

Antibodies to *Toxoplasma gondii* and *Neospora caninum* in the serum samples of European bison (*Bison bonasus bonasus* L.) in Borecka Forest

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The European bison is the largest herbivorous animal in Europe and is protected both by international and national laws. In 1966, the International Union for the Conservation of Nature and Natural Resources (IUCN) classified the European bison as an endangered species in its Red List of Threatened Species, and the European bison in Białowieża Forest play an important role in the restitution and protection program of the species.

Toxoplasma gondii and *Neospora caninum* are closely related intracellular protozoan parasites and tissue cyst-forming Coccidia of the phylum Apicomplexa. The seroprevalence of both parasite species in ruminants including European bison has been investigated worldwide and found to vary greatly.

The present study was to monitor European bison in terms of the presence of antibodies against of *N. caninum* and *T. gondii*. Eight serum samples obtained from Puszcza Borecka in 2018 were analysed for the presence of antibodies to *T. gondii* using a multi-species ID Screen Toxoplasmosis Indirect kit (IDvet, Montpellier) and for *N. caninum* using an ELISA kit (IDEXX Laboratories Inc., Westbrook, ME, USA). The analysis was performed according to the manufacturer's instructions.

Anti-*T. gondii* antibodies were detected in four of the eight studied European bioson serum samples. Three of them showed a strong positive response to *N. caninum*. Confection of *T. gondii* and *N. caninum* were confirmed in one serum sample. The serum samples were tested also by Western Blot. The results confirmed the presence of antibodies against of *T. gondii* and *N. caninum*.

Particularly prominent bands specific for *T. gondii* were located in the area at 100-25 kDa, wheras for *N. caninum* in two main area at 100-35 kDa and 25-20 kDa.

It is worth pointing out that both the apicomplexan parasites, *T. gondii* and *N. caninum*, may cause abortion or congenital disease in its intermediate hosts. The effect of the infection of both these parasite species on the health status and conservation of the European bison should be taken into consideration. In addition, European bison meat containing *T. gondii* cysts may act as a source of toxoplasmosis for humans and for carnivorous animals, because a part of the slaughtered animals is used for human consumption and for feeding the wolf population in the Białowieża Forest.