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Parasitology

**PARASITIC CILIATES (PROTOZOA, CILIOPHORA) OF THE
COMMON BREAM, *ABRAMIS BRAMA* (L.) AND WHITE BREAM,
BLICCA BJOERKNA (L.) FROM DĄBIE LAKE (POLAND)**

**PASOŻYTNICZE ORZĘSKI (PROTOZOA, CILIOPHORA) U LESZCZA
ABRAMIS BRAMA (L.) I KRĄPIA *BLICCA BJOERKNA* (L.)
Z JEZIORA DĄBIE (POLSKA)**

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A total of seven species of parasitic ciliates was recovered from the studied fishes of Dąbie Lake located in the estuary of the Odra River. The common bream harboured the following species: *Chilodonella hexasticha*, *Ch. piscicola*, *Ichthyophthirius multifiliis*, *Trichodina modesta*, and *Trichodinella epizootica*. The white bream turned out to be the host for: *Ch. piscicola*, *Capriniana piscium*, *I. multifiliis*, *T. modesta*, *Tripartitella copiosa*, and *T. epizootica*. Three of the above species constitute new records for the parasite fauna of the common bream in Poland, while five—new records for the white bream. Ciliates *T. modesta* are a new species for Polish parasite fauna. The white bream became a new host for *C. piscium*. The measurements and photographs of *T. modesta* and *T. copiosa* are provided in this paper.

INTRODUCTION

Ciliates of the family Trichodinidae of the common bream, *Abramis brama* (L.) and the white bream, *Blicca bjoerkna* (L.) from Polish waters are poorly known. Only one species had been hitherto recorded from those two hosts, identified by the authors as *Trichodina domerguei* (Wallengren, 1897). These protozoans on the common bream were recorded from the Vistula River near Warsaw by Kozicka (1951) and from the Włocławski Reservoir by Waluga and Własow (1988). This species was also reported to infect gills of the white bream from the Vistula Lagoon and the Ma-

surian Lake District by Wegener (1909) (cited after Grabda 1971). The other relevant publications on the common bream and white bream, list the protozoans found—on the generic level only—as *Trichodina* sp. They were found on the common bream from lake Warniak (Groba 1973) and from lake Kortowskie (Własow et al. 1991). On the white bream, the parasite was found in the Konin Lakes (Pojmańska et al. 1980) and on the hatch and fry of the white bream from lake Gośławskie (Niewiadomska 1977).

Among other ciliates, *Ichthyophthirius multifiliis* Fouquet, 1876 was recorded on the common bream (Grabda 1971) and the white bream (Grabda 1971; Niewiadomska 1977; Pojmańska et al. 1980). In addition to that, *Chilodonella piscicola* (Zacharias, 1894) was found on the common bream (Kozicka 1951) and *Apiosoma* sp.—on the white bream (Niewiadomska 1977; Pojmańska et al. 1980).

The aim of the present work was to contribute to the knowledge on the ciliates inhabiting the gills of the common bream and the white bream from Dąbie Lake. The present study will supplement scarce data on the above-mentioned hosts from the Polish waters. There have been no studies like this conducted hitherto in the Polish Western Pomerania.

MATERIAL AND METHODS

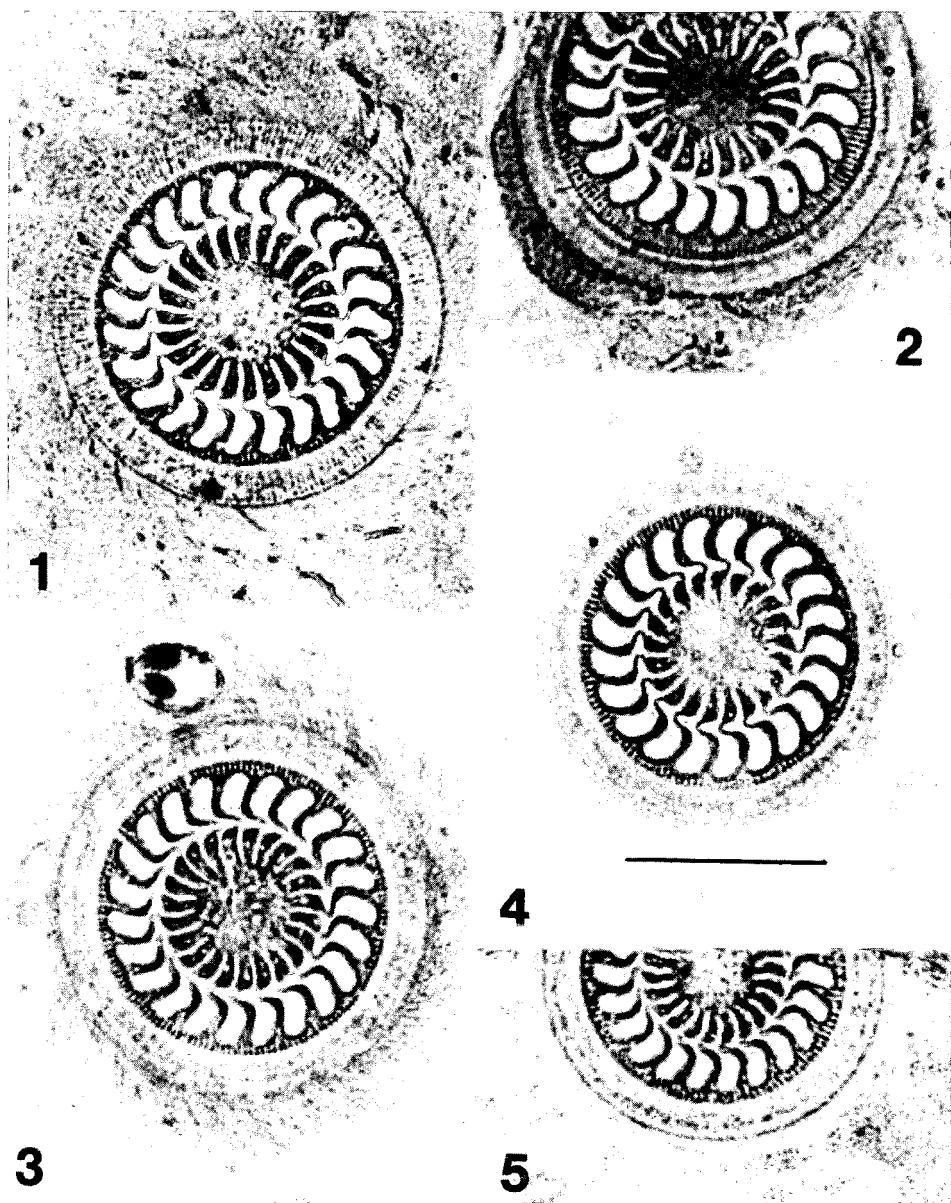
The fishes were collected from Dąbie Lake, connected with the estuarial section of the Odra River and located within the city limits of Szczecin. The present material was collected within 1969–1971 at the time of the survey of metazoan parasites (Wierzbicka 1974, 1977a, b, 1978). A total of 233 common bream, *Abramis brama* (L.) and a total of 229 white bream, *Blicca bjoerkna* (L.) were collected. The total lengths of the former ranged from 10.0 to 58.0 cm, the age—from 1+ to 10+. The total lengths of the white bream ranged from 7.5 to 34.0 cm and their age was from 1+ to 12+.

During the necropsies performed on fresh fishes, the scrapped material from the gills was studied under microscope. Subsequently, the smears of the gills were prepared. Such preparations were silvered with the solution of AgNO_3 (the method of Klein) or stained with the Delafield hematoxylin and mounted in the Canada balsam. The measurements of the ciliates were conducted according to the procedure adopted by Lom and Dyková (1992).

RESULTS

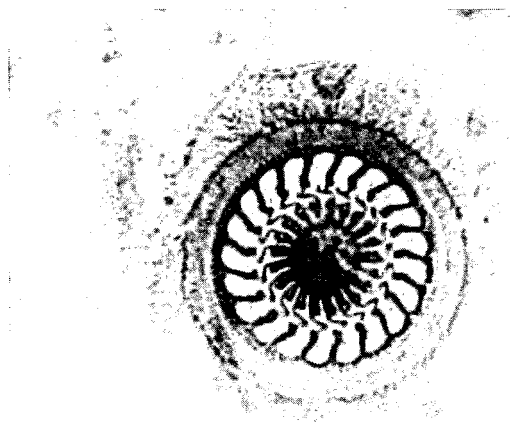
There were 7 species of parasitic ciliates found on the gills of the fishes surveyed. In this number 5 species on the common bream and 6 on the white bream.

Trichodina modesta Lom, 1970 (Figs. 1–5) occurred on both host species. They were recorded on 11 preparations from the common bream and on 10 from

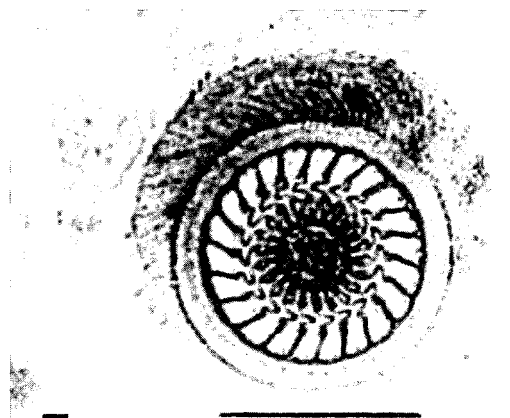


Figs. 1-5. *Trichodina modesta*; 1-3 from the gills of the common bream, 4, 5 from the gills of the white bream (scale bar = 20 μ m)

photographed by Mr. P. Šmietana



6



7

Figs. 6, 7. *Tripartiella copiosa* from the gills of the white bream (scale bar = 20 μ m)

photographed by Mr. P. Šmietana

the white bream. In most cases the intensity of infection was low. The number of denticles in the adhesive disk, as well as the morphometric characters of the protozoans found on both hosts, turned out to be very similar (Tab. 1). In the population inhabiting the common bream, however, those values were slightly higher, than the respective ones in the white bream.

Table 1

Particulars concerning *Trichodina modesta* and *Tripartiella copiosa*

Parasite species	<i>Trichodina modesta</i>				<i>Tripartiella copiosa</i>	
Host	<i>Abramis brama</i>		<i>Blicca bjoerkna</i>		<i>Blicca bjoerkna</i>	
	Range	\bar{x}	Range	\bar{x}	Range	\bar{x}
Diameter of:						
body	36.0–44.0	39.8	32.4–40.0	36.2	31.2–36.0	32.9
adhesive disc	27.2–32.0	29.2	23.2–30.4	26.5	17.6–24.8	21.2
denticulate ring	15.6–20.0	17.6	13.2–18.0	15.3	9.6–13.6	12.0
Number of:						
denticles	22–25	23.4	21–23	22.2	20–23	21.8
radial pins/denticle	6–7		6–7		4–5	
Dimension of denticles:						
blade	3.6–4.6	4.1	3.2–4.4	3.9	3.0–4.0	3.5
thorn	2.8–3.6	3.3	2.8–3.4	3.1	1.5–2.0	1.8
central part	1.2–1.6	1.3	1.0–1.5	1.2	1.2–1.5	1.4
length	4.2–5.0	4.6	4.0–5.2	4.4	3.2–4.0	3.4
Width of border membrane	3.2–4.0	3.6	3.2–4.0	3.7	2.0–3.0	2.4

Dimensions in μm , $n = 12$.

Tripartiella copiosa (Lom, 1959) (Figs. 6, 7) were found only on the gills of the white bream. Single or not numerous specimens of this species (up to 20 under a coverslip 24 x 24 mm) were encountered on 8 fish. The number of denticles in the adhesive disc and the dimensions of the ciliates are given in Tab. 1.

The other species—*Trichodinella epizootica* (Raabe, 1950) occurred on both hosts studied. Single specimens were recorded on the gills of four white bream and two common bream.

In addition to the above-mentioned parasitic ciliates, single specimens of *Chilodonella piscicola* (Zacharias, 1894) were found on the silvered preparations. They were present on three white bream and one common bream. The second species—*Ch. hexasticha* (Kiernik, 1909) was recovered from a single common bream only.

Examination of the fresh preparations yielded specimens of *Ichthyophthirius multifiliis* Fouquet, 1876 on both hosts. The prevalence of the infection of the common bream was 3.43%, while that of the white bream—4.37%. The intensity

of the infection was ranged from single to relatively numerous specimens. In addition to that, abundant specimens of *Capriniana piscium* (Bütschli, 1889) were present on the gills of one white bream.

Infection parameters of the individual species of the family Trichodinidae were undoubtedly higher. Some of the specimens, however, had their adhesive discs obscured what made proper identification, up to the species level, impossible.

DISCUSSION

Three species of the protozoans representing the family Trichodinidae were found on the surveyed common bream and white bream from Dąbie Lake. One of them—*Trichodina modesta* for the first time was found on the gills of zante, *Vimba vimba* (L.) from the former Czechoslovakia and the common bream from Hungary, and described by Lom (1970) as a new species. Subsequently it was recorded on the gills of the common bream from Kursk Bay (Stein 1982) and the white bream from the Rybinskij reservoir on the Volga River (Arthur and Lom 1984). The morphological and morphometric characters of *T. modesta* in the material presently analysed are consistent with the data of the above-mentioned authors. This is a new species for Polish parasite fauna.

Tripartiella copiosa described in the present paper appeared more often in the literature concerning different species (Šul'man 1984). These ciliates on the gills of the white bream in the former Czechoslovakia were recorded by Lom (1970), while a few specimens of this species on the same fish from the Rybinskij reservoir were mentioned by Arthur and Lom (1984). *T. copiosa* from Polish waters were described by Migąła (1976, 1993). Those papers dealt with another fish species. The data on *T. copiosa* from the gills of the white bream listed in Tab. 1, are consistent with the results of Arthur and Lom (1984).

Trichodinella epizootica, contrary to the above-mentioned species, was more frequently found on different hosts from Polish waters (Grabda 1971; Migąła 1976, 1993; Pilecka-Rapacz 1980; Wierzbicka and Orecka-Grabda 1994; Wierzbicka et al. 1998; and others). These protozoans, however, have not hitherto been found on the common bream and the white bream in the waters of our country.

Detailed discussion on the separate identity of *Chilodonella piscicola* and *Ch. hexasticha* was given by Kazubski and Migąła (1974), while a detailed description of *Capriniana piscium* was published by Prost (1952). The three above-mentioned species were found, among other fishes, also on the gills of the blue bream, *Abramis ballerus* (L.) from Dąbie Lake (Wierzbicka 1997). These ciliates have not hitherto been recorded on the common bream and white bream from Polish waters. The exception is *Ch. piscicola* reported previously from the common bream by Kozicka (1951). It is evident from the available literature and the data of Šul'man (1984) that the white bream is a new host for *C. piscium*.

CONCLUSIONS

1. There were 7 species of parasitic ciliates found on the gills of the surveyed common bream and white bream. The common bream was infected by: *Chilodonella hexasticha*, *Ch. piscicola*, *Ichthyophthirius multifiliis*, *Trichodina modesta*, and *Trichodinella epizootica*. The white bream harbored: *Ch. piscicola*, *Capriniana piscium*, *I. multifiliis*, *T. modesta*, *Tripartiella copiosa*, and *T. epizootica*.
2. The following parasites turned out to be new for the common bream in Poland: *Ch. hexasticha*, *T. modesta*, and *T. epizootica*. New for the white bream in Poland were: *Ch. piscicola*, *C. piscium*, *T. modesta*, *T. copiosa*, and *T. epizootica*.
3. *T. modesta* is a new species for Polish parasite fauna, while the white bream is a new host for *C. piscium*.

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PASOŻYTNICZE ORZĘSKI (PROTOZOA, CILIOPHORA) U LESZCZA *ABRAMIS BRAMA* (L.) I KRĄPIA *BLICCA BJOERKNA* (L.) Z JEZIORA DĄBIE (POLSKA)

STRESZCZENIE

Na skrzelach badanych leszczy i krapki z jeziora Dąbie, mającego bezpośrednie połączenie z ujściowym odcinkiem rzeki Odry, znaleziono 7 gatunków pasożytniczych orzęsków. U leszcza występowały: *Chilodonella hexasticha*, *Ch. piscicola*, *Ichthyophthirius multifiliis*, *Trichodina modesta* i *Trichodinella epizootica*. U krapki stwierdzono: *Ch. piscicola*, *Capriniana piscium*, *I. multifiliis*, *T. modesta*, *Tripartiella copiosa* i *T. epizootica*. Z wyżej wymienionych pierwotniaków nie były dotychczas notowane w wodach Polski u leszcza trzy gatunki: *Ch. hexasticha*, *T. modesta* i *T. epizootica*, natomiast u krapki pięć gatunków: *Ch. piscicola*, *C. piscium*, *T. modesta*, *T. copiosa* i *T. epizootica*.

Orzęski *T. modesta* są nowym gatunkiem dla parazytofauny Polski, natomiast krapka jest nowym żywicielem pierwotniaków *C. piscium*.

W pracy zamieszczono wymiary i fotografie orzęsków *T. modesta* i *T. copiosa*.

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