

## Identification of tapeworms in wild carnivores – molecular copro-diagnosis

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The current threats related to the migration of new parasite species and breaking the host specificity barrier require more research on the parasite fauna of free-living animals. Among the invasive introduced wild living animals in Europe, the two predatory mammal species – raccoon (*Procyon lotor*) and raccoon dog (*Nyctereutes procyonoides*) are spread widely in Europe. Both species were introduced to Europe in the 20th century – the raccoon from the USA and the Asian raccoon from the Far East. During the past decades, both of these species have expanded their range of occurrence and significantly increased their numbers. They are important reservoirs of numerous zoonotic so-called *emerging* or *re-emerging* pathogens which may pose a threat to public health. For example, studies from recent years indicate that the raccoon dog can also act as a definitive host (in addition to the red fox) for the zoonotic cestode *Echinococcus multilocularis* (Duscher et al. 2017). However, the current state of knowledge on the occurrence of helminths, including tapeworms, in wild carnivores in Europe is insufficient and the identification of cestodes in raccoons and raccoon dogs was often only solely based on morphological characters and parasites were classified to the genus level.

A total of 261 faecal samples (*P. lotor* – 103, *N. procyonoides* – 111, *Meles meles* – 47) were collected from the large intestine of carnivores during the necropsy. Animals were sampled from (Ruszów Forest District, Zgorzelecka Forest, Poland) during the predator control operation conducted as a part of the program to re-introduce the capercaillie (*Tetrao urogallus*) in the Lower Silesian Forest (grant LIFE11 NAT/PL/428). DNA were isolated from faeces using a Stool DNA Purification Kit (EURx, Gdansk, Poland). A fragment of mitochondrial (mt) 12S rRNA gene were amplified using PCR (Goldberg et al. 2014).

In total, cestode DNA were detected in 54 (20.7%) of faecal samples. The highest prevalence of tapeworms was recorded in badgers (48.9%), lower in raccoons (18.4%), and the lowest (10.8%) in raccoon dogs. Our report is the first molecular evidence of *Mesocestoides litteratus* and *Mesocestoides lineatus* in the faeces of introduced invasive carnivores as well as the tapeworm *Atriotaeonia incisa*, in both invasive and native carnivores.

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