SERIDA
Servicio Regional de Investigación y Desarrollo Agroalimentario

Programa de vigilancia de vectores en **Asturias** desde un enfoque "one health"

Alberto Espí Felgueroso

Gobierno del Principado de Asturias
Consejería de Salud

Gobierno del Principado de Asturias
Plan de Recuperación, Transformación y Resiliencia
Financiado por la Unión Europea NextGenerationEU

1 - GARRAPATAS

CRONOLOGÍA DE LOS ESTUDIOS EN ASTURIAS

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2010-11 SIERRA DEL SUEVE Trabajos preliminares

2012-14 **RTA 2011** 00008-CO2-01 Epidemiología de las Enfermedades transmitidas por **garrapatas** de interés en salud animal en dos zonas de norte de España

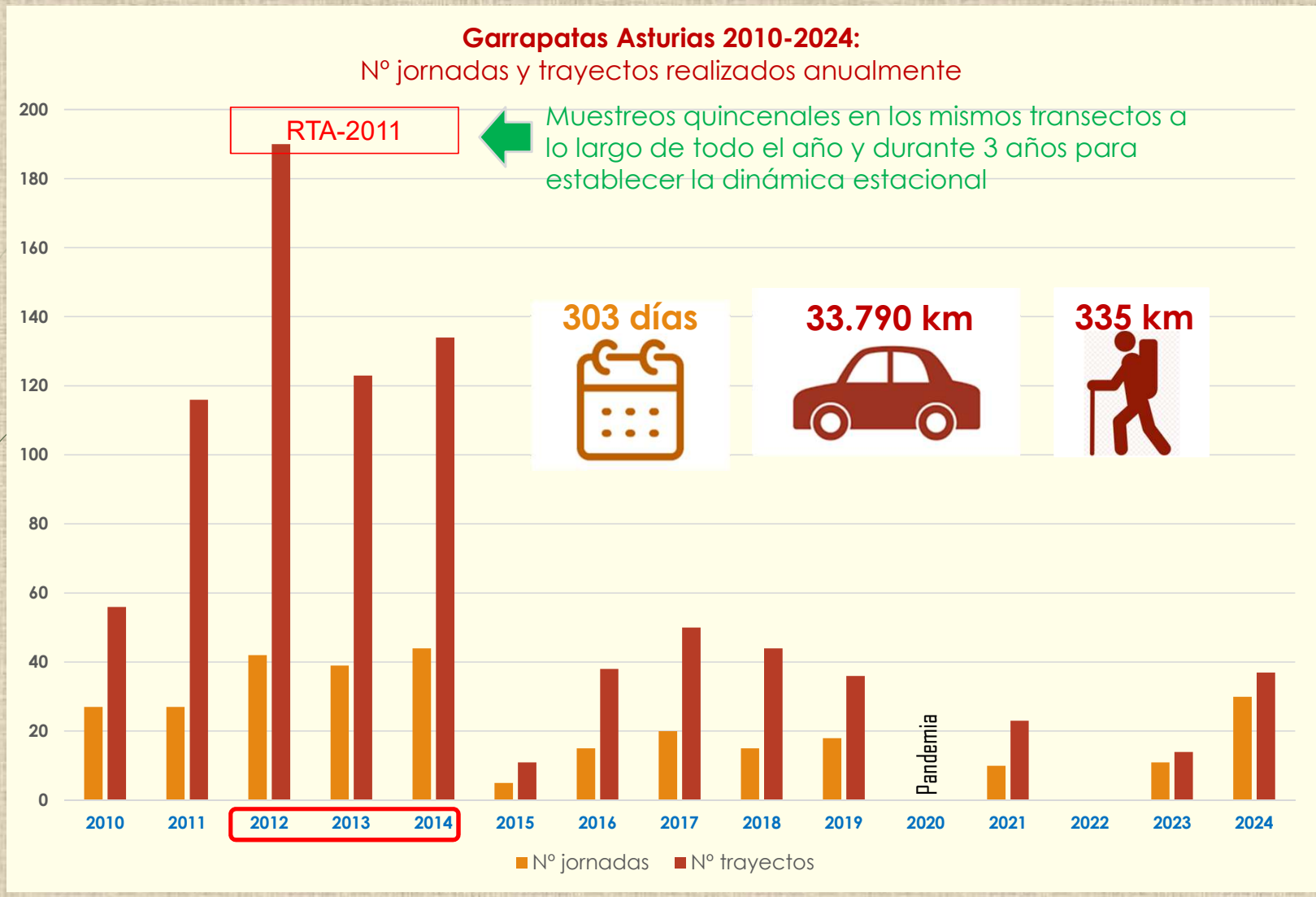
2015-17 **RTA 2013** 00013-CO4-04 Patogenia y control de **flavivirus**

2018-21 **RTA 2017** 00055-CO2-01 Investigación de la **fiebre Q** en Asturias

2024-26 **CONVENIO D.G. SALUD PÚBLICA** Vigilancia de **vectores** en Asturias

1.1.– GARRAPATAS EN VEGETACIÓN

Garrapatas Asturias 2010-2024:
Nº jornadas y trayectos realizados anualmente



TOTAL

2.810 adultos

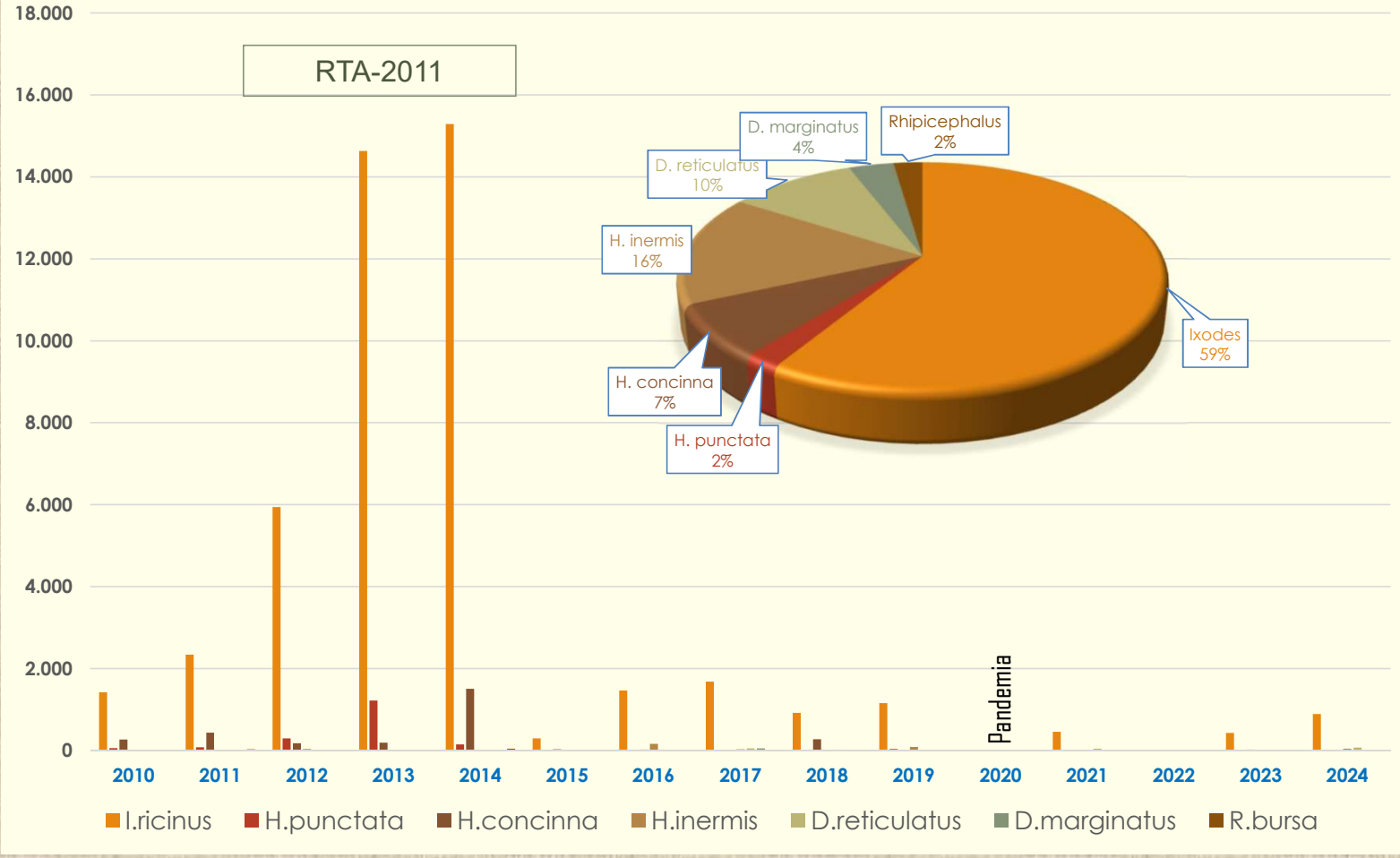
25.499 ninfas

24.844 larvas

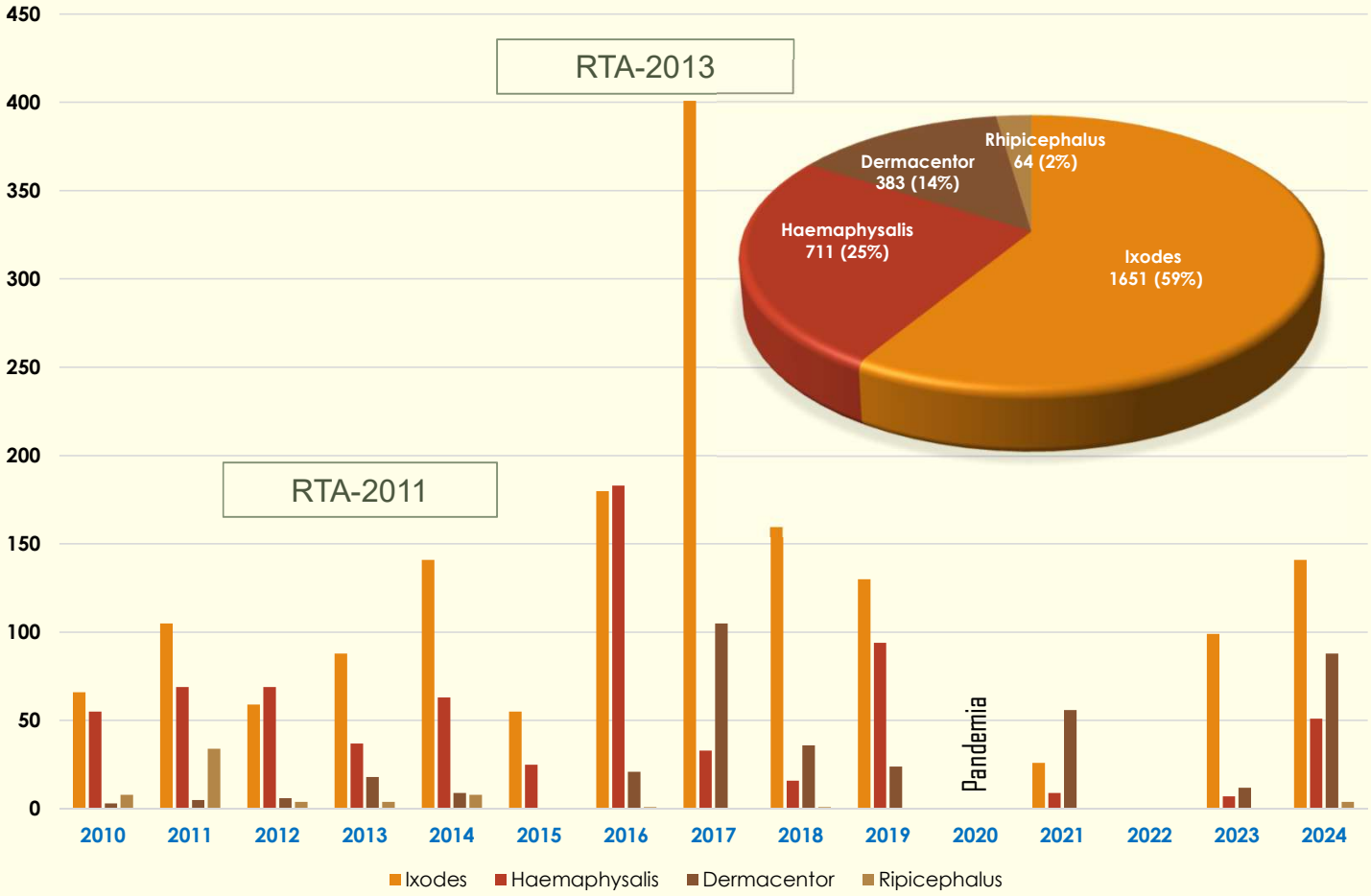
Garrapatas Asturias 2010-2024:
Nº ejemplares capturados anualmente (por estadios)

Garrapatas Asturias 2010-2024:

Nº ejemplares capturados por especie (todos los estadios)



Garrapatas Asturias 2010-2024:
Nº ejemplares adultos por género



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ESPECIES PRESENTES EN ASTURIAS:

Gen. *Ixodes*

Adulto hembra

Adulto macho

ninfa

larva

2 especies <u>exófilas</u> identificadas hasta ahora: *I. ricinus* e *I. inopinatus*

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ESPECIES PRESENTES EN ASTURIAS: Gen. *Haemaphysalis*

Adulto hembra

Adulto macho

ninfa

larva

3 especies identificadas hasta ahora: *H. punctata*, *H. concinna* e *H. inermis*

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ESPECIES PRESENTES EN ASTURIAS: Gen. *Dermacentor*

Adulto hembra

Adulto macho

2 especies identificadas hasta ahora: : *D. reticulatus* y *D. marginatus*

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ESPECIES PRESENTES EN ASTURIAS: Gen. *Rhipicephalus*

Adulto hembra

Adulto macho

Una sola especie identificadas hasta ahora en la vegetación: *R. bursa*

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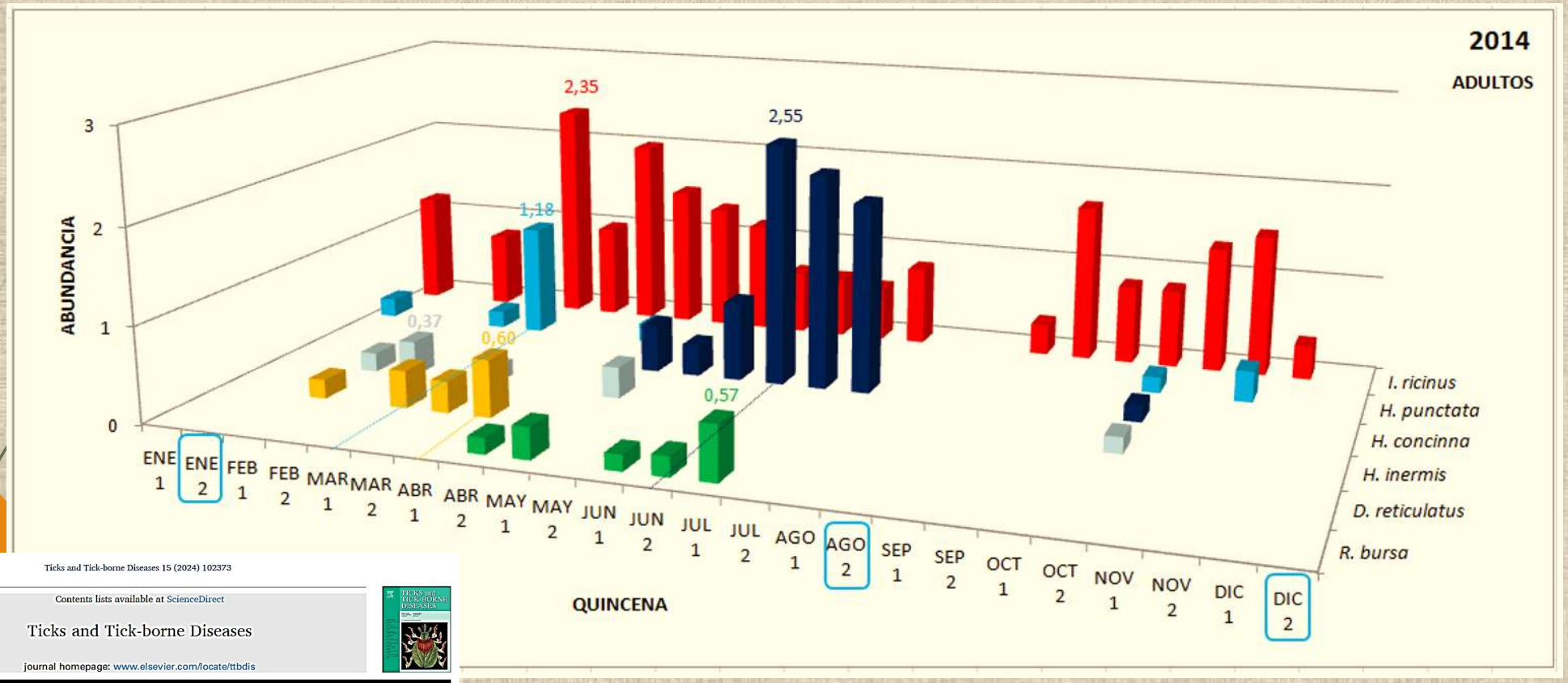
DINÁMICA ESTACIONAL: Sierra del Sueve (adultos)



Ticks and Tick-borne Diseases 15 (2024) 102373

Contents lists available at ScienceDirect

Ticks and Tick-borne Diseases

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

Original article

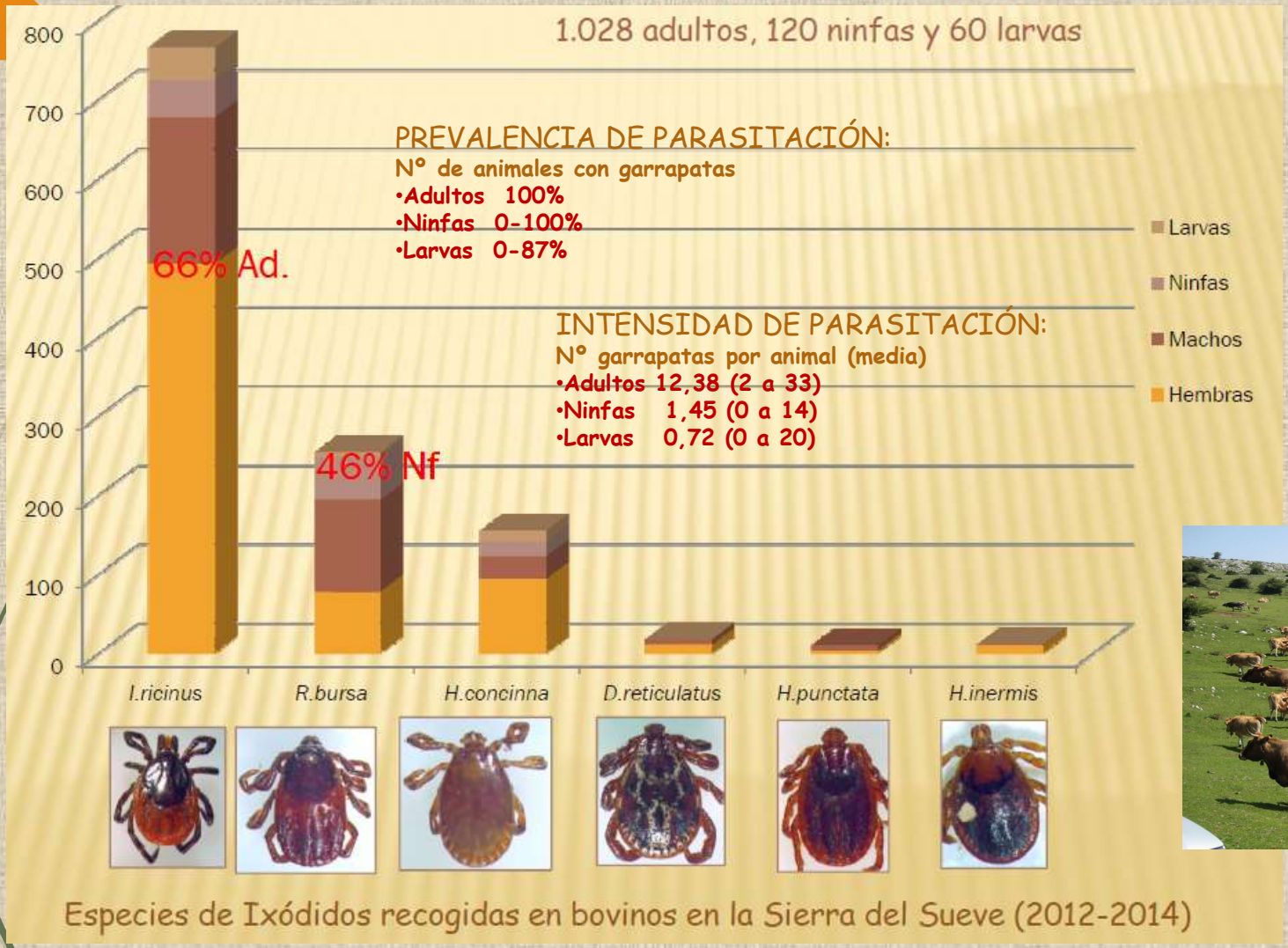
Spatiotemporal dynamics of *Ixodes ricinus* abundance in northern Spain

Alfonso Peralbo-Moreno [a], Alberto Espí [b], Jesús F. Barandika [c], Ana L. García-Pérez [c], Pelayo Acevedo [a], Francisco Ruiz-Fons [a,d,*]

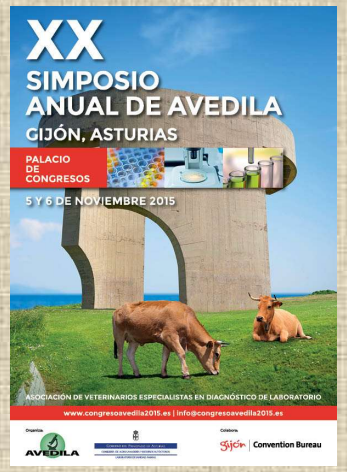
[a] Health & Biotechnology (SaBio) group, Spanish Game & Wildlife Research Institute (IREC), CSIC-UCLM-JCCM, Ciudad Real, Spain
[b] SERIDA, Gijón, Spain
[c] Animal Health Department, NEIKER-Basque Institute for Agricultural Research and Development, Basque Research and Technology Alliance (BRTA), Derio, Spain
[d] CIBERINFEC, ISC III, Madrid, Spain

1.2.– GARRAPATAS EN ANIMALES

ESPECIES DE IXÓDIDOS – DOMÉSTICOS - VACUNO

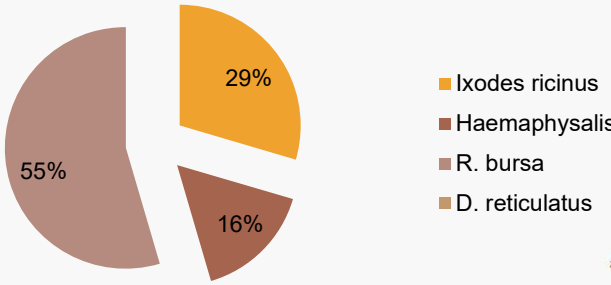


Especies de Ixódidos recogidas en bovinos en la Sierra del Sueve (2012-2014)

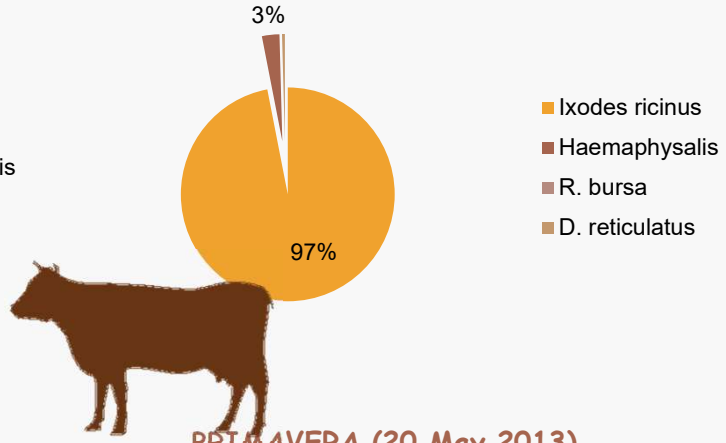


ESPECIES DE IXÓDIDOS – DOMÉSTICOS - VACUNO

VERANO (26 Jul 2012)



OTOÑO (27 Sep 2012)



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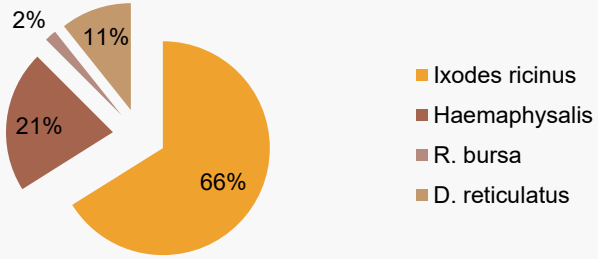
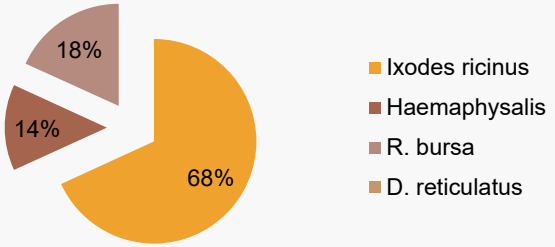


PRIMAVERA (20 May 2013)



ESPECIES DE IXÓDIDOS – SILVESTRES - ESP. CINEGÉTICAS

Tabla 13.- Estudio de garrapatas en especies cinegéticas en los años 2011-2014

ESPECIE	Nº 2011	2012	2013	2014	Estadio	Prevalencia parasitación	Intensidad parasitación	Especies *Ixodes ricinus*	*Haemaphysalis*	*R. bursa*	*D. reticulatus*
GAMOS	7	4	3		Adultos	14/14(100,00%)	1 a 32	95 (75,40%)	28 (22,22%)	-	3 (2,38%)
146	Abr-Dic	Oct-Nov	Marzo		Ninfas	5/14 (35,71%)	1 a 15	25 (97,11%)	-	1 (3,85%)	-
CIERVOS	6	2	2	3	Adultos	13/13 (100,00%)	7 a 76	434 (96,44%)	11 (2,44%)	2 (0,44%)	3 (0,67%)
138	Abr-Nov	Oct	Mar-Abr	Feb-Mar	Ninfas	10/13 (76,92%)	1 a 73	162 (89,50%)	18 (9,94%)	1 (0,55)	-
					larvas	2/13 (15,38%)	1	2 (100,00%)			
CORZOS	-	-	2	2	Adultos	4/4 (100,00%)	7 a 67	86 (98,85%)	1 (1,15%)	-	-
48			Mayo	Feb-Mar	Ninfas	4/4 (100,00%)	1 a 61	80 (97,56%)	2 (2,44%)	-	-
					larvas	3/4 (75,00%)	2 a 9	14 (100,00%)	-	-	-
JABALÍES	12	1	16	11	Adultos	5/40 (12,50%)	1 a 12	-	-	-	19 (100,00%)
400	Nov	Oct	Feb/Dic	FebMay	Ninfas	1/40 (2,50%)	1	1(100,00%)			

Tabla 13.- Estudio de garrapatas en especies cinegéticas en los años 2011-2014

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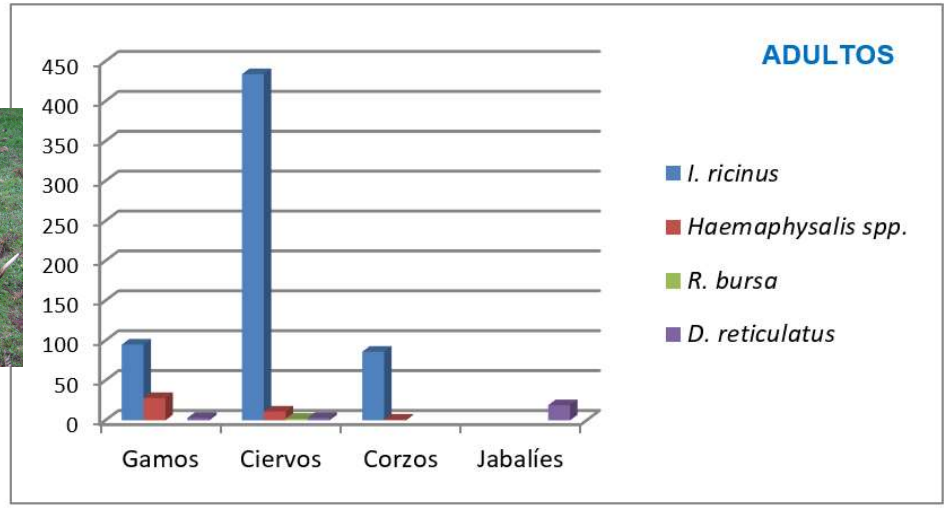
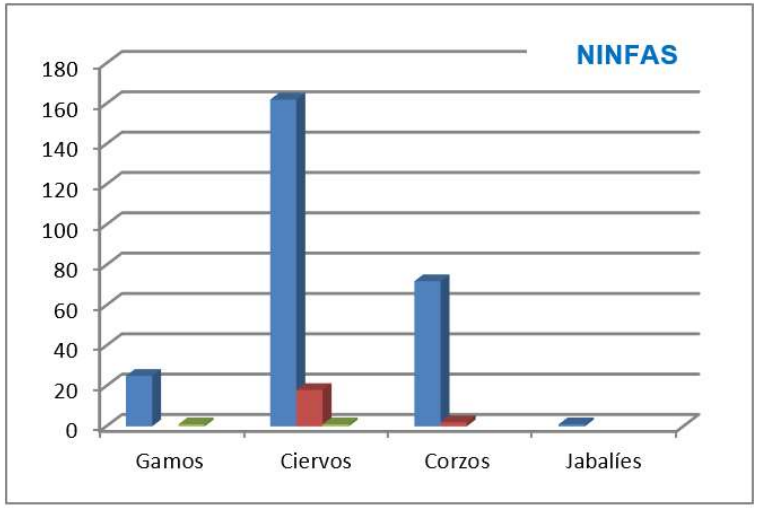
JABALÍES	12	1	16	11	Adultos	5/40 (12,50%)	1 a 12	-	-	-	19 (100,00%)
400	Nov										





ESPECIES DE IXÓDIDOS – SILVESTRES - ESP. NO CINEGÉTICAS

Tabla 14.- Garrapatas recogidas de especies no cinegéticas

ORIGEN MUESTRAS	AÑOS	ESPECIES	Nº	GARRAPATAS (Adul-Ninf-Larv)	ANIMALES PARASITADOS: Nº / TOTAL (%)			
					Ixodes spp.	*Haemaphysalis spp.*	*R. bursa*	*D. reticulatus*
Colección en alcohol:	2001-2006	Lobo	12	49-0-0	7/12 (58,3)	-	1/12 (8,3)	7/12 (58,3)
		Mustélidos	3	3-1-0	2/3 (66,7)	-	1/12 (8,3)	-
Ejemplares congelados:	2009-2014	Zorro	1	-	-	-	-	-
		Gato m.	2	-	-	-	-	-
		Gineta	2	1-24-0	1/2 (50,0)	-	-	-
		Mustélidos	7	1-8-1	3/7 (42,9)	-	-	-
Capturas proyecto:	2013-2014	Tejón	21	63 58-103-1	36/63(57,1)	3/63 (4,8)	1/63 (1,6)	2/63 (3,2)
Atropellos:	"	"	42					
Controles de población:	2010-2014	Lobo	15	29-0-0	7/15 (46,7)	-	-	1/15 (6,7)

Tabla 14.- Garrapatas recogidas de especies no cinegéticas

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Ejemplares congelados:	2009-2014	Zorro	1	-	-	-	-	-
		Gato m.	2	-	-	-	-	-
		Gineta	2	1-24-0	1/2 (50,0)	-	-	-
		Mustélidos	7	1-8-1	3/7 (42,9)	-	-	-
Capturas proyecto:	2013-2014	Tejón	21	63 58-103-1	36/63(57,1)	3/63 (4,8)	1/63 (1,6)	2/63 (3,2)
Atropellos:	"	"	42					
Controles de población:	2010-2014	Lobo	15	29-0-0	7/15 (46,7)	-	-	1/15 (6,7)

ESPECIES DE IXÓDIDOS – SILVESTRES - MICROMAMÍFEROS

Tabla 16.- Estudio de garrapatas, otros ácaros y otros ectoparásitos en micromamíferos (2012 y 2013)

Nº	ESPECIE HOSPEDADOR	Ixódidos Especie	Ninfas	Larvas	Prostigmata Fam. Trombiculidae	Mesostigmata Fam. Laelapidae	Pulgas	Piojos
1	*Microtus lusitanicus*	*I. ricinus*	-	2	4	1	-	-
2	*Apodemus flavicolis*	-	-	-	-	-	-	-
3	*Microtus agrestis*	-	-	-	100	¿?	10	-
4	*Apodemus sylvaticus*	*I. ricinus*	-	8	-	6	-	-
5	*Apodemus sylvaticus*	-	-	-	6	-	-	-
6	*Apodemus sylvaticus*	*I. ricinus*	-	2	7	2	-	-
7	*Apodemus sylvaticus*	*I. ricinus*	-	4	20	-	-	-
8	*Apodemus sylvaticus*	*I. ricinus*	-	7	-	-	10	20
9	*Apodemus sylvaticus*	*I. ricinus*	-	8	-	6	-	-
10	*Apodemus sylvaticus*	*I. ricinus*	-	3	-	-	-	-
11	*Apodemus sylvaticus*	-	-	-	2	-	-	-
12	*Microtus lusitanicus*	-	-	-	-	50	1	-
13	*Apodemus sylvaticus*	*I. ricinus*	-	4	20	1	1	-
14	*Microtus lusitanicus*	*I. ricinus*	-	1	20	-	1	-
15	*Apodemus sylvaticus*	*I. ricinus*	-	4	-	4	-	-
16	*Apodemus sylvaticus*	*I. ricinus*	-	5	-	2	1	-
17	*Crocidura russula*	*I. ricinus*	-	1	-	-	-	-
18	*Apodemus sylvaticus*	*I. ricinus*	-	1	-	2	-	-
19	*Apodemus sylvaticus*	-	-	-	2	-	-	-
20	*Crocidura suaveolens*	-	-	-	-	-	-	-
21	*Apodemus sylvaticus*	*I. ricinus*	-	1	-	2	3	-
22	*Apodemus sylvaticus*	-	-	-	-	15	4	-
23	*Apodemus sylvaticus*	*I. ricinus*	-	2	-	2	-	-
24	*Apodemus sylvaticus*	*I. ricinus*	-	1	-	3	-	-
25	*Apodemus sylvaticus*	*I. ricinus*	-	1	-	-	-	-
26	*Apodemus sylvaticus*	-	-	-	-	-	-	-

Figura 20.- Larvas de *Ixodes* en un ejemplar de *Apodemus sylvaticus*. Ácaros *Trombiculidae*. Ácaros Mesostigmata (*Laelaps agilis*), Ixodidae (*Ixodes ricinus*) y Prostigmata (*Trombiculidae*).

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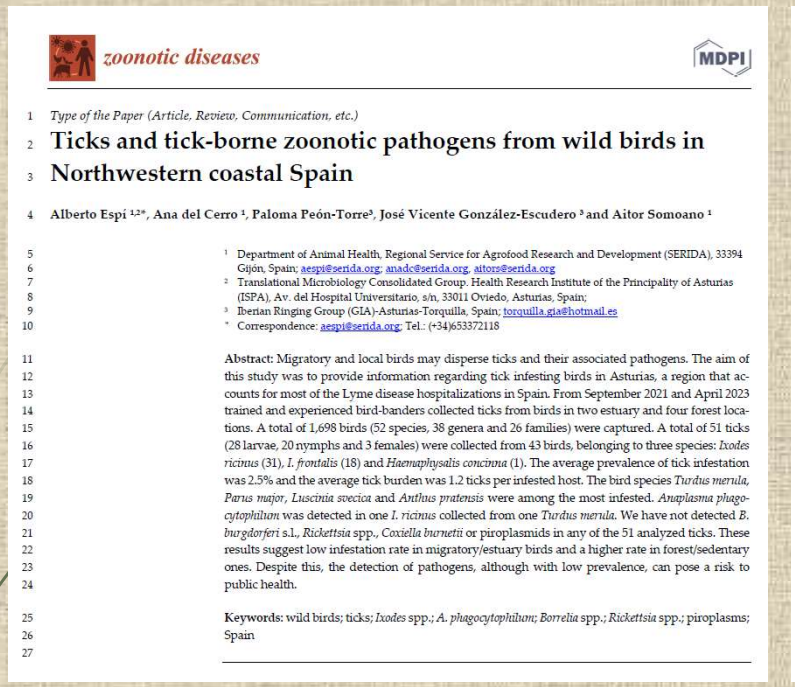
ESPECIES DE IXÓDIDOS – SILVESTRES - AVES



zoonotic diseases

MDPI

Type of the Paper (Article, Review, Communication, etc.)

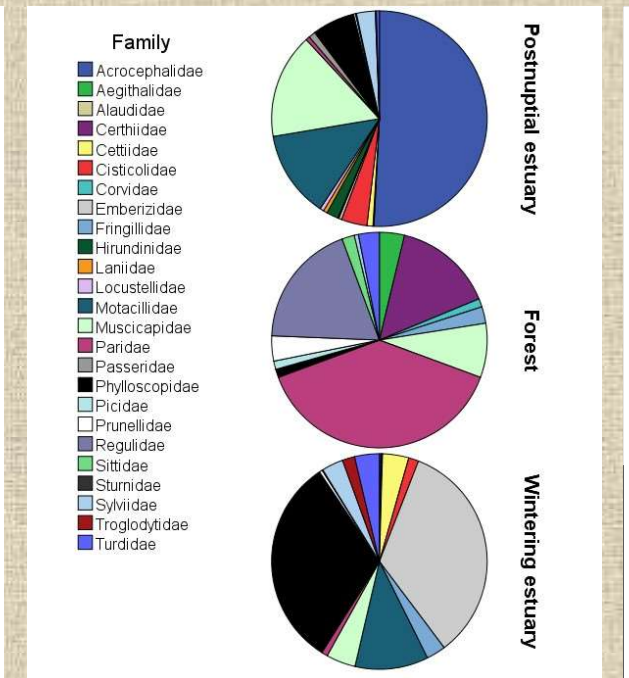
Ticks and tick-borne zoonotic pathogens from wild birds in Northwestern coastal Spain

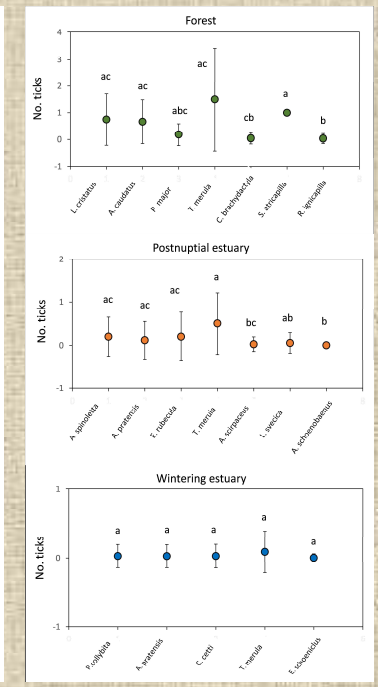
Alberto Espí [1,2]*, Ana del Cerro [1], Paloma Peón-Torre[3], José Vicente González-Escudero [3] and Aitor Somoano [1]

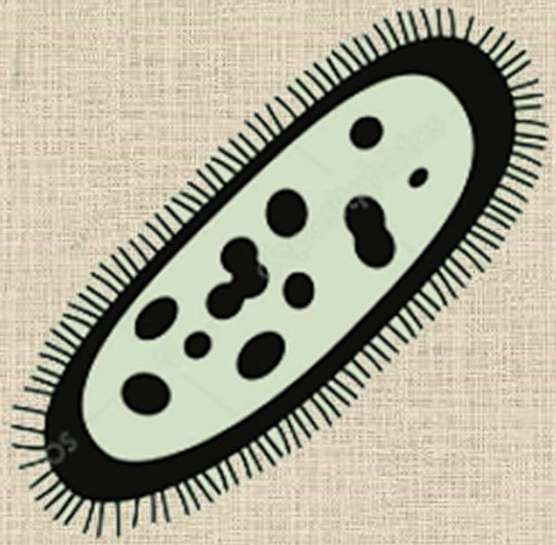
[1] Department of Animal Health, Regional Service for Agrofood Research and Development (SERIDA), 33394 Gijón, Spain; aespi@serida.org; anadc@serida.org, aitors@serida.org
[2] Translational Microbiology Consolidated Group. Health Research Institute of the Principality of Asturias (ISPA), Av. del Hospital Universitario, s/n, 33011 Oviedo, Asturias, Spain;
[3] Iberian Ringing Group (GIA)-Asturias-Torquilla, Spain; torquilla.gia@hotmail.es
* Correspondence: aespi@serida.org; Tel.: (+34)653372118

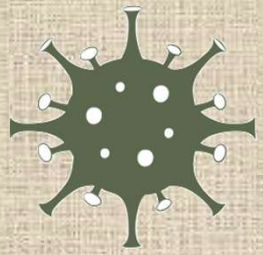
Abstract: Migratory and local birds may disperse ticks and their associated pathogens. The aim of this study was to provide information regarding tick infesting birds in Asturias, a region that accounts for most of the Lyme disease hospitalizations in Spain. From September 2021 and April 2023 trained and experienced bird-banders collected ticks from birds in two estuary and four forest locations. A total of 1,698 birds (52 species, 38 genera and 26 families) were captured. A total of 51 ticks (28 larvae, 20 nymphs and 3 females) were collected from 43 birds, belonging to three species: *Ixodes ricinus* (31), *I. frontalis* (18) and *Haemaphysalis concinna* (1). The average prevalence of tick infestation was 2.5% and the average tick burden was 1.2 ticks per infested host. The bird species *Turdus merula, Parus major, Luscinia svecica* and *Anthus pratensis* were among the most infested. *Anaplasma phagocytophilum* was detected in one *I. ricinus* collected from one *Turdus merula*. We have not detected *B. burgdorferi* s.l., *Rickettsia* spp., *Coxiella burnetii* or piroplasmids in any of the 51 analyzed ticks. These results suggest low infestation rate in migratory/estuary birds and a higher rate in forest/sedentary ones. Despite this, the detection of pathogens, although with low prevalence, can pose a risk to public health.

Keywords: wild birds; ticks; *Ixodes* spp.; *A. phagocytophilum*; *Borrelia* spp.; *Rickettsia* spp.; piroplasms; Spain









1.3.– PATÓGENOS TRANSMITIDOS POR GARRAPATAS

PATÓGENOS:

Ticks and Tick-borne Diseases 13 (2022) 101961

Contents lists available at ScienceDirect

Ticks and Tick-borne Diseases

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

Original article

Molecular identification of tick-borne pathogens (*Rickettsia* spp., *Anaplasma phagocytophilum, Borrelia burgdorferi* sensu lato, *Coxiella burnetii* and piroplasms) in questing and feeding hard ticks from North-Western Spain

Ana del Cerro [a,b,*], Alvaro Oleaga [c], Aitor Somoano [a], Jesus F. Barandika [d], Ana L. García-Pérez [d], Alberto Espí [a,b]

[a] Department of Animal Health, Regional Agrifood Research and Development Service (SERIDA), Deva, Gijón, Asturias 33394, Spain
[b] Translational Microbiology Consolidated Group. Health Research Institute of the Principality of Asturias (ISPA), Av. del Hospital Universitario, s/n, 33011 Oviedo, Asturias, Spain
[c] SERPA-Sociedad de Servicios del Principado de Asturias S.A., Gijón, Asturias 33202, Spain
[d] Department of Animal Health. NEIKER-Basque Institute for Agricultural Research and Development. Basque Research and Technology Alliance (BRTA), Derio, Bizkaia 48160, Spain

Table 2
Tick-borne pathogens (TBPs) detected in questing ticks.

Identified TBPs	N° of positive ticks (prevalence%)									
	Total[a]		*Ixodes ricinus*		*Dermacentor marginatus*	*Dermacentorreticulatus*	*Haemaphysalis punctata*		*Haemaphysalisinermis*	*Rhipicephalusbursa*
	Adults(n = 119)	Nymphs(n = 370)	Adults (n = 56)	Nymphs(n = 300)	Adults(n = 24)	Adults(n = 7)	Adults (n = 7)	Nymphs(n = 20)	Adults(n = 20)	Adults(n = 2)
Rickettsia spp.	34	4 (1.1–5.5) [b]	5 (9.0)	3 (1.0–15.0)	24 (100.0)	4 (57.1)	0	1	1 (5.0)	0
"*Candidatus*	(28.6)		5 (9.0)	1 (0.3–1.5)	14 (58.3)	4 (57.1)		(5.0–25.0)	1 (5.0)	
Rickettsia rioja"	20	1 (0.3–1.5)		2 (0.7–3.5)	8 (33.3)					
Rickettsia raoultii	(17.0)	2 (0.5–2.5)			2 (8.3)					
Rickettsia slovaca	12									
	(10.1)									
	2 (1.7)									
Anaplasma phagocytophilum	4 (3.4)	12 (4–20)	4 (7.1)	12 (4–20)	0	0	0	0	0	0
Piroplasms	1 (0.8)		0	0	0	0	0	0	0	1 (50.0)
Babesia bigemina	1 (0.8)									1 (50.0)
Borrelia burgdorferi s.l.	16	2 (0.5–2.5)	10	2 (0.6–3)	1 (4.2)	3 (42.9)	1 (14.3)	0	1 (5.0)	0
	(13.4)	1 (0.3–1.5)	(17.9)	1 (0.3–1.5)	1 (4.2)	1 (14.3)	1 (14.3)		1 (5.0)	
Borrelia lusitaniae	10 (8.4)	1 (0.3–1.5)	6 (10.7)	1 (0.3–1.5)		1 (14.3)				
Borrelia garinii	1 (0.8)		1 (1.8)							
Borrelia afzelii	2 (1.7)		1 (1.8)							
Borrelia burgdorferi s.s.	1 (0.8)		1 (1.8)							
Borrelia valaisiana	1 (0.8)		1 (1.8)							

[a] All *Haemaphysalis concinna* ticks analyzed (3 adults and 50 nymphs) were negative for all the pathogens tested therefore the results are not shown, but they were included in the calculation of prevalence data.
[b] "Minimum expected prevalence": percentage of positives is calculated assuming that any pool would contain one infected tick.

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Original article

Borrelia burgdorferi sensu lato prevalence and diversity in ticks and small mammals in a Lyme borreliosis endemic Nature Reserve in North-Western Spain. Incidence in surrounding human populations

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Table 2
Small mammals captured and PCR/sequencing results.

Animal species	Common name	Captured no. (%)[a]		PCR/Sequencing no. (%)[b]		Genospecies
		Natural reserve	Surroundings	Natural reserve	Surroundings	
Apodemus sylvaticus	Wood mouse	19 (73.1)	17 (38.6)	3 (15.8)	–	*B. burgdorferi* s.l.
Apodemus flavicollis	Yellow-necked field mouse	1 (3.8)	–	–	–	–
Microtus lusitanicus	Lusitanian pine vole	3 (11.5)	11 (25.0)	–	2 (18.2)	*B. afzelii*
Microtus agrestis	Field vole	1 (3.8)	–	–		–
Crocidura russula	White-toothed shrew	1 (3.8)	3 (6.8)	–	–	–
Crocidura suaveolens	Lesser white-toothed shrew	1 (3.8)	–	–		–
Sorex coronatus	Crowned shrew	–	3 (6.8)		–	–
Arvicola scherman	Montane water vole	–	10 (23.8)		4 (40.0)	*B. afzelii*
Total		26	44	3 (11.5)	6 (13.6)	

[a] Percentages of captured animals from the total number of captured animals.
[b] Percentages of positive animals from the total number of each animal species.

Table 1
Borrelia burgdorferi s.l. in *I. ricinus* ticks collected in Sierra del Sueve, Spain, 2012–2014.

Epidemiological factors	Ticks tested	Ticks infected		Genospecies
	No. (pools)	No. (pools)	%[a]	
Geographic orientation				
North	337 (73)	7–31 (7)	2.08	*B. afzelii, B. garinii, B. valaisiana*
South	541 (129)	7–31 (7)	1.29	*B. afzelii*
Vegetation type				
Grassland	244 (52)	4–20 (4)	1.64	*B. afzelii, B. garinii, B. valaisiana*
Shrubs	330 (78)	6–22 (6)	1.82	*B. afzelii, B. garinii*
Woodland	304 (72)	4–20 (4)	1.32	*B. afzelii*
Seasons				
Winter	234 (50)	2–10 (2)	0.85	*B. afzelii*
Spring	287 (71)	5–21 (5)	1.74	*B. afzelii, B. garinii, B. valaisiana*
Summer	114 (26)	4–16 (4)	3.51	*B. afzelii*
Autumn	243 (55)	3–15 (3)	1.23	*B. afzelii*
Tick stage:				
Adult	33	2	6.06	*B. afzelii*
Nymph	845 (169)	12–60 (12)	1.42	*B. afzelii, B. garinii, B. valaisiana*

[a] "Minimum expected prevalence": percentage of positives is calculated assuming that any pool would contain one infected tick.

ANAPLASMOSIS:

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Original article

Anaplasmataceae in wild ungulates and carnivores in northern Spain

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Table 1
Number of animals investigated and number of animals positive to the presence of DNA of Anaplasmataceae in each Family included in the study.

Host	Family	Analyzed animals	N positive *A. phagocytophilum* (%)	Other *Anaplasmataceae* (sequencing)
Ungulates	Cervidae (Roe deer)	105	64 (61.0)[a]	1 *A. centrale*; 4 *A. bovis*
	Cervidae (Red deer)	26	21 (80.8)	1 *A. centrale*
	Cervidae (Fallow deer)	6	3 (50.0)	na
	Suidae (Wild boar)	227	0	na
Total Ungulates		**364**	**88 (24.2)**	
Carnivores	Canidae	56	0	na
	Felidae	8	0	na
	Mustelidae	183	0	1 *Ehrlichia* sp.
	Viverridae	14	0	na
Total Carnivores		**261**	**0 (0.0)**	
Total		**625**	**88 (14.1)**	

[a] *A. phagocytophilum* in 2 roe deer was identified only by sequencing.
na, non-applicable.

PIROPLASMOSIS:

Occurrence and genetic diversity of piroplasms and other apicomplexa in wild carnivores

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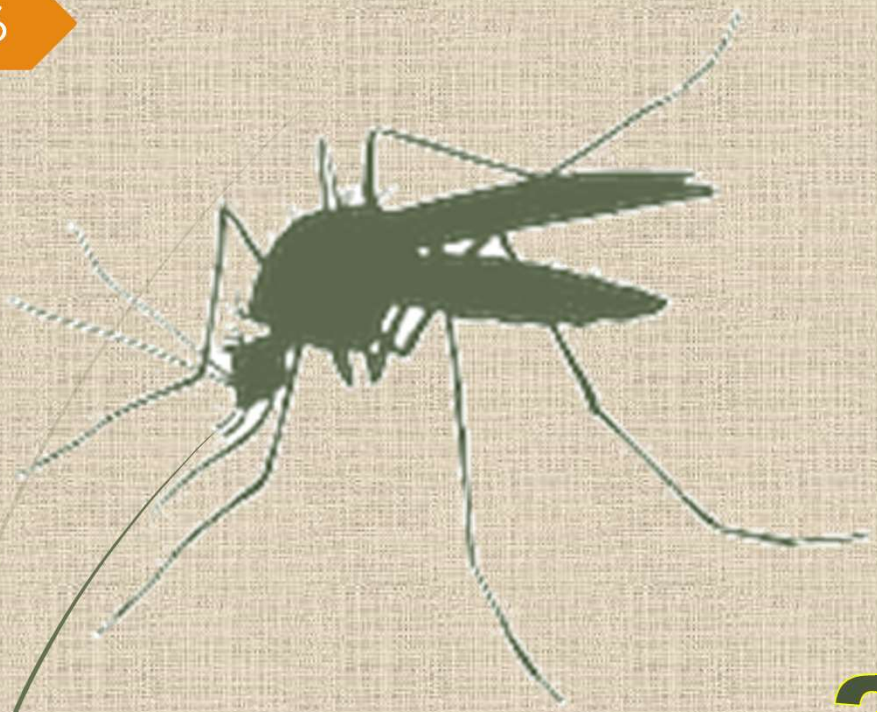
Table 2. Sequencing analysis results

Source	*n* samples sequenced	GenBank	% homology (positions compared) with nearest Blast hit
Red fox (*Vulpes vulpes*)	17	KT223483 *Babesia vulpes*	100% (1607) *Babesia* sp. 'Spanish dog' AF188001
European badger (*Meles meles*)	36	KT223484 *Babesia* sp. badger type A	98.6% (1535) *Theileria* sp. HN2 FJ645725
	7	KT223485 *Babesia* sp. badger type B	97.0% (1323) *Babesia* sp. 'Spanish dog' AF188001
	4[a]	KU198329 *Cystoisospora* sp.	99.2% (1574) *Cystoisospora timoni* EU200792
	1[a]	KU198330 *Hepatozoon* sp.	99.7% (1640) *Hepatozoon* sp. European pine marten EF222257
Wild cat (*Felis silvestris catus*)	4	KT223486 *Cytauxzoon* sp.	100% (397) *Cytauxzoon* sp. KT361080

[a] One European badger harboured a co-infection with *Cystoisospora* sp. and *Hepatozoon* sp.



2 - MOSQUITOS

MÉTODOS DE CAPTURA UTILIZADOS:

1. Trampas para hembras adultas en busca de hospedador

Trampas BG-Sentinel

Trampas de oviposición

2. Trampas para hembras portadoras de huevos

ESPECIES DE MOSQUITOS IDENTIFICADAS:

		Nº trampas	Mes	Tª Media ºC	Lluvia Nº días	Viento media Km/hr.	*Culex* spp. hembras	*Culex* spp. machos	*Aedes japonicus* hembras	*Aedes japonicus* machos	*Aedes albopictus*	*Anopheles* spp.
BG-Sentinel	T001	1	May									
	T002	1	May-Jun	16,6	0	8,5						
	T003	1	Jul	18,2	2	3,7	1	1				
	T004	1	Jul	20,4	3	4,0						
	T005	1	Jul-Ago	21,1	0	1,9			1			
	T006	1	Ago	21,4	1	3,4		1	2			
	T007	1	Ago	23,3	0	5,1						
	T008	1	Ago	21,1	2	2,6	3	2				
	T009	1	Ago	20,0	1	3,7			2			
	T010	1	Ago	20,3	1	4,2	2		1			
	T011	1	Sep	16,8	3	4,5						
	T012	1	Sep	16,3	5	6,2			1			
	T013	1	Sep	17,5	3	2,6						
	T014	1	Sep	18,1	3	3,6			1			
	T015	1	Sep-Oct	16,9	4	3,9	1	1				
	T016	1	Oct	17,0	5	2,4			1	1		
	T017	1	Oct	17,5	3	2,6	3					
	T018	1	Oct	16,4	3	3,0						
	T019	1	Oct-Nov	14,0	5	2,1						
							huevos	larvas	huevos	larvas	huevos / larvas	huevos / larvas
Ovitrampas	V001	1	May				1	1				
	V002	1	Jun	17,3	12	4,3						
	V003	2	Jun	17,3	12	4,3						
	V004	1	Jun	18,2	2	3,7						
	V005	1	Jul-Ago	21,3	4	3,6		1				
	V006	4	Ago	18,8	2	3,2			1			
	V007	4	Ago	21,1	2	3,7	1	1				
	V008	4	Ago	20,3	8	3,6						
	V009	4	Ago-Sep	18,4	11	2,8	1	1	1	1		
	V010	1	Ago-Sep	18,4	11	2,8			1			
	V011	4	Sep	17,2	9	4,1						
	V012	1	Sep	17,2	7	4,2						
	V013	4	Sep-Oct	17,0	10	3,2			2			

Tabla 7. Capturas de mosquitos de interés sanitario realizadas en Asturias en 2024

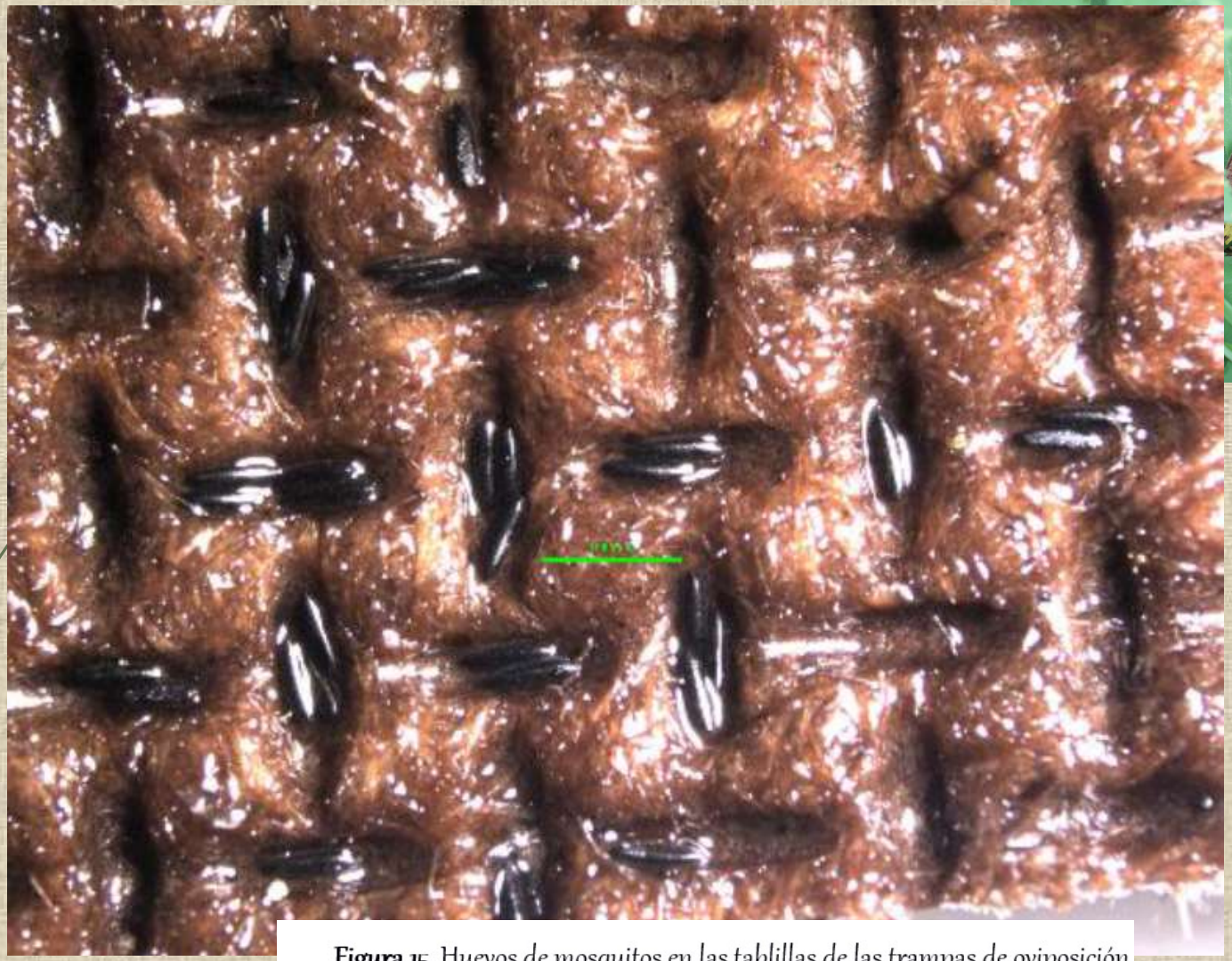


Figura 15. Huevos de mosquitos en las tablillas de las trampas de oviposición


V-010
23 09 2024


1000 µm


1000 µm


25 09 2024


V-6
23 08 2024


30 09 2024

ESPECIES INVASORAS: *Aedes japonicus*

Parasites & Vectors

RESEARCH Open Access

First detection of *Aedes japonicus* in Spain: an unexpected finding triggered by citizen science

Roger Eritja[1*], Ignacio Ruiz-Arrondo[2], Sarah Delacour-Estrella[3], Francis Schaffner[4,5], Jorge Álvarez-Chachero[6], Mikel Bengoa[7], María-Ángeles Puig[8], Rosario Melero-Alcibar[9], Aitana Oltra[9] and Frederic Bartumeus[1,8,10]

Abstract

Background: *Aedes japonicus* is an invasive vector mosquito from Southeast Asia which has been spreading across central Europe since the year 2000. Unlike the Asian Tiger mosquito (*Aedes albopictus*) present in Spain since 2004, there has been no record of *Ae. japonicus* in the country until now.

Results: Here, we report the first detection of *Ae. japonicus* in Spain, at its southernmost location in Europe. This finding was triggered by the citizen science platform Mosquito Alert. In June 2018, a citizen sent a report via the Mosquito Alert app from the municipality of Siero in the Asturias region (NW Spain) containing pictures of a female mosquito compatible with *Ae. japonicus*. Further information was requested from the participant, who subsequently provided several larvae and adults that could be classified as *Ae. japonicus*. In July, a field mission confirmed its presence at the original site and in several locations up to 9 km away, suggesting a long-time establishment. The strong media impact in Asturias derived from the discovery raised local participation in the Mosquito Alert project, resulting in further evidence from surrounding areas.

Conclusions: Whilst in the laboratory *Ae. japonicus* is a competent vector for several mosquito-borne pathogens, to date only West Nile virus is a concern based on field evidence. Nonetheless, this virus has yet not been detected in Asturias so the vectorial risk is currently considered low. The opportunity and effectiveness of combining citizen-sourced data to traditional surveillance methods are discussed.

Keywords: Asian bush mosquito, Culicidae, Invasive, West Nile virus, Citizen Science, Vector, Asturias, Spain

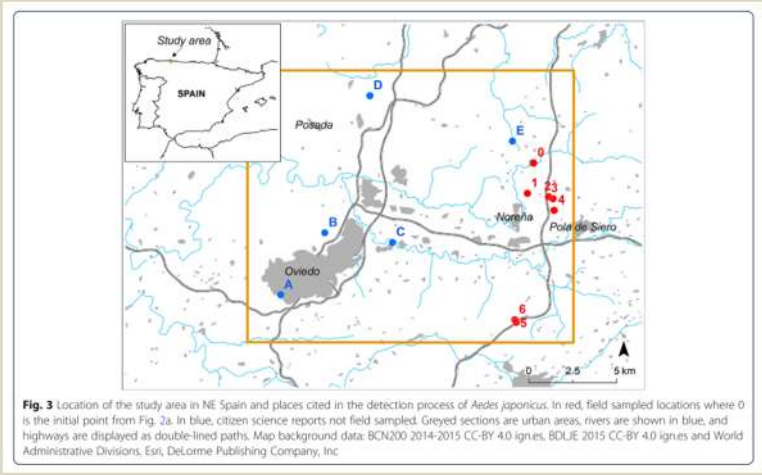


Fig. 3 Location of the study area in NE Spain and places cited in the detection process of *Aedes japonicus*. In red, field sampled locations where 0 is the initial point from Fig. 2a. In blue, citizen science reports not field sampled. Greyed sections are urban areas, rivers are shown in blue, and highways are displayed as double-lined paths. Map background data: BCN200 2014-2015 CC-BY 4.0 ign.es, BDLJE 2015 CC-BY 4.0 ign.es and World Administrative Divisions, Esri, DeLorme Publishing Company, Inc

Figura 14. Primera descripción en Asturias de la especie Aedes japonicus en junio de 2018 (Eritja y cols., 2019)

Centro de Biotecnología Animal (BG-Sentinel)

2024

Estación de Servicio de Robledo (Ovitrampas)

2018 Primeras descripciones

Oviedo - Siero

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