PARASITES AND RISING TEMPERATURES

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DUE TO RISING TEMPERATURES...

disease vectors are increasing their activity period throughout the year and their geographical range. This means that vector-borne diseases are appearing in previously free areas, or in endemic areas at times when pets are unprotected.

Many of these vector-borne diseases are a serious threat to your patients, and some pose an important public health risk as well. Stay curious, stay vigilant... you might have to face these pathogens soon!

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Year-round tick activity means that vector-borne diseases become a year-round problem. Rising temperatures and pet movement work in combination to increase the incidence of cases. Pet movement helps diseases spread, while rising temperatures help them become established.

Prof. Łukasz Adaszek
A member of the Faculty of Veterinary Medicine in Lublin.

KEY TAKEAWAYS

- Ectoparasites are **increasing their periods of activity throughout the year** and spreading to new areas.
- **Common pet parasites are vectors for important diseases** such as babesiosis, dirofilariosis, leishmaniosis, Rickettsial diseases, and Lyme disease (borreliosis).
- Pets are being left unprotected at times where parasites are still active; therefore, **we need to shift to a continuous protection paradigm**.
- Vets play a crucial role in educating pet owners that parasites are not just a nuisance, but **a risk to animal and public health**.
- Reality is changing day by day, and we need to increase our surveillance to **keep our knowledge updated regarding parasite distribution**.

PARASITES ARE MORE THAN JUST A NUISANCE!

Rising temperatures are affecting parasite-host relationships in a profound way. Warmer weather enables parasites to remain active for longer, and spread to areas where they were previously absent. Disease transmissibility is also on the rise. Most worrisome of all, disease is spreading to non-endemic areas.

TICKS

- **Babesiosis**
- **Lyme disease (borreliosis)**
- **Rickettsial diseases**

FLEAS

- **Bartonellosis**
- **Flea tapeworm (*Dipylidium* spp.)**

SANDFLIES

- **Leishmaniosis**

MOSQUITOES

- **Heartworm (*D. immitis*)**
- **Subcutaneous dirofilariosis (*D. repens*)**

Prof. Agustín Estrada Peña
Professor at the University of Zaragoza, specializing in tick-borne pathogens and the consequences of climate change or global warming.

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Many vets are only maintaining a level of vigilance for the same three or four parasites but may be unaware of the broader risks. We need to educate our vets to be proactive, flexible, and open-minded in terms of the parasitic diseases they may encounter.

TICKS

Ticks have a high vector capacity. Most have a three-host life cycle that lasts several years.

A significant proportion of ticks are infected with at least one pathogen. Ticks usually feed for several days on one host and engorge until they complete their blood meal. Unlike mosquitoes or sandflies, ticks have to **feed for many hours**, even days, **to transmit disease**.

Most tick populations are sustained by wildlife hosts, so it is very difficult, if not impossible, to control their numbers. As a general rule, and although there are exceptions, **ticks prefer wooded and swampy environments**. However, pet owners are increasingly finding them in urban and suburban areas. At least one species, *R. sanguineus*, **can complete its cycle indoors, and is responsible for the domestic cycle of some Rickettsial diseases**. Ticks are vectors of important zoonoses such as Lyme disease (borreliosis).

Distribution

It is changing: some of them, such as *Rhipicephalus sanguineus*, the brown dog tick, occur mainly in Southern Europe. Others, such as *Dermacentor* spp. are found in most of Europe but not Scandinavia. *Ixodes ricinus* is found all throughout the continent.

FLEAS

Fleas are a year-round problem because they can complete their cycle indoors.

Distribution

Fleas have a worldwide distribution. In Europe, they are found almost everywhere there are pets.

Fleas are the most common ectoparasite that vets face. **Because pets are the main host**, it is possible to control flea numbers through pet parasite protection. However, gaps in administration can **allow fleas to reproduce and to pollute the home**.

Fleas carry the zoonotic pathogen responsible for bartonellosis.

Fleas live indoors and can quickly colonise the household. Since they are a year-round problem, vets should educate Pet Owners on the need for **year-round flea protection**.

Prof. Łukasz Adaszek
A member of the Faculty of Veterinary Medicine in Lublin.

In Poland, we have observed an increase in the number of bartonellosis cases in cats. Fleas are, of course, vectors of *Bartonella*. It's not clear what role seasonal change is playing in this increase, but cases are certainly more numerous.

SANDLFLIES

European sandfly populations have undergone marked changes in the last two decades.

Content provider: CDC/ Frank Collins. Photo credit: James Gathany

Distribution

Mostly confined to Southern Europe, small sandfly populations are also now present in Germany. In Italy and Spain, sandflies have been making northward gains, and today they are found at a much higher altitude.

Because sandflies are weak fliers, their spread is limited. Nevertheless, in the last two decades they have expanded their geographical range **spreading to the Northern regions of Italy and Spain.** As a consequence, **leishmaniosis has appeared in these areas**.

Sandflies are also **staying active for longer in the year, causing an increase in leishmaniosis cases** where the disease is endemic. Because dogs are the main reservoir, protecting dogs against sandfly bites is an **indirect way to protect public health**.

MOSQUITOES

Dirofilarial larvae require a certain temperature to develop into the infective L3 stage in mosquitoes.

Distribution

There are mosquito populations all throughout Europe. There are also five invasive *Aedes* mosquito species in Europe, some of which could be viable vectors for filarial infections.

Another interesting point to note is the spread of *Aedes albopictus* (the tiger mosquito) from Asia to Europe.

Heartworm disease and other filarial infections are endemic mostly in the Mediterranean Basin. This is mainly due to the fact that **mosquitoes need to feed on an infected host first in order to transmit the disease**. In colder climates, where mosquitoes are active for just a few months, the chances of transmission are much lower, and the larvae cannot develop to an infective stage. **However, as temperatures rise and the warm seasons become longer, mosquitoes will acquire a higher vector capacity for dirofilariosis**.

In Poland, *Dirofilaria repens* was rarely seen several years ago, but it is **now considered endemic**, in part as a result of infected animal movement. *D. repens* has become endemic in Austria, and some believe the same will happen with *D. immitis* in the near future.

Even if most dirofilariosis cases are imported into Central and Northern Europe, **there are already viable vectors present in many of these areas. Rising temperatures could cause these diseases to spread**.

Prof. Jacques Guillot
Professor of Parasitology and Mycology at the Veterinary College of Nantes (Oniris) and member of the research group IRF at the University of Angers.

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In France I see lots of dogs and cats with fleas every day. I don’t think fleas are as affected by seasonal change, since they tend to mainly live indoors. Also, flea-borne diseases in dogs and cats tend not to be as severe. However, it is important to bear in mind the zoonotic potential of some flea-borne diseases.

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