

New Records of Cestodes from Birds in Saudi Arabia

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Abstract. Five cestode species are recorded for the first time in Saudi Arabia on the basis of specimens collected from the region of Abha, in the SW part of the country. These are *Killigrewia delafondi* (Anoplocephalidae), *Retinometra serrata* (Hymenolepididae) and *Raillietina perplexa* (Davaineidae) parasitic in wild pigeon (*Columba livia*), and *Raillietina echinobothriida* and *R. dattai* (Davaineidae) parasitic in domestic chickens (*Gallus gallus domesticus*). The record of *R. perplexa* in *C. livia* is also a new host record.

Key words: Davaineidae, Anoplocephalidae, Hymenolepididae, Saudi Arabia.

Introduction

The avian cestode fauna in Saudi Arabia is poorly studied. Magzoub *et al.* (1980) described three species of the family Davaineidae parasitic in the domestic pigeon (*Columba livia domestica*) obtained from markets and presumably originating from the vicinities of Riyadh City. Al-Ankari *et al.* (2003) reported one species of the family Hymenolepididae from crested lark (*Galerida cristata*) from Al-Ahsa Oasis.

In 2003, domestic chickens (*Gallus gallus domestica*) and wild pigeons (*Columba livia*) were examined for helminth parasites. All the cestodes collected were found to belong to species which had not previously been recorded in this country. The present paper reports these new records of cestodes from wild pigeon and domestic chicken.

Materials and methods

A total of 5 male domestic chicken and 7 wild pigeons were examined in the summer and in winter of 2003. All the birds originated from the mountainous region of Abha, SW Saudi Arabia. Their digestive tracts were opened and the cestodes were retained in water for few minutes to relax. They were fixed in 4% formaldehyde solution. Using standard techniques they were stained in iron

acetocarmine (Georgiev *et al.*, 1986), dehydrated in ethanol series, cleared in clove oil and mounted in Canada balsam.

Voucher specimens are deposited at the Parasitic Worms Collection of the Natural History Museum, London; the acquisition numbers are included in the text for each species.

Results

Cestode infections were found in the small intestines of four wild pigeons and of two chickens. A total of 5 cestode species were identified. Their systematic survey is presented below. For each species, data about some diagnostic characters (obtained from the present material) are included.

Family Anoplocephalidae

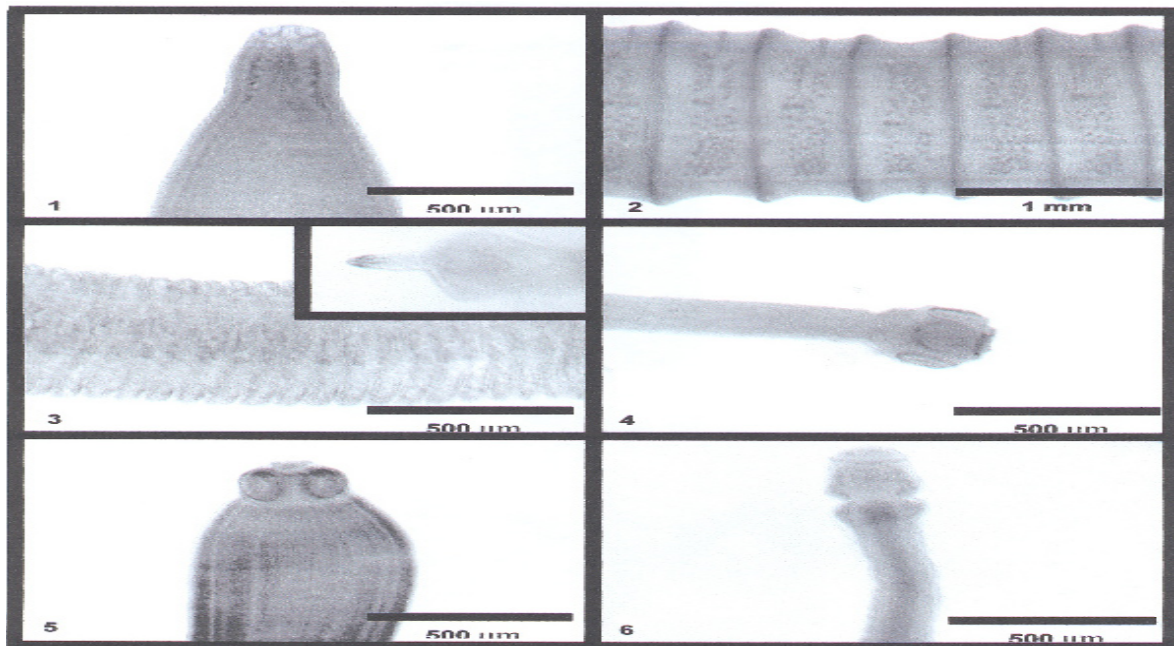
Killigrewia delafondi (Railliet, 1892) (Figs. 1-2)

Host: *C. livia*. Prevalence: in 2 out of 7 specimens studied. Intensity: 1 and 6 specimens respectively.

Voucher specimens no. 2005.1.25.1-3 (3 slides).

Diagnostic characters: Scolex with diameter 144-210 μm ; diameter of suckers 69-90 μm . Testes number 95-117 per proglottis.

The present material corresponds well to the description given by Spasskii (1951). This species is a widespread parasite of pigeons and doves in Europe, Asia and Africa (Spasskii, 1951). From the



Figs 1-6. Cestode species recorded from birds at Abha, Saudi Arabia: 1–*Killigrewia delafondi*, scolex and immature proglottides; 2–*K. delafondi*, mature proglottides; 3–*Retinometra serrata*, mature proglottides; inset – scolex; 4–*Raillietina dattai*, scolex and neck; 5–*Raillietina echinobothriida*, scolex and immature proglottides; 6–*Raillietina perplexa*, scolex and neck.

neighbouring countries, it was registered in Egypt (Ashour & Ahmed, 1996).

Family Hymenolepididae

Retinometra serrata (Fuhrmann, 1906) (Fig. 3)

Host: *C. livia*. Prevalence: in 2 out of 7 specimens studied. Intensity: 2 and 3 specimens respectively.

Voucher specimens no. 2005.1.25.4-6 (3 slides).

Diagnostic characters: 8 skrjabinoïd rostellar hooks 96-99 µm long. Cirrus provided with a stylet. Cirrus sac 300-334 x 57-63 µm.

The diagnostic characters correspond to those given by Spasskaya (1966). The geographical range of this species includes northern Eurasia, India and Africa (Spasskaya, 1966). Until now, it has not been recorded in SW Asia.

Family Davaineidae

Raillietina dattai Sinha, 1960 (Fig. 4)

Host: *G. gallus domestica*. Prevalence: in 2 out of 5 specimens studied. Intensity: 18 intact specimens in each host; numerous further fragments also present.

Voucher specimens no. 2005.1.25.7-12 (6 slides).

Diagnostic characters: Diameter of rostellum 102 µm. Rostellar hooks about 260 in number, with length

14-16 µm (anterior) and 11-13 µm (posterior). Suckers armed with spines with maximum length 11-13 µm. Genital pores unilateral. Testes 34-40 per proglottis.

The morphological results correspond to the redescription of this species by Gogoi & Chaudhuri (1981). Until now, this species is known from India only (Movsesyan, 2003).

Raillietina echinobothriida (Megnin, 1881) (Fig. 5)

Host: *G. gallus domestica*. Prevalence: in 1 out of 5 specimens studied. Intensity: 40 intact specimens isolated; numerous further fragments present.

Voucher specimens no. 2005.1.25.13-14 (2 slides).

Diagnostic characters: Diameter of scolex 260-275 µm. Diameter of rostellum 75-87 µm. Rostellar hooks about 196 in number, with length 12-13 µm (anterior) and 9-10 µm (posterior). Suckers armed with 11-12 spiral rows of spines; maximum length of spines 9-16 µm. Genital pores unilateral.

The present material corresponds very well to the description given by Movsesyan (2003). This species is a parasite of poultry with cosmopolitan distribution (Movsesyan 2003).

Raillietina perplexa Johri, 1933 (Fig. 6)

Host: *C. livia*. Prevalence: in 2 out of 7 specimens studied. Intensity: 2 and 3 specimens respectively.

Voucher specimens no. 2005.1.25.15-16 (2 slides).

Diagnostic characters: Rostellar hooks about 280 in number, with length 18 µm (anterior) and 14 µm (posterior). Genital pores unilateral. Testes 26-32 per proglottis. Cirrus sac 79-93 x 24-30 µm.

The present material is in agreement with the original description (Johri 1933). This species is known from *Columba intermedia* (Stickland) from India and from *Streptopelia* sp. from Afghanistan (Movsesyan 2003).

Discussion

All the species found are recorded for the first time for the avian fauna of Saudi Arabia. One of them (*R. echinobothriida*) has a cosmopolitan distribution as a parasite of poultry. Two species (*K. delafondi* and *R. serrata*) are widespread parasites of pigeons and doves in Eurasia and Africa. The records of *R. perplexa* and *R. dattai* are of special interest because this study expands their known geographical ranges (until now restricted to India and Afghanistan and to India only, respectively). On the basis of the present results, they can be characterised as species with South-Asian distribution.

In addition to the new geographical record, the finding of *R. perplexa* in *Columba livia* is a new host record.

The species of the genus *Raillietina* are parasites of major clinical importance for poultry (Kassai 1999) and their records in Saudi Arabia are therefore important from veterinary point of view.

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References

- Al-Ankari A.R.S., Elamin E.A., Al-Atiya S.A., Al-Jabr O.A. 2003. First report of *Variolepis farciminosus* (Cestoda: Hymenolepididae) and *Diplotriaeana tridens* (Nematoda: Diplotriaeonoidea) Infecting Crested Larks, *Galerida cristata*, from Hofuf, Al-Ahsa Oasis, Saudi Arabia. *Comparative Parasitology*, 70: 97-98.
- Ashour A.A., Ahmed S.E. 1996. Studies on the helminth parasites of birds from Egypt: 1-Trematoda and Cestoda. *Journal of the Egyptian Society of Parasitology*, 26: 2007-216.
- Georgiev B., Biserkov V., Genov T. 1986. *In toto* staining method for cestodes with iron acetocarmine. *Helminthologia*, 23: 279-281.
- Gogoi A.R., Chaudhuri R.P. 1981. Redescription of *Raillietina (Raillietina) dattai* (Sinha, 1960). *Indian Journal of Parasitology*, 5: 167-168.
- Johri L.N. 1933. On the genus *Houttuynia* Fuhrmann, 1920 (Cestoda), with a description of some species of *Raillietina* from pigeons. *Zoologischer Anzeiger*, 103 (3-4): 89-92.
- Kassai T. 1999. Veterinary helminthology. Oxford, Butterworth-Heinemann, 260 pp.
- Magzoub M., Kasim A.A., Shawa Y. 1980. Three new species (Cestoda: Davaineidae) from the rock pigeon *Columba livia domestica* with comments on the infection. *Journal of the College of Science, University of Riyadh*, 11: 119-127.
- Movsesyan S.O. 2003. Davaineates – tapeworms of animals and man. In: Beer, S.A. (Ed.) *Essentials of Cestodology*. Volume 13. Part 1. Moscow, Nauka, 395 pp. (In Russian).
- Spasskaya L.P. 1966. Cestodes of birds in the USSR. Hymenolepididae. Moscow, Nauka, 698 pp. (In Russian).
- Spasskii A.A. 1951. Anoplocephalate tapeworms of domestic and wild animals. In: Skryabin, K.I. (Ed.) *Essentials of Cestodology*. Volume 1. Moscow, Academy of Sciences of USSR (English translation by Israel Program for Scientific Translations, 1961, 783 pp.).

وصف أنواع جديدة من الديدان الشريطية في طيور المملكة العربية السعودية

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الملخص: تم في هذا البحث دراسة تواجد ووصف خمسة أنواع جديدة من الديدان الشريطية لأول مرة في المملكة العربية السعودية. جمعت هذه الأنواع من طيور محافظة أبها جنوب غرب المملكة العربية السعودية. أظهرت هذه الدراسة أنواع من ثلاثة عوائل (Families) مختلفة. ثلاثة أنواع منها وجدت في أمعاء الحمام البري (*Columba livia*) هي: *Killigrewia delafondi* من عائلة *Retinometra* (*Anoplocephalidae*). *serrata* من عائلة (*Hymenolepididae*) و *Raillietina perplexa* من عائلة (*Davaineidae*) أما النوع *Raillietina echinobothriida* والنوع *R. dattai* وهم أيضاً من عائلة (*Davaineidae*) ووجدت في أمعاء الديوك المحلية من نوع (*Gallus gallus domesticus*) ويعتبر النوع *Raillietina perplexa* أول تسجيل جديد في العائل (*Columba livia*).