

## *Aprocta* sp. (Aproctoidea, Nematoda) FOUND IN THE GREAT TIT *Parus major* IN SLOVENIA

### *Aprocta* sp. (Aproctoidea, Nematoda) najdena v veliki sinici *Parus major* v Sloveniji

ALEKSANDRA VERGLES RATAJ<sup>1</sup>, MARIJA NEMEC<sup>2</sup>, KSENIJA VLAHOVIĆ<sup>3</sup>, RENATA LINDTNER-KNIFIC<sup>4</sup>  
& ALENKA DOVČ<sup>4</sup>

<sup>1</sup> University of Ljubljana, Veterinary faculty, Institute of Microbiology and Parasitology, Gerbičeva 60, SI-1000 Ljubljana, Slovenia, e-mail: aleksandra.vergles@vf.uni-lj.si

<sup>2</sup> University of Ljubljana, Veterinary faculty, Clinic for ruminants with ambulatory clinic, Cesta v Mestni log 47, SI-1000 Ljubljana, Slovenia, e-mail: marija.nemec@vf.uni-lj.si

<sup>3</sup> University of Zagreb, Faculty of Veterinary Medicine, Department of Biology, Heinzelova 55, HR-1000 Zagreb, Croatia, e-mail: vlahovic@vef.hr

<sup>4</sup> University of Ljubljana, Veterinary faculty, Institute for Health Care of Poultry, Cesta v Mestni log 47, SI-1000 Ljubljana, Slovenia, e-mail: renata.lindtner@vf.uni-lj.si, alenka.dovc@vf.uni-lj.si

*Kongres ornitologov Slovenije ob 25. obletnici DOPPS  
Slovene Ornithologists' Congress at the 25<sup>th</sup> anniversary of DOPPS – BirdLife Slovenia*

The abdominal cavity of a dead Great Tit *Parus major* was found to be full of soft, dirty white and yellowish parasites. Exhaustion, dehydration, airsacculitis and perihepatitis were recorded in the dead bird. The digestive tract and faeces were examined using the flotation method, and found to be parasitologically negative. The parasites from the abdominal cavity were filariae, which belong to the genus *Aprocta* sp. The size of the female parasite was between 10.5 and 12.2 cm. The male was smaller, between 9.0 and 9.5 cm. The eggs had thick walls with larvae and the egg size was 450 x 250 µm. This is the first record and description of *Aprocta* sp. in the Great Tit in Slovenia.

**Key words:** *Parus major*, Great Tit, parasites, filariae, *Aprocta* sp., Slovenia

**Cljučne besede:** *Parus major*, velika sinica, zajedavci, filarije, *Aprocta* sp., Slovenija

## 1. Introduction

The Great Tit *Parus major* is widespread and numerous in most parts of Europe. It is common and widespread species in Slovenia, although it is scarcer at higher altitudes. In Slovenia there are about 300,000 breeding pairs (GEISTER 1995). In winter, the species is present in large numbers in urban areas, and very common in mixed flocks with other passerine species (SOVINČ 1994).

The nematode superfamily Aproctoidea is divided into two families, Aproctidae and Desmidocercidae. Little is known about their life cycles but it is likely that the family Aproctidae is more present in land birds, living in their air sacs, while the Desmidocercidae family is more frequent in piscivorous water birds, e.g. cormorants and albatrosses. Species from the latter family are found in air sacs, kidneys, livers, lungs, gall bladder, intestines and gizzard (ANDERSON 2000).

Haematophagous arthropods transmit eggs or larvae (microfilariae) to vertebrates, where adult filariae develop. Developmental forms move through lymphatic ducts or blood vessels in the host's body. Adult filariae live in tissue or the peritoneal cavity where they breed, producing eggs (LOYE & ZUK 1991).

PINTO *et al.* (1997) described the species *Aprocta pyrthurae* (Railliet & Henry 1910), which they recorded in the body cavity of *Cyanocorax* Jays from Brazil. They had also found these species in parrots (PINTO *et al.* 1993). ONIKI *et al.* (2002) recorded the species *Aprocta golvani* (DIAZ-UNGRIA 1963) in birds in Brazil. In addition, *Aprocta* sp. was often found in intraorbital sinuses and eye cavities (QUENTIN *et al.* 1976, BRGLEZ 1981, OKULEWICZ 1984, HERNANDEZRODRIGUEZ *et al.* 1986, LEPOJEV *et al.* 1990, MANFREDI *et al.* 1992). BRGLEZ (1981) recorded the filarian species *Aprocta turgida* in the nasal cavity of Black-headed Gull *Larus ridibundus* in Slovenia. LEPOJEV *et al.* (1990) were the

first to describe the same species of parasites in nasal sinuses of a Black-headed Gull in Serbia (LEPOJEV *et al.* 1990). MANFREDI *et al.* (1992) found *Aprocta matronensis* (Raillet & Henry 1910) in the eye cavity of Carrion Crows *Corvus corone corone* from Northern Italy. *Aprocta cylindrica* (Linstow 1883), which was recorded in songbirds in Africa, also lives in eye cavities (QUENTIN *et al.* 1976). In Poland, *Aprocta cylindrica* was first recorded in 1984 in the Robin *Erithacus rubecula*. The species *Aprocta intraorbitalis* was found in nasal sinuses of crows and songbirds (HERNANDEZRODRIGUEZ *et al.* 1986).

In the present study we describe, for the first time in Slovenia, filariae from the genus *Aprocta* sp. in the Great Tit.

## 2. Material and methods

A single Great Tit was found dead in the area of Kresnice near Litija in January 2001. A post mortem examination was performed. Liver, intestine and parasites from the abdominal cavity were examined bacteriologically and parasitologically. Liver was exposed to general bacteriological examination. Faecal samples were examined for the presence of endoparasites, using the flotation method (THIENPONT *et al.* 1979). We found parasites in the abdominal cavity, washed them out with water, separated them with an entomological needle and identified them by morphological criteria.

## 3. Results

Necropsy of the Great Tit showed general exhaustion and dehydration. Macroscopically, airsacculitis and perihepatitis were also recorded. Air sacks and surface of liver were clotted with white-yellowish fibrinous thick masses measuring about 1 mm. Bacteriological examination of liver was negative. Examination of the digestive tract revealed no parasites, but rather minor catarrhal enteritis. During macroscopic examination of the ball of soft, yellowish dirty white parasites from the abdominal cavity, we found a large number of adult filariae of both sexes. The body of the parasite was cylindrical, fragile and yellowish dirty white colour. The size of the female parasite was between 10.5 and 12.2 cm. The male was smaller, between 9.0 and 9.5 cm. In its mouthpart we noticed four small tubes, which continued into the interior like wide pipes. Males had spicula of unequal size, one was spindly twisted, the other flat with the back distal part gently curved. Both spicula were distally flat. The female had a mouthpart similar to that observed in males. The

vulva was near the mouthpart (Figure 1). The back part of the female had a semi-circular shape (Figure 2). A large number of eggs with larvae of the first stage were recorded in the uterus. The eggs had thick walls with larvae and the egg size was 450 x 250 µm. The nematode was determined as the genus *Aprocta* sp.



**Figure 1:** The anterior end of an adult female of *Aprocta* sp. found in a Great Tit *Parus major* from Slovenia (magnification 100x)

**Slika 1:** Sprednji del odrasle samice filarije *Aprocta* sp., najdene v veliki sinici *Parus major* iz Slovenije (100x povečava)

## 4. Discussion

This study presents the first record and description of filariae, which belong to the genus *Aprocta* sp., in the Great Tit in Slovenia. According to the morphological data the parasite belongs to the family Aproctidae (Skrjabin & Stikhobalova 1945), genus *Aprocta* sp. BRGLEZ (1981) found the parasite from the same genus in the body cavity of Hooded Crow *Corvus corone cornix* in Slovenia where, according to him, the genus *Aprocta* sp. is frequent in Hooded Crows. Our description reveals differences from the parasites



**Figure 2:** The back distal part of the adult female with eggs of *Aprocota* sp. found in a Great Tit *Parus major* from Slovenia (magnification 100x)

**Slika 2:** Zadnji distalni del odrasle samice filarije *Aprocota* sp. z jajčeci, najdene v veliki sinici *Parus major* iz Slovenije (100x povečava)

described previously. The males of filaria recorded in the Great Tit were up to 3.0 cm longer than those in the Hooded Crow. Other morphological differences have not been established.

Representatives of the superfamily Aprocotoidea are small to medium-sized nematodes found in air sacs, nasal cavities and subcutaneous tissues of head and neck of birds and often also in eye cavities (ANDERSON 2000).

The primary site of nematode infection is hard to determine, since nematodes easily migrate to neighbouring organs (ANDERSON 2000). In our case it was also hard to determine whether the filariae were primarily present in the abdominal cavity of the Great Tit although the whole abdominal cavity was filled with the parasites.

References often mention filarial parasites from the genus *Aprocota* in Passeriformes. They were found mostly in intraorbital sinuses, eye cavities and nasal

cavity but not in the abdominal cavity. We have confirmed that filariae from genus *Aprocota* sp. can live also in the abdominal cavity.

## 5. Povzetek

V trebušni votlini mrtve velike sinice *Parus major* je bilo polno mehkih umazano belih in rumenkastih parazitov. Pri ptici so bili ugotovljeni: splošna izčrpanost, dehidracija, aerosakulitis in perihepatitis. Pregled prebavnega trakta in iztrebkov, opravljen s flotacijsko metodo, je bil parazitološko negativen. Pregledani paraziti iz trebušne votline so bile filarije iz rodu *Aprocota* sp. Velikost samice parazita je bila med 10,5 in 12,2 cm. Samec je bil manjši, dolg med 9,0 in 9,5 cm. Jajčeca so bila debelostena z larvami in velika 450 x 250 µm. To je prvi zapis in opis *Aprocota* sp., najdenega v veliki sinici v Sloveniji.

## 6. References

- ANDERSON, R.C. (2000): Nematode Parasites of Vertebrates. – CABI Publishing, Wallingford.
- BRGLEZ, J. (1981): Zajedavci pri pticah v Sloveniji – Cestoda, Nematoda, Acanthocephala. – Zbornik Biotehniške fakultete Univerze v Ljubljani, suplement 5, Veterinarstvo, Ljubljana.
- DIÁZ-UNGRIA, C. (1963): Nematodes parasites, nouveaux ou intéressants du Vénézuéla. – Ann. Parasit. Hum. Comp. 38: 893–913.
- GEISTER, I. (1995): Ornitolški atlas Slovenije: razširjenost gnezdičk. – DZS, Ljubljana.
- HERNANDEZRODRIGUEZ, S., GUTIERREZPALOMINO, P. & MARTINEZGOMEZ, F. (1986): *Aprocota intraorbitalis* n. sp. (Nematoda, Aprocotoidea) parasite of the azure winged magpie *Cyanopica cyanus* (Passeriformes, Corvidae). – Ann. Parasitol. Hum. Comp. 61: 65–69.
- LEPOJEV, O., KULISIC, Z., ALEKSIC, N. & DIMITRIJEVIC, S. (1990): Nematodes of gulls (*Larus ridibundus* L.) in the Belgrade area. – Acta Veterinaria-Beograd 40: 159–162.
- LOYE, L.E. & ZUK, M. (1991): Bird Parasite Interaction. Ecology evolution and behaviour. – Oxford University Press, New York.
- MANFREDI, M.T., SAINO, A. & GENCHI, C. (1992): *Aprocota matronensis* in crows (*Corvus corone corone*) from northern Italy. – Parasitologia 34: 97–101.
- OKULEWICZ, A. (1984): Parasitic Nematoda of the robin *Erithacus rubecula* L. (Turdidae) from the region of Wrocław. – Wiad. Parazytol. 30: 585–594.
- ONIKI, Y., KINSELLA, J.M., WILLIS, E.O. (2002): *Pelecitus helacinus* Railliet & Henry, 1910 (Filarioidea, Dirofiliariinae) and other nematode parasites of Brazilian birds. – Mem. Ins. Oswaldo Cruz 97: 597–598.
- PINTO, R.M., VICENTE, J.J. & NORONHA, D. (1993): Nematode parasites of Brazilian psittacid birds, with emphasis on the genus *Pelecitus* Railliet and Henry, 1910. – Mem. Ins. Oswaldo Cruz 88: 279–284.

- PINTO, R.M., VICENTE, J.J. & NORONHA, D. (1997): Nematode Parasites of Brazilian Corvid Birds (Passeriformes): A General Survey with a Description of *Viktorocara brasiliensis* n. sp. (Acuariidae, Schistorophinae). – Mem. Ins. Oswaldo Cruz 92: 209–214.
- QUENTIN, J.C., TRONCY, P.M. & BARRE, N. (1976): *Aprocta cylindrica* Linstow, 1883, an oviparous filaria parasite of ploceid birds from Tchad. Larval morphogenesis. – Ann. Parasitol. Hum. Comp. 51: 83–93.
- SOVINC, A. (1994): Zimski ornitološki atlas Slovenije. – Tehniška založba Slovenije, Ljubljana.
- THIENPONT, D., ROCHETTE, F. & VANPARIJS, O.F.J. (1979): Diagnosing helminthiasis through coprological examination. – Janssen Research Foundation, Beerse.

Arrived / Prispelo: 25.10.2004

Accepted / Sprejeto: 7.3.2005