

The first record in Hungary of *Apororhynchus silesiacus* Okulewicz and Maruszewski, 1980 (Acanthocephala), with new data on its morphology

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Abstract: Eight mature specimens (three males and five females) of *Apororhynchus silesiacus* Okulewicz and Maruszewski, 1980 (Acanthocephala, Apororhynchida, Apororhynchidae) have been found in the small intestine of *Erithacus rubecula* at Alsóperepuszta, Hungary (new geographical record). The species is redescribed and figured on the basis of the Hungarian material. The main differences from the original description concern the dimensions of the proboscis, the testes and the giant nuclei in males.

Key words: Acanthocephala, *Apororhynchus silesiacus*, morphology, *Erithacus rubecula*, Hungary.

INTRODUCTION

In the course of an investigation on the acanthocephalans from non-aquatic birds from the Collection of the Hungarian Natural History Museum, Budapest, 8 mature specimens of the genus *Apororhynchus* Shipley, 1899 were found. Although some of the specimens were in bad condition, the examination of these parasites revealed that they belong to *A. silesiacus* Okulewicz and Maruszewski, 1980 (until now known only from its original description) and provided new data about the morphometry of the species.

MATERIALS AND METHODS

The present study was based on 3 male and 5 female specimens collected from the small intestine (?) of *Erithacus rubecula* (coll. no. 830) captured in the Bakony (Alsóperepuszta) in July 1966. The specimens were fixed and preserved in a mixture of ethanol and formalin. They were studied in temporary 25-100 % glycerine mounts (for the elucidation of the morphology of proboscis), and dimethylphthalate mounts and lactic acid

mounts (for the elucidation of the structure of internal organs). One of the female specimens was dissected in order to enable a more detailed study of the internal organs (lemnisci, genital tract, eggs and acanthors). The specimens were studied by an Amplival microscope. The drawings were made with a drawing tube. The measurements are given in millimetres.

RESULTS

Apororhynchus silesiacus Okulewicz and Maruszewski, 1980

Description of male (Fig. 1.): Total length 3.21–3.51. Trunk almost conical, with length 2.0–2.31 and maximum width 0.80–1.05 at middle. Main longitudinal vessels (dorsal and ventral) connected by numerous transverse anastomoses. Giant nuclei in tegument 27–28 in number, arranged mainly along longitudinal vessels. Nuclei ameboid, with dimensions 0.050–0.105 × 0.050–0.088.

Proboscis spherical, with length 0.90–1.10 and width 1.70. Proboscis armed with 36–40 irregular spiral or fan-shaped rows, 10 (12) hooks in each row (? some hooks probably on invaginated posterior part of proboscis). Each hook situated in deep and narrow pit-like depression. Blades of hooks never reach outer margin of proboscis wall. Dimensions of hooks (blade length × root length) 0.010–0.0125 × 0.020–0.025. Neck (everted in one specimen only) with length 0.044 and width 0.375. Collar (everted in one specimen) armed with 3–4 circular rows of small spines. Lemnisci not clearly seen and, therefore, correct number of giant nuclei in them uncertain. Giant nuclei with dimensions (length × width) 0.0975–0.1075 × 0.0625–0.088.

Testes oval, situated in tandem and overlapping one another, with dimensions 0.80 × 0.60–0.65. Cement glands oval to dropshaped, 8 in number, situated in compact group, extending to level of posterior testis. Dimensions of cement glands group (length × width) 0.20–0.35 × 0.35. Ducts of cement glands 0.35–0.46 long. Saeftigen's pouch ovoid, 0.45–0.50 long and 0.25 wide. Genital bursa invaginated, 0.45–0.55 long.

Description of female (Fig. 2.): Trunk truncate, with length 1.65–2.15 (? deformed) and width 0.90–1.08. Giant nuclei in tegument 20–28 in number, ameboid, with dimensions (length × width) 0.0675–0.133 × 0.0475–0.0825. Proboscis spherical, with length 1.11–2.10 and width 1.74–2.49. Armament of proboscides not clearly seen due to numerous eggs within them. Proboscis receptacle reduced. Lemnisci long, bandlike, 1.25–2.61 long and 0.13–0.19 wide. Giant nuclei in lemnisci oval, 13 in number per lemniscus; dimensions of nuclei in lemnisci (length × width) 0.0575–0.1325 × 0.045–0.113. Length of genital tract 0.668: uterine bell 0.206 long, uterus 0.231 long, and vagina 0.231 long. Ligament sacs and proboscis filled with eggs. Eggs elliptical, without polar prolongations, 0.0675–0.0750 long and 0.030–0.0375 wide (measurements taken from isolated eggs out of the trunk). Acanthors torpedo- or mushroom-shaped, spinose, bearing anterior rosette of numerous embryonic hooks. Dimensions of acanthors: length 0.0750–0.0875, width at level of anterior enlarged part 0.0275–0.030, width at level of constriction 0.0225–0.025, maximum width of anterior part of acanthor 0.0225–0.035.

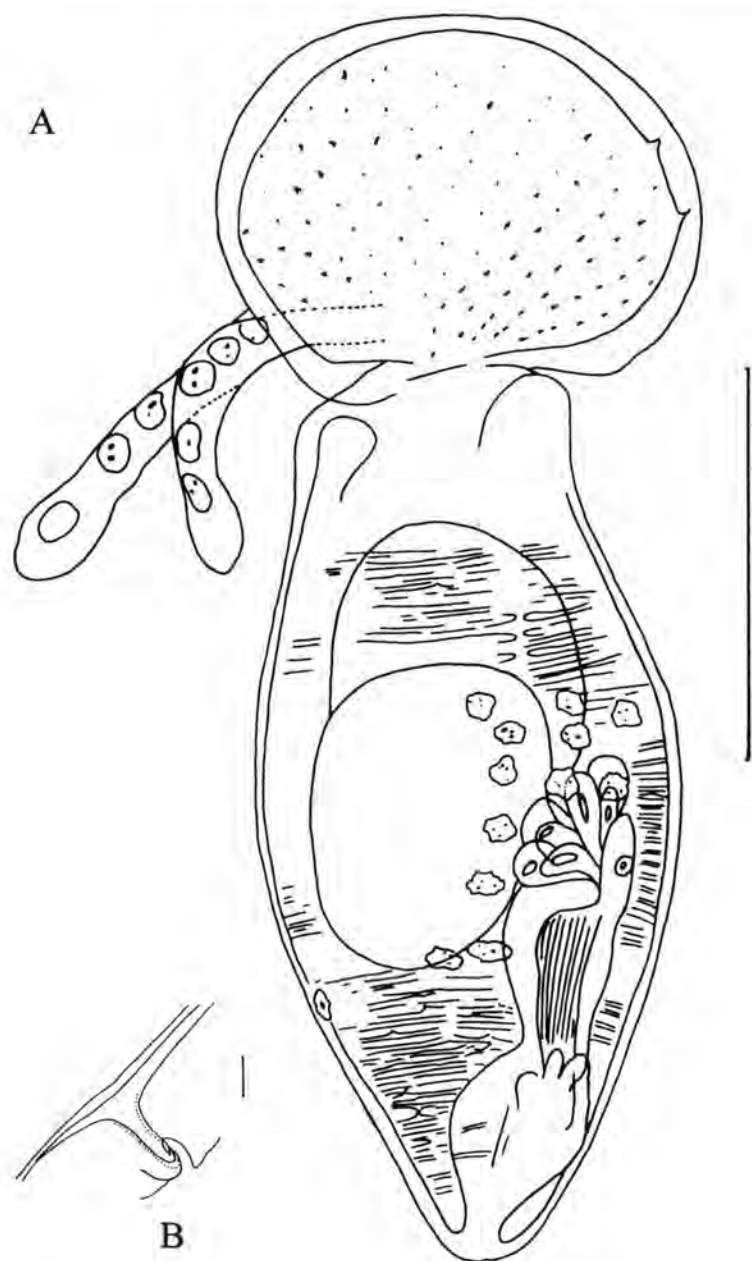


Fig. 1. *Apororhynchus silesiacus*, male. A – General view, B – Proboscis hook (Scale-bars: 11.0 mm; 30.02 mm).

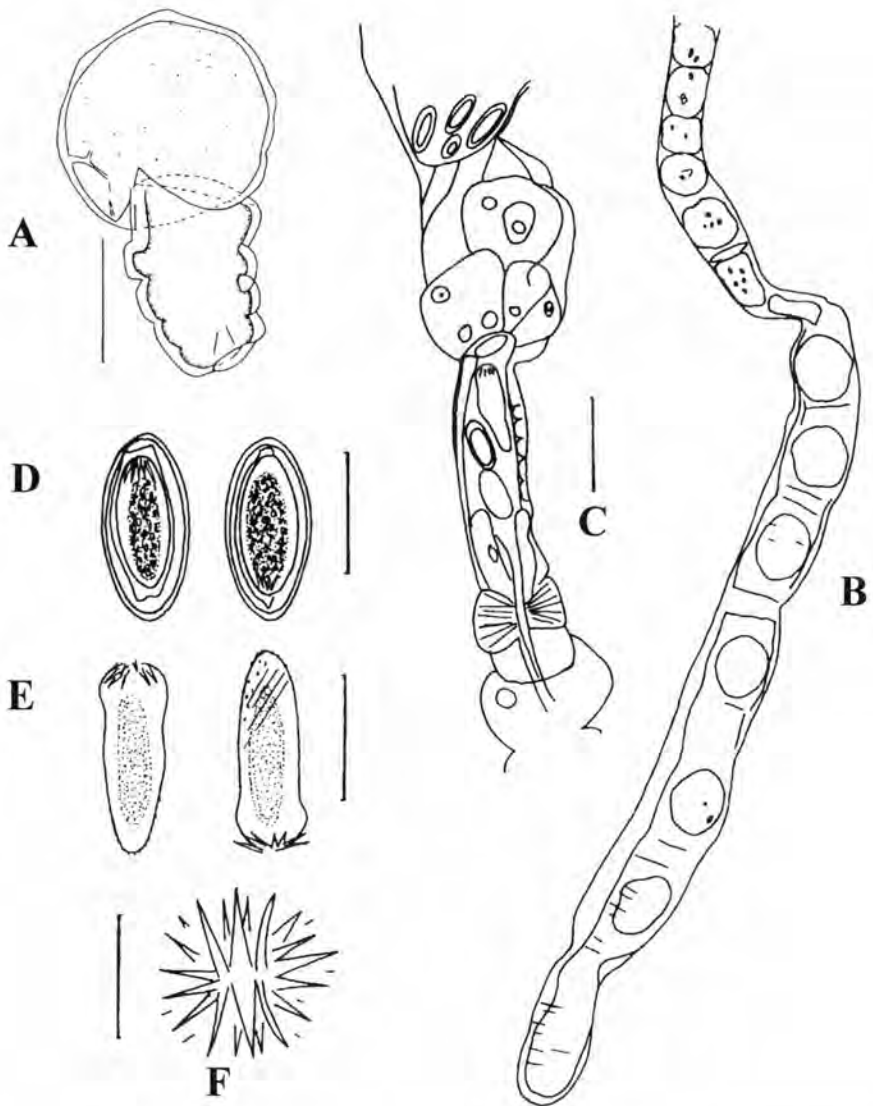


Fig. 2. *Apororhynchus silesiacus*, female. A – General view. B – Lemniscus. C – Genital ducts. D – Eggs. E – Acanthors. F – Anterior armament of acanthor. Scalebars: A–E – 41.0 mm; 50.05 mm, 60.1 mm; E – 80.05 mm; F – 90.02 mm.

DISCUSSION

The genus *Apororhynchus* Shipley, 1899 includes parasites occurring mainly in the cloaca and rectum of various passeriform birds. They are insufficiently known because of the scarcity of records. Until now, 6 species were included in this genus: *A. hemignathi* (Shipley 1896) Shipley, 1899 from the cloaca of *Hemignathus procerus* (Passeriformes), Hawaii (Shipley 1896, cited after Petrochenko 1958); *A. aculeatus* Meyer, 1931 from the digestive tract of *Oriolus cristatus* (Passeriformes), Brazil (Meyer 1931); *A. amphistomi* Byrd and Denton, 1949 from the cloaca of *Wilsonia canadensis*, *Parula americana* and *Geothlypis trichas* (Passeriformes), U. S. A. (Byrd and Denton 1949; Wells and Hunter 1960); *A. paulonucleatus* Khokhlova and Tsimbalyuk, 1971 from the cloaca and the rectum of *Motacilla flava*, *M. cinerea* and *Locustella ochotensis* (Passeriformes), Russian Far East (Tsimbalyuk 1965, Khokhlova 1966; Khokhlova and Tsimbalyuk 1971) and from the small intestine of *Glareola nordmani* (Charadriiformes), Siberia (Peresad'ko 1980); *A. chauhani* Sen, 1975 from the small intestine of *Athene brama* (Strigiformes), India (Sen, 1975); and *A. silesiacus* Okulewicz and Maruszewski, 1980 from the cloaca of *Erithacus rubecula*, *E. luscinia* and *E. megarhynchos* (Passeriformes), Poland (Okulewicz and Maruszewski 1980). A key to the species (without *A. chauhani*) is presented by Okulewicz and Maruszewski (1980).

The present material is very similar to the original description of *A. silesiacus* (Okulewicz and Maruszewski 1980). There are some differences concerning the dimensions of the proboscides of the males, i. e., 0.90-1.11 long and 1.17 wide in our specimens and 0.44 long and 0.51 in Polish specimens. Compared with the Hungarian material possessing testes with measurements 0.8-1.11×0.6-0.75, the original description reports considerably smaller dimensions of the testes, 0.19-0.21×0.11-0.13. In addition, the giant nuclei in both the tegument and the lemnisci of male specimens from Poland exhibit smaller dimensions. All these differences are probably due to the different degree of maturation of the worms.

This is the first record of *A. silesiacus* for the Hungarian fauna.

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Dimitrova, Z. M., Murai, É. and Georgiev, B. B.: Az *Apororhynchus silesiacus* Okulewicz and Maruszewski, 1980 (*Acanthocephala*) előfordulása Magyarországon és újabb adatok a faj morfológiájához

A szerzők a Magyar Természettudományi Múzeum Parazitológiai Gyűjteményét képező, az *Erithacus rubecula*-ban élősködő *Apororhynchus silesiacus* buzogányfejű fereg nyolc példányának meghatározása és morfológiai vizsgálata alapján annak új leírását adják. A magyar faunára új parazita az eredeti leírástól a proboscis, a herék és a "nagy magvak" méretében különbözik.

REFERENCES

- Byrd E. E. and Denton J. F. (1949): The helminth parasites of birds. II. A new species of *Acanthocephala* from North American birds. — *J. Parasitol.* **35**: 391-410.
- Khokhlova, I. G. (1966): Acanthocephalans from birds in Chucotka [in Russian]. — *Trudy GELAN*, **17**: 245-259.
- Khokhlova, I. G. and Tsimbalyuk, A. K. (1971): Acanthocephalans of genus *Apororhynchus* Shipley, 1899 and a description of a new species *A. paulonucleatus* nov. sp. [in Russian]. — In: *Sbornik Rabot po Gelmintologii Posvjascen 90letiju so Dnya Rozhdenija Akademika K. I. Skrjabina*, Izdatel'stvo 'Kolos', Moscow, pp. 426-431.
- Meyer A. (1931): Neue Acanthocephalen aus dem Berliner Museum. Begründung eines neuen Acanthocephalensystems auf Grund einer Untersuchung der Berliner Sammlung. — *Zool. Jahrb., Abt. Syst.* **62**: 53-108.
- Okulewicz, J. and Maruszewski, W. (1980): *Apororhynchus silesiacus* sp. n. (Apororhynchidae, Acanthocephala) — a parasite of passerine birds (Passeriformes). — *Acta parasit. polon.* **27**: 459-470.
- Peresad'ko, L. V. (1980): New nematodes and acanthocephalans from charadriiform birds in Western Siberia [in Russian]. — In: *Systematics and ecology of animals*, Izdatel'stvo 'Nauka', Novosibirsk, pp. 10-23.
- Petrochenko V. I. (1958): Acanthocephalans of Domestic and Wild Animals Vol. 2. [in Russian]. — Izdatel'stvo Akademii Nauk SSSR, Moscow, 458 pp.
- Sen, J. K. (1975): On a new species of *Apororhynchus* Shipley, 1899 (Apororhynchidea: Apororhynchidae) from India. — In: *Dr. B. S. Chauhan Comm. Vol.*, pp. 211-213.
- Tsimbalyuk, A. K. (1965): Acanthocephalans of animals on islands of the Bering Sea [in Russian]. — In: *Paraziticheskie Chervi Domashnikh i Dikikh Zhivotnykh*, Vladivostok, pp. 343-347.
- Wells, M. J. and Hunter, W. S. (1960): Helminths of the yellowthroat, *Geothlypis trichas*, during migration. — *J. Parasitol.* **46**: 623.