

## Microscopic and molecular analyses on digenean trematodes in red deer (*Cervus elaphus*).

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Digenean trematodes are a large group of internal metazoan parasites that are characterized by a complex life cycle including mollusc and vertebrate hosts. This study focuses on trematodes of the red deer (*Cervus elaphus*) in the Danube backwater forests southeast of Vienna. Particular emphasis was given to the naturally occurring liver fluke *Fasciola hepatica* and the introduced American liver fluke *Fascioloides magna* and the species specific differentiation between these two species. The former is a pathogen of medical and veterinarian, the latter only of veterinarian relevance.

Between May and November 2008, a *F. magna*-monitoring within the area of the "Nationalpark Donau-Auen" has been performed. Altogether, 158 deer faeces samples were collected from 13 sites. All samples were processed for microscopy with a modified Benedek sedimentation method and subsequently screened for trematode eggs. A collection of samples was chosen for molecular biology. 109 samples were homogenized, the DNA was extracted by two different types of DNA-extraction kits and subjected to three different kinds of PCR (trematodes, *F. magna*, *F. hepatica*). Species-specific differentiation was achieved by sequencing. In 49 of 158 samples (31%) trematode eggs were found by microscopical means. Additionally, there were eggs found in six samples which could not be specified. With molecular methods, 35 of 109 samples (32%) showed positive results during PCRs. The most frequent trematode species were members of the family Fasciolidae (29 samples), followed by Paramphistomidae (eleven samples). One sample contained eggs of Dicrocoeliidae and eleven samples showed eggs/DNA of more than one trematode species.

The overall trematode burden in the investigated area was 37%. This was not surprising concerning a naturally parasite load of wild living ruminants. However, the remarkably high percentage of positive *F. magna* samples points out the dangerous potential of an introduced parasite. No one sample was positive with *F. hepatica*.