ZOONOTIC PARASITES *ECHINOCOCCUS MULTILOCULARIS* AND *TRICHINELLA SPP.* IN WILDLIFE IN SWEDEN

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Wildlife species are reservoirs for numerous zoonotic pathogens. Understanding their role in the maintenance of the pathogen provides critical information when trying to minimize human exposure. Alveolar echinococcosis caused by *Echinococcus multilocularis* and Trichinellosis caused by *Trichinella spp.* are two important examples. In the interest of public health, active surveillance programs for both parasites are conducted on Swedish wildlife.

Echinococcus multilocularis is a tapeworm in which a rodent-eating carnivore (primarily the red fox, *Vulpes vulpes*) serves as the definitive host and numerous small rodents act as intermediate hosts. Humans become infected following ingestion of eggs shed in feces of the definitive host. Although human infections are rare, they cause serious disease and can be fatal. The larval stage of the tapeworm develops primarily in the liver and behaves as a tumour-like growth. Diagnosis is often made 5-15 years after infection when signs of liver failure become apparent. Although *E. multilocularis* is endemic in central and eastern Europe, it was detected in Sweden for the first time in 2011. During an annual surveillance program for *Echinococcus*, a single red fox was found to be infected. To determine prevalence in foxes and geographic distribution, this was followed by extensive targeted surveillance of almost 3000 hunted foxes throughout the country. An additional three positive foxes were found, representing three distinct geographical areas in Sweden. It appears that *E. multilocularis* is endemic in Sweden, but at an extremely low level (0,1%). Risk for human infection is determined to be very low and further surveillance, research and public education are ongoing.

Trichinella spp. are parasitic nematodes that infect a wide range of vertebrate species, including humans. To date, eight species are recognized globally, of which four have been found in Sweden (*Trichinella spiralis, T. nativa, T. britovi* and *T. pseudospiralis*). Humans become infected following the consumption of raw or undercooked meat containing the larval stage of this parasite. Symptoms are directly related to the number of larva ingested and include diarrhea and abdominal pain in the early stages, followed by muscle pain and tenderness, fever and periorbital edema in later stages. Historically in Sweden, domestic pigs were the main source of infection. Following changes to pig husbandry, no positive cases have been detected in commercial pigs since 1994. Currently, the primary sources of infection are wild game. By law, all wild boar (*Sus scrofa*) and bear (*Ursus arctos*) meat sold for consumption must be tested. Following extensive testing, positive samples from 16 wild boar and 2 brown bears have been found since 2007. Wild boar carried *T. spiralis, T. britovi* and *T. pseudospiralis* at burdens of 0,1 –2000 per gram of muscle. One bear was infected with freeze-tolerant *T. nativa* and larval burdens in bears were 45 and 72/g muscle. Surveillance of other wild carnivores and raptors has regularly demonstrated *Trichinella* infection in lynx (*Lynx lynx*), red foxes and wolves (*Canis lupus*), and rare cases in wolverine (*Gulo gulo*) and tawny owl (*Strix aluco*).