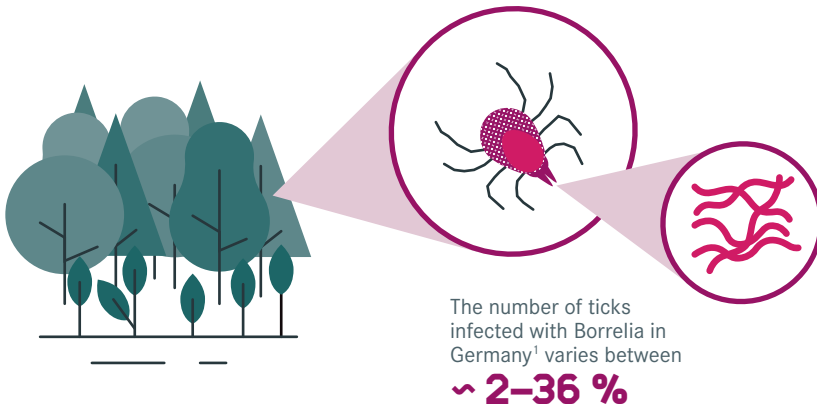




TOPIC: TICKS AND CLIMATE CHANGE

BORRELIOSIS

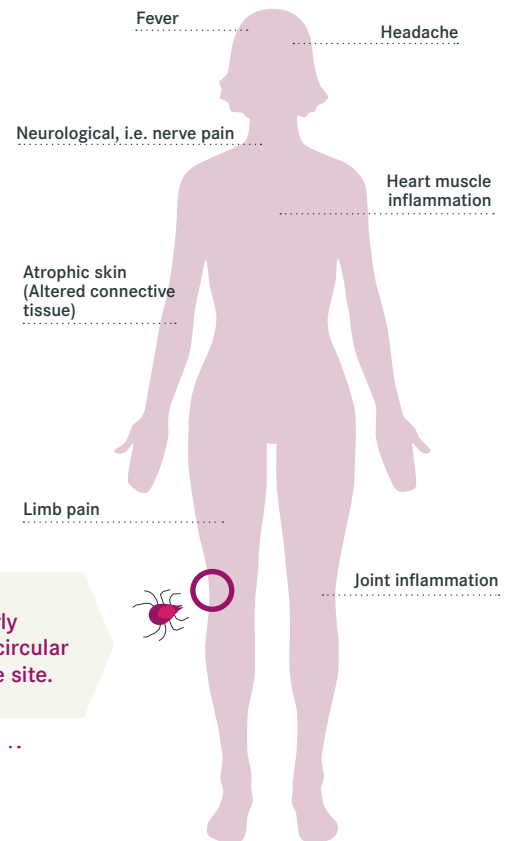
Ticks are parasites and are found in forests, bushes and city parks. They sit on plants and bite people and animals. In the process, they can transmit viruses and bacteria, including Borrelia. The longer the infected tick sticks to the body, the higher the risk of becoming infected.



Besides Lyme disease, ticks can transmit other diseases, such as early summer meningoencephalitis, triggered by the TBE virus.

i A typical symptom in the early stages of Lyme disease is a circular redness around the puncture site.

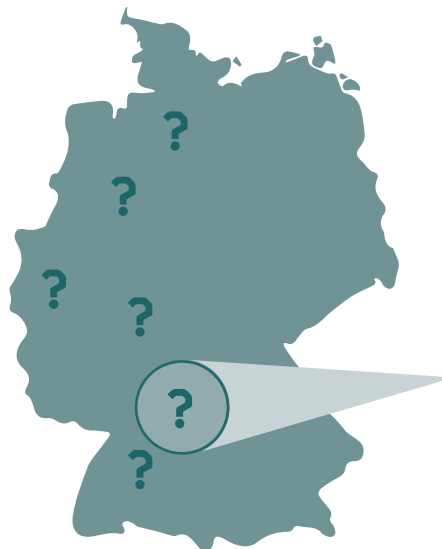
SYMPTOMS



PREVENTION

Currently, there is no vaccine against Lyme disease in Germany. If the rash occurs around the sting, antibiotics can be administered to prevent long-term complications. During walks and hikes you can protect yourself:

- Wear protective clothing on arms and legs
- Use tick repellent
- Check your body for ticks immediately
- If you find a tick, read up on how to safely remove it
- Remove the tick and consult a physician if symptoms appear – especially lyme rash.



Only few infections with Borrelia from tick bites lead to symptoms. Quite different forms of the disease occur, which can become noticeable in different parts of the body, depending on the individual case.

RISKY AREAS

The risk of infection varies from place to place. Therefore, it is important to know which areas are particularly affected. Early signs of Lyme disease cluster in the months of June through August.²

Some German states do not report data on Lyme disease. This makes it difficult to understand local risks and prevent infections.

Analyses of health insurance data suggest that more than 400 per 100,000 insured individuals in Germany are diagnosed with the disease in any given year.³

Sources:
1 Răileanu et al. (2020), Parasites & Vectors, Volume 13
2 German National Reference Centre for Borrelia
3 2019 data, Versorgungsatlas.de (report 21)



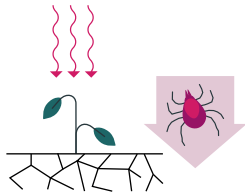
CLIMATE CHANGE IN EUROPE

Lyme disease is the most common tick-borne disease in Europe. With climate change and changing environmental conditions the risks of infection could shift. There's a complex interplay of tick populations and their hosts, land use and vegetation, weather and climate, and human behavior.

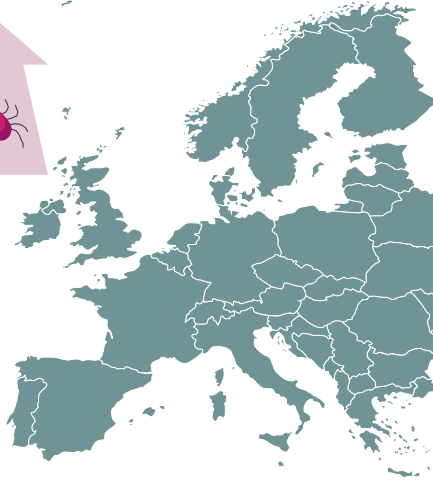
Ticks are increasingly colonizing northern Europe, partly because the climate there offers them ever better living conditions.



The seasons are shifting. Ticks could thus become active earlier and longer in the year, searching of hosts. A continuous activity of ticks during the winter season has already been demonstrated.



With climate change, droughts and heat waves happen more frequently. This could lead to a decline in the tick population in some areas.

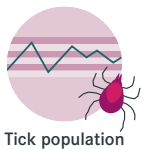


In parts of southern Europe, conditions for ticks are worsening. There, the number of cases of Lyme disease could decrease. However, ticks are capable of adapting to changing climatic conditions.

HELMHOLTZ' RESEARCH: RISK MAPS FOR GERMANY

CLIMATE SCENARIOS FOR TICKS AND LYME DISEASE

How will the distribution of ticks and Lyme disease cases in Germany change under different climate scenarios? Scientists of the Helmholtz Climate Initiative are developing models to understand how climate change could influence the risk of Lyme disease in Germany.



Tick population



Demographics



Humidity



Land cover



Temperature



INFO

This research work is part of the project "Infectious Diseases and Allergies" of the Helmholtz Climate Initiative.

Can climate change increase tick-borne infectious diseases? Dr. Stefanie Castell, Martín Lotto Batista and their team at the Helmholtz Centre for Infection Research (HZI) are researching the future developments in Lyme disease. They are bringing together different data sources and scenarios to gain insights into the interplay between Lyme disease and climate change.

Would you like to know more about this topic?

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The models combine Lyme disease cases reported to the Robert Koch Institute (RKI) with data from the Helmholtz Centre for Environmental Research (UFZ) on tick population and land cover, as well as data from the Climate Service Center Germany (GERICS) on temperature and humidity.

Maps are created from the combination of these data sets: How high is the risk in a certain area in Germany?

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HELMHOLTZ CLIMATE INITIATIVE

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An initiative of the Hermann Helmholtz Association of German Research Centres

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