

# Ticks can adapt to the Spain's climatic diversity

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This is a male tick (*Dermacentor reticulatus*). Credit: Francisco Ruiz-Fons

Carnivores in the Iberian Peninsula, such as the Iberian lynx, are under an increasingly serious threat: ticks that can adapt to changing climatic conditions and that can even survive in extremely arid environments. A study headed by Spanish researchers confirms the innate ability of ticks to adapt according to climate.

The life cycle of ticks varies with changes to the climate, habitat or [movement patterns](#) of people and goods. These parasites and the pathogens they carry are a danger to public health, animal health and conservation. What is more is that both differ in terms of their [geographical distribution](#) and [population size](#) due to changes in their environment.

The study has been published in the *Veterinary Parasitology* journal and demonstrates that despite the great climatic variation between different regions in Spain, there is the constant risk of animal parasitation. This is mainly due to the fact that the parasites adapt to environmental conditions.

"The ability of different species of ticks to adapt to prevailing climatic conditions means that the Peninsula's carnivores, such as wolves, foxes, martens and badgers amongst others, are at risk of similar levels of parasitation. In the case of exophilic ticks though, they have an even greater ability to adapt to arid conditions," explains to SINC Francisco Ruiz-Fons, lead author and researcher at the Research Institute of Hunting Resources (IREC) of the University of Castilla-La Mancha and the CSIC (Spanish National Research Council).

In the case of endophilic ticks, which inhabit the nests and burrows of its hosts, the risk of Iberian carnivores being parasitised is more "variable" because the parasites are less conditioned to the climate given their sheltered habitat.

## **Strong vectors of disease**

According to researchers, changes in tick populations pose a significant risk to Spanish wildlife because the parasites introduce exotic illnesses and increase the prevalence of endemic pathogens.

"In the Iberian Peninsula, the risk mainly comes from prevalence changes in pathogens transmitted by ticks and, to a lesser extent, the introduction of pathogens from other countries, although this by no means poses a lower risk," points out Ruiz-Fons. An example of this is the [Iberian lynx](#) (*Lynx pardinus*).

Discovering the presence of this Cytauxzoon type pathogen in lynxes in

the Andújar mountain range a few years ago caused great concern within the scientific community and those in charge of Iberian lynx conservation. Experts feared that they were dealing with *C. felis*, a pathogen discovered in lynx and puma on the American continent that killed many domestic cats.

"Fortunately, the species found in Spain was not *C. felis*. However, its possible introduction in the Peninsula could pose a risk for the Iberian lynx," warns the researcher who ensures that the movement of travellers and goods from country to country where pathogens exist is "very high and on the rise meaning that risk is significant."

## **Parasites are even dangerous to humans**

Humans and domestic and wild animals share a multitude of illnesses. The risk of such illnesses passing from one to the other increases with changes in ecosystems and wild animal populations. Risk also increases with contact between people and domestic animals.

Ruiz-Fons affirms that "in the [Iberian Peninsula](#) some zoonotic pathogens transmitted by [ticks](#) are already endemic in wild cycles and have an impact on livestock and pets." However, scientists still do not know the way in which fauna changes affect the risk of infection.

Nonetheless, there is some evidence: "the recent discovery of the Crimean-Congo virus in [ticks](#) taken from deer in Cáceres shows that there is a risk of connection between wild, domestic and human cycles. This merits study," concludes the expert.

**More information:** Sobrino, Raquel; Millán, Javier; Oleaga, Álvaro; Gortázar, Christian; de la Fuente, Jose; Ruiz-Fons, Francisco.

"Ecological preferences of exophilic and endophilic ticks (Acari: Ixodidae) parasitizing wild carnivores in the Iberian Peninsula"

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