

Raccoon dog represents a more acute risk than raccoon as vector for transmission of local parasites

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Compared to the racoon, the racoon dogs are more closely related to foxes and thus the more emerging threat as an additional vector. Credit: Tanja Duscher/Vetmeduni Vienna

The raccoon and the raccoon dog are two non-indigenous animal species that have become established in Europe in the past decades. Their increasing abundance has not only made them the most common carnivore species in some countries, but has also made them of interest to parasitologists as potential hosts for diseases. A team of researchers from Vetmeduni Vienna has now analysed samples from both species in Austria. The raccoon dog, which is more closely related to the fox, was shown to serve as an additional host for local parasites. Like the fox, it represents a risk as a host of zoonotic parasites, such as the fox tapeworm or trichina worms, that are also of relevance for humans. The raccoons sampled, as they mainly originated from fur farms, were still largely pathogen-free.

The results were published in the journal *Parasitology Research*.

Raccoons and raccoon [dogs](#) are non-native [species](#) in Europe, being endemic to North America and the Far East, respectively. Both were introduced to northern Europe and have extended their range to the south. In some places, they are even the most common carnivore species. And they are additional carriers for disease. Both are potential hosts for a number of different parasites, such as the fox tapeworm, which can also infest humans.

Raccoon still relatively harmless as disease carrier

Raccoons and raccoon dogs are often confused, but they are actually quite easy to distinguish by the differences in their face masks. Despite their similar appearance, the two species are not as closely related as the raccoon dog is with the fox. This also makes the raccoon dog a risk as an additional vector of disease, such as the fox tapeworm, a proven parasite of local foxes. But the raccoon can also transmit human-relevant parasites, such as the raccoon roundworm.

Researchers from Vetmeduni Vienna for the first time studied samples from Austrian animals in the laboratory looking for parasitic pathogens. "Important was above all the question whether the animals can contribute or are already contributing to an increased spread of local parasites," explains Georg Duscher of the Institute of Parasitology. The study revealed that the raccoon currently represents a lower risk than the raccoon dog. "We have so far not discovered any parasites in the raccoon samples," the senior author explains. This finding coincides with studies conducted in other European countries that have also found few relevant pathogens.

Raccoon dog: Relationship to fox a greater risk

The raccoon dog, on the other hand, represents a greater risk than the raccoon. In addition to parasites that cannot be transmitted to humans, the researchers also found the fox tapeworm as well as the trematode *Alaria alata*, or Duncker's muscle fluke, in individual samples. These were taken from raccoon dogs in different habitats across Austria. The infections with the fox tapeworm were restricted to western Austria, those with *A. alata* to the East. In both areas, the parasites were also shown to infest local foxes.

Infections with the parasite *B. cf. microti*, in comparison, were found in samples regardless of their location. This parasite can also be transmitted by foxes. The researchers thus produced the first evidence of a parallel infection of the two animals in Europe. "The raccoon dog therefore clearly is an additional vector of fox-type [parasites](#) and should be controlled regularly," says Duscher.

Species distribution model could make studies easier

The abundance of the two carnivores in Austria remains relatively low in

comparison to Germany and northern Europe, says first author Tanja Duscher from the Research Institute of Wildlife Ecology. This also has to do with the geographic conditions. She has created a so-called species distribution model for the two animals. The model calculates the probability of presence of the species in Austria. "The [species distribution model](#) allows us to predict where the two carnivores are most likely to spread in Austria. Such a model could help to support epidemiological monitoring."

The raccoon dog, being more closely related with foxes, represents a greater risk as a host, says Georg Duscher. This non-native animal should therefore be controlled regularly – although the raccoon should not be excluded either. The latter has so far been given a clean bill of health with few parasitic infestations. "Most raccoons in Europe originate from fur farms and are still largely parasite-free, probably because of the veterinary examinations," explains Georg Duscher. The mixing of the founder populations, however, leads to parasitic transmission and could make raccoons more relevant in the future.

More information: Tanja Duscher et al. The raccoon dog (*Nyctereutes procyonoides*) and the raccoon (*Procyon lotor*)—their role and impact of maintaining and transmitting zoonotic diseases in Austria, Central Europe, *Parasitology Research* (2017). [DOI: 10.1007/s00436-017-5405-2](#)

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