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Fish parasitology

REDESCRIPTION OF *PSEUDACANTHOCOTYLA WILLIAMSI* (PRICE, 1938) (MONOGENEA) FROM GREENLAND HALIBUT, *REINHARDTIUS HIPPOGLOSSOIDES* (WALBAUM, 1792)

REDESKRYPCJA *PSEUDACANTHOCOTYLA WILLIAMSI* (PRICE, 1938) (MONOGENEA) Z HALIBUTA NIEBIESKIEGO, *REINHARDTIUS HIPPOGLOSSOIDES* (WALBAUM, 1792)

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In the course of a parasitological survey carried out on Greenland halibut, *Reinhardtius hippoglossoides* (Pleuronectiformes) from the eastern part of the Bering Sea (north Pacific) a single specimen of a monogenean fluke was found. The parasite, later identified as *Pseudacanthocotyla williamsi* (Price, 1938) Yamaguti, 1963 has never been found on a Greenland halibut. This fish species has been considered an atypical host for all monogeneans of the family Acanthocotylidae. The present work contains a detailed redescription of the parasite found.

INTRODUCTION

Monogenean flukes of the family Acanthocotylidae, with the exception of the subfamily Lophocotylinae, are parasites of elasmobranch fishes and they occur predominantly on their skin (Yamaguti 1963). This group had been studied by Monticelli (1899), Bonham and Guberlet (1938), Brinkmann (1939/40), and Palombi (1949) to name just a few. One of the most commonly studied species was *Acanthocotyle lobianchi* Monticelli, 1899. It was found, for the first time, on the skin of *Raja clavata* (Rajidae) from the Mediterranean Sea (Sproston 1946). The parasite name was originally spelled by Monticelli (1899) as "*A. lobiancoi* Montic." The most recent account of this parasite from *R. clavata* caught off Plymouth (UK) was by Malmberg and Fernholm (1991), who used scanning electron microscope (SEM) as a tool. The presently investigated parasite, was originally described as *Acanthocotyle williamsi* Price, 1938 and found on the skin of "Raja" off the Aleutian Islands, north Pacific (Sproston 1946). Subsequently this monogenean was transferred by

Yamaguti (1963) to his newly proposed genus *Pseudacanthocotyla* Yamaguti, 1963. Another record of this parasite was by Sekerak and Arai (1973). Those authors found a single specimen of this species while surveying 66 specimens of *Sebastes alutus* (Teleostei) from the north-eastern Pacific.

The present work contains redescription and illustrations of *Pseudacanthocotyla williamsi* (Price, 1938) Yamaguti, 1963 found on the gills of a Greenland halibut, *Reinhardtius hippoglossoides* (Walbaum, 1792), which is an atypical host for parasites of the family Acanthocotylidae.

MATERIAL AND METHODS

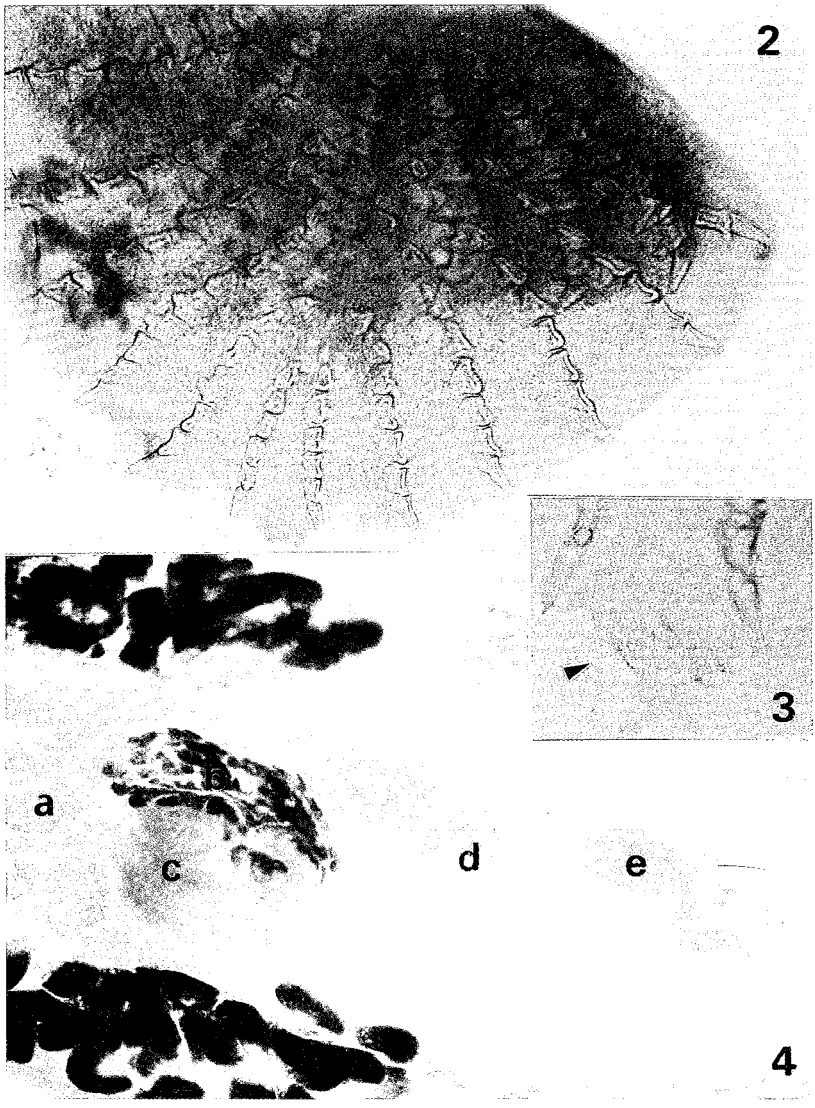
The fish surveyed originated from the north Pacific. They were caught in the spring of 1981 on a fishing ground in the eastern part of the Bering Sea. On board the ship they were frozen below –20°C. They were delivered to Szczecin, Poland in frozen state where they were subjected to parasitological examination in the Division of Fish Diseases, Agricultural University of Szczecin. This sample consisted of 7 Greenland halibut, *Reinhardtius hippoglossoides* (Walbaum, 1792) (Pleuronectiformes). The fish length (*TL*) ranged from 55.5 to 82.5 cm, while their weight—from 1 530 to 6 200 g. Their age was from 7+ to 14+.

The single monogenean specimen was preserved in 75% ethyl alcohol, following gentle flattening. Subsequently it was stained in alum carmine and after dehydration mounted on a microscopic slide in Canada balsam. The micrographs were taken using Olympus BX-50 compound microscope with Nomarsky interference contrast.

RESULTS

A single monogenean specimen, identified later as *Pseudacanthocotyla williamsi* (Price, 1938) Yamaguti, 1963 was found on the gills of one of the necropsied Greenland halibut, *Reinhardtius hipoglossoides*. The specimen found (Fig. 1) was 6.1 mm long, 1.3 mm wide. Its circular attachment disc (pseudohaptor) was 1.35 mm in diameter. It was armed with large robust hooks (Fig. 2) arranged in 20 rows (6, 7, 8, or 9 hooks in each row). A total of 156 hooks were observed on the attachment disc. On the posterior margin of the disc, small larval attachment organ was located (Fig. 3). It was armed with 16 small hooks, 0.026–0.028 mm long and 0.006–0.007 mm wide. The specimen found had 35 testis located in the posterior half of the body, between the vitellaria close behind the ovary and big oval receptaculum seminis (Figs. 1, 4). A bilobate seminal vesicle was found in front of the ovary. The vesicle was linked to elongate copulatory pouch with a short tubule (Fig. 4). Male genital pore was observed at the point of the intestine bifurcation, in a close proximity of the pharynx, whereas the end and opening of the uterus was not clearly visible (because of the damage to the specimen in this area).

Fig. 1. *Pseudacanthocotyla williamsi* (Price, 1938) Yamaguti, 1963 from the gills of Greenland halibut, *Reinhardtius hippoglossoides* (Walbaum, 1792); entire specimen, wentral view



Figs. 2–4. *Pseudacanthocotyla williamsi;* Fig. 2. Attachment disc; Fig. 3. Part of attachment disc with small larval attachment organ (arrow); Fig. 4. Details of reproductive system; a, testes; b, ovary; c, receptaculum seminis; d, seminal vesicle; e, copulatory pouch; f, vitellaria

DISCUSSION

The specimen of *Pseudacanthocotyla williamsi* found on Greenland halibut did not differ from the earlier descriptions. The armament of the attachment disc arranged in 20 rows and comprising a total of 156 hooks, as well as the number of testis (35) is consistent with the data provided by Sproston (1946) and Beverley-Burton (1984). The observed details of the reproductive system in the specimen from the Greenland halibut are also very similar to the illustrations of *P. williamsi* published by Yamaguti (1963) and Beverley-Burton (1984). Certain differences are observed in the size of the parasites. The presently described specimen was 6.1-mm long, whereas Yamaguti (1963) gives the length range of 3.7–4.4 mm. Larger size of the monogenean specimen found on the gills of Greenland halibut can be attributed to the freezing of the material, resulting in possible loosening of the parasite tissues.

The monogenetic fluke *P. williamsi* parasitises elasmobranch fishes (rays) (Yamaguti 1963; Beverley-Burton 1984). Sekerak and Arai (1973) suspected that the specimen of *P. williamsi* found by them on the gills of *Sebastes alutus* could have been transferred to that host during the fishing. Complex, based on large number of fishes, surveys of the parasite fauna of the Greenland halibut were conducted by Wierzbicka (1991, 1992) and Arthur and Albert (1994). There have been no previous records of *P. williamsi* parasitising Greenland halibut. The present record constitutes the second case of this species occurring on the gills of a teleost fish. It cannot be ruled out that is an accidental parasite for the Greenland halibut.

RECAPITULATION

1. The present finding of the monogenean *Pseudacanthocotyle williamsi* constitutes the first record of this parasite from the Greenland halibut, *Reinhardtius hippoglossoides*.
2. The Greenland halibut is an atypical (accidental) host for parasites of the family Acanthocotylidae.

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REFERENCES

Arthur J.R., E. Albert, 1994: A survey of the parasites of Greenland halibut (*Reinhardtius hippoglossoides*) caught off Atlantic Canada, with notes on their zoogeography in this fish. Can. J. Zool., **72**, 4: 765–778.

Beverley-Burton M., 1984: Monogenea and Turbellaria. In: Guide to the parasites of fishes of Canada [Margolis L., Z. Kabata (ed.)]. I. Can. Spec. Publ. Fish. Aquat. Sci., **74**: 7–209.

Bonham K., J.E. Guberlet, 1938: Ectoparasitic trematodes of Puget Sound fishes, *Acanthocotyle*. Am. Midland Naturalist, **20**, 3: 590–602.

Brinkmann A. jr., 1939/40: Contribution to our knowledge of the monogenetic trematodes. Bergens Mus. Arbok, Naturvitenskapelig rekke, 1: 117.

Malmberg G., B. Fernholm, 1991: Locomotion and attachment to the host of *Myxinidocotyle* and *Acanthocotyle* (Monogenea, Acanthocotylidae). Parasitol. Res., **177**: 415–420.

Monticelli F.S., 1899: Il genere *Acanthocotyle*. Archiv. Parasitol., **2**, 1: 75–120.

Palombi A., 1949: I Trematodi d'Italia. Parte I. Trematodi monogenetici. Archiv Zool. Italiano, **34**: 203–408.

Sekerak A.D., H.P. Arai, 1973: Helminths of *Sebastes alutus* (Pisces: Teleostei) from the north-eastern Pacific. Can. J. Zool., **51**: 475–477.

Sproston N.G., 1946: A synopsis of the monogenetic trematodes. Trans.Zool. Soc. London, **25**, 4: 185–600.

Wierzbicka J., 1991: Parasite fauna of the Greenland halibut, *Reinhardtius hippoglossoides* (Walbaum, 1792) from Labrador area. Acta Ichthyol. Piscat., **21**, 1: 21–29.

Wierzbicka J., 1992 Parasitic fauna of Greenland halibut, *Reinhardtius hippoglossoides* (Walbaum, 1792) from the Barents Sea. Acta Ichthyol. Piscat., **22**, 1: 31–37.

Yamaguti S., 1963: Systema Helminthum. IV. Monogenea and Aspidocotylea. Interscience Publ., New York–London.

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STRESZCZENIE

W trakcie badań parazytologicznych halibuta niebieskiego, *Reinhardtius hippoglossoides* (Pleuronectiformes) z północnego Pacyfiku, odłowionego we wschodniej części Morza Beringa, stwierdzono występowanie na skrzelach pojedynczej przywry monogenetycznej *Pseudacanthocotyla williamsi* (Price, 1938) Yamaguti, 1963. Gatunek ten nie był dotychczas notowany u tego żywiciela. Z danych literatury i badań własnych wynika, że halibut niebieski jest nietypowym żywicielem dla pasożytów z rodziny Acanthocotylidae występujących u ryb chrzęstnoszkieletowych (płaszczek). W pracy podano opis znalezionego pasożyta.

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