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Parasitology

HENNEGUYA WOLINENSIS N. SP. (MYXOSPOREA) FROM PERCH *PERCA FLUVIATILIS* L. FROM SZCZECIN FIRTH, POLAND

HENNEGUYA WOLINENSIS N. SP. (MYXOSPOREA) Z OKONIA *PERCA FLUVIATILIS* L. Z WÓD ZALEWU SZCZECIŃSKIEGO, POLSKA

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During parasitological investigations of perch *P. fluviatilis* L., in spring 1988 from waters of Szczecin Firth, noticed a presence of *Henneguya wolinensis n. sp.* (*Myxosporea: Bivalvulida*) cysts on fish skin. Milk-white, oval cysts measured from 0.5 to 1.0 mm occured under scales, on epidermis of all fish scaled body surface. Dimensions of spore: body length 22.3-27.2 µm, total length 61.1-69.3 µm, breadth 7.4-8.7 µm, polar capsules length 11.1--15.1 µm, polar filaments length 120-160 µm. The new described species compared with *H. creplini* and *H. psorospermica* from gills founding on perch together with *H. wolinensis n. sp.*

MATERIAL AND METHODS

37 specimens of perch *P. fluviatilis* L. originated from river Dziwna, one of Szczecin Firth's arm, examined during March-May 1988 period. Fishing place was located into the center of the city of Wolin, near by the outlet of municipal sewage into the river. All examined fishes ranged between 7.5 to 15.0 cm longitudo totalis, and most of them were the adults with mature gonads. The fishes studied immediately after fishing. The collected cysts were separated from skin, placed on an objective slide in heated glycerin-gelatin liquid (Donetz and Shulman 1973) and covered with a cover glass slightly compressing in order to liberate spores. Spores were examined without additional staining. Drawnings and measurements made on fresh or glicerin-gelatin's slides. All measurements were made according to Lom and Arthur (1989) and given in micrometers unless otherwise stated.

RESULTS

Species: *Henneguya wolinensis n. sp.*
Host: *Perca fluviatilis* L.
Localization: epidermis under scales
Locality: river Dziwna, Szczecin Firth

Deccription of cyst

Polysporous, oval, milk-white, small cysts measured from 0.5 to 1.0 mm were located under fish scales. They were attached to the layer of epidermis covering scales. From single to numerous cysts (max. 64) found on one specimen, mean about 20. The infected fishes ranged from 11.5 to 15.0 cm l.t., smaller fishes were free of cysts on skin. No regularity was observed concerning cyst localization on fish surface. They occured accidentally from head to fish tail on the whole body surface covered with scales.

The first time cysts were noticed on March, 17. They were seen as a white spots visible through scales, measured from 0.5 to 0.7 mm in diameter. Inside they contained well formed spores. Growning the cysts caused gradually the erection of scales. Infected fishes caught on the begining of April had strong erected scales. Generally the cysts were greater (0.7-1.0 mm) and when slightly touched very easy opened. The last infected fishes were collected on April, 8, later any cysts on fish skin were found.

The changes are that, matured cysts burst releasing spores. The infection didn't remain any macroscopically visible changes on the fishes.

Dimensions of spore

Spore is fusiform, elongated in front view, with widest area slightly anterior to posterior end of polar capsules, anterior end slightly concaved and blunt (length 22.3-27.2 µm), walls smoth and thin. Two equal caudal processes, thin and long (34.6--47.0 µm), from 1.5 to 1.8 times longer than body length. Caudal processes separated in 1/5 to 1/4 of their length, tips straight. Total spore length 62.3-66.2 µm). Inside spore two equal, pyriform, elongated polar capsules (11.1-15.1 µm). Seldom one of them a little longer (+1.0). Polar filaments slight, coils inside capsules unvisible. Polar filaments after releasing long (143.5-163.3 µm), both of similar length.

Spore and caudal processes slightly curved in side view (Fig. 1).

All measurements are given in Table 1 and Table 2.

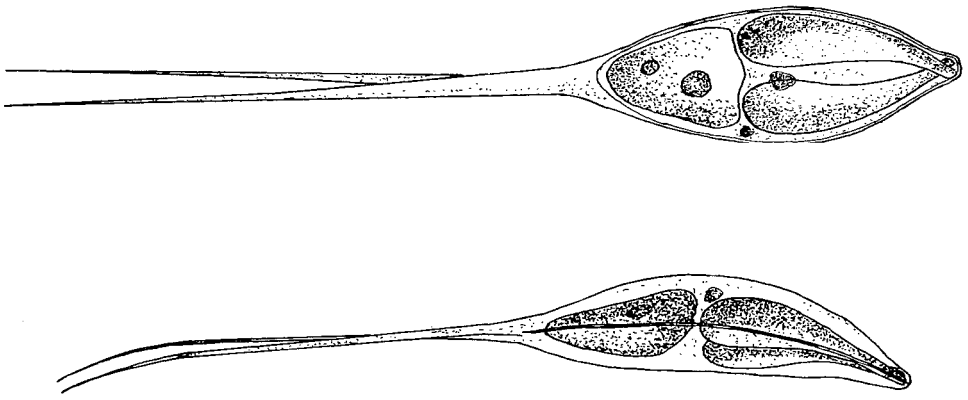

Fig. 1. Spore of *Henneguya wolinensis* n. sp. Bar 10 micrometers

DISCUSSION

So far from perch has been described 5 myxosporidian species of the family *Henneguya* Thelohan, 1982 from Euroasia freshwaters. Most frequently from gills, subcutaneous tissues and muscles (Šulman, 1984). However relatively often species of the family noted on skin and external body surface of other fishes (Šulman 1984, Minchew 1977, Nicholas and Jones 1959). But they were not observed on the skin of perch. Occasionally, only one species-H.lobosa was detected on fins of perch (Šulman 1984). Morphologically the new species resambles most nearly *H. oviperda, H. vovki, H. psorospermica, H. lobosa* and *H. creplini.* However *H. wolinensis n. sp.* differs significantly from the others in a few characteristics at least. These species are compared in Table 1. Among the species mentioned above only *H. vovki* is reported on fish body surface and *H. lobosa* very seldom on fins. The first one differs not only in host but very distincly in all dimensions, as well. Accepting wide changeability of spore dimensions within the family *Henneguya,* the new species resambles most nearly *H. lobosa* and *H. psorospermica.* However spore of *H. wolinensis n. sp.* is more elongated than the others. Generally all spore's elements are much greater (Table. 2). Polar capsules are always longer than 1/2 body spore length (1.5-1.8 times). Polar filaments length of *H. lobosa* is unknown, whereas these of *H. psorospermica* and *H. wolinensis n. sp.* differs essentialy from each other. Very importent is also fact that polar capsules of *H. lobosa* and *H. psorospermica* are located parallel and their anterior ends are wide, while polar capsules of *H. wolinensis n. sp.* are pointed and distinctly intersected.

The studied fishes were parasited not only by *H. wolinensis n. sp.* two other species-*H. psorospermica* and *H. creplini* were found on gills too. Accurate measuremen-

Table 1

Spieces of *Henneguya* with spores similar to those of *H. wolinensis n. sp.*
All measurements for range and mean (in parentheses) in micrometres

Species	Host (s)	Localization	Body			Cadual processes length	Polar capsules		References
			length	breadth	thickness		length	breadth	
1	2	3	4	5	6	7	8	9	10
H. oviperda (Cohn, 1895)	*P. fluviatilis* *Esox lucius* *L. lucio-perca*	ovary kidney, intestine walls (?)	16–22	9–10	5–4	10–28	6–11	2.3–2.5	Shulman 1984
H. vovki Achmerov, 1960	*Ophiocepha-lus argus war-pachowski*	body surface	10–11	6.5–7	5.3–5.5	22–24	6.5–6.8	1.8–2.0	Shulman 1984
H. psorosper-mica Thélohan, 1895	*P. fluviatilis* *E. lucius* *L. lucioperca* *Lota lota* *Pelecus cul-tratus*	gills, musculat., intestine walls, mouth cavity	10–15	6.2–9	4–6	14–30	6.2–11	2.3–3	Shulman 1984
H. psoro-spormica f. gigantica	*P. fluviatilis*	–	16.5–21	7.5	–	27–45	10.5–12	–	Shagorov 1977 (in Shulman 1984)
H. lobosa (Cohn, 1895)	*P. fluviatilis* *Esox lucius* *E. reicherti*	gills, fins (seldom) mouth cavity	10–27	4–8	4–5	20–30	6–10	1.5–2.5	Shulman 1984
H. lobosa f. major	*E. lucius*	–	23.9–29	5.3–7.5	–	–	6.5–10	–	Shulman 1950 (in Shulman 1984)
H. cerplini (Gurley, 1894)	*P. fluviatilis* *L. lucioperca* *Acerina cernua* *Aspro zingel*	gills	13–22.5	6.2–9	5–7	13–66	6.3–10	2–3	Shulman 1984
H. wolinen-sis n. sp.	*P. fluviatilis*	epidermis under scales	24–26 (24.9)	7–8.4 (7.5)	6–6.4 (6.1)	36–42 (40)	12.4–14 (13.2)	2.4–3 (2.7)	present paper

Henneguya creplini, H. psorospermica and *H. wolinensis n. sp.* from perch *P. fluviatilis*, river Dziwna, Szczecin Firth, Poland, All measurements for range and mean (in parentheses) in micrometres. Dimensions of cysts in milimetres[1]

Species	Cysts	Local.	Body			Caudal processes length	Total spore length	Polar capsules		Polar filaments length
			length	breadth	thickness			length	breadth	
H. creplini	oval, diameter 0.1–0.4 milk-white	gills	18–20 (19.2)	7.2–9.3 (8.2)	5.4–6 (5.7)	10.3–16.7 (14.4)	28.3–36.1 (33.2)	10.4–12.3 (11.4)	2.2–2.4 (2.3)	79.2–91.5
H. psorospermica	oval or elongated, 0.3–0.5 x 1.0–1.5, milk-white	gills	18.6–20.8 (19.7)	5–8.9 (7.4)	5.4–6 (5.6)	16.8–27.2 (22.9)	35.9–47 (42.6)	9.2–12.4 (10.6)	2–2.7 (2.4)	76.7–80.2
H. wolinensis	oval, diameter 0.5–1.0 milk-white	epidermis under scales	22.3–27.2 (25.1)	7.4–8.7 (8)	5.8–7.7 (6.9)	34.6–47 (41.3)	61.6–69.3 (66.3)	11.1–15.1 (13)	2.4–3.5 (3)	143.5–163.3
		[2])	24.1–26 (24.6)	6.3–7.9 (7.1)	5.8–6.3 (6)	37.9–42 (40)	62.3–66.2 (64.6)	12.9–14.2 (13.5)	2.6–3 (2.7)	120–160

[1]) 30 spores in glycerin-gelatin liquid of each species measured, [2]) fresh spores

ts of spores of these species were made. The obtained results show distinct differences between them (Table 2).

It's worth mentioning that spore dimensions of *H. psorospermica* are generally much greater than so far described from Poland (Pilecka-Rapacz 1980, El-Tantawy 1989).

37 specimens of perch have been studied on presence of *Myxosporea*. 13 have been parasited by *H. wolinensis n. sp.* (35.1%), between them 10 specimens by the three species at the same time (27%). Spores of *H. creplini* nave been detected on perch longest, till the end of April. Any spores have been detected in May.

In spring (III, IV, V) 1989 and 1990 have been caught 55 and 67 specimens of perch l. t. 8.0-17.0 cm, respectively from the same river and even the place of previous fishing. Cysts of *H. creplini* and *H. psorospermica* have been detected very often on gills, however any cyst detected on skin.

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STRESZCZENIE

Podczas badań parazytologicznych okoni *Perca fluviatilis* L. w III i IV 1988 roku z rzeki Dziwny (Zalew Szczeciński) stwierdzono obecność na skórze ryb cyst nowego gatunku *Henneguya wolinensis n. sp.* Białe, owalne, wielosporowe cysty wielkości 0.5-1.0 mm umiejscawiają się w warstwie epidermy bezpośrednio pod łuskami. Podstawowe wymiary spory: długość 22.3-27.2 µ m, z wyrostkami 61.6-69.3 µm, szerokość 7.4--8.7 µm, długość torebek biegunowych 11.1-15.1 µm, dł. nici bieg. 120-160 µm. Nowo opisany gatunek porównano ze znajdowanymi jednocześnie na skrzelach okonia *H. creplini*, i *H. psorospermica.*

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