

# DIVERSITY OF TICKS ON TRAILS IN ASTURIAS (NORTHWEST SPAIN): BIG DIFFERENCES DEPENDING ON THE STUDY AREA

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## BACKGROUND

Located on the northern coast of Spain, Asturias offers travellers and residents awe-inspiring landscapes that can be enjoyed through its extensive network of hiking, biking and horseback riding trails. Nevertheless, due to its climatic and faunistic conditions, this region is also favourable for the presence of ticks, especially the *Ixodes ricinus* species, considered the main vector of Lyme borreliosis, a disease endemic to the area.



**OBJECTIVE:** Determine the public health risk of tick bites on the busiest hiking trails of Asturias

## METHODS

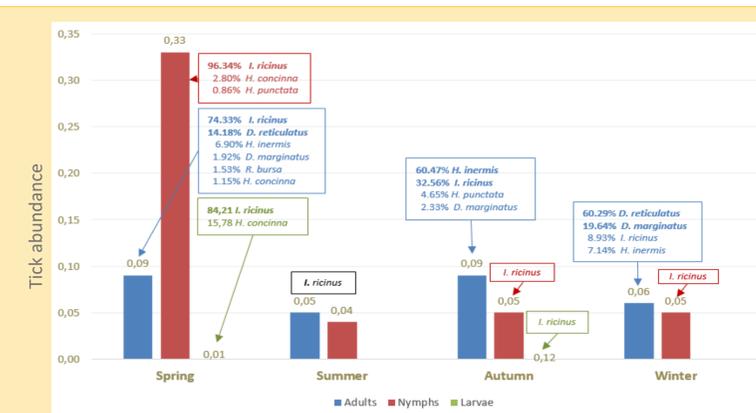


## RESULTS

A total of **1,494 ticks** were collected (96 larvae, 1,014 nymphs and 383 adult ticks) between May 2023 and December 2024 on **31 trails** in 27 municipalities.

<i>Ixodes</i>	<i>Haemaphysalis</i>	<i>Dermacentor</i>	<i>Rhipicephalus</i>
<i>I. ricinus</i> or <i>I. inopinatus</i>	<i>H. punctata</i> / <i>concinna</i> / <i>inermis</i>	<i>D. reticulatus</i> - <i>D. marginatus</i>	<i>R. bursa</i>
61.6%	0.5 - 0.8 - 12.5%	19.1 - 4.4%	1.0%
% of all collected adults			
96.7%	0.8 - 2.6 - 0.0%	Nymphs are endophilic	Nymphs molt on hosts
% of all collected nymphs			

Table 1.- Specimens of ticks collected on trails in Asturias  
(From left to right: females of *Ixodes ricinus*, *Haemaphysalis punctata*, *Dermacentor reticulatus* and *Rhipicephalus bursa*)



## CONCLUSIONS

As expected from previous studies in Asturias, *I. ricinus* was the most abundant species overall for both nymphs and, to a lesser extent, adults (table 1).

However, in certain peri-urban trails and mostly during the cold months of the year, other species such as *D. reticulatus* or *D. marginatus* also show notable abundances (table 2) and, although less frequently than *I. ricinus*, they also bite humans and can transmit several pathogens. This genus is especially adapted to urbanized areas where dogs or horses are common.

Although the analyses to detect pathogens in the collected ticks is still pending, in previous studies we found a prevalence of 7.8% for *Rickettsia* spp. and 3.7% for *B. burgdorferi* s.l. in vegetation ticks. Besides, ticks of the genus *Dermacentor* serve, not only as vectors but also as the primary hosts and natural reservoir of *R. raoultii* in Europe. Therefore, we can consider these pathogens to be among the main risks for trail users.

## ACKNOWLEDGEMENTS

This research has been funded by the Department of Health of the Principality of Asturias (MRR Funds) with which SERIDA has made an agreement for the establishment of a vector surveillance network in Asturias.



Figure 2.- Different types of trails sampled and its geographical distribution.



DATE	SEASON	SAMPLING POINT	HABITAT	A.I. (N)	SPECIES	DATE	SEASON	SAMPLING POINT	HABITAT	A.I. (Ad)	SPECIES
May 25, 2023	Spring	PROAZA- Senda Oso-Caranga	scrub	326,67	<i>Ixodes ricinus</i> , <i>H. concinna</i> , <i>H. punctata</i>	May 25, 2023	Spring	PROAZA- Senda Oso-Caranga	scrub	53,33	<i>Ixodes ricinus</i>
June 01, 2023	Spring	VILLAYÓN-Área recreativa	scrub	106,67	<i>Ixodes ricinus</i> , <i>H. concinna</i>	June 03, 2024	Spring	ALLER Senda Verde Foyoso	forest	17,95	<i>Ixodes ricinus</i> , <i>H. inermis</i> , <i>H. concinna</i> , <i>D. marginatus</i>
June 03, 2024	Spring	ALLER Senda Verde Foyoso	forest	105,64	<i>Ixodes ricinus</i> , <i>H. concinna</i>	Nov. 27, 2024	Autumn	ALLER Senda Foces El Pino	forest	16,36	<i>Ixodes ricinus</i> , <i>H. inermis</i> , <i>D. marginatus</i>
Jan. 31, 2024	Winter	PILOÑA-A.R. La Pesanca	forest	45,57	<i>Ixodes ricinus</i>	March 13, 2024	Winter	OVIEDO-Senda Verde Fuso	scrub	14,22	<i>D. reticulatus</i> (7%), <i>Ixodes</i> (4%), <i>D. marginatus</i>
May 08, 2024	Spring	DEGAÑA-Rebollar	forest	36,94	<i>Ixodes ricinus</i>	April 12, 2024	Spring	SIERO-Pola (Nora)	forest	10,67	<i>D. reticulatus</i>
May 22, 2024	Spring	VALDÉS-Cadavedo Paradiella	forest	36,36	<i>Ixodes ricinus</i>	April 10, 2024	Spring	LAVIANA-Pola	meadow	9,72	<i>D. reticulatus</i>
June 15, 2023	Spring	TARAMUNDI-Ruta del Agua	scrub	24,00	<i>Ixodes ricinus</i>	June 01, 2023	Spring	VILLAYÓN-Cascadas Oneta	forest	8,44	<i>Ixodes ricinus</i>
May 10, 2024	Spring	PEÑAMELLERA ALTA-Alles	scrub	19,49	<i>Ixodes ricinus</i> , <i>H. punctata</i>	May 22, 2024	Spring	VALDÉS-Cadavedo Paradiella	forest	7,88	<i>Ixodes ricinus</i>
May 25, 2023	Spring	PROAZA-Senda Oso-Sebrayo	scrub	14,70	<i>Ixodes ricinus</i> , <i>H. concinna</i>	June 15, 2023	Spring	TARAMUNDI-Ruta del Agua	scrub	7,67	<i>Ixodes ricinus</i>
Oct. 14, 2024	Autumn	PILOÑA-A.R. La Pesanca	forest	14,45	<i>Ixodes ricinus</i>	Jan. 31, 2024	Winter	PILOÑA-A.R. La Pesanca	forest	6,75	<i>H. inermis</i> y <i>Ixodes</i>
May 17, 2023	Spring	SOBRESOBIO-Ruta del Alba	forest	13,56	<i>Ixodes ricinus</i> , <i>H. concinna</i>	June 01, 2023	Spring	VILLAYÓN-Área recreativa	scrub	6,67	<i>Ixodes ricinus</i>
April 19, 2024	Spring	LLANES-Senda Río Guadamín	forest	10,96	<i>Ixodes ricinus</i> , <i>H. punctata</i>	July 17, 2024	Summer	CANGAS NARCEA-Muniellos	forest	6,13	<i>Ixodes ricinus</i>
April 22, 2024	Spring	CUDILLERO-Senda Gargayón	forest	10,67	<i>Ixodes ricinus</i> , <i>H. concinna</i>	Oct. 14, 2024	Autumn	PILOÑA-A.R. La Pesanca	forest	5,83	<i>Ixodes ricinus</i> y <i>H. punctata</i>
June 05, 2024	Spring	SOBRESOBIO Torrexón	forest	10,20	<i>Ixodes ricinus</i> , <i>H. concinna</i>	May 08, 2024	Spring	SALAS-Soto Infantes	forest	5,33	<i>Ixodes ricinus</i> y <i>D. marginatus</i>
Oct. 14, 2024	Autumn	PILOÑA-A.R. La Pesanca	forest	10,00	<i>Ixodes ricinus</i>	April 22, 2024	Spring	CUDILLERO-Senda Gargayón	forest	5,33	<i>Ixodes ricinus</i> y <i>D. reticulatus</i>

Table 2. Trails with the highest abundance indices (A.I.) of nymphs and adult ticks in Asturias