

HELMINTHOLOGIA, 43, 4: 239–241, SEPTEMBER 2006

## Research note

### First record of *Diplotriaena henryi* Blanc, 1919 from the coal tit, *Parus ater* with new report from the great tit, *Parus major* in the Middle East

I. MOBEDI<sup>1</sup>, M. E. SEHHATISABET<sup>2</sup>, E. RAZMJOU<sup>1</sup>, S. SHAFIEI<sup>3</sup>

<sup>1</sup>School of public Health and Institute of Public Health Research, Tehran University of Medical Sciences, Tehran, Iran, P.O. Box 14155-6446; <sup>2</sup>Ornithology Unit, Wildlife and Aquatic Organisms Office, Natural Environment &

Biodiversity Deputy, Department of the Environment (DOE), Tehran, Iran; Email: [m\\_sehhati@yahoo.com](mailto:m_sehhati@yahoo.com);

<sup>3</sup>Department of Biology, Faculty of Science, Shahid Bahonar University of Kerman, 22 Bahman Blvd, Kerman, Iran, P. O. Box: 79169-133

#### Summary

Seven males and thirteen female *Diplotriaena henryi* Blanc 1919 were collected from body cavities (heart, sternum, and chest) of tits (one *Parus major* and three *Parus ater*) in plain woodland of Noor, in Northern Iran.

Key words: *Diplotriaena henryi*; *Parus major*; *Parus ater*; Iran

At first, Blanc (1919) found species of *Diplotriaena henryi* from *Turdus philomelos* in France, then, from *Coracias garrulus* in Central Asia, *Actenoides princeps* in oriental Africa, *Merops apiaster* in Georgia. also is distributed in Europe, Asia (Russia and central Asian countries as well as south eastern Asia) and Africa (Sonin 1968) So far was found in *Athene noctua*, *Asio otus* (Strigiformes), *Actenoides princeps*, *Coracias garrulus*, *Merops apiaster* (Coraciiformes), *Alauda arvensis*, *Anthus spinolella*, *Galerida cristata*, *Lanius excubitor*, *L. cristatus*, *L. minor*, *Parus major*, *Turdus philomelos*, *T. pilaris*, *T. ruficollis*, *T. viscivorus*, *Turdus* sp., *Zosterops erythropleura*, *Parus major*, *Sturnus vulgaris*, *Garrulus glandarius* and *Corvus cornix* (Sonin, 1968; Literák et al., 2003).

During feeding studies of the three tits species in Plain woodland of Noor in North of Iran (Sehhatisabet, 2000), we have seen that there are white nematodes in both *Parus major* and *Parus ater*. Feeding habits of three species tits (*Parus major*, *P. ater*, *P. caeruleus*) were studied in the plain woodland of Noor, 36°34'N, 51°50'E, Mazandaran, from early summer of 1998 to the late summer of 1999 (Sehhatisabet, 2000). During of study, 116 of *Parus major*, 76 of *P. ater* and 49 *P. caeruleus* were collected, but only four birds infected (one *P. major* female, three *P. ater* contain one male and two female) with filarial nematodes with 32 – 134 mm in long.

In autopsy filarial nematodes collected from arial sac. After nematodes fixed in 10 % formaldehyde in field transferred to Azocarmine lactophenol and on slide covered with cover glasses after staining, drew with help of a Zeiss microscope and measured nematodes.

Characteristics of *Diplotriaena henryi*: cephalic extremity with one pair of lateral pores each opening to protrusible cuticularized structures in form of tridents beside anterior end of oesophagus. First-stage larva with circles of spines around cephalic extremity and on caudal extremity, with small stoma conical in shape oesophagus divided in two parts muscular and glandular chitinous and expanded in anterior part where located two Trident like structure.

Life cycle of *Diplotriaena*: ovum containing larvae exchange from infected birds through faeces mites the soil after releasing first stage larvae it could infect locust by eating the larvae which is intermediate host. Larvae cause cavities in fatty tissue of insect and replaces in Different organs. After four days again if moulting cuticle of first stage larvae turns to 2<sup>nd</sup> stage larvae. After eight days sheds cuticle of 2<sup>nd</sup> stage larvae turns to 3<sup>rd</sup> stage larvae which is infective to in intermediate host definitive host (tit) by eating infected locust contains 3<sup>rd</sup> stage larvae. When the birds eat the locust infected with larvae, releases in to the tit's gut the third stage larvae invades intestine migrate to liver through the bile duct where molting 3<sup>rd</sup> stage cuticle and turns to fourth stage larvae then larva migrates to heart through portal vena then goes to aerial sac through blood where worm become adult male and female after mating released ova through aerial sac goes to upper respiratory form where swallowed ova goes to digestive tract exchange by defecation of tit since adult

Table 1. Biometry of samples *Diplotriaena henryi* Blanc 1919, Sonin (1968) and our materials

Sizes (mm)	Samples					
	<i>Coracias garrulus</i>		<i>Turdus philomelos</i>		Our materials	
	Male	Female	Male	Female	Male	Female
Length	22 – 35	42 – 61	24 – 37	41 – 68	32 – 37	94 – 134
Width	0.78 – 1.06	1.06 – 1.29	0.62 – 0.8	0.64 – 0.98	0.68	1
Length of muscular part of esophagus	0.30 – 0.41	0.37 – 0.46	0.34 – 0.42	0.32 – 0.5	0.37	0.4
Length of mucosal part	1.7 – 4.92	3.09	2.9 – 4.2	3.42 – 4.29	1.7 – 3.5	3.7
Trident	0.14 – 0.17	0.14 – 0.18	0.13 – 0.16	0.12 – 0.14	0.14 – 0.17	–
Left spicul	0.69 – 0.83	–	0.71 – 0.80	–	0.409	–
Right spicul	0.48 – 0.62	–	0.43 – 0.58	–	0.285	–
Length of vulva	–	0.35 – 0.78	–	0.53 – 0.56	–	0.4 – 0.47

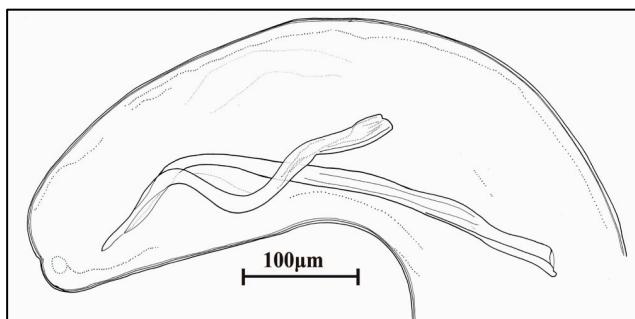


Fig. 1. Male terminal with spicules

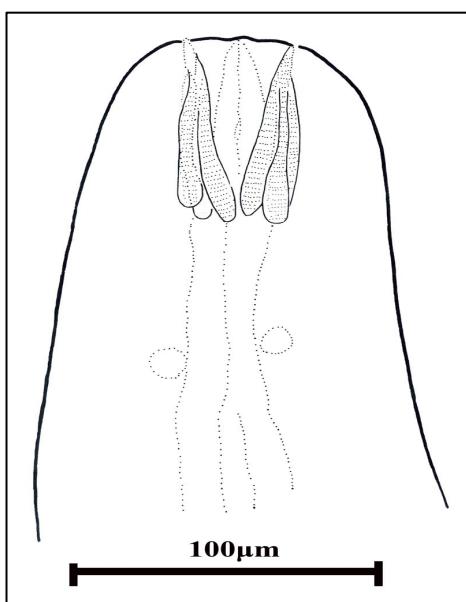


Fig. 2. Head part with tridents

stage occurs in aerial sac causes respiration difficulty which might ends to death of host or easily caught by predator (Moradi, 1999). The fact that the parasite was found in this young great tit (born this year) indicates that *D. henryi* life cycle can occur farther north than previously

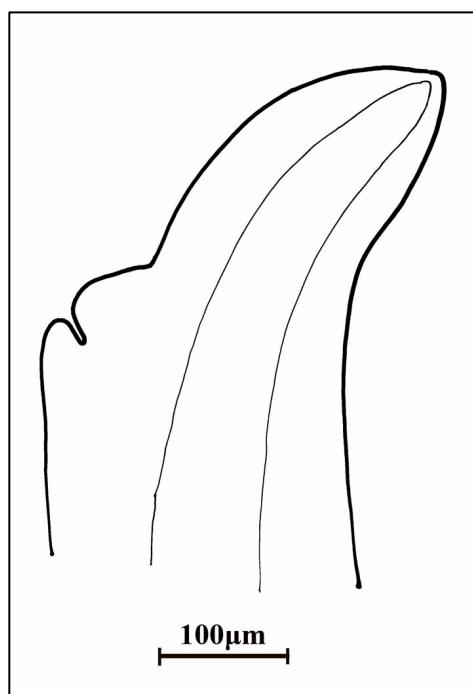


Fig. 3. Situation of vulva and anterior part of female

supposed Baruš and Rudkowska (1965) and Gundlach (1965).

According to the results (Tab. 1), in our specimens, male measured 32 to 37 mm in length and 6.8mm in width, but female measured 94 to 134 mm in length. Spicules in male nematode were 409 μm and 285μm, respectively. Vagina located 325 μm from anterior part of the body. Length of trident like structures were 150, 170, 177 μm in female, and 159, 167, 169 μm in male, respectively. Also in *Diplotriaena henryi* Blanc 1919 the largest spicule was been reported 830μm but in our studies it was 409 μm. It seems that the size of filarial in different hosts and area are variable.

## References

- ANDERSON, R. C., CHABAUD, A. G., WILLMOTT, S. (1989): *Keys to the nematode parasites of vertebrates*, C.A.B. International Wallingford
- BARUŠ, V., RUDKOWSKA, M. (1965): Contribution to the synonymics and geography of tree nematode species parasitic in *Coracias garrulus garrulus* L. (Aves – Coraciiformes). *Čsl. Parasitol.*, 12: 71 – 80
- BORGSTEDE, F. H. M., OKULEWICZ, A., ZOUN, E. F., OKULEWICZ, J. (2003): The helminth fauna of birds of prey (Accipitriformes, Falconiformes and Strigiformes) in the Netherlands. *Acta Parasitol.*, 48: 200 – 207
- GUNDLACH, J. L. (1965): The helminth parasites of the starling (*Sturnus vulgaris* L.) of the Lublin Palatinae. *Acta Parasitol. Pol.*, 13: 215 – 225
- LITERÁK, I., BARUŠ, V., HAUPTMANOVÁ, K., HALOZKA, R. (2003): The nematode *Diplotriaena henryi* (Nematoda: Diplotriaenoidea) as the possible cause of subcutaneous emphysema and respiratory insufficiency in a great tit (*Parus major*). *Helminthologia*, 40: 23 – 25
- MORADI, A. (1999): *Survey of parasites of Syrian Woodpecker and Wryneck in Mazandaran province*. MD Dissertation, Islamic Azad University, Shah-e-Kord, 114 pp.
- SEHHATISABET, M. E. (2000): *Study of feeding habits of Tits (Paridae) in Noor plain forest*. M.Sc. thesis. Environmental Science, Tarbiat Modares University. Tehran.p.53.
- SONIN, M. D. (1968): Filarioidea of animals and man and the diseases caused by them. II. Diplotriaenioidea. In SKRYABIN, K. I. (Ed.): *Fundamental of Nematodology*. Vol. 21. Publ. House Nauka, Moskow, 390 pp.

RECEIVED MAY 4, 2006

ACCEPTED SEPTEMBER 27, 2006