Notes on Some Chiggers (Acarina: Trombiculidae) from Southern Korea

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The following account is based upon specimens collected by members of the 207th Preventive Medicine Survey Detachment and the 37th Preventive Medicine Survey Detachment in southern Korea. It is undoubtedly incomplete, and the sampling may be selective: the hosts examined came mostly from agricultural areas and near dwellings. Despite the inevitable shortcomings of such a preliminary survey, this account will serve as a beginning for a study of the trombiculid fauna of Korea.

The area covered by this paper is slightly beyond that discussed by Womersley (1952) in his voluminous work on chiggers of the Asiatic-Pacific area; and this account is, in a small measure, a supplement to the much larger one by Womersley. Six species of chiggers were described from regions to the north of Korea by Schluger (1948), and two of those species have been collected in southern Korea. Pertinent to this account is the apparently heretofore largely overlooked paper by Kanda, mentioning two species of chiggers from Korea.

There are reported here several species previously known only from Japan, two species described by Schluger from more northerly regions of the Asiatic mainland, and one species known also from North America. Two species are described as new in this paper. There is in preparation an illustrated account of Japanese chiggers, and the Japanese species known from southern Korea are not re-illustrated in this paper.

The illustrations in this paper were made in Kyoto, Japan, and are the work of Mr. M. Endo, Mr. S. Shibata, Mr. A. Shimazoe, and Mr. K. Daishoji. These artists were under the direct supervision of Mr. K. Yamazaki. The bulk of the material collected was mounted by Miss Y. Yoshida.

We would like to express our appreciation to Major Paul W. Oman, MSC, under whose direction and encouragement this work was done; to Dr. James M. Brennan for professional council in this study; to Professor Harujiro Kobayashi for calling our attention to and loaning us a copy of the paper by Kanda; and to Lt. Col. Robert Traub, MSC, for a photostatic copy and translation of the paper by Schluger.

Key to the Chiggers of Southern Korea

1. Anteromedian scutal seta absent .......................... Gabrielpia brennani var. ventralis
2. Anteromedian scutal seta present (single or double)
2. Anteromedian scutal setae paired; coxa I with two setae; all legs with six segments

*Shunsennia tarsalis*

Anteromedian scutal seta single; coxa I with one seta; all legs with seven segments

3. Sensillae capitate; palpal claw five-pronged. *genus Euschöngastia, 4*
Sensillae flagelliform; palpal claw three-pronged. *genus Trombicula, 5*

4. Two pairs of humeral setae. *E. ikaeensis*
One pair of humeral setae... *E. koreaeensis*

5. Scutum more or less pentagonal; one or more mastitarsalae III. *subgenus Neotrombicula, 12*
Scutum more or less rectangular; with no mastitarsalae III.

*subgenus Leptotrombidium, 6*

6. Ventral tibial seta of palpus feathered. 7
Ventral tibial seta of palpus nude. 8

7. Base of sensillae nude or with very minute, closely appressed barbs; first post-humeral row of setae usually ten. *palpalis*
Base of sensillae with small but conspicuous, divergent basal barbs; first posthumeral row of setae usually eight.

*orientalis*

8. With one nude seta on telofemur III; dorsal palpal tibial seta nude; spur on tarsus II longer than spur on tarsus I.

*subakamushi*

With no nude seta on telofemur III; dorsal palpal tibial seta feathered; spur on tarsus II shorter than spur on tarsus I.

*9*

9. Scutum more than twice as wide as long. *biranumai*
Scutum less than twice as wide as long

*10*

10. Sensillae with conspicuous, divergent basal barbs. *pallida*
Sensillae basally nude or virtually so.

*11*

11. Scutum with a pair of crescent-shaped marks near the anterior margin; barbs on dorsal setae short. *myotis*

Scutum without crescent-shaped marks; dorsal setae rather short, but with numerous long barbs...

*subintermedia*

12. With three mastitarsalae III. *tamiyai*
With one or two mastitarsalae III. 12

13. With two mastitarsalae III.

*"sp." of Kanda*

With one mastitarsala III. 13

14. With two pairs of humeral setae... *japonica*
With one pair of humeral setae... *nagayoi*

Shunsennia tarsalis
Jameson and Toshioka, 1953


**DISTRIBUTION AND HOSTS:** Known only from the original data.

**TYPE DATA:** Holotype from (?)*Clethrionomys rufocanus;* 15 miles northwest of Wonju; March 13, 1952. One paratype with same data and one paratype from *Apodemus agrarius,* 10 miles west of Chunchon; February 16, 1952. Holotype deposited at the U. S. National Museum.

Gahrliepia (Walchia) brennani var. ventralis Womersley, 1952

Fig. 1


**DIAGNOSIS:** Palpal femoral seta nude or branched; other palpal setae nude. Palpal claw three-pronged (stated to be two-pronged in original description). Galeal seta nude. Scu-
Fig. 1  Gahrliepia brennani var. ventralis Womersley
tum five-sided, the posterior sides more or less straight and forming a right angle with each other. Coxal setae 1–1–1. Sternal setae 2–2. Several setae between coxae II and III. Humeral setae variable, three to five pairs. Scutal measurements of a mean of 17 specimens (given by the describer): "AW-37.5, PW-54.1, SB-32.8, ASB-21.8, PSB-57.8, AP-37.6, AL-27.3, PL-26.8, S-33.5." Scutal measurements of a south Korean specimen: AW-44, PW-50, SB-35, ASB-26, PSB-49, AP-45, AL-37, PL-35, S-34.

**Euschöngastia ikaoensis**

*Sasa et al., 1951*


**DIAGNOSIS:** All palpal setae feathered. Palpal claw five-pronged. Galeal seta nude. Cheliceral base and palpal femur with scattered light punctae. Chelicera with a subapical tooth or notch. Scutum: 2.5–3.0 times as wide as long; with a few light punctae. Sensillary bases behind a line connecting the posterolateral setae. Sensillae pyriform. Scutal measurements of holotype: AW-69, PW-86, SB-29, ASB-27, PSB-10, AP-17, AM-35, AL-45, PL-67, S-35. Legs: Coxal setae 1–1–1; seta on coxa III arising from the rear edge of the sclerotized part of the anterior margin of the coxa. Specialized (nude) setae as follows: Leg I, 2 genualae, 1 microgenuala, 2 tibialae, 1 microtibiala, 1 spur, 1 microspur, 1 subterminala, 1 para-subterminala, 1 pretarsala; Leg II, 1 genuala, 2 tibialae, 1 spur, 1 microspur, 1 pretarsala; Leg III, 1 genuala, 1 tibiala. Setae: Sternal setae 2–2. About 40 ventral setae behind coxa III, similar in character to sternal setae. Dorsal setae similar to scutal setae; dorsal setal formula: 2–12–12–12–6–6.

**TYPE:** Holotype from *Rattus rattus*, 17 miles southeast of Chorwon; November 15, 1951. Deposited in the U. S. National Museum. Paratypes from *Rattus norvegicus*, 7 miles southeast of Chorwon, and from *Apodemus agrarius*, 4 miles east of Inchon.

**Trombicula (Leptotrombidium) palpalis**

*Nagayo et al., 1919*

Fig. 2  Euschongastia koreaensis, n. sp.

DISTRIBUTION AND HOSTS: From many localities in southern Korea from Rattus rattus, R. norvegicus, and Apodemus agrarius. This is the first record of T. palpalis occurring outside Japan.

TYPE DATA: From Microtus montebelli, Yamagata Prefecture, Honshu, Japan. A lectotype in the Institute for Infectious Diseases, University of Tokyo.

Trombicula (Leptotrombidium) orientalis Schluger, 1948

Fig. 3


DISTRIBUTION AND HOSTS: From many localities in southern Korea from Apodemus specious, A. agrarius, Rattus rattus, and R. norvegicus. Previously T. pallida was known only from Japan.

TYPE DATA: Lectotype selected from specimens collected by the original authors: Yachi, Yamagata Prefecture, 1919, from M. montebelloi. Deposited at the Institute for Infectious Diseases, University of Tokyo.

Trombicula (Leptotrombidium) subintemedia n. sp.

This species is allied to Trombicula intermedia Nagayo et al. of Japan and T. lanceolata Womersley of the tropical Orient.

DESCRIPTION: Gnathosoma: Palpal femoral, genual, and lateral and ventral tibial setae nude; dorsal tibial seta feathered. Galeal seta feathered. Palpal claw three-pronged. Cheliceral base and palpal femur with punctae. Chelicera with a dorsal subapical notch. Scutum: More or less rectangular, slightly more than twice as wide as long, with delicate punctae; rear corners rounded. Sensillary bases slightly behind a line connecting the posterolateral setae. Sensillae nude basally (minute barbs visible on some specimens), plumose distally. Scutal measurements of holotype: AW-70, PW-77, SB-31, ASB-27, PSB-20, AP-25, AM-50, AL-36, PL-63, S-67. Legs: Coxal setae 1–1–1; seta on coxa III considerably behind anterior margin of coxa. Specialized (nude) setae on legs: Leg I, 2 genualae, 1 microgenuala, 2 tibialae, 1 microtibiala, 1 spur, 1 microspur, 1 subterminala, 1 paraterminala, 1 pretarsala; Leg II, 1 genuala, 2 tibialae, 1 spur, 1 microspur, 1 pretarsala; Leg III, 1 genuala, 1 tibiala. Setae: Dorsal setae moderately short and well provided with...
Fig. 4 *Trombicula subintermedia*, n. sp.


Type data: Holotype from *Apodemus agrarius*, 2 miles southeast of Yonchon, November 27, 1951. Deposited in the U. S. National Museum.

Comments: *T. subintermedia* can be separated from *T. intermedia* by the dorsal setal formulae: in *T. intermedia* this is 2–10–8–8–6–4–2, considerably more setae than in *subintermedia*; from *lanceolata* the new species differs in the sensillae being nude or almost so, whereas the original illustration of *lanceolata* shows numerous rather long sensillae, and the scutal measurements of *lanceolata* and *subintermedia* differ appreciably.

*Trombicula (Leptotrombidium) hiranumai* Kanda, 1942


Diagnosis: Palpal femoral, genual, and lateral and ventral tibial setae nude; dorsal tibial seta feathered. Palpal claw three-pronged. Galeal seta feathered. Scutum rectangular, more than twice as wide as long, with the
rear corners angulate. Sensillary bases in advance of a line connecting posterolateral setae. Sensillae basally nude, with plumose bars distally. Dorsal setae arranged 2-10-8-8-7-4-2.

**DISTRIBUTION AND HOSTS:** Apparently known only from the original collection; not found in this survey.

**TYPE DATA:** From a cony, *Ochotona hyperborea*, from Konkyo-hokudo. The location of the type is not known.

**COMMENT:** This species resembles in some ways *T. akamushi* (Brumpt): *hiranumai* differs in having the scutum more than twice as wide as long in contrast to the scutum of *akamushi* which is less than twice as wide as long.

**Trombicula (Leptotrombidium)**

*myotis* Ewing, 1929

Fig. 5


DISTRIBUTION AND HOSTS: Previously recorded only from North America (see comments below), from various kinds of bats. In Korea *T. myotis* is known from Tobang-san from *Myotis* sp.


COMMENTS: Fuller (1948, Brooklyn Ent. Soc., Bul. 43: 106) has pointed out the similarity between *T. myotis* Ewing, 1929, and *T. russica* (Oudemans, 1902) of the Old World. We have not had the opportunity to compare our Korean specimens with *russica*, but they are very similar to North American specimens of *T. myotis* and, in our opinion, are not more than subspecifically distinct.

*Trombicula* (Neotrombicula) *tamiyai* Philip and Fuller, 1950

**Trombicula tamiyai** Philip and Fuller, 1950. Parasitology 40(1, 2): 51.


DISTRIBUTION AND HOSTS: Previously known only from Japan. This species is exceedingly common in many localities in southern Korea and was taken mostly from *Rattus rattus* and *R. norvegicus*.

Fig. 6  *Trombicula subakamushi* Schlüer
Trombicula (Neotrombicula) japonica
Tanaka et al., 1930


 DISTRIBUTION AND HOSTS: Widely distributed and common in Japan; previously not known outside Japan. In Korea taken near Yonchon from Rattus norvegicus and Apodemus agrarius.

TYPE DATA: Described from Microtus montebelloi (?) taken at Yuzawa, Akita Prefecture, Japan.

Trombicula (Neotrombicula) nagayoi
Sasa et al., 1950


DIAGNOSIS: The gnathosomal features of nagayoi are similar to those of japonica, but there are usually fewer branches on the palpal setae. Sensillary bases distinctly forward of a line connecting posterolateral setae. Dorsal setae shorter than in japonica and with more barbs. A single pair of humeral setae. Scutal measurements of a specimen from southern Korea: AW-70, PW-91, SB-31, ASB-31, PSB-28, AP-33, AM-45, AL-40, PL-60, S-74.

 DISTRIBUTION AND HOSTS: Previously known only from Japan where it is common and widely distributed. From southern Korea there are five specimens from 2 miles southeast of Yonchon from Apodemus agrarius.

TYPE DATA: From Apodemus speciosus, Yamanashi Prefecture, Honshu, Japan. Holotype deposited at the Institute for Infectious Diseases, University of Tokyo.

Trombicula (Neotrombicula) sp. Kanda

Kanda illustrated leg III of a chigger but did not identify or describe this species. From the presence of 1.mastifemorala III, 1 mastitibiala III, and 2 mastitarsalae III, this species belongs in the microti group of Brennan and Wharton. This species is possibly T. pomeranzevi Schluge, 1948, or T. microti Ewing, 1928, both of which have been taken in Manchuria by Dr. Kiyoshi Asanuma.