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BIOLOGICAL NOTES

PARASITES OF FISH FROM THE COASTAL LAKE KOPAŃ

Jolanta Morozińska-Gogol

*Department of Ecology and Protection of the Sea, Pedagogical University,
Arciszewskiego St. No 22 b, 76-200 Słupsk, Poland*

The coastal Lake Kopań is located in the middle coast of Poland, in an agricultural region near Darłowo. Shallow waters of this lake have a high level of eutrophication. Fishing on Lake Kopań is not intensive. The predominant fish species are white bream (*Blicca bjoerkna*) and pike-perch (*Stizostedion lucioperca*). Characteristic of Kopań is the absence of bivalve. This lake is a favourite place for water-birds.

Fish for parasitological analysis were caught by fish-net in spring 1999. After catching the fish were transported to the laboratory, at the *Department of Ecology and Protection of the Sea, Pedagogical University of Słupsk* and immediately examined. The fish were examined for ecto- and endoparasites with a binocular microscope. Parasites were prepared and preserved by typical methods for particular groups (Bylund *et al.* 1980). Mean intensity and prevalence of infestation were counted in the case of white bream.

The sample included 15 white bream (*Blicca bjoerkna*) and single pike-perch (*Stizostedion lucioperca*), perch (*Perca fluviatilis*), bream (*Abramis brama*) and tench (*Tinca tinca*).

Five parasites were collected: cysts of *Myxosporea*, ciliates from genus *Trichodina*, *Diplozoon paradoxum* (*Monogenea*), *Posthodiplostomum cuticola* (*Digenaea*, metacercariae), and *Acanthocephalus anguillae* (*Acanthocephala*). Protozoan parasites were not yet determined.

White bream were infected by *Trichodina* sp., *Diplozoon paradoxum* and *Posthodiplostomum cuticola* (Table 1). The predominant parasite of white bream was *P. cuticola*, prevalence is 60 %. Metacercariae of this species were visible as black points on the skin, fins and sometimes on gills or the body cavity of the fish. Prevalence 26,67 % was observed in the case of *D. paradoxum* and less than 20% for ciliates.

From the remaining fish in the intestine of tench was found one acanthocephala *A. anguillae* (♂) and on the gills of bream were observed cysts of *Myxosporea*. Perch and pike-perch were free of parasites.

Table 1

Parasite species recorded for fish from Lake Kopań

Fish species	No. examined fish / no. infected fish	No. of parasites	Species of parasites	Organs infected
White bream	15 / 3	555	<i>Trichodina</i> sp.	Skin and fins
	15 / 4	8	<i>Diplozoon paradoxum</i>	Gills
	15 / 9	53	<i>Posthodiplostomum cuticola</i>	Skin, fins, gills and body cavity
bream	1 / 1	Not counted	<i>Myxosporea</i>	Gills
tench	1 / 1	1	<i>Acanthocephalus anguillae</i>	Intestine
perch	1 / 0	-	-	-
pike-perch	1 / 0	-	-	-

Parasites like *Trichodina* sp. have been encountered in polluted and eutrophic regions (Rohde 1993). Very interesting is the fact of the ciliate's absence from gills.

D. paradoxum parasitizes gills of cyprinid fish (Le Brun *et al.* 1988). The pathogenic influence of monogenean is unknown.

In distinction to the above-mentioned *P. cuticola* have intermediate and final hosts. The first intermediate hosts are molluscs from the genus *Planorbis*, second - fish and final fish-feeding birds, especially heron. Cyprinid fish are the most important 2nd intermediate host (Gibson 1996) but also percid, esociform and salmonid fish.

Peculiarly striking is the fact of the absence in Kopań of digenean like *Diplostomum* spp., a very frequent parasite in our region in freshwater and brackish fish.

Like trichodiniids, *A. anguillae* have been known for polluted and eutrophic regions (Galli *et al.* 1998, Kennedy *et al.* 1989). Acanthocephalan which were found in tench occur in the western Palearctic and using isopod *Asellus aquaticus* as intermediate host (Kennedy *et al.* 1989, Valtonen & Crompton 1990). *A. anguillae* is characteristic for many fish species, especially cyprinid, which are very often clumped, a really pathogenic species.

SUMMARY

Fish from the coastal Lake Kopań were examined for parasites. The predominant white breams were infected by *Trichodina* sp. (Ciliata) *Diplozoon paradoxum* (Monogenea) and *Posthodiplostomum cuticola* (Digenea). The digenean was a predominant species - prevalence 60%. Tench was infected by acanthocephalan *Acanthocephalus anguillae*. Cysts of *Myxosporea* were found on the gills of bream (Table 1).

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PASOŻYTY RYB Z PRZYMORSKIEGO JEZIORA KOPAŃ

Streszczenie

Ryby, z przymorskiego jeziora Kopań, przebadano pod względem parazytologicznym. Karpie były zarażone orzęskami z rodzaju *Trichodina* sp., *Diplozoon paradoxum* (Monogenea) i *Posthodiplostomum cuticola* (Digenea). Digenea dominowały - ekstensywność 60%. U lina stwierdzono kolcogłowa *Acanthocephalus anguillae* a na skrzelach leszcza zaobserwowano cysty *Myxosporea* (Tabela 1).