

**FIRST RECORD OF A FISH PARASITE *APOROCOTYLE SIMPLEX* (DIGENEA)
FROM THE POLISH EXCLUSIVE ECONOMIC ZONE OF THE BALTIC SEA**

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Abstract. One specimen of *Aporocotyle simplex* Odhner, 1900 (Digenea: Sanguinicolidae) was confirmed in 2004 from the branchial artery of a dab, *Limanda limanda* (Linnaeus, 1758), from the Gulf of Gdańsk. This work provides a partial description and a few morphological measurements of that specimen. This is the first record of *A. simplex* from Poland.

Keywords: Sanguinicolidae, fish blood fluke, *Limanda limanda*, dab, fish, parasite, Gulf of Gdańsk, Poland

The range of dab, *Limanda limanda* (Linnaeus, 1758) (Actinopterygii: Pleuronectidae) covers the European Atlantic coasts and stretches into the Polish Exclusive Economic Zone of the Baltic Sea. There are only two Polish publications dealing with parasites of dab (Markowski 1933, Rolbiecki 2004).

In 2004, nine dab specimens (221–224 mm, 154–197 g) were captured from the Gulf of Gdańsk, Poland and examined for parasites. One live specimen of *Aporocotyle simplex* Odhner, 1900 (Fig. 1), infecting the branchial artery of the second gill arch, was recovered. The parasite was preserved in hot 70% ethanol, stained with Gowers alum carmine, dehydrated in 90% acetic acid, cleared in benzyl alcohol, and mounted in Canada balsam. It was deposited in the Division of Invertebrate Zoology, University of Gdańsk. This is the first record of *A. simplex* in Poland.

Description and measurements of *Aporocotyle simplex* (all measurements in mm). Body fusiform with anterior end more pointed than posterior end. Body length 2.37×0.44 . Oesophagus 0.74 long, with the glandular posterior part with oesophageal gland cells measuring 0.17. Alimentary tract H-shaped, anterior- and posterior caeca 0.38 and 1.55 long, respectively. Number of testes 131, measuring ($n = 20$) $0.016\text{--}0.058 \times 0.025\text{--}0.058$ (average 0.043×0.036), between posterior caeca. Cirrus sac pyriform, recurvate with visible internal seminal vesicle and pars prostatica, submedially, beneath testes; cirrus sac 0.135×0.109 . Ovary oval, submedially, orienting diagonally and opposite of cirrus sac; ovary 0.16×0.13 . Uterus strongly plicate, between cirrus sac and posterior edge of testes and ovary. Uterine seminal receptacle posterior to and slightly lateral of ovary, 0.093×0.051 . Vitelline fol-

licles lateral to oesophagus and intestine, terminating at level of ovary. Excretory bladder not observed.

This specimen corresponds to previous descriptions (e.g., Thulin 1980a). Specimens of *Aporocotyle simplex* infecting dab are shorter than those infections American plaice, *Hippoglossoides platessoides* (Fabricius, 1780). Based on the published literature the vitelline follicles in specimens of *A. simplex* from dab should be less developed than those from American plaice (Thulin 1980a, 1991), but the present specimen had vitelline follicles that are well developed and surrounding the intestine.

Adults of *Aporocotyle simplex* mature in the blood vascular system, mainly branchial vessels, heart, and ventral aorta, of flatfishes (Pleuronectidae and Scophthalmidae). The range of the parasite covers the Arctic-, north Atlantic, and the north Pacific oceans. The majority of the host records are from American plaice and dab, but the parasite also infects flathead sole, *Hippoglossoides elassodon* Jordan et Gilbert, 1880; Atlantic halibut, *Hippoglossus hippoglossus* (Linnaeus, 1758); Greenland halibut, *Reinhardtius hippoglossoides* (Walbaum, 1792); flounder, *Platichthys flesus* (Linnaeus, 1758); witch, *Glyptocephalus cynoglossus* (Linnaeus, 1758); and European plaice, *Pleuronectes platessa* Linnaeus, 1758 (cf. Thulin 1980b). *A. simplex* has also been recorded in a representative of Scophthalmidae—turbot, *Psetta maxima* (Linnaeus, 1758) (cf. Køie and Petersen 1988). Additionally, Grabda (1977) recorded *A. simplex* in Alaska pollock, *Theragra chalcogramma* (Pallas, 1814), while Zubčenko (1981) did so in roundnose grenadier, *Coryphaenoides rupestris* Gunnerus, 1765; however, Thulin (1980a) suspected that these specimens were *Aporocotyle theragrae* Ichihara, 1970 based on the hosts'

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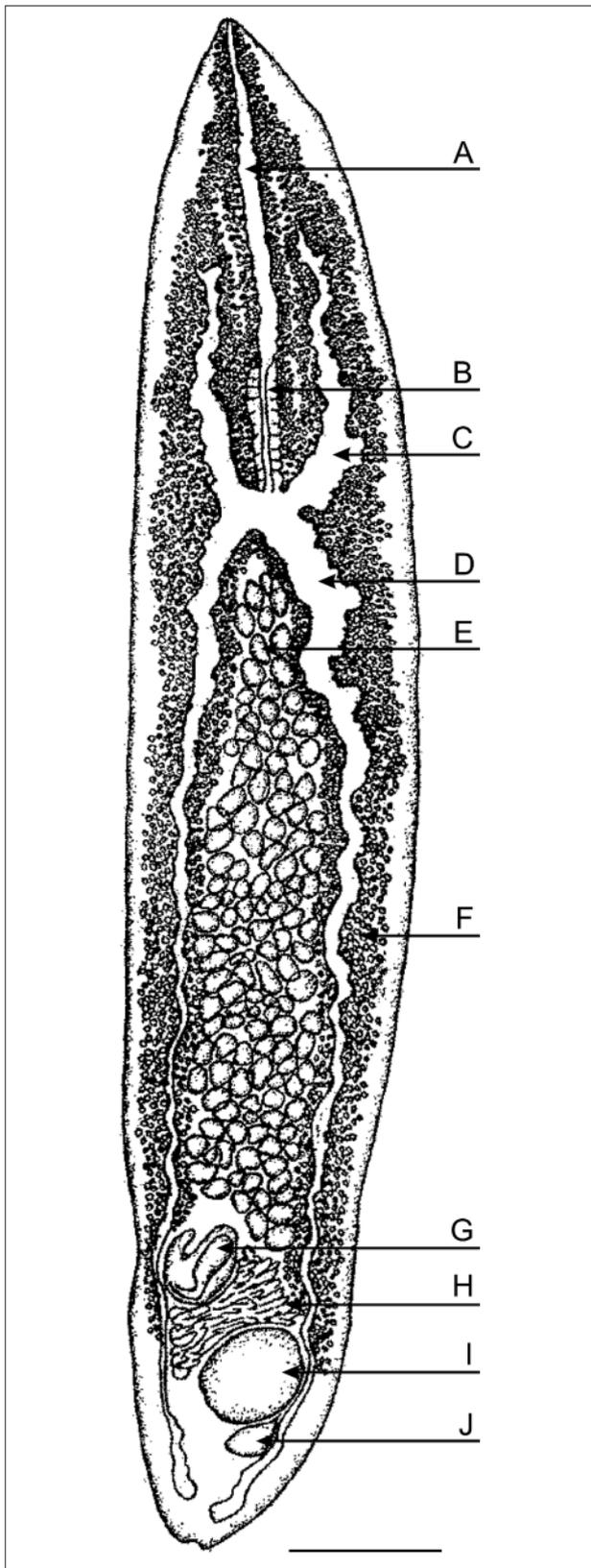


Fig. 1. *Aporocotyle simplex* from branchial vessels of dab, *Limanda limanda*, from the Polish Baltic Sea, scale bar = 200 μ m; A: oesophagus, B: posterior part of oesophagus with gland cells, C: anterior caecum, D: posterior caecum, E: testes, F: vitelline follicles, G: cirrus sac, H: uterus, I: ovary, J: uterine seminal receptacle

phylogenetic affiliation (Gadiformes) and geographic locality (Pacific Ocean). Indeed the Grabda's (1977) mistake was acknowledged by Grabda (1991), who amended the previous parasite's identification as *A. theragrae*.

Blood flukes, including *Aporocotyle simplex*, can harm the host fish by damaging the gills and consequently compromise the respiration. Adults and eggs can occlude blood vessels, leading to thrombosis, hyperplasia, epithelium hypertrophy, and, consequently—gill necrosis. Infected fish can have granulomatous nodules in the branchial cavity epithelium and the heart of infected fishes can have cercariae and/or schistosomule larvae (Thulin 1991).

Aporocotyle simplex is a marine species using either of the terebellid polychaetes *Artacama proboscidea* Malmgren, 1865 or *Lanassa nordenskiöldi* Malmgren, 1866 as intermediate hosts (Køie 1982, Køie and Petersen 1988), and flatfishes as the most commonly reported definitive host (Thulin 1991). Due to the lack of those species of polychaetes in the Baltic Sea would seem that the fluke using another annelids in that area, or *A. simplex* was introduced here in dab from the region of the North Sea.

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