



WANTED

DEAD OR ALIVE



THE MEDICAL UNIVERSITY OF VIENNA ASKS FOR YOUR HELP

Who are you?

You like to enjoy nature and can't wait for the perfect day to finally start your outdoor activities again? You enjoy hiking, geocaching, mushroom hunting or simple strolls in beautiful forests and nature areas? You are fond of collecting things for a good reason? Then you are perfect to help us!

Who are we and what do we want?

We are the Austrian research group for ticks and tick-borne pathogens at the Institute for Hygiene and Applied Immunology of the Centre for Pathophysiology, Infectiology and Immunology at the Medical University of Vienna. As the name already tells we are interested in ticks and the microorganisms they contain such as *Borrelia burgdorferi* sensu lato, the causative agent of Lyme borreliosis.

We want to evaluate the current microbiological situation of ticks all over Austria. This helps us monitor certain pathogens and other microorganisms that may or may not play a role in human disease. For this we need to collect a significant number of ticks from different places of our country - and this is where we need your help!

What can you do for us?

If you are not scared of arachnids ("spider-animals" characterized by 8 legs in comparison to insects with 6 legs) and plan a longer time outside where you actively move through nature areas, we would like to ask you to collect ticks from vegetation for us! For statistical reasons we ask you to collect at least 20 ticks per location before you send us your collection. We also ask for the exact location by GPS coordinates and to fill out the tick collection form (see end of file).

How to collect ticks?

The most common method used by biologists is the so called "flagging" method. Flagging means dragging a piece of cloth (e.g. old bedlinen, flannel sheets, any other fabric with not too smooth texture) – the so called "flag" – over scrubs, high grass and small trees on the side of paths. Ideally it should be white (or light-coloured) so that ticks that attach to it can be easily spotted and collected in a properly sealed container. This method makes use of the passive hunting behaviour of ticks. A questing tick just waits for a host in high grass or bushes with its first pair of legs reaching out, ready to attach to anything that passes it. More information about flagging can be found in the FAQs in the end of this document.



What kind of ticks can be expected in Austria?

The most common tick in Austria is *Ixodes ricinus* which is a so-called three-host tick. This means during its whole life it feeds three times on different hosts. In between these three blood meals the tick moults into different life stages which will most notably vary in size.



Life stages of *I. ricinus* ticks. From left to right: adult female, adult male, nymph, larva

When a tick hatches from an egg it is called “larva” and very small (< 1mm). Due to this small size it is often not even recognized as a tick. However, one might notice very small dark dots that move around. If you find one larva, most probably there will be (much) more because you probably entered a ‘tick nest’.

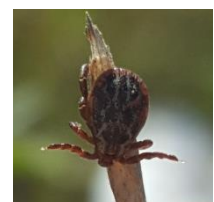
The second life stage, after the larva has fed on its first host and moulted, is the “nymph”. These are of bigger interest to us because this life stage is the most common one found on people. Because a questing nymph already had one blood meal as a larva, this life stage might already contain pathogens which were taken up from the first host.

The last and biggest life stage is the “adult” tick. Here one can discriminate between female (black & red coloured) and male (black) ticks now.

Occasionally other tick species can be found:

- *Dermacentor* ticks:

These are quite large compared to *Ixodes* ticks and if you find them on your flag you most likely only get to see the adult life stages. These ticks especially occur in alluvial forests and can be active when it is still or already too cold for *Ixodes* ticks.



- *Haemaphysalis* ticks:

When compared to *Ixodes* ticks they are smaller and the adult stage of this species (size-wise) is more like the nymphal stage of *Ixodes* ticks. All life stages of this tick are possible to encounter when going flagging, however, they are more of a rare bycatch.



Safety instructions for tick collecting

When you actively go out for collecting ticks for us you should also consider some protective measurements:

1. Wear long and light-coloured clothes.
This will help you notice ticks much faster when they get onto you.
2. Put your trousers into your socks.
It might look funny but doing so will make it harder for the tick to get access to your skin because they can only crawl on the surface of your cloths and not on the inside.
3. Wear good and closed shoes.
4. Actively check yourself for ticks.
A tick that got onto you will be crawling around a bit looking for a good area on your body before it stings you.
5. Change your clothes when you are home and don't put worn clothes in rooms that are used regularly (best would be to wash them immediately).
Ticks might be brought home via your clothing after outdoor activities and will keep looking for a host. However, the most often dry environment of a person's home will most likely lead to the death of ticks after a few days.

In case of a tick-bite don't panic! There is no need for calling an ambulance or go to hospital. Simply remove the tick by grabbing it, either with your fingers or forceps, as close to the skin as possible and pull it straight out. You can keep the tick in a sealed container until it dies or immediately kill it and throw it away – in this case make sure you really killed it or at least wrapped it in an escape-proof way. Keep an eye on your tick-bite location and look out for skin changes such as expanding red rings - so called 'erythema migrans'- which can be an indicator for an infection with *Borrelia*. Itchiness and small rashes are normal after tick- and insect-bites.



Please send the ticks incl. the tick collecting form to following address:

To
Anna-Margarita Schoetta
Tick Research Group
Institute for Hygiene and Applied Immunology
Kinderspitalgasse 15
1090 Vienna

Additional information

If you have any further questions you can contact us via email:

anna-margarita.schoetta@meduniwien.ac.at

TICK COLLECTION FORM

Sender information (if we have questions)

Name of Sender: _____

Email address: _____

Phone number: _____

Collection information

Collection location name: _____

Collection date: _____

Collection location GPS coordinates*: _____

*If you have a smartphone use google maps and your GPS system to find out the coordinates as follows: open google maps and locate yourself by pressing the 'location' button. The app will show you where you are now. Next, simply press the red pin on the map for a few seconds and you will get your coordinates.

Province:

Lower Austria

Styria

Salzburg

Upper Austria

Tyrol

Vorarlberg

Burgenland

Carinthia

Vienna

Additional information

How many ticks were collected: 20 20-40 >40

Time of collecting: morning (until 12:00) noon (12:00 -14:00)

afternoon (14:00-18:00) evening (after 18:00)

Weather: sunny cloudy misty/wet rainy

other: _____

Temperature*: _____

*Please check the temperature for the time you were collecting. If you don't have a weather app just google 'weather' + the name of the collection location and you get this info directly from google for every hour of the day.

Any other comments:

Frequently asked questions (FAQ)



Where can I find ticks?

Ticks like any deciduous forests, because there they are protected from heat and drought. Hence, a short mown meadow exposed to sun would not be the perfect place to look for ticks. Also not every forest is the same. Some are quite dry and don't have many bushes, however, you can still flag the leaf litter and young trees. If a forest has a nice undergrowth scrubs and bushes can be flagged.



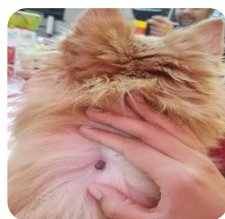
Do I need to use a flag like in the pictures?

No, that is not needed. You can decide whatever fits best to your outdoor activity. If it is more convenient a light-coloured piece of cloth could even be attached to a rope on your backpack being dragged along as you walk. You can also simply use your hands to stroke a cloth over bushes, scrubs, leaf litter and high grass in the shade of forests.



Which container should I use for collecting?

For collecting, we recommend a container that can quickly and safely be closed. The more ticks you collect the more you will start to struggle to keep them all in. We usually use 50 ml tubes and can handle about 40 ticks this way but it is up to you how many ticks you collect in one tube and what you feel comfortable with. When it gets crowded inside you need to tap the tube a few times before opening to get ticks away from the lid and also take care not to crush them when closing it again.



Do you also want engorged ticks from my pets?

No, thank you, currently we do not have a project in which we could use those ticks. Now we only want to investigate questing ticks of a known location. However, if you take your dog along for tick collecting and you also find ticks on your pet next to your flag, then these can be collected as long as they didn't bite your dog yet and are definitely from the same collection location.



How do I prepare ticks for sending?

If available transfer the ticks to a smaller container. If the ticks are still alive you can freeze them for 30 minutes to make it easier to transfer them and then put all from one location together in a smaller container (e.g. 15 ml tube or smaller). Alternatively, you can also simply wrap them in a sheet of white paper closed with tape and additionally put them in a sealed plastic bag. Please don't forget the tick collection form. You can then simply mail us an envelope via Austrian post.