

Molecular and morphological identification of *Isthmiophora melis* (Schrank, 1788) Luhe, 1909 (Digenea: Echinostomatidae) from American mink and European polecat in Lithuania

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The Echinostomatidae Looss, 1899 is a large digenean family known to occur in adult stage in the small intestine of more than thirty vertebrate species, including humans. Morphological identification of individual species of the genus *Isthmiophora* is difficult, due to high morphological similarities. In this case, identification based on molecular techniques is currently one of the most commonly used molecular methods in parasitology. The aim of our study was to identify the flukes of the genus *Isthmiophora* from American mink (*Neovison vison*) and European polecat (*Mustela putorius*), collected at the same time in Lithuania, using morphological and molecular data.

Forty American mink and 22 European polecat were collected/hunted in different parts of Lithuania between 2013 and 2015. Adult *I. melis* individuals were found in small intestine of 30 American mink and 21 European polecat using a total helminthological examination of individual organs. Fluke specimens were processed for morphological studies following standard procedure of temporary and permanent preparations. The partial 18S rDNA, 28S rRNA, and ITS-1, 5.8S rRNA, and ITS-2 regions were used for molecular identification.

According to morphological features, the flukes from both species of mustelids have short forebody (16.6% of body length), head collar reniform, small; collar spines 27 dorsal, four angle spines on each ventral lappet, longer than marginal spines; aboral collar spines ($61 \times 13 \mu\text{m}$) are slightly shorter than dorsal oral ones ($67 \times 14 \mu\text{m}$); post-testicular region is very long (38.8%), long armed cirrus, short uterus, large eggs ($134 \times 85 \mu\text{m}$). Molecular analysis revealed what most informative for species identification was ITS-1 region, which shared 100% homology with GenBank deposited *I. melis* isolates.

Based on morphological traits and DNA sequences data we conclude that the flukes of genus *Isthmiophora* in American mink and European polecat from Lithuania represent *I. melis* (Schrank, 1788) Lühe, 1909.