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Introduction of new parasites in Denmark

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Movement of wildlife across borders and between different regions entail an increased risk of (re-) introduction and spread of new or otherwise low prevalent diseases, which may have consequences not only for the wildlife itself but also for pets, farm animals and humans.

The lecture presents examples of such parasites/parasitic diseases:

Setaria tundra, a mosquito-borne filarioid nematode which was detected for the first time in Danish deer in 2010. This parasite is usually considered harmless but is capable of causing peritonitis and mortality in ungulates. The newly detected parasite was genetically very similar to previously published isolates from France and Italy, and may have been spread to Denmark from southern Europe.

***Giardia* spp.** a zoonotic, unicellular parasite (protozoa) well known in Danish livestock but recently found in extremely high numbers in Danish deer with chronic diarrhea and emaciation. Molecular epidemiological studies are ongoing. At the present time it is unknown whether *Giardia* spp. in Danish deer has been introduced, and little is known about the transmission rate between deer and farmed ruminants.

Echinococcus multilocularis (the small fox tapeworm) was detected for the first time in Denmark approximately 10 years ago in 3 foxes from the Copenhagen area. Since then, no systematic surveillance has been performed, and therefore the current prevalence among wildlife and pets is unknown. So far the parasite has not been found in intermediate hosts (rodents) in Denmark. *Echinococcus multilocularis* causes severe chronic liver damage (alveolar echinococcosis) in the intermediate host including humans, whereas the final host remains clinically unaffected. It is not known whether the parasite was introduced by dogs returning to Denmark after a stay in endemic areas or by wild carnivores entering the country. Increasing prevalences are observed in our neighboring countries, and migrating raccoon dogs from Germany are thought to entail a risk for transmission and spread of this much feared parasite.

Likewise, invading foxes and raccoon dogs may cause a risk of increasing numbers of the roundworm ***Trichinella***. This parasite infects not only wild animals but also pigs, horses and humans. There are no signs of infection in animals whereas humans, depending on ingested number of parasites, will suffer from e.g. fever, myalgia, edema, chronic muscle pain and even death. Today Denmark, contrary to our neighboring countries, is classified as an area with negligible risk of trichinellosis based on documented low prevalence of *Trichinella* spp. in Danish wildlife.

Examples of other parasites that are already present in the country but may be further distributed by invading wildlife are the French heartworm ***Angiostrongylus vasorum*** and the scabies mite ***Sarcoptes scabiei***.

The round worm ***Baylisascaris procyonis*** is an example of a zoonotic parasite which has not yet been detected in Denmark but may be introduced by migrating raccoons. This parasite is capable of infecting a wide range of mammals including dogs and humans. In the latter, severe neurological disease is seen almost inevitably leading to death or lasting neurological sequelae. The eggs of *B. procyonis* are environmentally resistant and resemble those of the common roundworm in dogs: *Toxocara canis*. This may create a dangerous situation for dog owners as well as veterinarians, and is one of the reasons for maintaining a far-sighted veterinary contingency plan.