

Vladimír Bádř · Petr Štefan · Jiří Preisler

***Trichodectes canis* (De Geer, 1778) (Phthiraptera, Ischnocera), a new ectoparasite of the raccoon dog (*Nyctereutes procyonoides*) in the Czech Republic**

Received: 4 January 2005 / Accepted: 22 February 2005 / Published online: 10 May 2005
© Springer-Verlag 2005

Abstract The raccoon (*Nyctereutes procyonoides*) is described as a host of the dog biting louse, *Trichodectes canis* (De Geer, 1778). The present note reports the occurrence of this species of louse on two raccoon dogs from Moravia and Bohemia. The specimens of *T. canis* collected on this host differed from *T. canis* originating from the domestic dog by body size only.

Keywords Lice · Phthiraptera · Raccoon dog

Introduction

The dog biting louse, *Trichodectes canis* (De Geer, 1778) has been found and collected from the domestic dog in the Czech Republic up to the 1950s. Balát (1977) in his checklist of Czechoslovakian Mallophaga mentioned this species for a part of the Czech Republic—Bohemia only. He took his faunistic records from the public entomological collections of several museums. Máca (1991) reviewed the Mallophaga parasitizing mammals from this territory, but no recent findings of *T. canis* were cited. *Trichodectes canis* have not been recorded in the past few decades in Czechoslovakia.

The domestic dog (*Canis familiaris*) is considered the main host of *T. canis*. In addition, this louse has been noted on wild-living canids too. Thompson (1934) found it on gray wolf (*Canis lupus*) in Canada, Eads (1948) on

coyotes (*Canis latrans*) in Texas, Gier and Ameel (1959) on coyotes in Kansas. Schwartz et al. (1983) discovered the species on gray wolf and coyotes in Alaska, Mech et al. (1985) on the same hosts from Minnesota and Wisconsin. Zotorzycka (1983) noted *T. canis* on wolf (*C. lupus*) from the Zoological Garden in Lodź. Mey (1988) reviewed the present knowledge of the Mallophaga of European mammals and noted *T. canis* in addition to the domestic dog, in the following hosts: *C. lupus*, *C. aureus*, *C. latrans*, *Dusicyon culpaeus*, *Cerdocyon thous*, *Vulpes bengalensis* and *Viverra civetta*. The raccoon dog, *Nyctereutes procyonoides* is mentioned as hypothetical host of any still unknown biting louse. Currently, only very limited faunistic data are available to the occurrence of *T. canis* from *N. procyonoides*.

The first reliable report on the occurrence of the raccoon dog in Czech Republic was documented in 1963 (Kratochvíl 1964). Other records were summarized by Nesvadbová (1984). Raccoon dog numbers are increasing in the Czech Republic, but ectoparasites of *N. procyonoides* in this country have been not studied so far.

Materials and methods

The biting lice were collected from two raccoon dogs (*N. procyonoides*). The first was found dead in north Moravia, ♀ Branná, 4.10.1991, P. Štefan lgt., *T. canis*: 4 ♂, 14 ♀, 1 nymph. The second raccoon dog was sent to the State Veterinary Institute in Liberec for rabies examination, north Bohemia, ♂, Zákupy, Božíkov (Česká Lípa) 23.10.1991, J. Preisler lgt., *T. canis*: 11 ♂, 12 ♀.

No biting louse was found on six other raccoon dogs examined: four from Bohemia (♀, Chomutov, 16.6.1994, J. Preisler lgt.; ♂, Pardubice, 12.9.1995, J. Preisler lgt.; ♂, Velké Petrovice, 9.9.2004, M. Štěpán lgt.; ♀, Nové Město n. Metují, 14.10.2004, J. Trojan lgt.); one from Moravia (♀, Ropice, 25.10.1993, J. Preisler lgt.); one from Finland (Joroinen, October, 2003, J. Trojan lgt.).

V. Bádř (✉)

Department of Biology, University of Hradec Králové,
Rokitanského 62, CZ, 500 03 Hradec Králové,
Czech Republic
E-mail: Vladimír.Badr@uhk.cz

P. Štefan

Branná 196, CZ,
788 25, Czech Republic

J. Preisler

State Veterinary Institute, Liberec 30,
463 11 Vratislavice n. Nis.,
Czech Republic

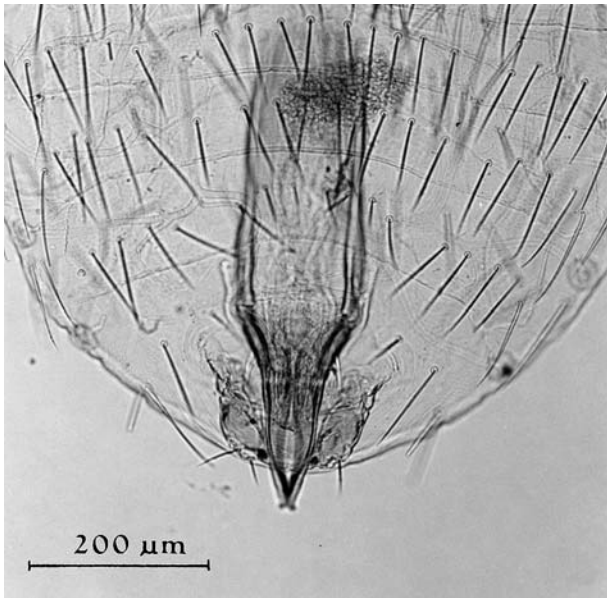


Fig. 1 *Trichodectes canis* from *Nyctereutes procyonoides*. Male genital region

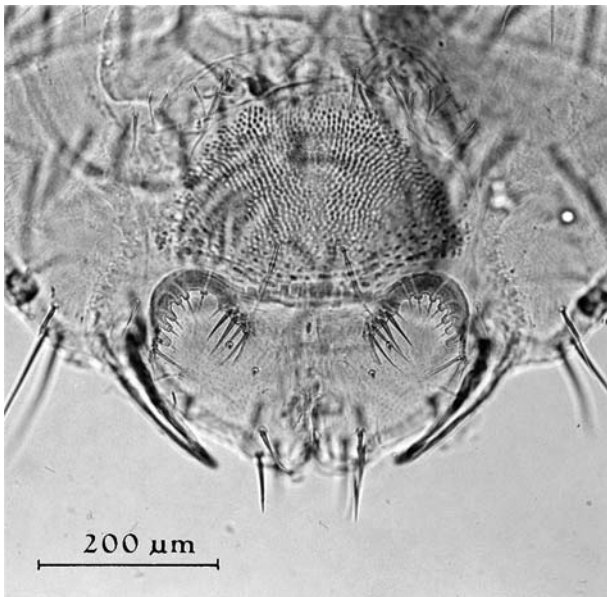


Fig. 2 *Trichodectes canis* from *Nyctereutes procyonoides*. Female genital region

No biting louse was recovered from 1,108 domestic dogs examined by Preisler during the period from 1981 to 1998.

The lice were preserved in 70% ethanol and mounted in permanent slides in Canada balsam. Male and female biting lice collected from the raccoon dogs were compared to specimens, which were collected from domestic dogs in Italy. Body measurements and head index

Table 1 Body measurements (in mm) and head index of *Trichodectes canis* males and females from raccoon dog, Moravia

	Males (n = 3)		Females (n = 13)	
	Min.–Max.	$x \pm SD$	Min.–Max.	$x \pm SD$
Head length	0.38–0.40	0.39 ± 0.007	0.38–0.45	0.41 ± 0.015
Head width	0.56–0.59	0.58 ± 0.011	0.58–0.63	0.61 ± 0.013
Head index	0.67–0.68	0.68 ± 0.007	0.65–0.72	0.68 ± 0.017
Prothorax width	0.41–0.42	0.42 ± 0.007	0.41–0.47	0.44 ± 0.014
Pterothorax width*	0.44–0.47	0.45 ± 0.012	0.47–0.54	0.50 ± 0.017
Abdomen length	0.83–0.90	0.87 ± 0.027	0.76–1.08	0.93 ± 0.086
Abdomen width	0.75–0.85	0.78 ± 0.045	0.82–0.94	0.90 ± 0.046
Total length	1.49–1.56	1.52 ± 0.029	1.41–1.74	1.57 ± 0.102

Table 2 Body measurements (in mm) and head index of *Trichodectes canis* males and females from raccoon dog, Bohemia

	Males (n = 8)		Females (n = 11)	
	Min.–Max.	$x \pm SD$	Min.–Max.	$x \pm SD$
Head length	0.36–0.40	0.38 ± 0.013	0.34–0.43	0.41 ± 0.024
Head width	0.48–0.58	0.54 ± 0.031	0.57–0.62	0.59 ± 0.016
Head index	0.67–0.81	0.70 ± 0.042	0.59–0.71	0.69 ± 0.031
Prothorax width	0.36–0.45	0.40 ± 0.030	0.40–0.44	0.42 ± 0.010
Pterothorax width*	0.41–0.47	0.45 ± 0.019	0.46–0.51	0.49 ± 0.014
Abdomen length	0.76–0.85	0.80 ± 0.025	0.69–0.93	0.80 ± 0.064
Abdomen width	0.69–0.86	0.78 ± 0.053	0.71–0.96	0.84 ± 0.069
Total length	1.37–1.50	1.43 ± 0.052	1.29–1.56	1.44 ± 0.091

Table 3 Body measurements (in mm) and head index of *Trichodectes canis* males and females from domestic dog, Kathrinenhof Research Center

	Males (n = 3)		Females (n = 3)	
	Min.–Max.	$x \pm SD$	Min.–Max.	$x \pm SD$
Head length	0.42–0.43	0.42 ± 0.005	0.44–0.45	0.45 ± 0.007
Head width	0.58–0.61	0.60 ± 0.012	0.58–0.65	0.61 ± 0.028
Head index	0.69–0.71	0.71 ± 0.008	0.67–0.78	0.73 ± 0.044
Prothorax width	0.46–0.47	0.46 ± 0.004	0.46–0.49	0.48 ± 0.013
Pterothorax width*	0.49–0.51	0.50 ± 0.009	0.53–0.56	0.54 ± 0.016
Abdomen length	0.88–1.01	0.92 ± 0.061	1.01–1.11	1.06 ± 0.039
Abdomen width	0.80–0.87	0.83 ± 0.028	0.96–1.01	0.99 ± 0.022
Total length	1.60–1.68	1.63 ± 0.038	1.75–1.82	1.78 ± 0.025

(*Males mesothorax width, females metathorax width)

calculations were performed on adults. All values are given in millimetres (mm).

Results

Body measurement and head index data are summarized in Tables 1, 2 and 3. The male and female genital apparatus are shown in Figs. 1 and 2, respectively.

Discussion

The examination of the adult biting lice from both raccoon dogs did not reveal differences with regard to body size and chaetotaxis. A comparison of the lice from the raccoon dogs and domestic dogs did not reveal differences in the abdominal chaetotaxis and the morphology of male and female genitalia. However, *T. canis* collected from raccoon dogs had slender and shorter body segments and a shorter total body length than *T. canis* collected from domestic dogs.

After determination of the lice a few very short informations on the occurrence of *T. canis* on raccoon dogs came to our attention. Blagoveshchenskij (1956) mentioned the raccoon dog in the material he examined in his study, page 6: “*Trichodectes canis* De Geer: and ♂ from *Canis familiaris* L., ♂ from *C. lupus*, *N. procyonoides* Gray.” Ūdin (1977) reported the finding of *T. canis* on a raccoon dog in the Far East of Former Soviet Union. In a recent review of the Phthiraptera of Germany, Mey (2003) reported findings of lice on raccoon dogs from Saxony-Anhalt, which did not differ from *T. canis*.

It is difficult to conclude whether the dog biting louse *T. canis* occurs on the raccoon dog rarely but naturally in relation to phylogenetics or derivatively only, owing to a farm breeding of this species in Russia before introduction to the European part of this country between 1927 and 1957. A relatively low host specificity of *T. canis* within the family Canidae supports a possibility that the raccoon dog could be a primary host of this biting louse. *Nyctereutes procyonoides* and the gray fox,

Urocyon cinereoargentatus are considered the oldest species of the Canidae (Geffen et al. 1996).

Acknowledgements We are grateful to Dr. M. Pollmeier (Merial GmbH, Rohrdorf) who provided the *T. canis* from domestic dogs for comparison.

References

- Ūdin VG (1977) Enotovidnaâ sobaka Primor'â i Priamur'â. Izd. Nauka, Moskva
- Balát F (1977) Mallophaga. In: Enumeratio insectorum bohemoslovakiae. Check list. Acta Faun Entomol Mus Pragae 15(Supplementum 4):45–52
- Blagoveshchenskij DI (1956) Stroenie i sistematičeskoe značenie polovoj sistemy puchoedov (Mallophaga). Parasit Sbor 16:5–88
- Eads RB (1948) Ectoparasites from a series of Texas coyotes. J Mammal 29:268–271
- Geffen E, Gompper ME, Gittleman JL, Luh HK, MacDonald DW, Wayne RK (1996) Size, life history traits, and social organization in the Canidae: A reevaluation. Am Nat 147:140–160
- Gier HT, Ameel DJ (1959) Parasites and diseases of Kansas coyotes. Kans Agric Exp Stn, Manhattan Tech Bull No. 91
- Kratochvíl J (1964) Prvé zprávy o výskytu mývalovce kuniho (*Nyctereutes procyonoides*) v ČSSR (in Czech, with German summary). Zool Listy 13:174–175
- Máca J (1991) Mallophaga parasitizing mammals in Czechoslovakia. Acta Soc Zool Bohemoslov 55:1–11
- Mech D, Thiel RP, Fritts SH, Berg WE (1985) Presence and effects of the dog louse *Trichodectes canis* (Mallophaga, Trichodectidae) on Wolves and Coyotes from Minnesota and Wisconsin. Am Midl Nat 114:404–405
- Mey E (1988) Übersicht Über die Säugetier-Mallophagen Europas. Angew Parasitol 29:113–126
- Mey E (2003) Verzeichnis der Tierläuse (Phthiraptera) Deutschlands. In: B Klausnitzer (ed) Entomofauna Germanica 6. Entomol Nachr Ber, Beih, 6:72–129
- Nesvadbová J (1984) Occurrence of the raccoon dog (*Nyctereutes procyonoides*) in Bohemia and Moravia (ČSSR). Folia Zool 33:315–325
- Schwartz CC, Stephenson R, Wilson N (1983) *Trichodectes canis* on the gray wolf and coyote in south central Alaska. J Wildl Dis 19:372–373
- Thompson GB (1934) Records of Siphunculata and Mallophaga from Canadian hosts. Can Entomol 66:279–281
- Zotorzycka J (1983) Mallophagenfunde aus Vögeln und Säugetieren in zoologischen Gärten. Angew Parasitol 24: 166–178