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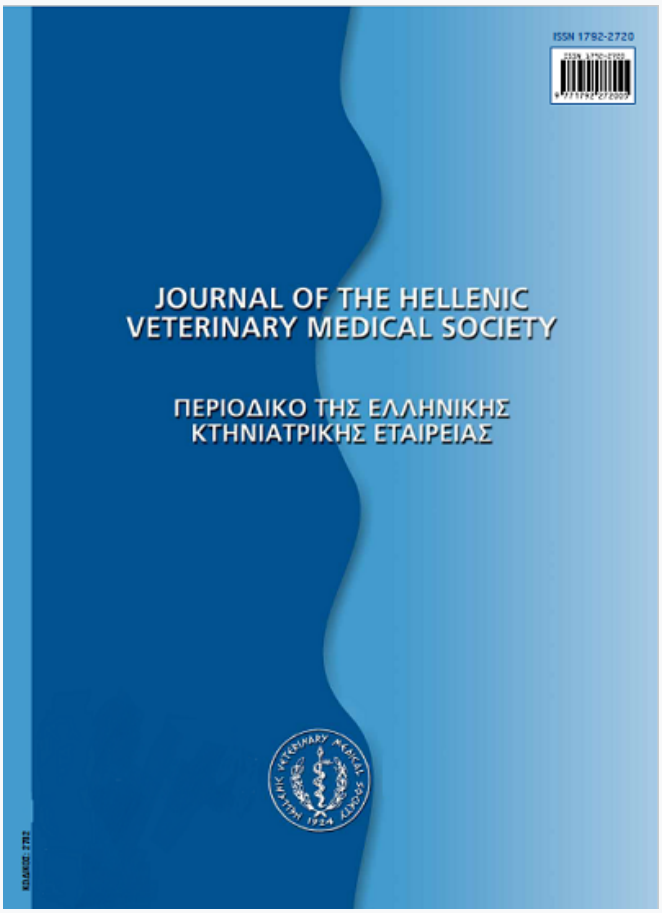

A new nasal mite of the genus Ptilonyssus (Rhinonyssidae) from Parus caeruleus (Passeriformes) from Russia

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A new nasal mite of the genus *Ptilonyssus* (Rhinonyssidae) from Parus caeruleus (Passeriformes) from Russia

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Ένα νέο είδος ρινικού ακάρεως του γένους *Ptilonyssus* (Rhinonyssidae) στο πτηνό Parus caeruleus (Passeriformes) στη Ρωσία

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ABSTRACT. A new species of nasal mite, *Ptilonyssus mironovi* n. sp. is described from the Azure Titmice *Parus caeruleus* L. (Passeriformes: Paridae) from the Leningrad province, Russia. The new species and four previously known species, *P. pinicola* Knee 2008, *P. plesiotypicus* Knee 2008, *P. pari* Fain and Hyland 1963, and *P. coccothraustis*, Fain and Bafort 1963, are arranged here into a *"pari"* species complex with the genus *Ptilonyssus*.

Keywords: *Rhinonyssidae*, *Ptilonyssus*, nasal mites, *rhinonyssidosis avium*

ΠΕΡΙΛΗΨΗ. Ένα νέο είδος ρινικού ακάρεως, *Ptilonyssus mironovi* n. sp. περιγράφεται στο πτηνό μελισσοφάγος Azure *Parus caeruleus* Titmice L. (Στρουθιόμορφα: Paridae) από την επαρχία του Λένινγκραντ, στη Ρωσία. Το νέο είδος και τέσσερα παλαιότερα γνωστά είδη, *N. pinicola* Knee 2008, *P. plesiotypicus* Knee 2008, *P. pari* Fain και Hyland 1963, και *P. coccothraustis*, Fain και Bafort 1963, τοποθετούνται σε ένα συγκρότημα ειδών «*Pari*» μαζί με το γένος *Ptilonyssus*.

Λέξεις-κλειδιά: *Rhinonyssidae*, *Ptilonyssus*, ρινικά ακάρεα, *Rhinonyssidosis avium*

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INTRODUCTION

Nasal mites of the family Rhinonyssidae are permanent parasites living in the respiratory tract of birds. Most species of these slow-moving mites live in nasal cavities, and some species can occupy the lungs, tracheae and air sacs (Porter and Strandtmann 1952, Krantz and Walter 2009). Rhinonyssid mites are mainly transmitted via the oral route, when infested birds regurgitate food to their nestlings or during courtship behavior. These mites are viviparous, produce larvae in which the nymphs are already developed (Bregetova, 1956). The family Rhinonyssidae currently includes about 500 described species worldwide (Knee et al. 2008). Recent experts arrange these species from eight and more genera (Domrow, 1987, Bregetova 1951, Butenko 1984). Nasal mites are known from most recent orders of birds and were recorded on all continents. Investigations of rhinonyssids are of a high importance, because in addition to the direct damage to their hosts (rhinonyssidosis avium disease) (Dimov, 2011). There is a probability that these mites could be reservoirs or vectors of various infections, like encephalitis, Lyme borreliosis, ehrlichia infection, anaplasma infection, Q fever.

The genus *Ptilonyssus* Berlese and Trouessart in 1889 is the most diversiform and species-rich genus within the family Rhinonyssidae and currently includes over 130 species (Pence 1975). Representatives of this genus mainly parasitize birds from the order Passeriformes; several species of this genus were recorded and hosts from the order Caprimulgiformes, Falconiformes, Apidiformes (Knee et al. 2010). The present study continues my investigation of biodiversity of rhyinonyssid mites in the North-West of Russia (Dimov, 2010, 2011) and presents a description of a new species of the genus *Ptilonyssus* from a passerine host from the Leningrad province.

MATERIALS AND METHODS

Five birds (road killed) *Parus caeruleus* L. (Passeriformes: *Paridae*) were collected in a neighborhood of Lomonosov (Leningrad Province, Russia). The collected birds were kept frozen for a while and then they were examined for the presence of nasal mites. Three mites were collected from one bird by dissecting the host's nasal cavities. The heads of bird samples were dissected and placed in a glass dish with 80% ethanol and examined under a dissecting stereomicroscope. All found mites were preserved in 70% ethanol. Then mites were cleared in 75% lactic acid for 2-4 hr, put again in 70% ethanol for 2-3 min and finally mounted in slides with the Hoyer medium. The description of the new species follows the modern format used for rhinonyssid mites (Knee et al. 2006). All measurements are in micrometers. The type material is deposited in the Zoological Institute of the Russian Academy of Sciences (Saint Petersburg, Russia).

The following designations were adapted from Fain and Hyland (1962): LB, length of body including palps; WID, width of idiosoma; LPS, length of podosomal shield; WPS, width of podosomal shield; LOS, length of opisthosomal shield; WOS, width of opisthosomal shield; LSS, length of sternal shield; WSS, width of sternal shield; LGS, length of genital shield; WGS, width of genital shield; LAS, length of anal shield; WAS, width of anal shield; LG, length of gnathosoma, ventral view, including palps; WG, width of gnathosoma; LCH, length of chelicera; WCH, width of chelicera; Lleg, length of leg, including coxa, excluding ambulacrum (LLeg I to LLeg IV). Idiosomal chaetotaxy is after Pence (1976).

RESULTS

Family Rhinonyssidae Trouessart, 1895

Genus *Ptilonyssus* Berlese and Trouessart in 1889

This genus includes more than 130 species (Pence 1975) and there several different concepts regarding its taxonomic borders. Some authors accepting genus *Ptilonyssus* in a strict sense refer to this genus mites having one podosomal shield and one or two pygidial shields on the dorsal idiosoma (Strandtmann, 1956, 1960; George, 1961; Bregetova, 1965, Černý, 1969; Stanjukovich, Butenko, 2003). Within this genus, some closely related species are arranged into the *motacillae, sairae, hirsti,* and *lanii* complexes (Domrow, 1964; Fain, 1963 Pence, and Casto, 1976; Butenko and Lavrovskaia,1984; Knee 2008). Other authors considering the genus *Ptilonyssus* in a wide sense (Pence, 1975; Domrow, 1969; Knee 2008) refer mites with one podosomal shield and one opisthosomal shield or 1–2 pygidial shields to this taxon. Fain (1957) considered that the genus *Neonyssus* Hirst, 1921 is a synonym of the genus *Ptilonyssus*. I follow the concept considering that genus *Ptilonyssus* sensu lato.

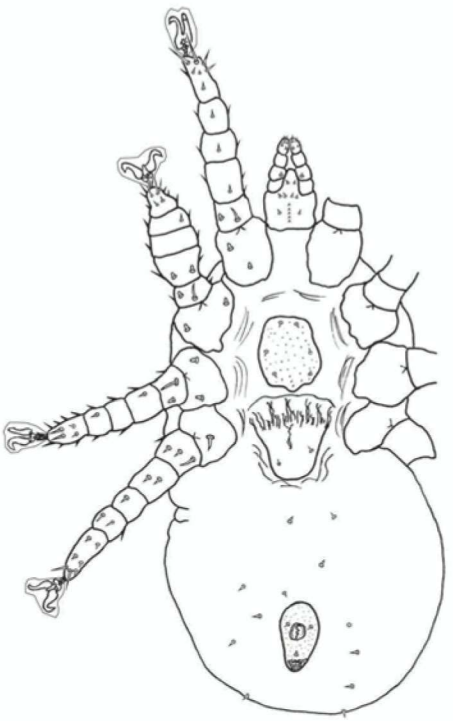
Among numerous previously known species of the

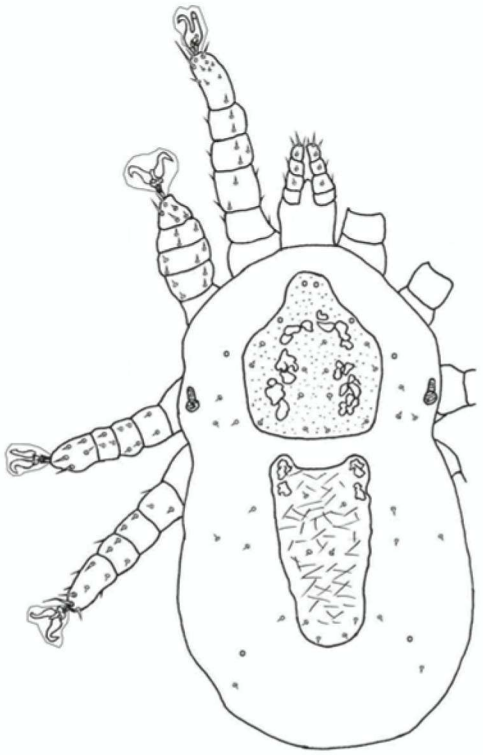
genus *Ptilonyssus*, I recognize a small new complex of species, named here as the *pari* species complex. Representatives of this complex are characterized by the following combination of features.in females: the anterior margin of podosomal shield has strong anterior extension; the posterior margin of podosomal shield is rounded, the poststernal shields are absent; the mesosomal shieldlets are absent;.the sternal shield is large, with slightly rounded margins; the genital shield is large; paranal setae are situated anterior and a postanal seta is posterior to the anal opening; gnathosomal formula of setae: 2-4-2.

Included species: *Ptilonyssus coccothraustis*, Fain and Bafort 1963, *P. mironovi* sp.n. , *P. pari* Fain and Hyland 1963, *P. pinicola* Knee 2008, and *P. plesiotypicus* Knee 2008.

Ptilonyssus mironovi n. sp.

(Figures 1 & 2)





Description

Female: *(holotype, range for 2 paratypes in parentheses).*

Middle-sized rhinonyssids with well developed podosomal and opisthosomal shields. Genital shield large. Anterior margin of podosomal shield with strong median extension. Posterior margin of podosomal shield rounded. Opisthosomal shield longer than wide. Opisthosomal shield with concave anterior margin. Sternal setae situated on the sternal shield. Four pairs of mesolateral setae present. One long seta present on trochanters II-IV. Paranal setae situated anterior to anal opening.

Measurements: LB- 425-560; WID – 196-202; LPS – 143-155; WPS – 120-129; LOS – 165-174; WOS – 71-83; LSS –- 57-60; WSS – 45-50; LGS – 52-55; WGS – 44-51; LAS- 55-62; WAS- 34-35; LG –84-94; WG – 43-48; LCH – 60-73; WCH – 8-9; Lleg I - 229-230; Lleg II – 175-181; LlegIII – 182-188; Lleg IV –228-236.

Dorsum: Anterior margin of podosomal shield with strong median extension; 9 pairs of setae (j_{2-6}, z_{2-5}) present on this shield (Fig. 1). Four pairs of mesolateral setae ($r_{5,6}$, $s_{5,6}$) present. Opisthosomal shield longer than wide, with 4 pairs of setae (J_{1-4}) Opisthosomal shield with concave anterior margin. Opisthosoma 5 pairs of setae (Z_{1-3}, $R_{1,2}$). Peritremes situated dorsolaterally, at level coxae III.

Venter: S (Fig. 2) Sternal shield large, with slightly

Table 1. Differential characters of *Ptilonyssus mironovi* n.sp. and P. *pari* Fain and Hyland 1963

Character	*Ptilonyssus mironovi* n.sp.	*Ptilonyssus pari*
Anterior concavity of opisthosomal shield	Yes	No
Podosomal shield covering most of idiosoma	No	Yes
Large sternal shield	No	Yes
One long seta on trochanters II-IV	Yes	No
Number of setae on tarsus I	19	22
Number of setae on tarsus IV	16	14

rounded margins; 3 pairs of sternal setae on this shield (st_{1-3}). Genital shield rather wide, with one pair of genital setae (he_4). Opisthosoma with 6 pairs of setae (Jv_{1-4}, $Zv_{2,3}$). Anal shield distinct, with paranal and postanal setae (Ad, Pa). Paranal setae anterior to anal opening. Cribrum present.

Gnathosoma: One pair of short subcapitular setae (cs). Five deutosternal teeth. Palps with short setae. Chelicerae elongate, gradually tapering. Chela small, movable digit triangular.

Legs: All legs six-segmented. Coxae I–III with two setae; coxa IV with one seta. Coxal formula: 2-2-2-1. Legs with identical short setae. One long seta on trochanters II–IV. Tarsi of all legs with pair of curved claws.

Male, larva, nymph: Unknown

Type material: Holotype female (ZISP 4711) and 2 paratype females (ZISP 4712, 4713) from Parus caeruleus L. (Paridae), Lomonosov, Leningrad Province, Russia, (59°55' N, 29°42' E), 06. December 2010, coll. I. Dimov.

Etymology: The new species is named after my supervisor Dr. Sergey Mironov (Zoological Institute, Russian Academy of Science, Saint Petersburg).

Differential diagnosis

Ptilonyssus mironovi sp. n. is most similar to P. pari Fain and Hyland 1963 known from the Black-capped Chickadee Parus *atricapillus* (Linnaeus, 1766) from the USA (Fain and Hyland 1963) by the presence of the podosomal and opisthosomal shields and having a narrow extension on the anterior end of propodosomal shield. *Ptilonyssus mironovi* differs from the latter one by having the concave anterior margin of the opisthosomal shield, relatively smaller podosomal and sternal shields (143–155 × 120–129 and 57–60 × 45–50, respectively), other numbers of setae on tarsi I and IV (**Table 1**), and by the presence of one long seta on trochanters II–IV. In P. pari, of the anterior margin of opisthosomal shield is straight, podosomal and sternal shields are broader and longer (165–177 ×155–164 and 85-93 × 65–70), tarsi I and IV with 22 and 14 setae, respectively, and trochanters II-IV bear one long seta each.

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