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A New Nasal Mite Species of the Genus *Rhinonyssus* (Mesostigmata: Rhinonyssidae) from *Anas platyrhynchos* (Anseriformes: Anatidae) in Russia

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ABSTRACT

A new species of nasal mites, *Rhinonyssus kadrae* n. sp. (Mesostigmata: Rhinonyssidae), collected from the Mallard, *Anas platyrhynchos* Linnaeus, 1758 (Anseriformes: Anatidae) from the Leningrad Province, Russia, is described. *Rhinonyssus kadrae* n. sp. is characterized by the following features: large oval form with 1 podosomal shield strongly sclerotized trapezium-shaped form, and without mesosomal shieldlets and sternal shield; anal shield strongly sclerotized, and two anal setae situated lateral to this shield.

Key words: Rhinonyssidae, *Rhinonyssus kadrae,* nasal mites, Anseriformes, *Anas platyrhynchos*

INTRODUCTION

Mites of the family Rhinonyssidae (Parasitiformes: Mesostigmata) are permanent parasites of birds living in their respiratory tract (Fain, 1994; George, 1961; Knee and Proctor, 2010; Vitzthum, 1935). Most species of this family are located in nasal turbinates, a cavity of complicate form layered by the vascularized epithelial tissue. However, some species occupy the lungs, tracheal tissues and body cavity of their host (Krantz, 1978; Porter and Strandtmann 1952). Rhinonyssid mites are very slow-moving gamasid mites. They disperse mainly by the oral route when infested adult birds regurgitate food to their nestlings or during courtship behavior. Indirect transmission has been detected through water, perches, or other contaminated surfaces (Bell, 1996). It is thought that rhinonyssid mites are descendents of ectoparasites predecessors which were probably related to gamasid mites of the family Macronyssidae (Strandtmann, 1948). The level of host specificity is variable across rhinonyssid genera; some genera are restricted to one host family, while others occur on hosts from several avian orders (Butenko, 1984; Fain, 1957; Pence, 1975). The family Rhinonyssidae currently includes about 500 described species arranged in 11 genera (Dimov, 2012b): *Larinyssu*s Strandtmann, 1948, *Locustellonyssus* Bregetova, 1965,

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*Mesonyssu*s Fain, 1960, *Ptilonyssoides* Vitzthum, 1935, *Ptilonyssus* Berlese and Trouessart, 1889, *Rallinyssus* Strandtmann, 1948, *Rhinoecius* Cooreman, 1946, *Rhinonyssus* Trouessart, 1894, *Sternostoma* Berlese and Trouessart, 1889, *Tinaminyssus* Strandtmann and Wharton, 1958, *Vitznyssus* Castro, 1948.

MATERIALS AND METHODS

Rhinonyssid mites have been collected from dead bird corpses by an amateur ornithologist. Bird heads were placed into a dish with 80% ethanol to preserve for future investigations. For mite collecting from the host's nasal cavities the bird's heads were dissected and examined under a dissecting stereomicroscope. Recovered mite specimens were preserved in 70% ethanol and further mounted on microslides in Faure's medium.

Description is based upon the holotype and paratype. Species descriptions follow the format of Knee (2008) and Dimov (2012a). Terminology for morphological structures mainly follows Fain and Hyland (1962).

Abbreviations used in the description are as follows: LB- length of body including palps; WID – width of idiosoma; LPS – length of podosomal shield; WPS – width of podosomal shield; LGS – length of genital shield; WGS – width of genital shield; LG – length of gnathosoma, ventral view, including palps; WG – width of gnathosoma; LCH – length of chelicerae; WCH - width of chelicerae; Lleg I to Lleg IV - length of leg, including coxa, excluding ambulacrum. All measurements are in micrometers.

Holotype and paratype are deposited in the collections of Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia.

RESULTS

Family **Rhinonyssidae** Trouessart, 1895

Genus ***Rhinonyssus*** Trouessart, 1894

The genus *Rhinonyssus* currently includes more than 26 described species. To date *Rhinonyssus* species have been collected from 5 orders of birds worldwide: Anseriformes, Charadriiformes, Colymbiformes, Podicipediformes, and Sphenisciformes. The genus *Rhinonyssus* has been characterized by Strandtmann (1956) as mites that have a single dorsal shield or a group of shieldlets, without peritreme, without tritosternum and deutosternal teeth, anal shield reduced or lacking, sternal shield greatly reduced or lacking. On the basis of the morphological features Strandtmann (1959) separated nine species of the genus *Rhinonyssus* in three different groups (group A, group B, group C) and created keys to them. By Strandtmann (1959) Group "A" includes: *R. caledonicus, R. waterstoni, R. coniventris*. Group "B" includes: *R. himantopus, R. minutus, R. afribyx*. Group "C" includes: *R. rhinolethrum, R. poliocephali, R. alberti* (Butenko, 1984; Pence, 1975; Strandtmann 1956; Wilson, 1970).

***Rhinonyssus kadrae* n. sp.**

(Figs. 1–2)

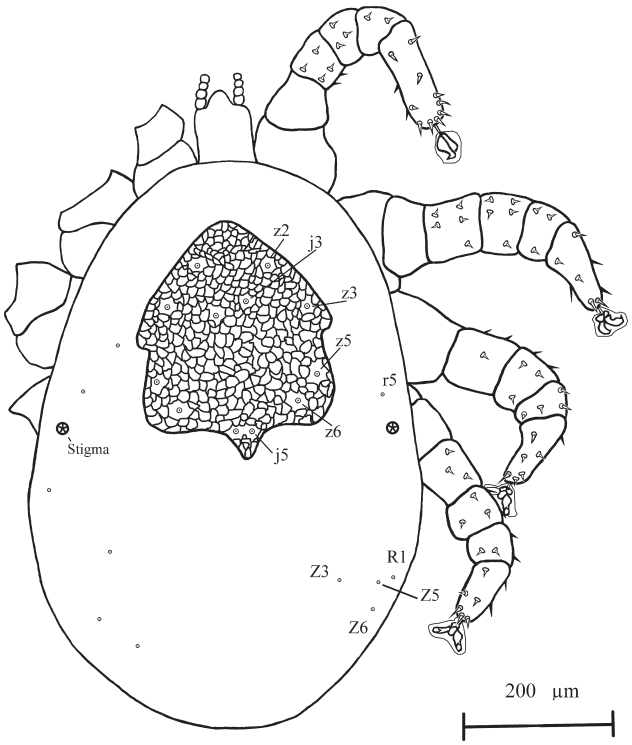

Fig. 1. *Rhinonyssus kadrae* n. sp., female, dorsum.

Diagnosis. Large oval form with 1 podosomal shield strongly sclerotized trapezium-shaped form, and without mesosomal shieldlets and sternal shield; anal shield strongly sclerotized, and two anal setae situated lateral to this shield.

Description. *Female* (based on holotype and 1 paratype). LB- 775-782; WID – 433-443; LPS – 276-285; WPS – 224-231; LGS –129-132; WGS – 57-60; LG – 94-98; WG –74-76; LCH – 69-74; WCH –18-20; Lleg I – 436-457; Lleg II – 405-412; LlegIII – 386-401; Lleg IV – 382-408.

Dorsum (Fig. 1). Idiosoma of elliptical form, with podosomal shield. Podosomal shield strongly sclerotized trapezium-shaped form with 12 setae. Mesosomal shieldlets absents. Dorsal idiosoma with 11 setae. Stigmata without peritremes located dorsolaterally at level of coxa IV.

Venter (Fig. 2). Sternal shield absent. Three pairs of sternal setae present. Genital shield broad and sclerotized without genital setae. Ventral opisthosoma with 23 setae. Anal shield strongly sclerotized without clean form. Anus located in front of anal shield. Two pairs of adanal setae situated lateral to anal shield. Cribrum absent. Coxae and trochanters on the ventral side sclerotized.

Legs. All legs six-segmented. Chaetotaxy of legs: Coxae 2-2-2-1; trochanters 3-4-4-4; femurs 8-7-5-4; genua 6-8-8-8; tibiae 4-5-6-7; tarsi 20-14-16-17. All tarsi with ambulacra.

Male, nymphs, larva. Unknown.

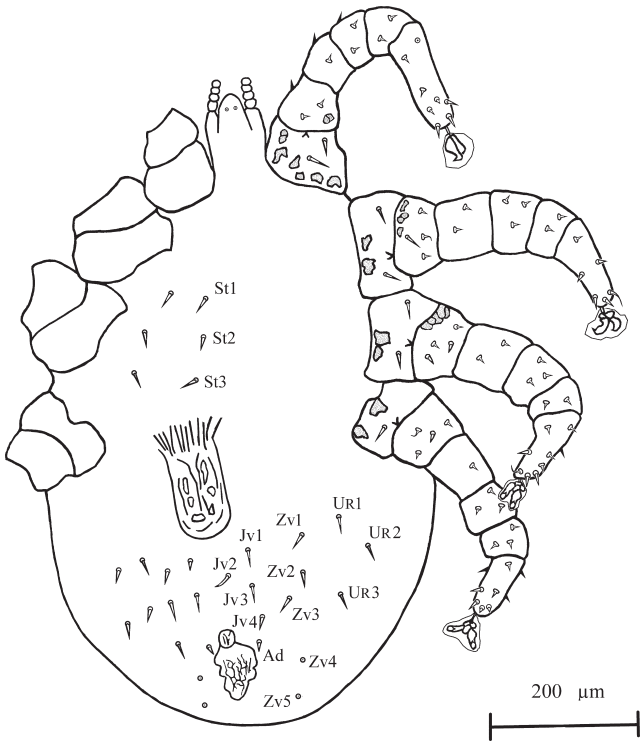

Fig. 2. *Rhinonyssus kadrae* n. sp., female, venter.

Type material. Female holotype (ZISP 5056) with 1 female paratype (ZISP 5057) from *Anas platyrhynchos* (Linnaeus, 1758) (Anatidae), Russia, Leningrad province, Dubrovka (59° 50′ N, 30° 56′ E), 28 September 2011, coll. I. Dimov.

Etymology. The new species is named after author's mother - Dr Kadra Popivanova Dimova in appreciation her help in my researches on Rhinonyssid nasal mites.

DISCUSSION

Rhinonyssus kadrae n. sp. is most similar to *R. anatidae* (Butenko, 1984) which was also collected from *Anas platyrhynchos* and another birds from genus *Anas* in many provinces in Russia (Butenko, 1984). *Rhinonyssus kadrae* n. sp. has ventral sclerotization of coxae and trochanters, and *R. anatidae* has no sclerotization. *R. kadrae* n. sp. has 11 setae on dorsal idiosoma and *R. anatidae* is without setation on dorsal idiosoma. The new species has 23 setae on ventral idiosoma, whereas *R. anatidae* has 15 or 20. Mesosomal shieldlets are absent on the dorsal idiosoma of *R. kadrae* n. sp., but they are present on the dorsal idiosoma of *R. anatidae*. Cribrum present on the anal shield of *R. anatidae*, but it is absent on the anal shield of the new species. *Rhinonyssus kadrae* n. sp. belongs to the group "C" and resembles *R. rhinolethrum* (Trouessart, 1895) in same group. The differences between *Rhinonyssus kadrae* n. sp. and *R.*

rhinolethrum are as follows: mesosomal shieldlets are absent on the dorsal idiosoma of *R. kadrae* n. sp., but they are present on the dorsal idiosoma of *R. rhinolethrum*; the new species has 23 setae on ventral idiosoma, whereas *R. rhinolethrum* has 15.

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