

The impact of seasonal moose migrations in Biebrza Valley on shedding parasite dispersive forms in annual cycle

Katarzyna J. Filip-Hutsch¹, Michał Czopowicz²,
Aleksander W. Demiaszkiewicz¹

¹ Witold Stefański Institute of Parasitology PAS, Twarda 51/55, 00-818 Warsaw, Poland; ² Laboratory of Veterinary Epidemiology and Economics, Faculty of Veterinary Medicine, Warsaw University of Life Sciences – SGGW, Nowoursynowska 166, 02-787 Warsaw, Poland

Parasites are one of the most important agents affecting populations of wild terrestrial mammals. The spread of parasites and host-parasite relationships depends on many ecological factors, including season and population variables. To analyze those factors, we studied patterns of shedding eggs, oocysts and larvae of parasites of moose in Biebrza Valley, NE Poland. Moose are animals showing seasonal migrations from coniferous forests at the end of vegetation season to wetlands at the end of winter. We wanted to investigate how the level of parasite transmission in moose population will change in accordance to seasonal migrations of these animals and to find out what factor will be the most important - increased use of water bodies during vegetation season or higher moose concentration during winter one.

Two hundred thirty faecal samples of moose were collected over 16 months in the area of the Biebrza Valley (53° 24'25"N, 22° 47'43"E) and examined by a method of flotation, decantation and the Baermann technique on the presence of eggs of gastrointestinal nematodes, oocysts of coccidia, eggs of flukes and larvae of lung nematodes. Prevalence and intensity of infection understood as number of eggs/oocysts/larvae in one gram of faeces were estimated. Parasites were identified to the family, genus or species level on the basis of morphometrical features.

Examination of faecal samples of moose revealed the presence of 10 species or groups of parasites. Eggs of nematodes from Trichostrongylidae family, eggs of fluke *Parafasciolopsis fasciolaemorpha*, nematodes *Trichuris* spp., *Nematodirella alcidis* and larvae of *Elaphostrongylus alces* were the most prevalent. We found significant differences in parasite dynamics between two seasons – winter and vegetation one. Eggs of nematodes *N. alcidis* and larvae of nematodes from Protostrongylidae family were more prevalent in the winter; however it probably resulted from high resistance of those parasites on harsh weather conditions. There was also a positive correlation between shedding larvae of *E. alces* and the presence of snow cover. On the other hand, prevalence of *Eimeria alces* and *Aonchotheca* sp., as well as EPG of *P. fasciolaemorpha* was higher during vegetation season when contact of moose with water sources is increased. We have also observed a significant impact of increasing mean monthly temperature on higher level of shedding eggs of tapeworm *Moniezia* sp., fluke *P. fasciolaemorpha*, and nematodes from Trichostrongylidae family.

Our study revealed that high moose concentrations in the coniferous forest during winter did not affect parasite dynamics. Increased use of water sources by moose during vegetation season, availability of intermediate hosts in the environment as well as mean monthly temperature seemed to be of greater importance in parasite transmission.