

Original papers

A new occurrence of *Eimeria alces* (Apicomplexa: Eimeridae) in elk (*Alces alces*) in East Poland

Izabela Kuligowska, Aleksander W. Demiaszkiewicz, Rafał Kowalczyk¹

W. Stefański Institute of Parasitology, Polish Academy of Sciences, Twarda 51/55, 00-818 Warsaw

¹Mammal Research Institute, Polish Academy of Sciences, Waszkiewicza 1, 17-230 Białowieża; Poland

Corresponding author: kuligowska@twarda.pan.pl

ABSTRACT. A total of 114 elk faecal samples from the Polesie National Park and adjacent forest districts were examined in 2013 and 2014. Three samples were positive. The positive samples were from the village of Wereszczyn, the Sobibor forest district, and the Polesie National Park and Forest district, Parczew. Morphometric examination revealed that the oocysts belong to the species *Eimeria alces*. This is the second identification of the parasite in elk in Poland and the fifth worldwide.

Key words: Coccidia, *Eimeria alces*, elk, Polesie

Introduction

One of the most important factors affecting the health of elk in Poland are parasites. Infection of parasites and the diseases caused by them are the most common illnesses occurring in wild ruminants. Parasitic diseases occur more frequently than infectious diseases in hunting grounds. Elk are particularly sensitive to infection by parasites.

Literature data indicates that elk host two species of Coccidia, genus *Eimeria*: *E. alces* and *E. catubrina*. In farm ruminants and wild animals, coccidia cause diarrhea, poorer feed conversion, smaller growth rate in young calves and even death [1].

The aim of this study is to present evidence of the presence of this rare parasite in elk in Polesie region of Eastern Poland.

Materials and Methods

A total number of 114 faecal samples from elk in the Polesie National Park and adjacent forest districts were examined in 2013 and 2014. The samples were collected from fresh elk faeces (102 samples) or were taken directly from the rectum of animals immobilized for collaring (12 samples). Forty-eight faeces samples were taken in February

and March, 2013, and sixty-six samples in January, February and March, 2014. Faeces were examined by flotation according to Willis, with some modifications, namely the number of oocysts was determined in 3 grams of faeces. The Samples were examined under a light microscope. Pictures were taken using an Olympus BX50 light microscope and the program C.

Results and Discussion

The presence of *Eimeria* oocysts measuring 33.6×42.1 µm was observed in four of the 114 samples (the total oocyst counts being 9931, 590, 46 and 2994), giving a prevalence of 3.51% (Fig. 1). The positive samples were found from the village of Wereszczyn, the Forest district of Sobibor, and the Polesie National Park and Forest district of Parczew. Morphometric characters revealed that the oocysts belonged to the species *E. alces*.

This parasite was first recorded in Lithuania [2], where it was identified in 9 of 223 elk faecal samples. The intensity of infection was low, with two samples presenting 9–10 oocysts in the visual field of the microscope, at a magnification of 8×15, with only single oocysts being found in other samples. The second published identification of *E.*



Fig. 1. Oocysts of *Eimeria alces*

alces oocysts was in the Zlynkowski Distict, Bransk Province, Russia, where they were found in one of six faeces samples [3]. The author suggests that the identification of this rare species of parasite in such a small number of samples may be purely accidental or be as a result of reduced resistance of these animals caused by the Chernobyl disaster. It was identified for a third time in Belarus, where Pieńkiewicz [4] reports the presence of *E. alces* in the intestines of 12.2% of examined elk. Pyziel and Demiaszkiewicz [5] reported the presence *E. alces* in one moose in the Augustowska Forest, Poland, at an intensity of 100 oocysts per gram of faeces, and *E. catubrina* in one elk from the Bialowieza National Park. *E. catubrina* is a species typical of roe deer.

This identification of *Eimeria alces* in elk is the fifth in the world and the second in Poland, however, this finding took place in a completely different environment in the Polesie National Park and neighboring forest districts where the dominant habitat is wetland. The Polesie National Park is located in the Lublin province in the western part of

the Polesie region. The intensity of infection observed in the present study is the highest recorded so far, although similar intensities of coccidian invasion, as high as 6550 oocysts per gram of faeces, have also been observed in bison in the Bialowieza Forest [6]. Histopathological examination revealed the presence of inflammatory infiltration in the intestinal wall with the presence of parasite eosinophils and gamonts [7]. Such a high intensity of coccidian invasion in elk may result in a number of clinical symptoms.

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Received 11 October 2014

Accepted 24 November 2014