

Ectoparasites of carnivores in north-eastern Poland

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Domestic animals were considered as a potential sources of zoonoses. However, recent years have shown that free-ranging animals are also a source of emerging human pathogens. Wild carnivores, in particular, harbor a variety of pathogens that could be transmitted to both domestic animals and humans. The parasitic fauna of carnivores is poorly described. At present, only groups of parasites are characterized, including cestodes and nematodes, and there is little information concerning the species of parasitic protozoan present in carnivores and their vectors.

The study was conducted in the years 2014–2015. The animals originate from Augustowska Puszcza Forest and were shot during selective hunting expeditions. Ectoparasites were collected from animal skin and fur by combing. In total, 167 red foxes (*Vulpes vulpes*), 88 raccoon dogs (*Nyctereutes procyonoides*), 76 badgers (*Meles meles*) and 38 martens (*Martes martes*, *Martes foina*) were sampled.

The dominant ectoparasites were hard ticks, *Ixodes ricinus* were found in red foxes (37.7%), raccoon dogs (53.4%) badgers (30.3%) and martens (9%); with *Dermacentor reticulatus* in red foxes (24.5%), raccoon dogs (25.0%), badgers (9.2%) and martens (3.0%). Subdominant among hard ticks were *Ixodes hexagonus* in red foxes (1.8%), raccoon dogs (4.5%), badgers (7.9%) and martens (7.9%); and *Ixodes crenulatus* in red foxes (2.9%), raccoon dogs (3.4%), and badgers (14.4%). All active developmental stages of *Ixodes* ticks were found, and only adults of *D. reticulatus*. The dominant fleas were *Chaetopsylla globiceps* in red foxes (60.0%), raccoon dogs (6.8%), badgers (15.8%) and martens (2.6%); and *Ch. trichosa* in red foxes (6.0%), badgers (2.6%) and martens (2.6%). Subdominant was *Paraceras melis*, found on red foxes (0.6%), raccoon dogs (2.3%) and badgers (10.5%). Single specimens of *Ctenocephalides canis* were found on red foxes and raccoon dogs, *Ceratophyllus* sp. and *Malareus penicilliger* on martens. More than 20.0% of red foxes and 50.0% of raccoon dogs were infected with *Sarcoptes scabiei*. The fauna of chewing-lice was typical for species: *Linognathus vulpis* on badgers, *Trichodectes canis* on raccoon dogs.

The findings reveal the presence of oligoxenic parasites and species associated with Carnivora. The identified *Paraceras melis* and chewing-louse are host specific. Only martens were infested by single fleas, whose origin was probably from the rodents and birds which had been their victims.