

CHIGGERS PARASITIZING SMALL MAMMALS IN THE SOUTHERN PART OF YUGOSLAVIA (ACARINA: TROMBICULIDAE)

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Abstract. In the territory of the Socialist Republics of Macedonia and Montenegro and in the Autonomous Region of Kosovo 13 species of chiggers parasitizing small mammals were found: *Neotrombicula (Neotrombicula) autumnalis*, *N. (N.) zachvatkini*, *N. (N.) japonica*, *N. (N.) ilagorensis*, *N. (N.) cernaia*, *N. (N.) rhinophi*, *Myiatrombicula (Myiacarus) muris*, *Leptotrombidium (Leptotrombidium) europaeum*, *Sasatrombicula (Sasatrombicula) hureschi*, *Ascoschoengastia (Ascoschoengastia) latyshevi*, *Cheladonta costulata*, *Schantzenichia (Platytricha) krampitzi* and *Euschoengastia (Bruchaldia) bulgarica*.

During joint Yugoslav-Czechoslovak expeditions which were carried out in 1968–1969 in the territory of the Socialist Republics of Macedonia and Montenegro and in the Autonomous Region of Kosovo with the aim to study natural foci of infections, special attention was paid to ectoparasites of small free-living vertebrates as potential vectors of some diseases. Among others larvae of the family Trombiculidae were collected. On the total of 11 species of small mammals (*Neomys anomalus*, *Apodemus flavicollis*, *A. sylvaticus*, *A. agrarius*, *A. mystacinus*, *Mus musculus*, *Dolomys bogdanovi*, *Clethrionomys glareolus*, *Microtus arvalis*, *Glis glis* and *Rhinolophus hipposideros*) 13 species of chiggers were found, out of which 6 species had been found for the first time in the territory of Yugoslavia. Thus, the investigations have brought new zoogeographical information about the distribution of this important group of parasitic mites in the Peninsula of Balkan.

SPECIES COLLECTED

1. *Neotrombicula (Neotrombicula) autumnalis autumnalis* (Shaw, 1790), (Richards, 1950)*

Material: Kumanovo (Vojnik)—10 L on *A. flavicollis* (May 10, 1968); Strumica (Bansko)—1 L on *A. flavicollis* (May 17, 1968); Struga (Čafasan)—1 L on *N. anomalus* (May 25, 1968); Struga (Belčište)—1 L on *A. flavicollis* (May 26, 1968); Stari Dojran (Rabrovo)—1 L on *A. sylvaticus* (May 18, 1968); Virpazar—7 L on *D. bogdanovi* (May 17, 1969).

*) The classification of subspecies of the group *autumnalis* corresponds to that of Kepka (1964).

The distribution area of this species includes the whole Europe; the area of findings reported by some authors extends as far as the Middle Asia on one hand and North America on the other (Daniel 1959). Due to the fact that a whole group of closely related species is attached in the literature to the name *N. autumnalis*, it is necessary to consider the findings outside Europe with some reservations. As far as the Yugoslav territory is concerned, this species has been reported for the first time from North Slovenia (Daniel and Brelj 1959).

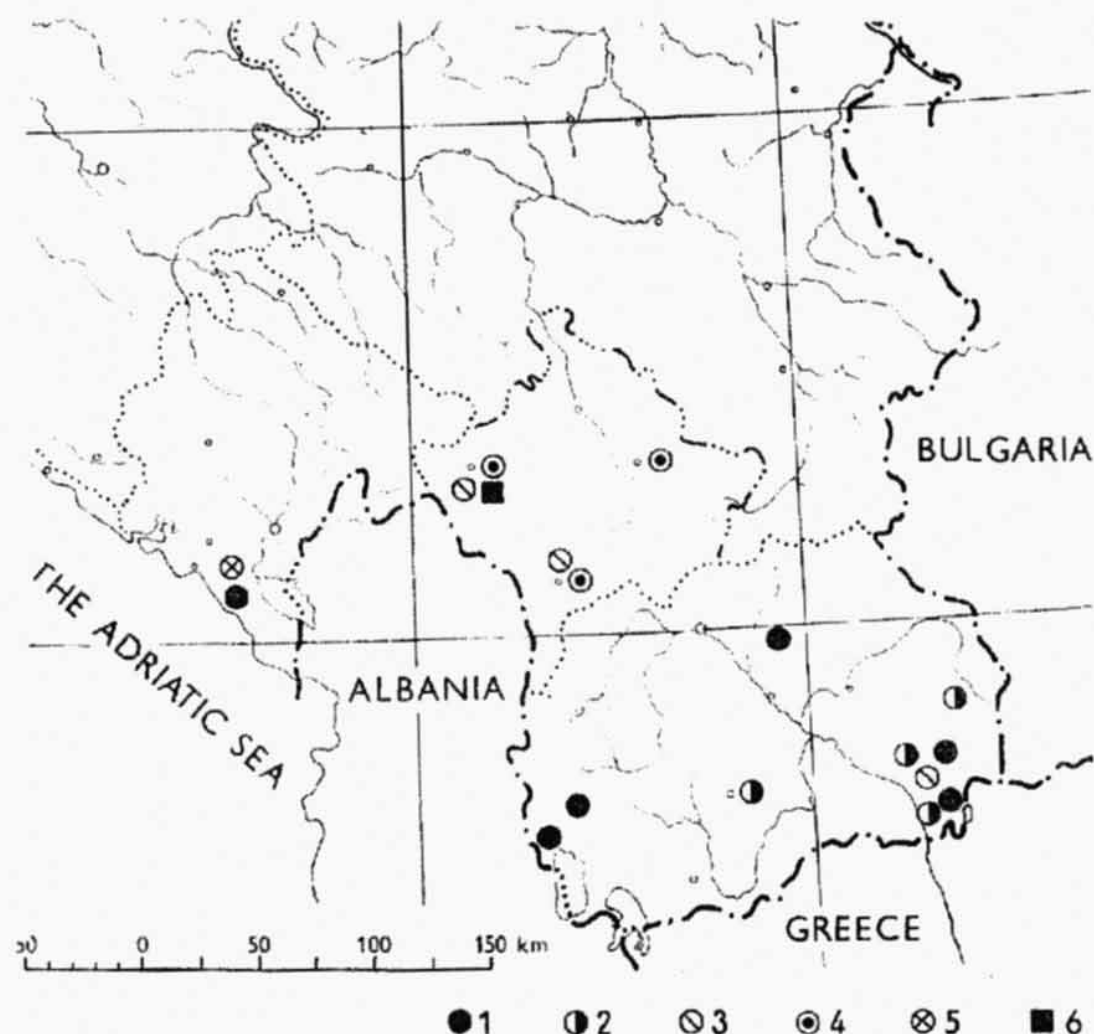


Fig. 1. Occurrence of larvae of the genus *Neotrombicula* in the southern part of Yugoslavia: 1. *N. autumnalis*, 2. *N. zachvatkini*, 3. *N. japonica*, 4. *N. ceruunia*, 5. *N. illogorensis*, 6. *N. rhinolophi*.

2. *Neotrombicula (Neotrombicula) zachvatkini* (Schluger, 1948)

Material: Djan Tepo (Maleševske planine)—9 L on *U. glareolus* and 10 L on 4 *A. flavicollis* (May 15, 1968); Stari Dojran (Nikolić)—9 L on *A. sylvaticus* (May 20, 1968); Stari Dojran (Rabrovo)—2 L on 2, *A. flavicollis*, 1 L on *A. sylvaticus* (May 18, 1968); Strumica (Bansko)—1 L on *A. sylvaticus* (May 17, 1968); Prilep—1 L on *A. flavicollis* (May 23, 1968).

The distribution area of *N. (N.) zachvatkini*, as well as that of the preceding species, includes practically the whole Europe; further collections will be necessary in order to determine the southern and western boundary, especially in the Balkans where other three morphologically related species occur, making the so-called "complex zachvatkini". They are joined by another species described from mountains of the Asian part of

Turkey (Daniel 1960, Kepka 1966). As far as the Yugoslav territory is concerned, this species has been reported from the Socialist Republic of Slovenia (Daniel and Brelih 1959).

3. *Neotrombicula (Neotrombicula) japonica* (Tanaka, Teramura, Kagaya, 1930)

Material: Novi Dojran—1 L on *M. musculus* (May 19, 1968); Prizren (Vrbnica)—1 L on *A. sylvaticus* (May 10, 1969); Pečka Banja—2 L on 2 *A. sylvaticus* (May 13, 1969).



Fig. 2. Occurrence of larva of the family Trombiculidae in the southern part of Yugoslavia: 7. *M. muris*, 8. *L. europaeum*, 9. *S. bureschi*, 10. *A. latyshevi*, 11. *Ch. costulata*, 12. *S. krampitzi*, 13. *E. bulgarica*.

The species under consideration has been described from the Far East where it is widely spread. In Europe, it has been found in Austria, Czechoslovakia and Albania (Daniel 1959) and in Bulgaria (Kolebinova 1969). This has been the first finding on the territory of Yugoslavia.

4. *Neotrombicula (Neotrombicula) llogorensis* (Daniel, 1960)

Material: Priština (Grmjā)—5 L on 4 *A. flavicollis* (May 7, 1969); Priština (Miloševo)—2 L on *A. sylvaticus* (May 8, 1969); Prizren—4 L on 4 *A. sylvaticus*, 1 L on *A. flavicollis*, 1 L on *M. musculus* (May 9–11, 1969); Prizren (Vrbnica)—7 L on 6 *A. sylvaticus* (May 9–10, 1969); Peć—7 L on 3 *A. sylvaticus* (May 12, 1969); Peć (Selo Vrelo)—2 L on *A. agrarius* (May 13, 1969).

N. (N.) illogorensis was described from coast mountains of Albania (Daniel 1960); furthermore, it has been found in Bulgaria where it occurs in masses in all biotopes between 300 and 1900 metres above the sea level (Kolebinova 1969) and in the region of the Minor Caucasus (Mulyarskaya 1968). Our finding—the first one of the species in the Yugoslav territory—confirms fully the opinion of Kepka (1968) who considers *N. (N.) illogorensis* to be an Adriatic and Pontic-Mediterranean faunistic element.

5. *Neotrombicula (Neotrombicula) ceraunia* (Daniel, 1960)

Material: Virpazar—10 L on *D. bogdanovi* (May 17, 1969).

This species, as well as the preceding one, was described from the coast mountains of Albania (Daniel 1960) and, furthermore, from Bulgaria by Kolebinova (1969). Our finding has been the first one in the territory of Yugoslavia. Kepka (1968) considers this species to be a Pontic-Mediterranean element.

6. *Neotrombicula (Neotrombicula) rhinolophi* Kolebinova, 1968

Material: Peć (Rugovska klisura)—6 L on *R. hipposideros* (May 12, 1969).

The species under consideration has been described from the territory of Bulgaria. Our finding, which has been the first one in the territory of Yugoslavia, is also the first one outside terra typica.

Table of standard measurements of the material studied (in microns):

AW	PW	SB	ASB	PSB	SD	AP	AM	AL	PL	S	DSA	DPS
61	70	23	27	17	44	26	43	42	58		59	40
61	72	25	25	18	43	24		44	56		59	34
61	72	25	29	16	45	26		45	54		61	37
63	71	26	28	17	45	25	38		56		59	36
64	79	27	28	20	48	25		44	54		56	38
65	75	26	30	20	50	23		41	59	68	59	36

7. *Myiatrombicula (Myiacarus) muris* (Oudemans, 1910)

Material: the Biogradska lake—3 L on *G. glis* (May 15, 1969).

This species occurs in the Western and Central Europe (Daniel 1957a); from the Southern Europe, it has been reported from Bulgaria by Kolebinova (1969). Our finding has been the first one on the territory of Yugoslavia.

8. *Leptotrombidium (Leptotrombidium) europaeum* (Daniel et Brelih, 1959)

Material: Prilep—7 L on 3 *A. flavicollis* (May 21, 23, 1968); Novi Dojran—5 L on *A. flavicollis* (May 19, 1968); Kumanova (Vojnik) 1 L on *A. flavicollis* (May 10, 1968); Prizren (Vrbnica)—3 L on *A. mystacinus* (May 10, 1969); Virpazar—4 L on *D. bogdanovi*, 1 L on *A. flavicollis* (May 17, 1969).

This species has been originally described from North Slovenia as the subspecies *L. (L.) intermedium europaeum*. On the basis of recent findings it is considered to be an inde-

pendent species (Hushcha and Shluger 1967; Vercammen—Grandjean—personal information). Furthermore, it has been found in the Southern and Central Europe (Czechoslovakia, Austria, Bulgaria, Albania, Spain).

9. *Sasatrombicula (Sasatrombicula) bureschi* Kolebinova et Beron, 1965

Material: Šavnik (Pernica)—4 L on *R. hipposideros* (May 23, 1969).

Described from the territory of South Bulgaria (Strandzha Kolebinova and Beron, 1965). Our finding, which is the first one of this species on the territory of Yugoslavia, is also the first one outside terra typica.

Table of standard measurements of the material studied (in microns):

AW	PW	SB	ASB	PSB	SD	AP	AM	AL	PL	S	DSA	DSP
49	58	18	30	19	49	33		32	51	54	39	29
49	62	18	32	19	51	38		29	50		44	30
50	58	16	31	18	49	33		31	47		41	27
50	63	18	31	18	49	35	43	34	46		41	31

10. *Ascoschoengastia (Ascoschoengastia) latyshevi* (Schluger, 1955)

Material: the Biogradsko lake—2 L on *G. glis* (May 15, 1969).

The given species has been described from the Far East. The first finding in Europe was reported by Daniel (1959) from Czechoslovakia. Furthermore, it has been found in Austria (Sixl 1969). Our finding is the first one of this species in the territory of Yugoslavia.

11. *Cheladonta costulata* (Willmann, 1952)

Material: Prizren—1 L on *A. sylvaticus* (May 10, 1969).

This species has been reported from the territory of Czechoslovakia (Willmann 1952, Daniel 1957b), Austria (Kepka 1958), Belgium (Vercammen—Grandjean 1960) and Bulgaria (Kolebinova 1969). In the territory of Yugoslavia, it has been found in Slovenia (Daniel and Brelih 1959).

12. *Schoutedenicchia (Platytrichia) krampitzi* (Willmann, 1952)

Material: the Prespan lake—5 L on *A. flavicollis* (May 24, 1968); Kumanovo (Mlado Nagoričano)—4 L on *A. flavicollis* (May 9, 1968); Prilep—1 L on *A. flavicollis* (May 23, 1968); Priština (Miloševo)—9 L on *M. arvalis* (May 8, 1969); Prizren (Vrbica)—1 L on *A. mystacinus* (May 10, 1969); Pećka Banja—1 L on *A. sylvaticus* (May 13, 1969); Virpazar—1 L on *A. mystacinus* (May 17, 1969); Uleinj—4 L on *A. sylvaticus* (May 21, 1969); Šavnik—1 L on *A. flavicollis* (May 22, 1969); Šavnik (Petnica)—3 L on *A. sylvaticus* (May 23, 1969).

S. (P.) krampitzi is distributed in the southern part of Europe (Italy, Sicily, Albania—Daniel 1960), Bulgaria (Kolebinova 1969) and in Minor Asia (Turkey—Kepka 1966). Our finding has been the first one from the territory of Yugoslavia.

13. *Euschoengastia (Brunealdia) bulgarica* Vercammen-Grandjean et Kolebinova, 1966

Material: Prilep—21 L on 3 *A. flavicollis* (May 23, 1968); Stari Dojran (Rabrovo)—9 L on 2 *A. sylvaticus* (May 18, 1968); Novi Dojran—2 L on *M. musculus* (May 20, 1968).

This species has been described from Bulgaria. Our finding has been the first one in the territory of Yugoslavia and also the first one outside terra typica.

Table of standard measurements of the material studied (in microns):

AW	PW	SB	ASB	PSB	SD	AP	AM	AL	PL	S	DSA	DSP
54	63	25	28	11	39	16	21	31	45	28/16	38	28
55	61	25	25	10	35	14	18	30	41	28/14	32	27
56	61	26	27	10	37	15	18	32	45	28/16	39	27

КРАСНОТЕЛКИ ПАРАЗИТИРУЮЩИЕ НА МЕЛКИХ МЛЕКОПИТАЮЩИХ В ЮЖНОЙ ЧАСТИ ЮГОСЛАВИИ (ACARINA: TROMBICULIDAE)

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Резюме. На территории социалистических республик Македонии и Черной Горы и в автономной области Косово на мелких млекопитающих было обнаружено 13 видов клещей-краснотелок.

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