

Gastro-intestinal nematodes of cormorants (*Phalacrocorax carbo* L. 1758) from the upper and the lower Vistula

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Cormorants inhabit different areas of Poland from April to October and usually migrate south in winter. Some of birds remain in Poland, mainly in Szczecin Lagoon and the Gulf of Gdańsk, as well as in Southern Poland. For the birds wintering in the area of the upper Vistula, the River's waters provide the main food source. Cormorants are at the top position in the food chain of aquatic ecosystems, and are particularly exposed to invasions of larvae parasitizing fish. Many of the parasite larvae occurring in prey fish grow and reach sexual maturity in cormorants.

Parasitological studies of gastrointestinal parasites were carried out on 20 cormorant pulli collected from a breeding colony situated on the island near the right bank of the Włocławski Reservoir, in the vicinity of Murzynowo, and 20 adults sampled in February near Tyniec. The gastrointestinal tract was divided into subsequent segments (oesophagus, stomach and intestine) and placed in separate crystallizers. These were then dissected longitudinally and decanted with saline (0.9% solution of NaCl). Parasites were identified according to Baruš et al. (1978).

In all birds, mixed invasions were observed, with a maximum species richness of four. The extensity of infection with the nematode *Contraecaecum rudolphii* of both, the pulli (Murzynowo) and the adults (Tyniec) reached 100%. The mean intensity of infection was 12.45 in pulli and 154.60 in adults. *Eustrongylides excisus* was the second most abundant nematode in the studied community; the extensity of infection reached 75% in nestlings (mean intensity 4.25) and 80% in adults (mean intensity 7.00). Less frequent species of nematodes were *Syncuaria squamata*, *Cosmocephalus obvelatus* and *Desmidocercella numidica*. The larvae of *Anisakis simplex* and *Hysterothylacium aduncum* occurred only in pulli collected in the area of Włocławek Reservoir, and the nematode *Baruscapilaria carbonis* occurred only in adult birds from southern Poland.