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SPINTURNIX BREGETOVAE SP.N. (GAMASINA: SPINTURNICIDAE), A NEW SPECIES OF PARASITIC MITES FROM BATS

SPINTURNIX BREGETOVAE SP.N. (GAMASINA: SPINTURNICIDAE) — НОВЫЙ ВИД ПАРАЗИТИЧЕСКИХ КЛЕЩЕЙ С ЛЕТУЧИХ МЫШЕЙ

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Ключевые слова: клещи-гамазиды, Spinturnicidae, *Spinturnix bregetovae* **sp.n.**, летучие мыши, определительные таблицы *Spinturnix*, Россия и сопредельные страны.

ABSTRACT

All development stages of the gamasid mite *Spinturnix bregetovae* **sp.n.** from bats of the Far East are described. An identification key is given for males and females of 13 species of the genus *Spinturnix* von Heyden,1826 known from Russia and adjacent territories.

РЕЗЮМЕ

Дано описание нового вида *Spinturnix bregetovae* **sp.n**. по всем стадиям развития с летучих мышей Дальнего Востока. Приводятся таблицы для определения видов рода *Spinturnix* von Heyden, 1826 по самкам и самцам для России и сопредельных стран.

Most species of the family Spinturnicidae Oudemans, 1901 belong to the genus *Spinturnix* von Heyden, 1826. *Pteroptus myoti* Kolenati, 1856 is the

type species of the genus. Mites of the genus *Spinturnix* parasitize on bats of the family Vespertillionidae Gray, 1821 from both Old and New World. There are 19 species in the genus, according to the data of Rudnick [Rudnick, 1960]. Radovsky [1985] mentioned 35 species. Recently several new species of the genus *Spinturnix* were described [Uchikawa, Wada, 1979; Deunff, Keller, Aellen, 1986; Deunff, Volleth, Keller, Aellen, 1990; etc.]. In my opinion, the world fauna of the genus *Spinturnix* consists of at least 45 species.

For a long time the fauna of bat gamasids of the territory under consideration was totally neglected. Only one species, *Spinturnix vespertilionis* L., was mentioned in the handbook of gamasids [Bregetova, 1956]. It is necessary to stress that the species name "*vespertilionis*" was recognized invalid according to Opinion 128 of ICZN in 1936. However, this name was used in Russian literature for a long time after that. Because of the lack of taxonomic handbooks, this very name continued to be used for the complex of different species of the genus *Spinturnix* for many years [Dzovtay, Zarubina, Prokopiev, Schvedko, 1962; Yamilianov, Vysokovsky, 1962; Arzamasov, Curskov, 1962; Akimov, Yastrebtsov, 1966 etc.]. Some regional faunistic works that appeared later [Vshivkov, 1963; Pintchuk, 1971; Arutunian, Ogandjanian, 1974; Gadjziev, Dubovchenko, 1967; Tagiltzev, 1971; Senotrusova, 1971; Rybin, 1983] could not solve this problem.

I found thirteen species of spinturnicids of bats in Russia and adjacent countries, including four species new for the former USSR and one totally unknown species. Here I describe this new species belonging to the genus *Spinturnix* von Heyden, 1826 of the family Spinturnicidae Oudemans, 1936 from bats (bat species affiliation remains unknown) from the Suputinsky Reserve of the Russian Far East. All developmental stages are described. The identification keys for females and males of those species of the genus *Spinturnix* that are known from the former USSR are given below. Dimensions are given in mkm.

Spinturnix bregetovae Stanyukovich **sp.n.**

Figs. 1—3.

Female. Idiosoma ovoid, 1033 to 1067 (1042) wide, 1213 to 1437 (1320) long. The dimensions of the holotype are put in brackets.

Dorsum (Fig.1.B). Dorsal shield rhombic, with slightly smoothed corners; some individuals with flat posterior end of the dorsal shield; length of the shield 696—752 (718), width 562—595 (571); 12 pairs of pores (some of them with microchetae) present on the shield; the 9th pair of them situated on the border of the shield and integument between III—IV coxae. Many small pits present on the shield in the places where muscles are attached. The soft integument around the shield covered by small denticles; near the shield the denticles with delicately punctated pattern; integument on the periphery

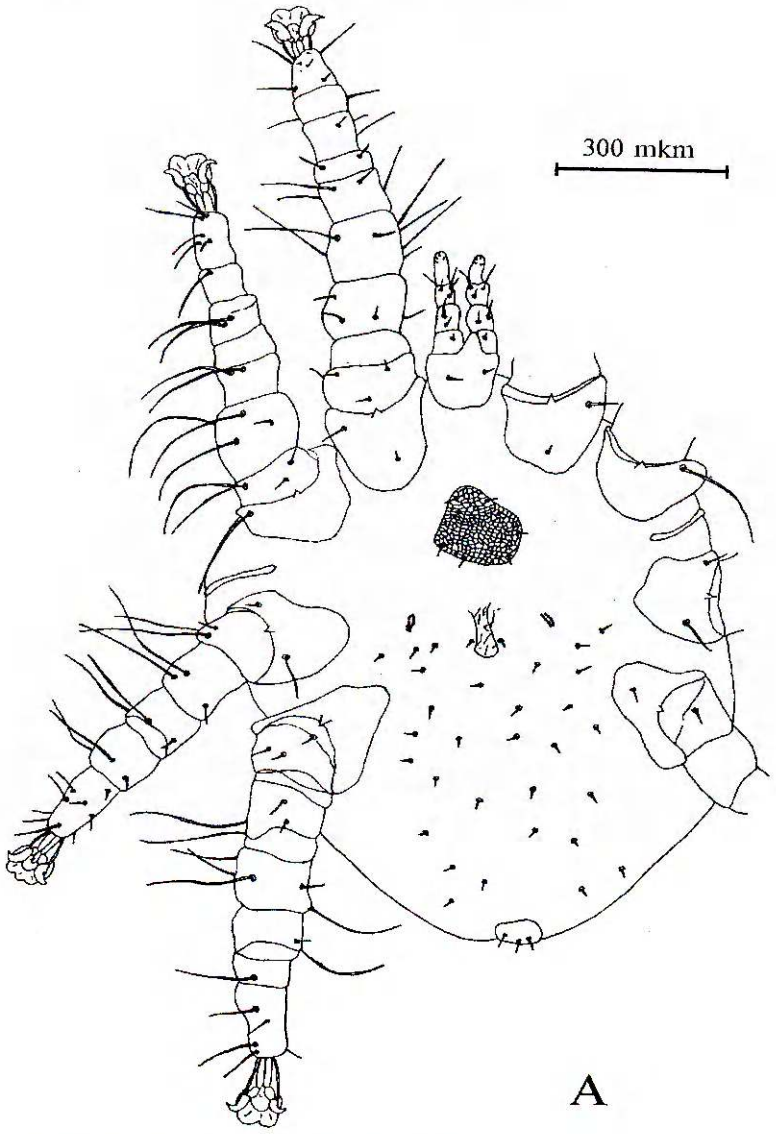

Fig.1A. *Spinturnix bregetovae* sp.n., female. Ventral view.

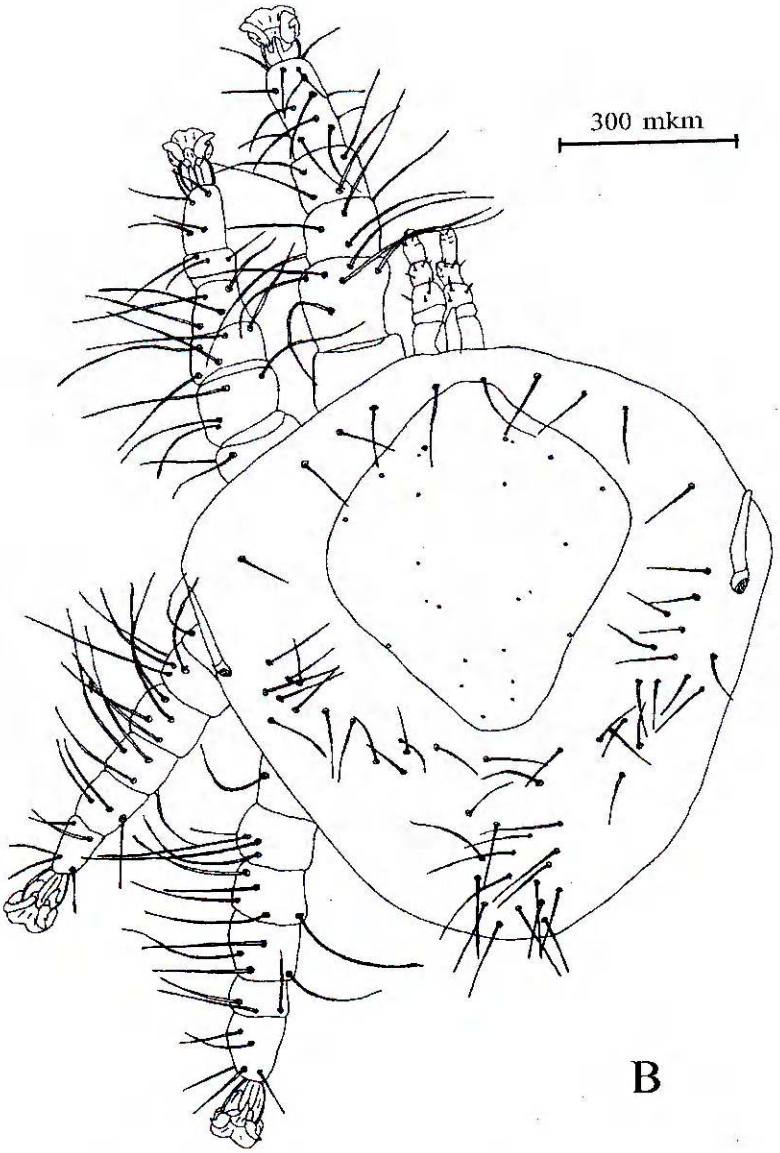

Fig.1B. *Spinturnix bregetovae* sp.n., female. Dorsal view.

dentate, and on the posterior end of body scaled. Five pairs of podosomal setae 101—146 (105—136) long. On the dorsal surface of idiosoma 40—50 (42) setae; setae near dorsal shield 79—101 (82—101) long, shorter than setae on the end of idiosoma (135—168 <137—165>).

Ventrum (Fig.1.A). Tritosternum not visible. Sternal shield with clear scaled pattern; two pairs of pores and three pairs of setae present on the shield. The reduced metasternal shields set widely on the level of the middle of genital shield. Genital shield small, with one pair of genital setae, and slightly widened anteriorly; pattern on the shield like a group of large cells. 22—28 (25) short setae present between genital and anal shields, their length varying from 22—45 (27—41). Anal shield twice as long as wide. Adanal and postanal setae short.

Gnathosoma. Tectum short and rounded. Hypostomal setae longer than gnathosomal ones. Chelicerae with dentate chelae.

Legs. Ventrolateral setae mostly long (340—360). Remaining ventral setae mostly short (22—33). Dorsal setae mostly long to very long.

Male. Idiosoma 932—966 long and 696—718 wide.

Dorsum (Fig.2.A). On ovoid dorsal shield there are 11 pairs of pores on the shield, some of them with microchetae; the 12th pair of pores situated on the integument near dorsal shield, on the level of the middle of first coxae. Length of dorsal shield 651—663, width 517—528. Integument near dorsal shield with wavy pattern; on the periphery the pattern dentate. Dorsal shield surrounded anteriorly by 5 pairs of setae. Peritremes mostly dorsal, their anterior ends bending ventrally between coxae II and III, sinuous. 27—30 setae (78—101) present on the dorsal integument.

Ventrum (Fig.2.B). Tritosternum not visible. Sternogenital shield spade-shaped; shield pattern coarsely reticulated; three pairs of setae and two pairs of pores present on the shield. Endopodal and metasternal shields reduced. A pair of setae present on the integument in the posterior portion of shield; 17—18 setae situated between III—IV coxae and anal shield. Anal shield ovoid with, slightly reticulate pattern. Postanal seta longer than adanal setae.

Gnathosoma. As in female, chelicerae with spermatodactyle.

Legs. As in female.

Deutonymph (male) (Fig.3.C). Idiosoma ovoid, 876 long, 674 wide. Dorsal shield slightly stretched out posteriorly, 663 long, 449 wide. Shield surrounded anteriorly by 5 pairs of setae; 29 setae situated on the dorsal surface of idiosoma; 2 pairs of setae on the border of sternal shield with integument (1 pair laying outside the shield). 16 setae situated between sternal and anal shields.

Deutonymph (female) (Fig.3.B). Idiosoma 898 to 921 long, 674 to 707 wide; dorsal shield ovoid; 53—54 setae present on the dorsal surface of the idiosoma. Two pairs of pores on sternal shield, sternal setae situated outside the shield; 32—34 setae between sternal and anal shields.

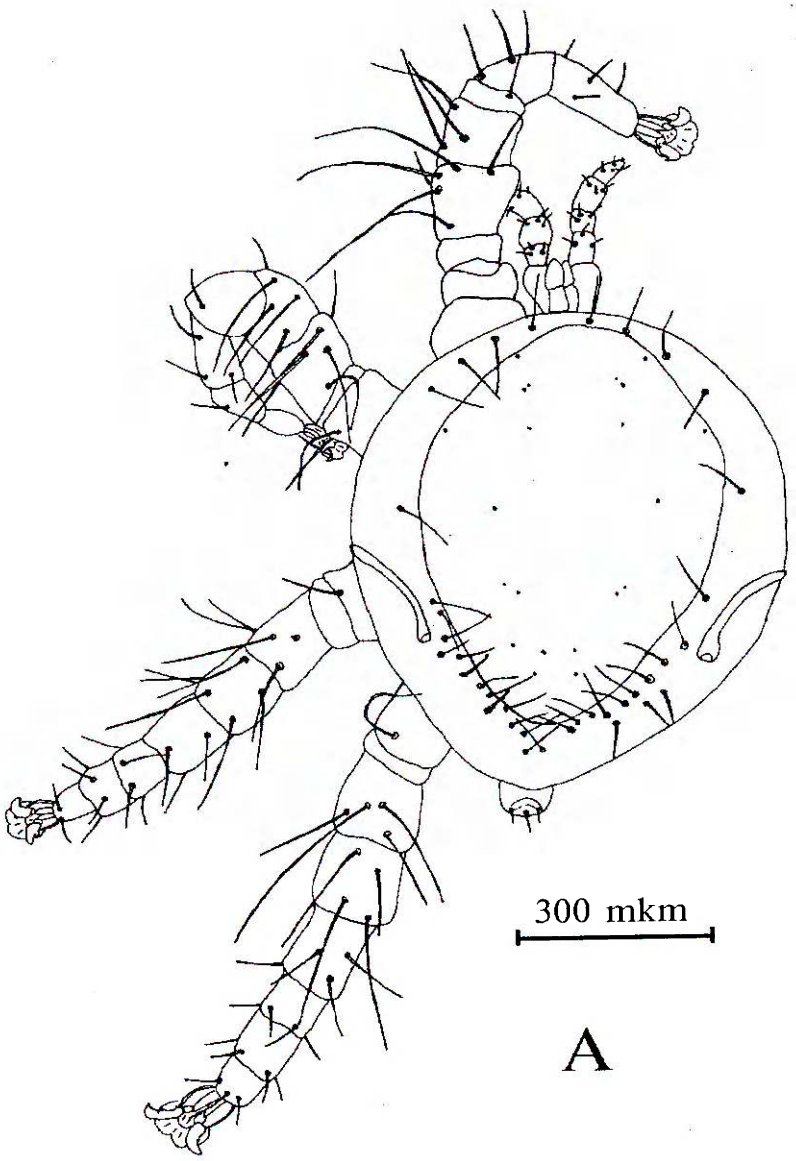

Fig.2A. *Spinturnix bregetovae* sp.n., male. Dorsal view.

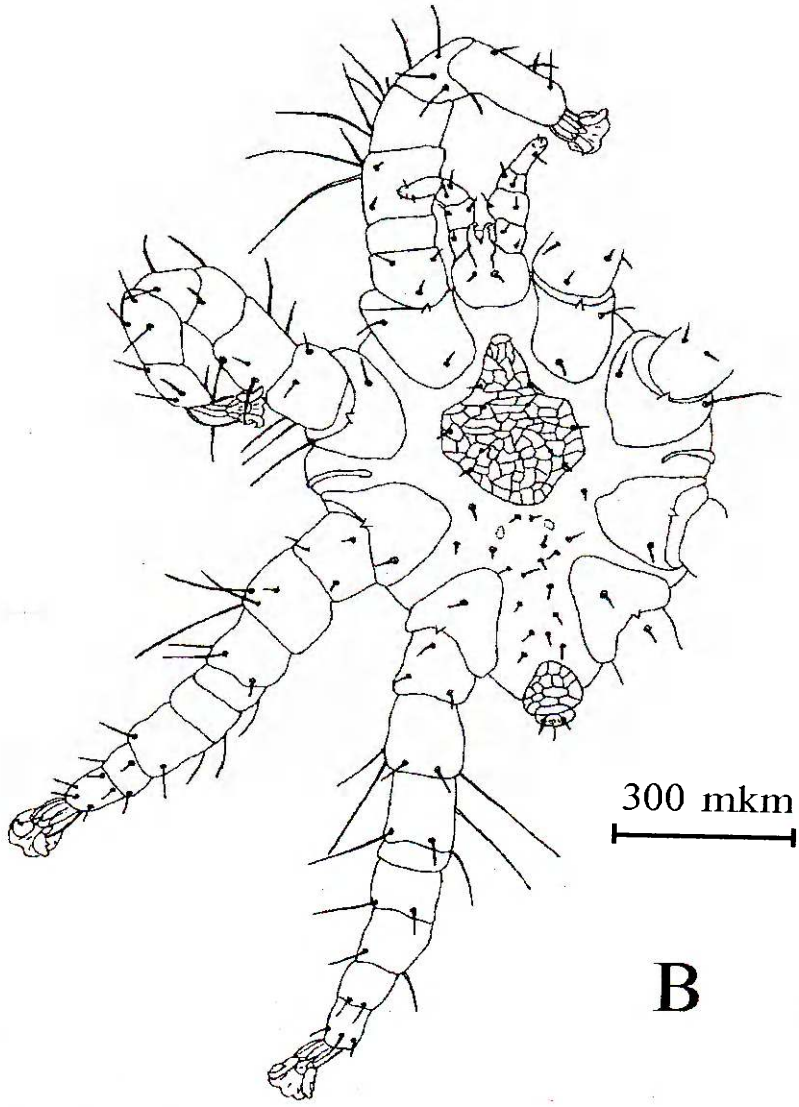

Fig.2B. *Spinturnix bregetovae* sp.n., male. Ventral view.

Protonymph (Fig.3.A). Idiosoma ovoid, 730 to 786 long, 651 to 674 wide. Podosomal shield with sinuous hollow posteriorly; triangular pygidial shield with two small projections in anterior part; two pairs of setae, 124 to 135 long, in the posterior portion of the shield. Three pairs of setae situated near sternal shield. Two pairs of short setae present between IV coxae. Length and width of anal shield equal; adanal and postanal setae very short.

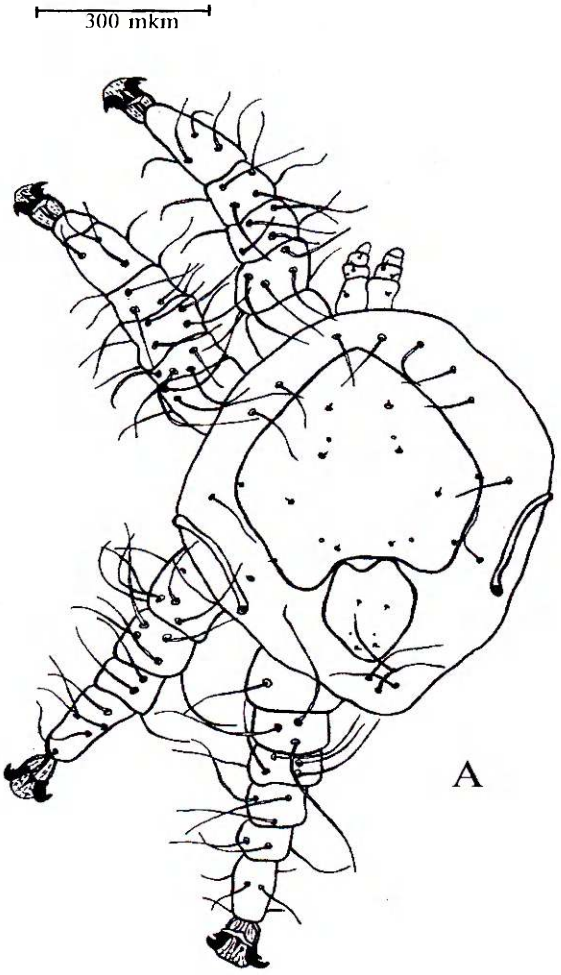

Fig.3A. *Spinturnix bregetovae* sp.n. Protonymph, dorsal view.

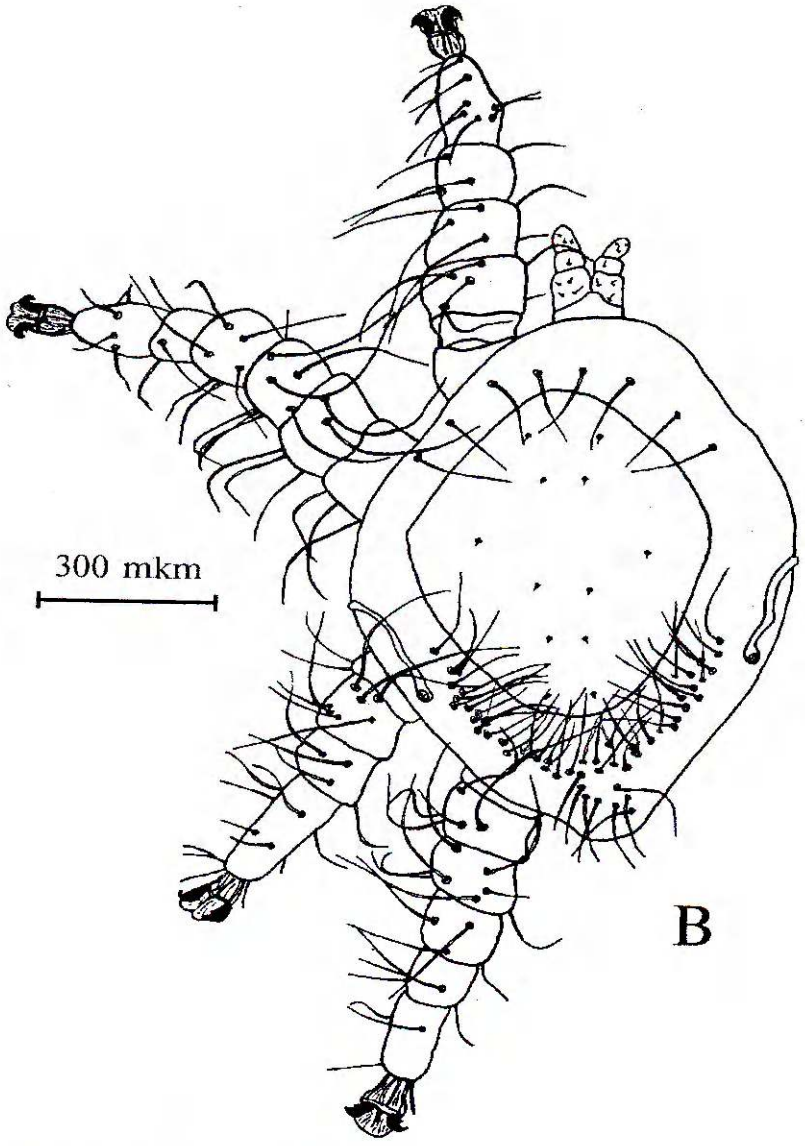

Fig.3B. *Spinturnix bregetovae* sp.n. Deutonymph (female), dorsal view.

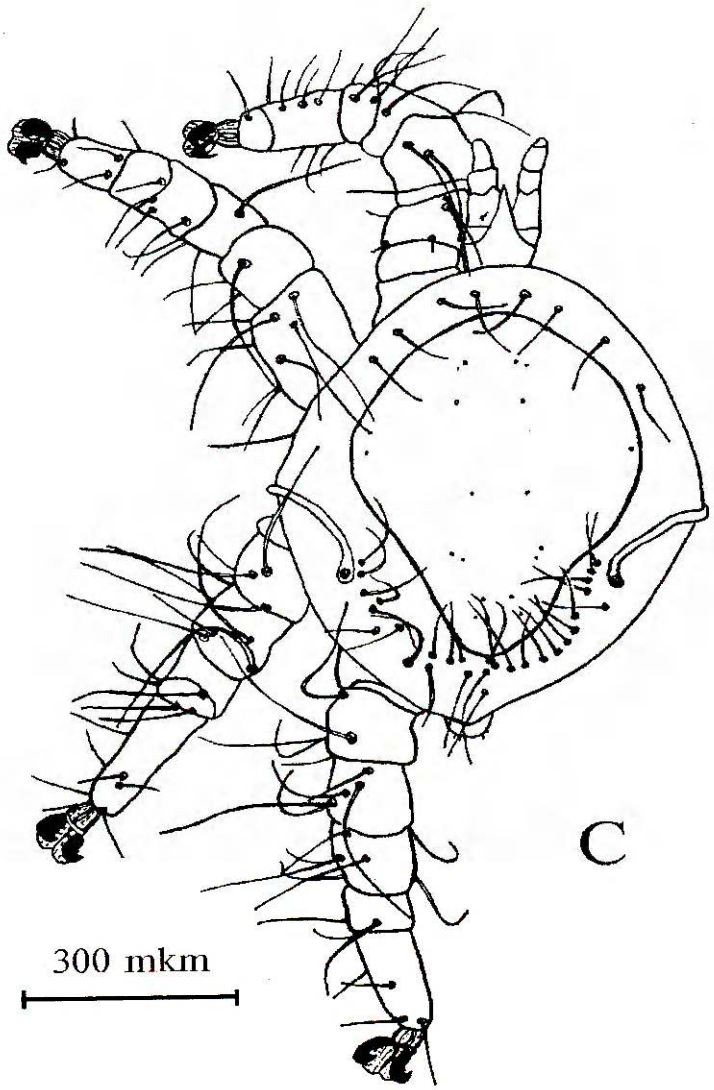

Fig.3C. *Spinturnix bregetovae* sp.n. Deutonymph (male), dorsal view.

DIFFERENTIAL DIAGNOSIS

Similarly to most species of the genus *Spinturnix, S.bregetovae* sp.n. has 5 pairs of podosomal setae; only 3 species of the genus are known to have a different number of setal pairs: *S.orientalis* Turk, 1950 — 3 pairs, *S.plecotinus* (Koch, 1839) — 4 pairs, *S.multisetosus* Rudnick, 1960 — more than 70 pairs. The tritosternum of the new species is not visible (only three species of the genus *Spinturnix* have no tritosternum: *S.multisetosus*, *S.abyssinicus* Hirst, 1927 and *S.lawrensi* Zumpt, 1951; all of them are spread outside Palaearctic). The mites belonging to *S.bregetovae* differ from the three species mentioned above by the smaller numbers of dorsal setae on idiosoma (for example, *S.multisetosus* has over 250 setae), by the shape and structure of sternal and sternogenital shields, by the numbers and sizes of dorsal idiosomal setae (idiosomal setae of *S.abyssinicus* are longer than those of *S.bregetovae*). The other 12 species of the genus *Spinturnix* investigated by me have a well visible tritosternum; only females of *S.plecotinus* have very small tritosternum. The number of setae on the dorsum, as well as the shape and structure of dorsal and sternal shields of *S.bregetovae* are similar to the same characteristics of *S.psi*. Females of both the new species and *S.psi* have 40 —50 setae at the end of idiosoma. However, *S.bregetovae* specimens have smooth setae on the legs (in *S.psi*, serrate), tritosternum not visible (in *S.psi*, well developed), 12 pairs of pores on the dorsal shield (in *S.psi*, 11), and no lanceolate setae on the tips of tarsi (present in *S.psi*). *S.bregetovae* males have 16 —17 pairs of setae on the idiosoma (*S.psi* males, 8 pairs) and 3 pairs on the sternogenital shield (*S.psi*, 5 pairs). *S.helvetiae* females also have 40 setae at the end of idiosoma, but the shape and structure of sternal shield differ from those of *S.bregetovae*; besides, there are some other minor differences. *S.helvetiae* males differ from males of *S.bregetovae* by their minutely reticulate sternogenital shield, by the number of pore pairs on the dorsal shield.

Type material. Holotype female (№ 9960, ZIN RAN) from bats, Primorsky Kray, Suputinsky Reserve, 8.08.1954 (coll. L.I. Amosova). Paratypes: 3 females, 1 female with protonymph from bats (the same place), 9.08.1954 (coll. L.I. Amosova), № 9961, ZIN RAN; 4 females from bats (the same place), № 9962, ZIN RAN; 2 males, 3 deutonymphs (female), 1 deutonymph (male), 3 protonymphs (the same place), № 9963, ZIN RAN. All material is deposited in the collection of the Zoological Institute, St. Petersburg.

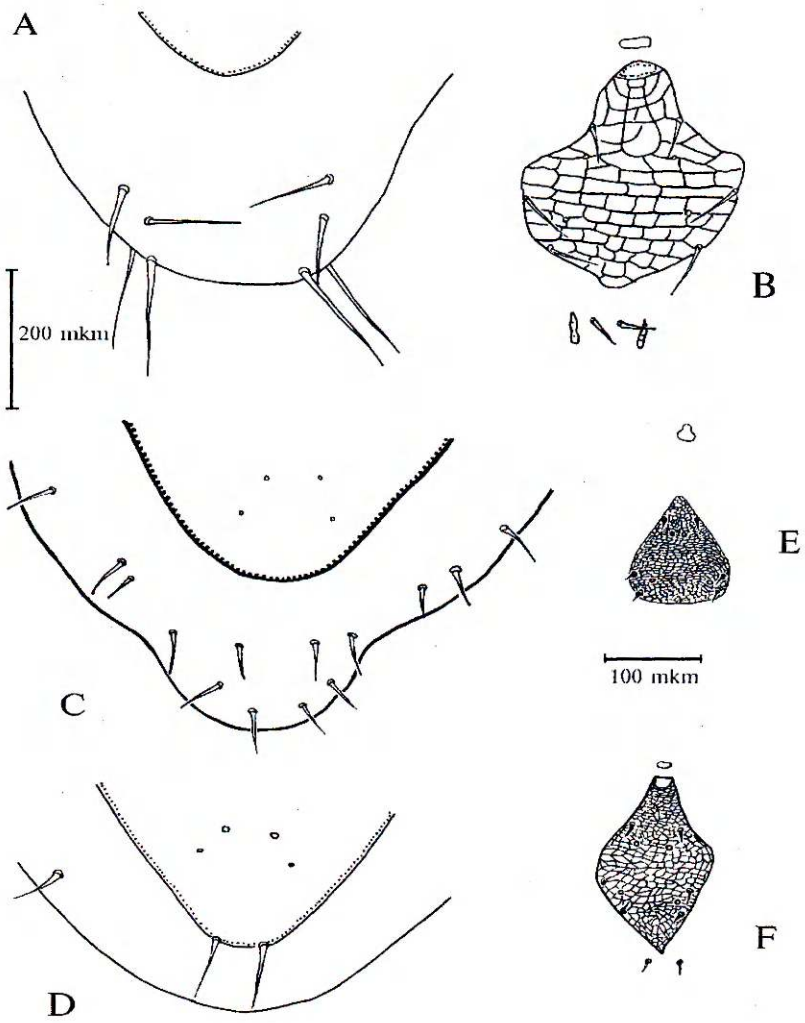

Fig.4. *Spinturnix kolenatii* (Oud.): A — dorsal view of idiosoma, female; B — sternogenital shield of male. *Spinturnix plecotinus* (Koch): C — dorsal view of idiosoma, female; D — dorsal view of idiosoma, male. *Spinturnix bakeri* Rudn.: E — sternal shield of female; F — sternogenital shield of male.

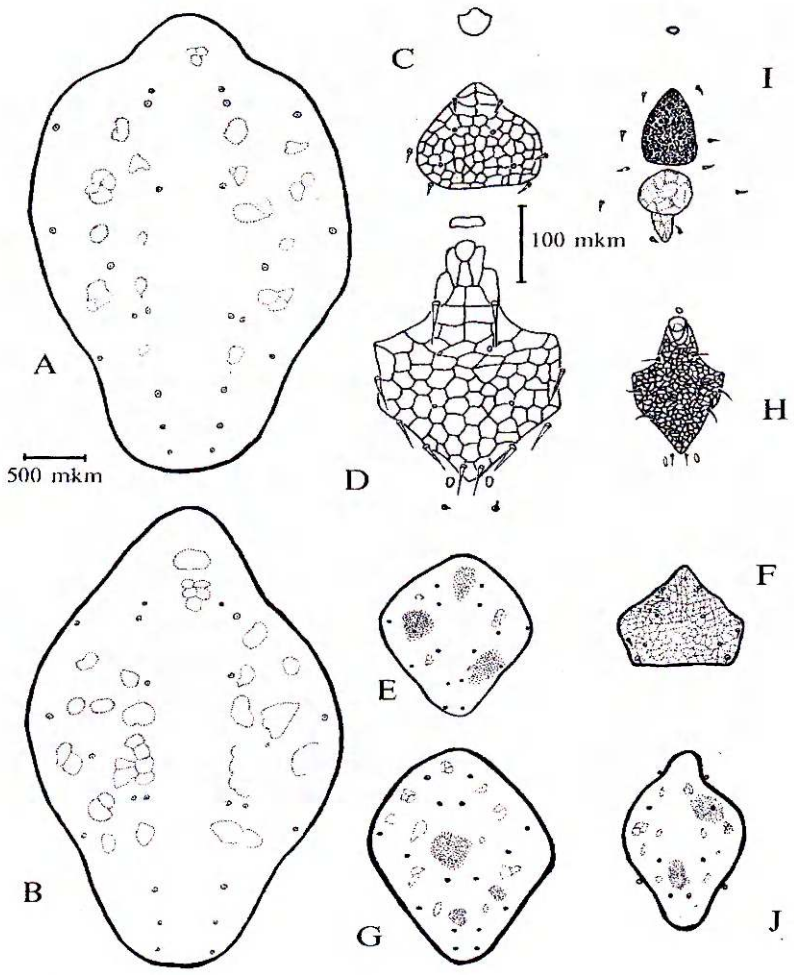

Fig.5. *Spinturnix barbastelli* (Kol.): A — dorsal shield, female. *Spinturnix acuminatus* (Koch): B — dorsal shield, female. *Spinturnix psi* (Kol.): C — sternal shield, female; D — sternogenital shield, male. *Spinturnix maedai* Uch. et Wad.: E — dorsal shield, male; F — sternal shield, female. *Spinturnix nobleti* Deun., Voll., Kel. et Ael.: G — dorsal shield, female; H — sternogenital shield, male. *Spinturnix helvetiae* Deun., Kel. et Ael.: I — sternal shield, female; J — dorsal shield, male.

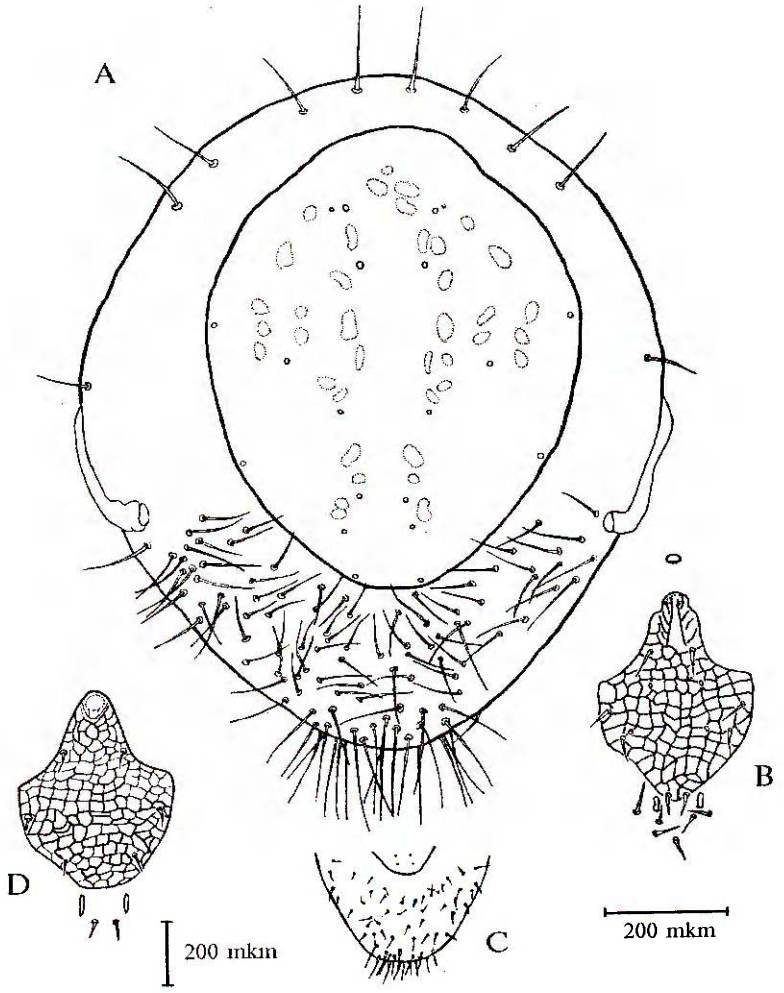

Fig.6. *Spinturnix myoti* (Kol.): A — dorsal view of idiosoma, female; B — sternogenital shield, male. *Spinturnix emarginatus* (Kol.): C — dorsal view of idiosoma, female. *Spinturnix mystacinus* (Kol.): D — sternogenital shield, male.

Keys to the species of *Spinturnix* von Heyden, 1826

Females

1(6) Number of dorsal idiosomal setae behind stigmata not exceeding 14.

2(3) 6—7 pairs of dorsal idiosomal setae (Fig.4.C); lanceolate setae on dorsal tips of tarsi II—IV present

.....*S.plecotinus* (Koch, 1839)

3(2) 3—4 pairs of dorsal idiosomal setae; lanceolate setae on dorsal tips of tarsi II—IV absent.

4(5) 2 pairs of long setae and 2 pairs of short setae at the end of idiosoma (Fig.4.A); tritosternum discoidally rounded.

.....*S.kolenatii* Oudemans, 1910

5(4) 3 pairs of short setae on the dorsal surface of idiosoma; tritosternum jar-shaped (Fig.4.E)

.....*S.bakeri* Rudnick, 1960

6(1) Number of dorsal idiosomal setae behind stigmata greater than 20.

7(18) Number of dorsal idiosomal setae greater than 50.

8(9) Tritosternum large, mushroom-shaped (Fig.5.C); some dorsal setae of I—II legs serrate.

.....*S.psi* (Kolenati, 1856)

9(8) Tritosternum of a different shape or invisible; setae on legs smooth.

10(13) Number of dorsal idiosomal setae no less than 40.

11(12) Sternal shield with coarse reticulate pattern; shield with 3 pairs of sternal setae (Fig.1.A); tritosternum invisible.

.....*S.bregetovae* sp.n.

12(11) Sternal shield minutely reticulate; sternal setae absent on the shield; tritosternum small and rounded (Fig.5.I).

.....*S.helvetiae* Deunff, Keller et Aellen, 1986

13(10) Number of dorsal idiosomal setae below 40.

14(15) Dorsal shield diamond-shaped, rounded (Fig.5.G); posterior margin of sternal shield rounded.

.....*S.nobleti* Deunff, Volleth, Keller et Aellen, 1990

15(14) Dorsal shield egg-shaped; posterior margin of sternal shield almost straight.

16(17) Dorsal shield with slightly rounded shoulders posteriorly and anteriorly (Fig.5.B); podosomal setae about 2 times shorter than idiosomal ones.

.....*S.acuminatus* (Koch, 1836)

17(16) Dorsal shield with out shoulders (Fig.5.A); podosomal and idiosomal setae nearly equal in length.

.....*S.barbastelli* (Kolenati, 1856)

18(7) Number of dorsal idiosomal setae over 60.

19(20) Sternal shield pentagonal (Fig.5.F).

.....*S.maedai* Uchikawa et Wada, 1979

20(19) Sternal shield rounded or pear-shaped (Fig.5C).

21(22) Genital setae situated not on the genital shield. Over 90 dorsal idiosomal setae (Fig.6.A).

.....*S.myoti* (Kolenati, 1856)

22(21) Genital setae situated on the shield; less than 90 dorsal idiosomal setae.

23(24) Marginal dorsal idiosomal setae longer than other idiosomal setae (Fig.6.C); tritosternum clearly visible.

.....*S.emarginatus* (Kolenati, 1856)

24(23) Marginal dorsal idiosomal setae and other idiosomal setae nearly equal; tritosternum weakly developed.

.....*S.mystacinus* (Kolenati, 1857)

Males

1(2) 2 setae at the end of idiosoma (Fig.4.D); lanceolate setae on dorsal tips of tarsi II—IV present.

.....*S.plecotinus* (Koch)

2(1) 4—46 setae at the end of idiosoma; lanceolate setae absent.

3(6) 4 dorsal idiosomal setae.

4(5) Sternogenital shield sharped posteriorly; pattern of the shield minutely reticulate (Fig.4.F); 6 pairs of setae on ventral integument between II—IV coxae.

.....*S.bakeri* Rudnick

5(4) Sternogenital shield smoothly rounded posteriorly; pattern of the shield coarsely reticulate (Fig.4.B); 8 pairs of setae on ventral integument between II—IV coxae.

.....*S.kolenatii* Oudemans

6(3) 14—46 dorsal idiosomal setae.

7(22) On sternogenital shield 3 pairs of setae.

8(15) Sternogenital shield not spade-shaped.

9(12) 29—38 dorsal idiosomal setae.

10(11) Dorsal shield diamond-shaped; pores on the border between dorsal shield and integument absent (Fig.5.E).

.....*S.maedai* Uchikawa et Wada

11(10) Dorsal shield not diamond-shaped; pores on the border between dorsal shield and integument present (Fig.5.J).

.....*S.helvetiae* Deunff, Keller et Aellen

12(9) 18—20 dorsal idiosomal setae.

13(14) Dorsal shield with dot pattern; a pair of setae present near the

posterior tip of sternogenital shield.

.....*S.acuminatus* (Koch)

14(13) Dorsal shield without dot pattern; near the posterior tip of sternogenital shield no closely placed setae.

.....*S.barbastelli* (Kolenati)

15(8) Sternogenital shield spade-shaped (Fig.2.B; 5.D; 6.B).

16(17) Pattern of sternogenital shield minutely reticulate (Fig.5.H).

.....*S.nobleti* Deunff, Volleth, Keller et Aellen

17(16) Pattern of sternogenital shield coarsely reticulate.

18(19) Sternogenital shield posteriorly cut (Fig.6.D).

.....*S.mystacinus* (Kolenati)

19(18) Sternogenital shield not cut.

20(21) 27—30 setae on dorsal idiosomal surface; tritosternum indiscernible.

.....*S.bregetovae* sp.n.

21(20) Dorsal idiosomal surface with 16 setae; tritosternum well developed.

.....*S.emarginatus* (Kolenati)

22(7) Sternogenital shield with 4—5 pairs of setae.

23(24) Sternogenital shield with 4 pairs of setae (Fig. 6B). On dorsal idiosomal surface 33—46 setae; tritosternum small and rounded.

.....*S.myoti* (Kolenati)

24(23) Sternogenital shield with 5 pairs of setae (Fig.5.D); on dorsal idiosomal surface 16 setae; tritosternum rectangular.

.....*S.psi* (Kolenati)

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