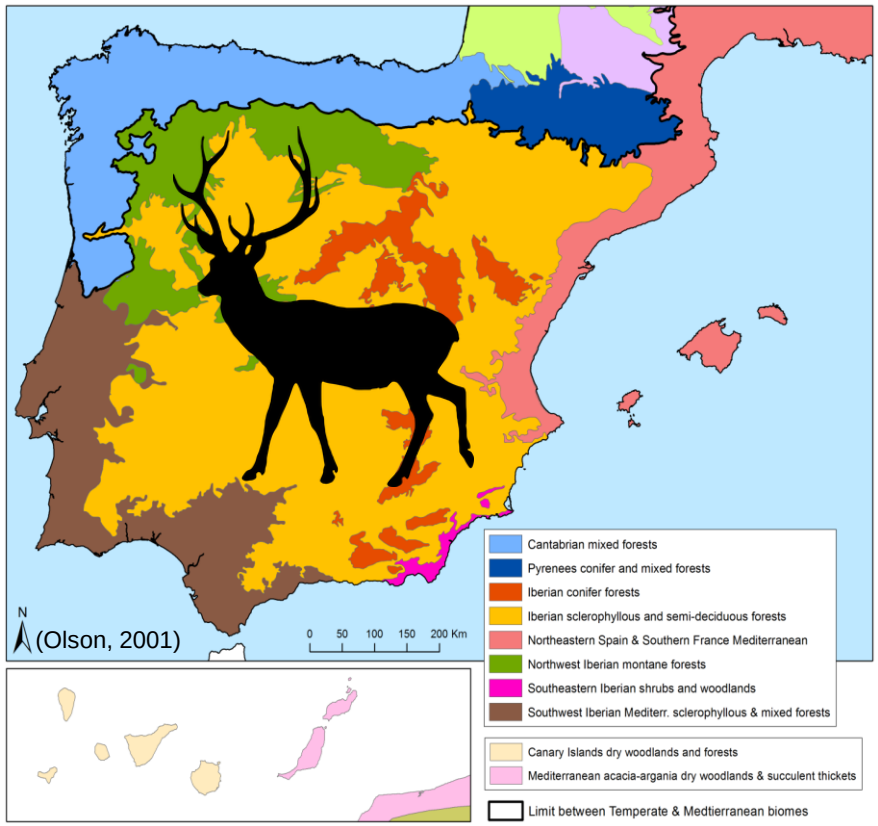


(ECDC, 2024) Predict ecological suitability autochthonous human CCHF



South and western Spain

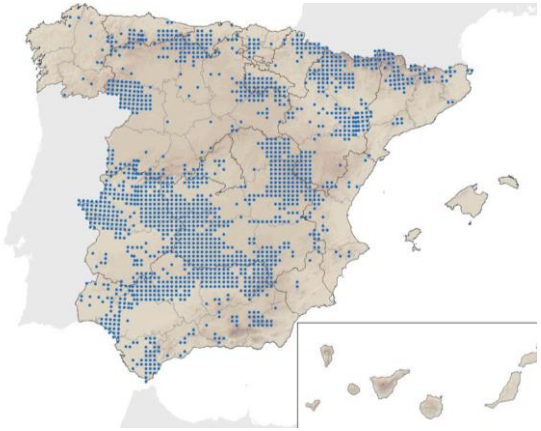
- CCHFV positivity (PCR) mostly in ***H. lusitanicum***
- CCHFV endemic in wild ungulates (red deer)
- **Red deer is an indicator of CCHFV risk**



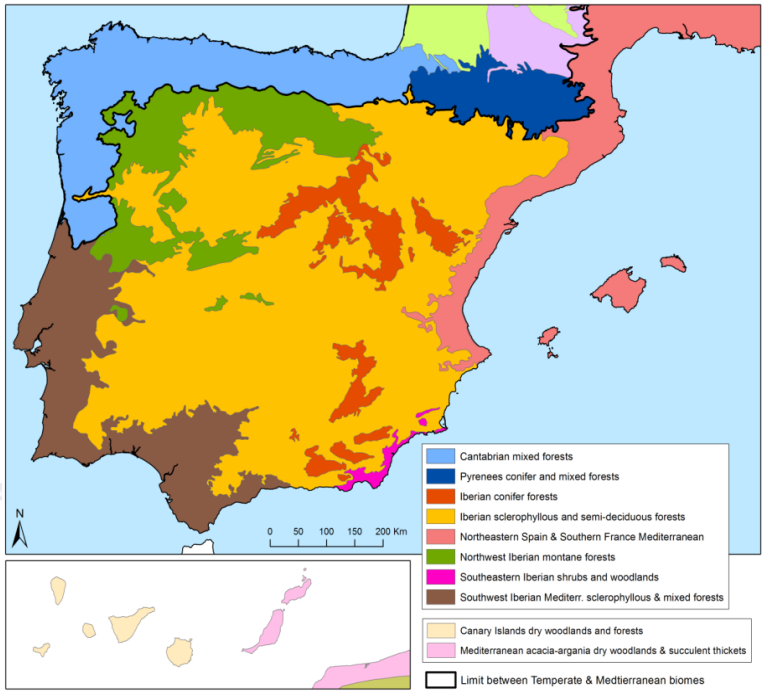
NE-Spain Mediterranean ecoregion

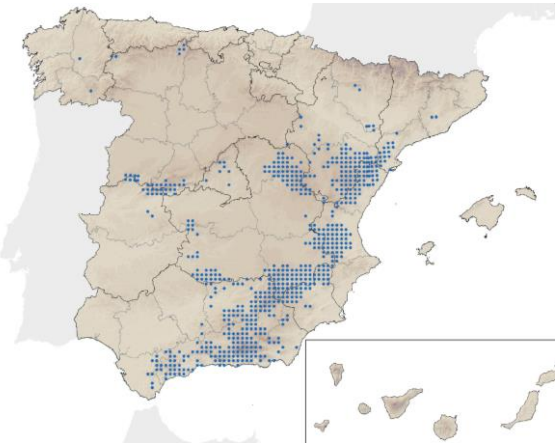
Different ecological region → deer low abundance

- Distribution of ticks UNKNOWN
- No CCHF human cases detected
- CCHFV circulation in wild or domestic animals UNKNOWN



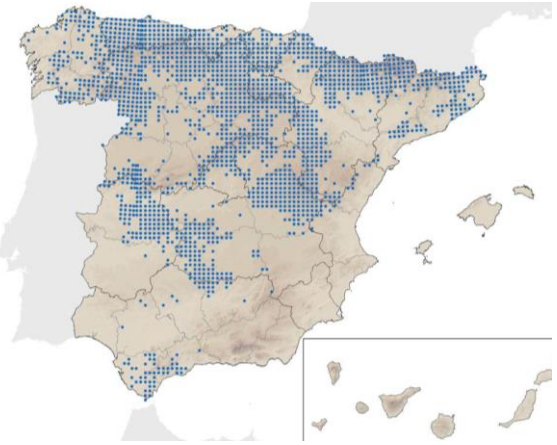
Cervus elaphus



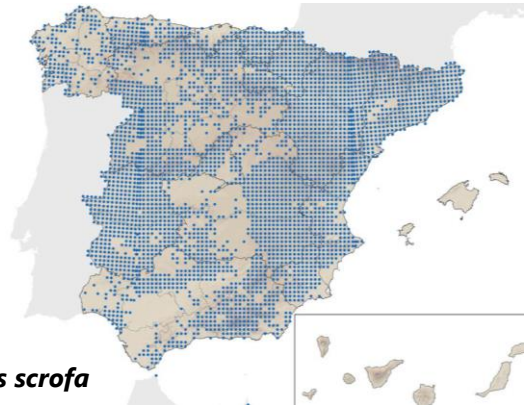


Capra pyrenaica

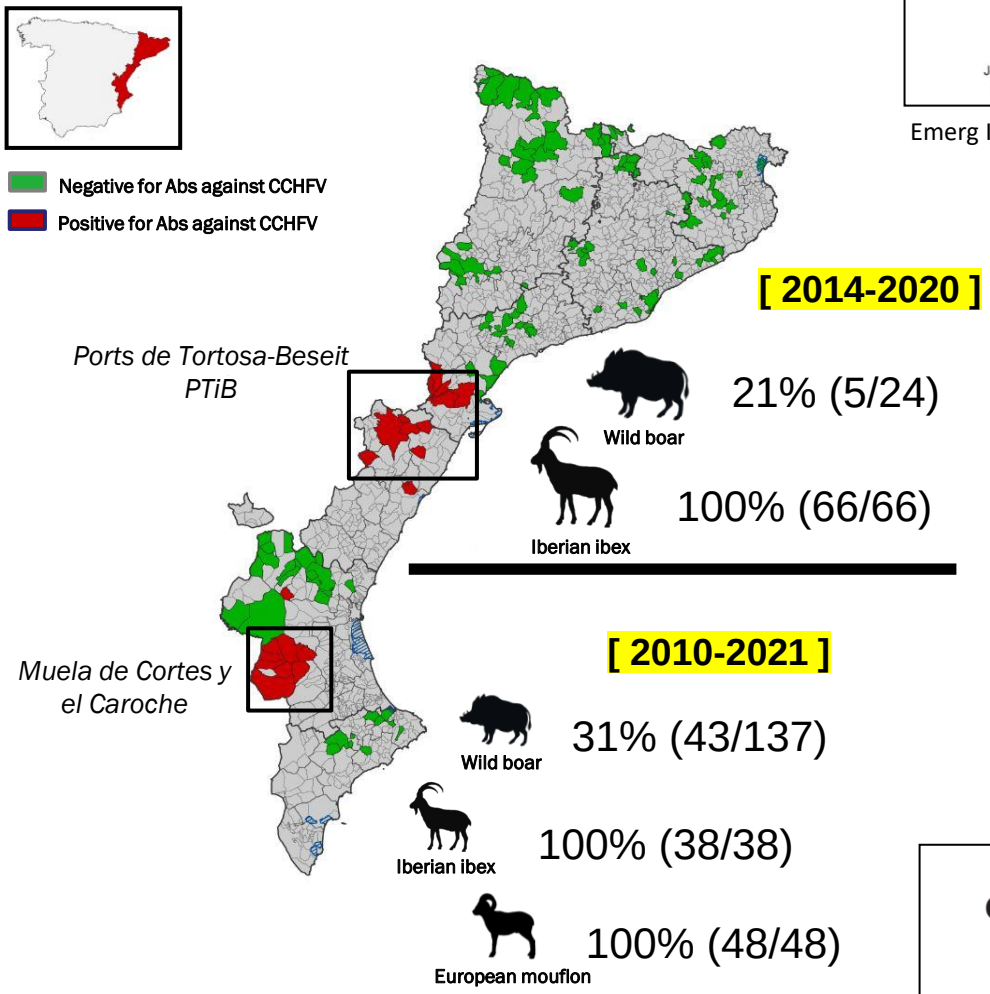
Dama dama



Capreolus capreolus



Sus scrofa



Hotspot of Crimean-Congo Hemorrhagic Fever Virus Seropositivity in Wildlife, Northeastern Spain

Johan Espunyes, Oscar Cabezón, Lola Pailler-García, Andrea Dias-Alves, Lourdes Lobato-Bailón, Ignasi Marco, María P. Ribas, Pedro E. Encinosa-Guzmán, Marta Valldeperes, Sebastian Napp

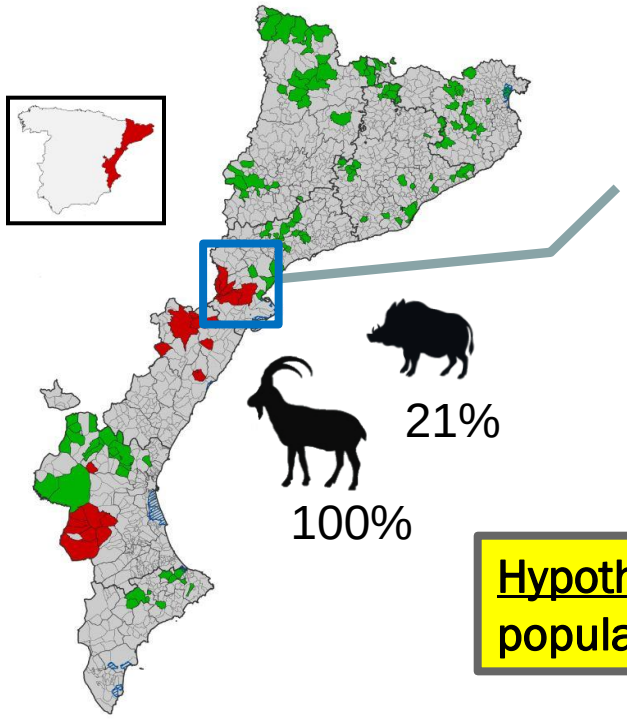
Emerg Infect Dis (2021) 27:2480-2484

Species	Total Seroprevalence
Red deer *Cervus elaphus*	0 % (0/174)
Iberian ibex *Capra pyrenaica*	89 % (187/210)
Roe deer *Capreolus capreolus*	1.3% (1/79)
European rabbit *Oryctolagus cuniculus*	0 % (0/35)
Wild boar *Sus scrofa*	12.5 % (56/448)
Fallow deer *Dama dama*	0 % (0/4)
European Mouflon *Ovis aries*	100% (48/48)

Evidence of Prolonged Crimean-Congo Hemorrhagic Fever Virus Endemicity by Retrospective Serosurvey, Eastern Spain

Laura Carrera-Faja, Jesús Cardells, Lola Pailler-García, Víctor Lizana, Gemma Alfaro-Deval, Johan Espunyes, Sebastian Napp,[1] Oscar Cabezón[1]

Emerg Infect Dis (2022) 28:1031-1034



2014:
Sarcoptic mange
(*Sarcoptes scabei*)
epidemics en Iberian ibex

2021:
Population decline **>85% !!**

Hypothesis: Is there any relationship between the Iberian ibex population decline and CCHFV circulation?

Multi-year retrospective serological study:
Evaluation in parallel of CCHFV seroprevalence and densities of Iberian ibex and wild boar (2009–2022)

One Health 17 (2023) 100622

Contents lists available at ScienceDirect

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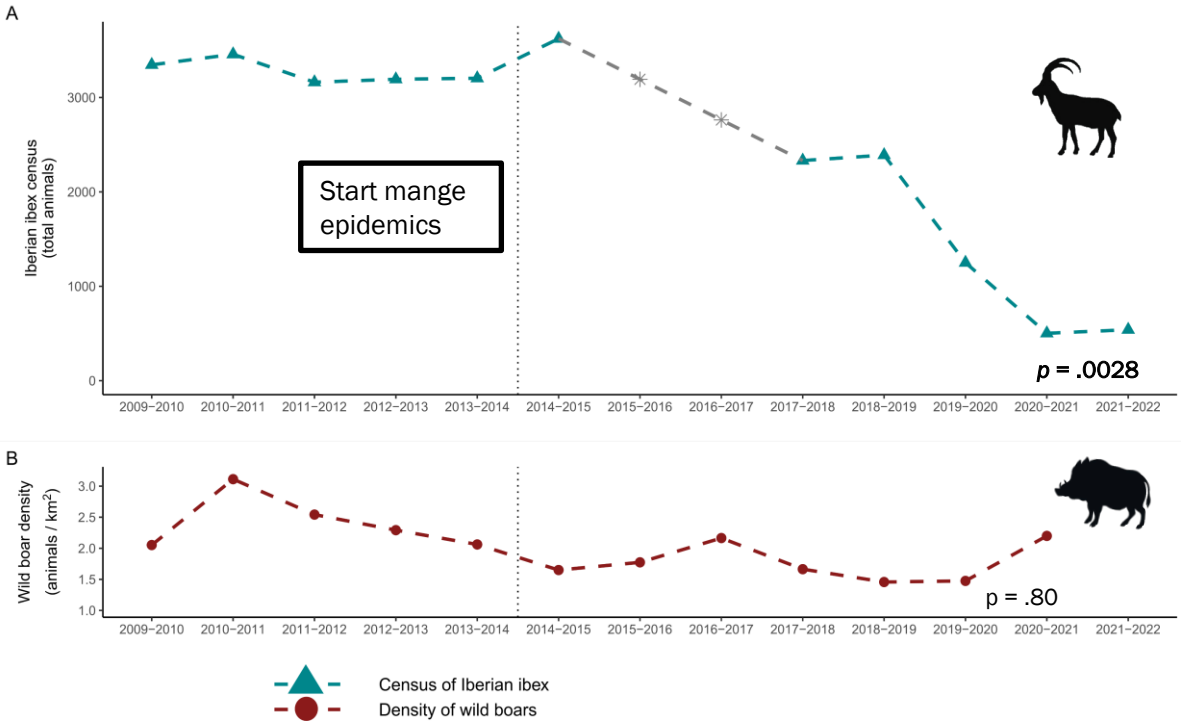
journal homepage: www.elsevier.com/locate/onehlt

Dynamics of Crimean-Congo hemorrhagic fever virus in two wild ungulate hosts during a disease-induced population collapse

Laura Carrera-Faja[a], Johan Espunyes[a], Jesús Cardells[b], Xavier Fernández Aguilar[a], Lola Pailler-García[c,d], Sebastian Napp[c,d,e], Oscar Cabezón[a,c]



One Health 17 (2023) 100622

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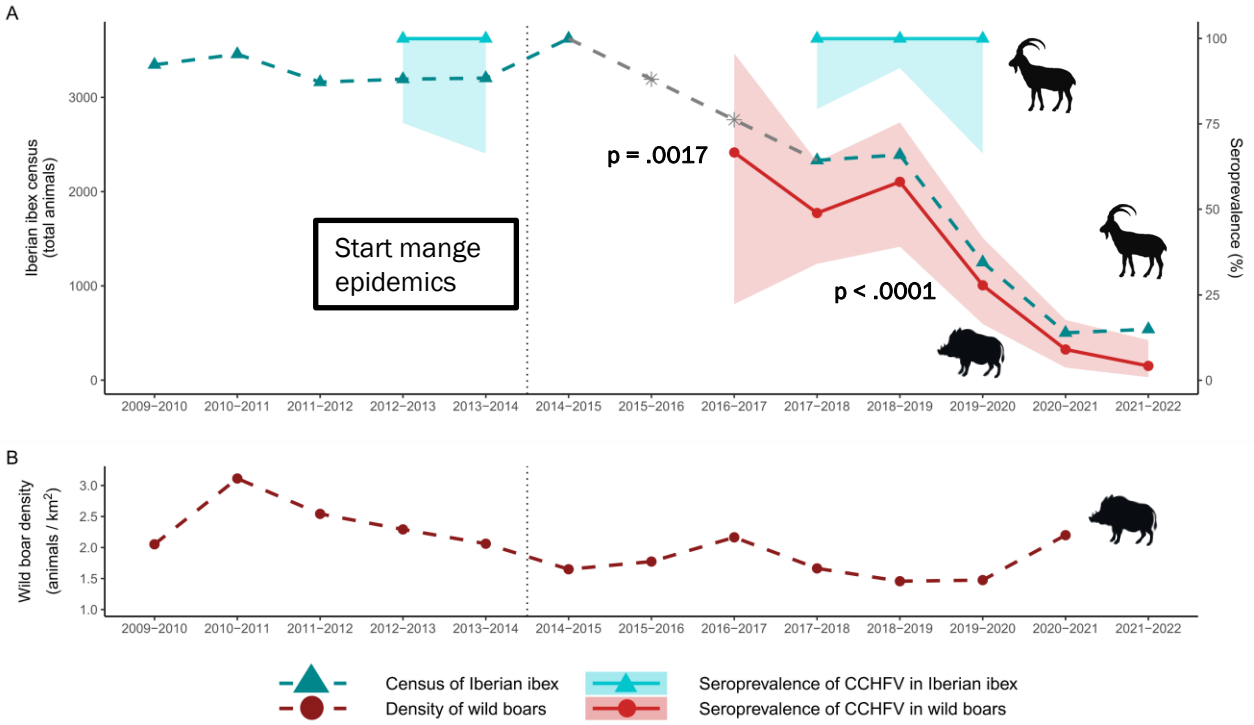

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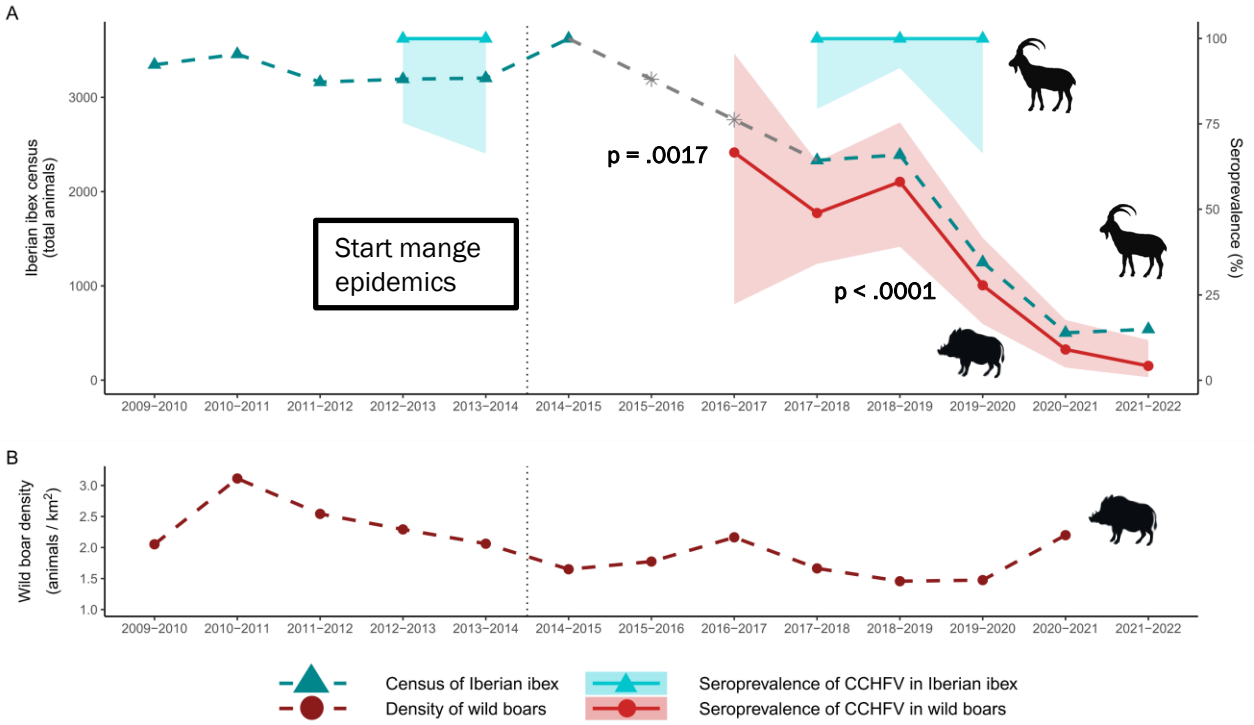
Correlation between reduction of Iberian ibex and decrease of seroprevalence in wild boar suggests a common CCHFV transmission cycle.



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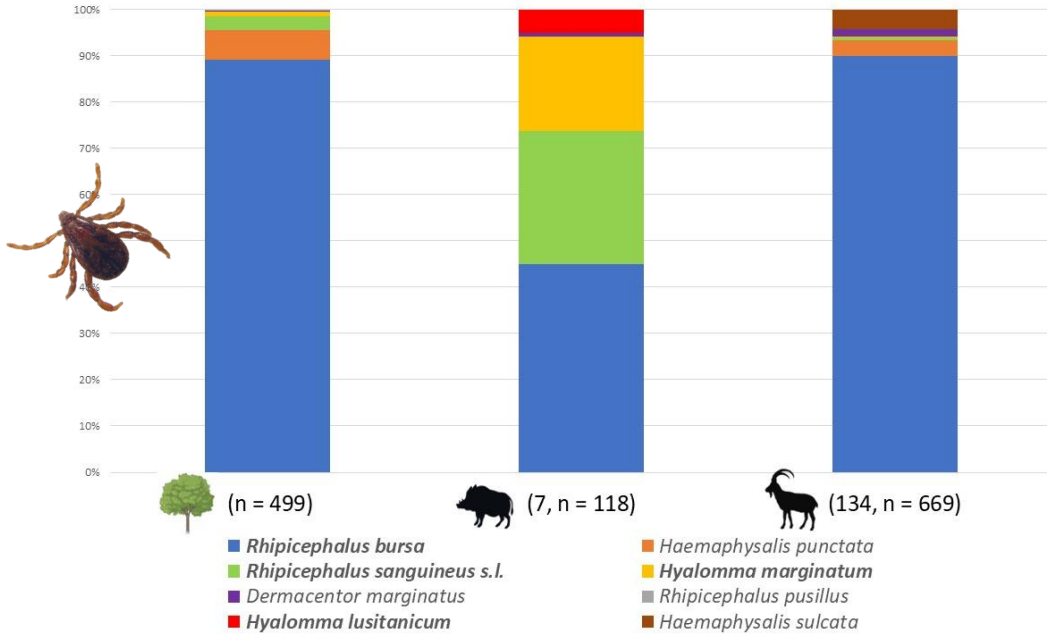

			*
Rhipicephalus bursa	89%	45%	90%
Rhipicephalus sanguineus s.l.	3%	29%	1%
Hyalomma marginatum	1%	20%	0%
Hyalomma lusitanicum	0%	5%	0%
Other spp.	7%	6%	9%

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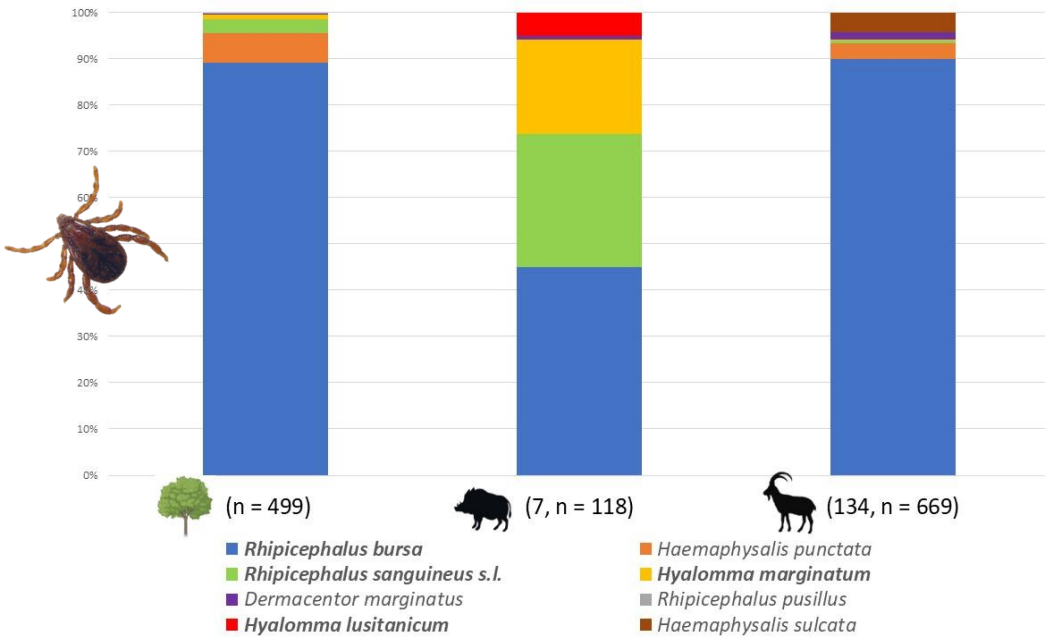
Hypothesis: role of *Rhipicephalus bursa* in CCHFV transmission in NE-Spain Mediterranean ecoregion.



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CCHFV ?

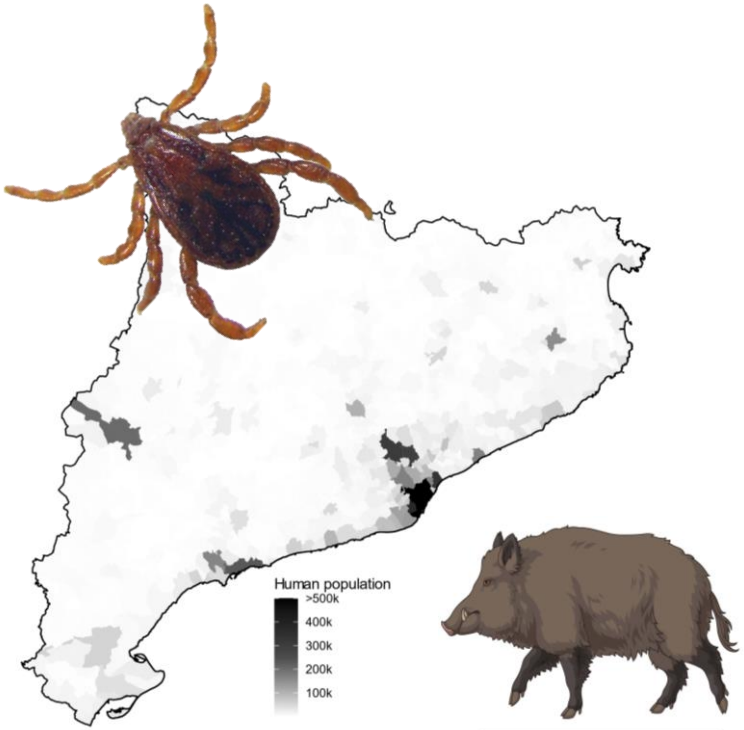
PID2021-126996OA-I00. Epidemiología del CCHFV en la ecorregión mediterránea del NE Peninsular. **Proyectos de generación de conocimiento. Plan Estatal de Investigación Científica 2021-2023.**

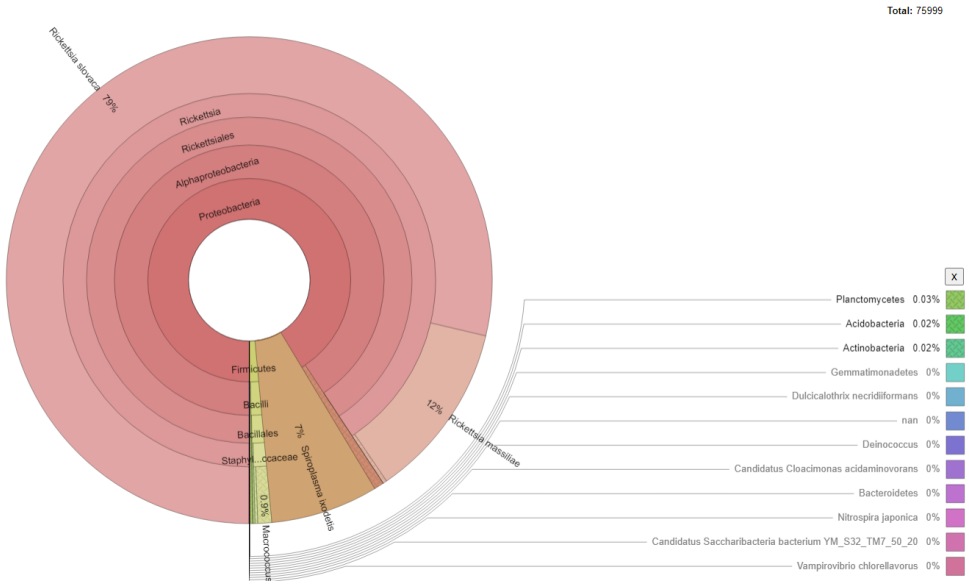
2023 CLIMA 00103. Understanding the impacts of climate change on vectors and vector-borne diseases in Catalonia: West Nile fever and tick-borne diseases. **Convocatòria AGAUR "Ajuts per finançar projectes de recerca per a la mitigació i adaptació al canvi climàtic".**

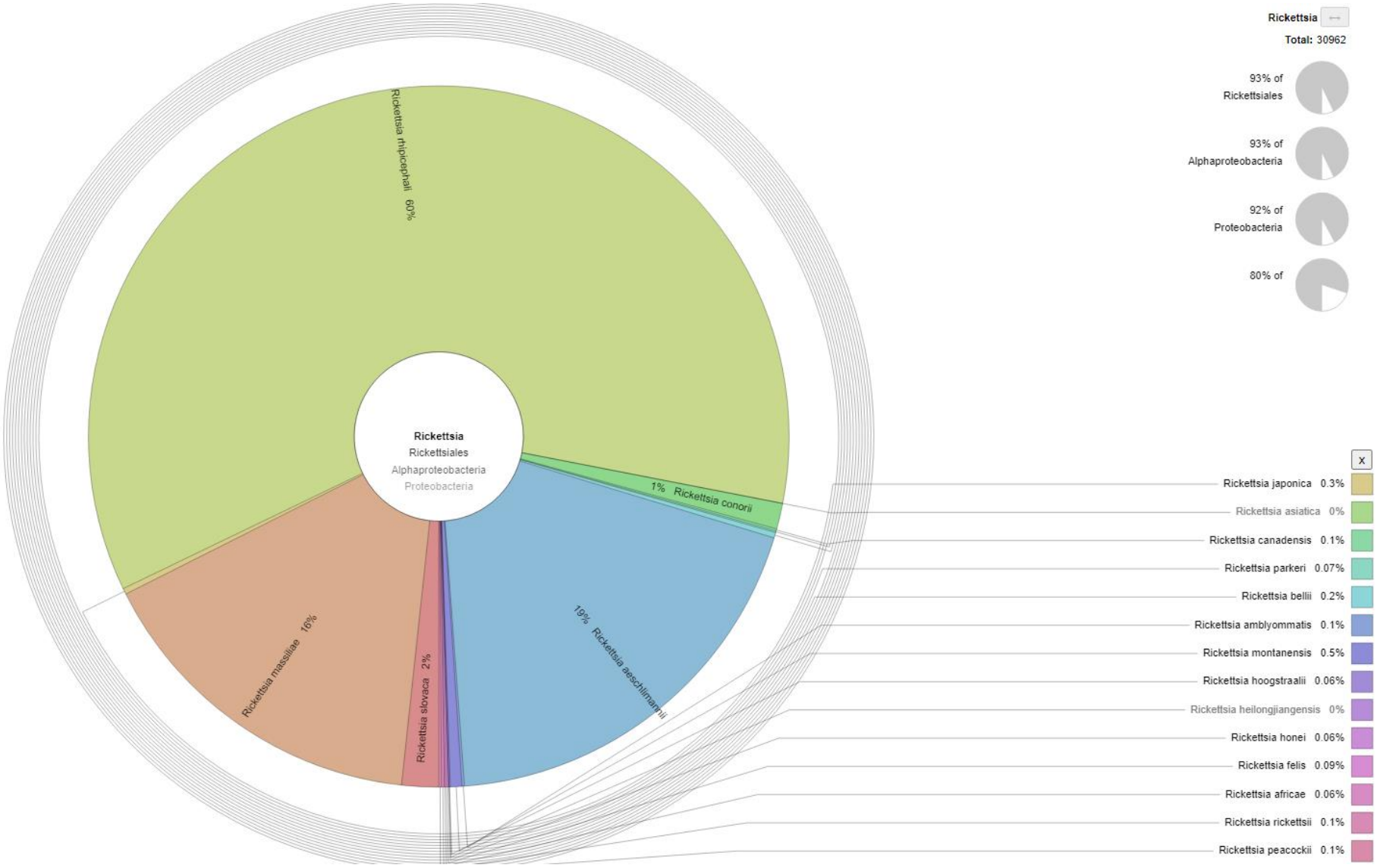
O1. Description of tick species distribution.

O2. Characterization of circulating CCHFV in Catalonia (North-Eastern Spain Mediterranean Ecological region).

O3. Use of NGS for TBP surveillance.


Human population
>500k
400k
300k
200k
100k


Total: 75999
Rickettsia slovaca 79%
Rickettsia
Rickettsiales
Alphaproteobacteria
Proteobacteria
Firmicutes
Bacilli
Bacillales
Staphyl...ccaceae
7% Spiroplasma ixodetis
0.9% Macrococcus
12% Rickettsia massiliae
Planctomycetes 0.03%
Acidobacteria 0.02%
Actinobacteria 0.02%
Gemmatimonadetes 0%
Dulcicalothrix necridiiformans 0%
nan 0%
Deinococcus 0%
Candidatus Cloacimonas acidaminovorans 0%
Bacteroidetes 0%
Nitrospira japonica 0%
Candidatus Saccharibacteria bacterium YM_S32_TM7_50_20 0%
Vampirovibrio chlorellavorus 0%


Rickettsia
Total: 30962
93% of Rickettsiales
93% of Alphaproteobacteria
92% of Proteobacteria
80% of
Rickettsia
Rickettsiales
Alphaproteobacteria
Proteobacteria
Rickettsia rhipicephali 60%
1% Rickettsia conorii
19% Rickettsia aeschlimannii
Rickettsia slovaca 2%
Rickettsia massiliae 16%
x
Rickettsia japonica 0.3%
Rickettsia asiatica 0%
Rickettsia canadensis 0.1%
Rickettsia parkeri 0.07%
Rickettsia bellii 0.2%
Rickettsia amblyommatis 0.1%
Rickettsia montanensis 0.5%
Rickettsia hoogstraalii 0.06%
Rickettsia heilongjiangensis 0%
Rickettsia honei 0.06%
Rickettsia felis 0.09%
Rickettsia africae 0.06%
Rickettsia rickettsii 0.1%
Rickettsia peacockii 0.1%

Futur - reptes

Organització
- One Health.
- Establiment Pla de Vigilància Sanitària (GenCat). NGS.

Coneixement
- Factors de risc. Estudis a petita escala.
- capacitat vectorial paparres / suscept hostes (infec. exp. – NBS3/4)

Gestió
- canvis ecosistèmics (zones urbanes incloses).
- educació ciutadania