

Interesting Velvet Ants (Hymenoptera, Mutillidae)
from Japan and Korea¹⁾

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Abstract *Petersenidia* gen. nov. (type species: *Smicromyrme fukudai* TSUNEKI), hitherto unknown female of *Myrmosa eos* LELEJ and male of *Squamulotilla exilipunctata* CHEN are described. *Smicromyrme wotani* (ZAV.) and *Ephutomma naja* (ZAV.) are newly recorded from Japan and *M. eos* LELEJ and *S. exilipunctata* CHEN are newly recorded from Korea. New synonymy in two species is given.

Key words: Mutillidae, new genus, Japan, Korea.

The mutillid fauna of Japan has been studied relatively well and comprises 16 species in eight genera (MICKEL, 1935; TSUNEKI, 1972 a, b, 1973). We collected some interesting forms in the summer of 1991 in Kyûshû and the Ryukyus, and additional materials from Japan and Korea in the following collections included new records and undescribed sexes of certain species: Collections of Kagoshima University (KU), National Science Museum (Nat. Hist.), Tokyo (NSMT), Zoological Museum of Moscow University (ZMMU), Zoological Institute, Sankt-Peterburg (ZIS) and Institute of Biology and Pedology, Vladivostok (IBPV).

Myrmosa nigrofasciata YASUMATSU, 1931

Specimens examined. Kyûshû—11 ♂, Handa-kôgen, Mts. Kujû (900 m alt.), 6 Aug. 1991, T. SAIGUSA, N. KURZENKO & A. LELEJ (IBPV); 1 ♂, Momiki, Gokanoshô (700 m alt.), 8 Aug. 1991, A. LELEJ (IBPV); Yaku-shima—1 ♀, Hanayama (750 m alt., forest), 20 Aug. 1983, Sk. YAMANE (KU).

Distribution. Japan (Honshû, Kyûshû, Yaku-shima). New to Yaku-shima.

Myrmosa eos LELEJ, 1981

Female (hitherto unknown). Body 4.6–6.5 mm long. Similar to *M. mon-*

1) Report no. 11 from the Russia/Japan Cooperative East Asian Entomological Program.

golica SUÁR. and *M. nigrofasciata* YASUM. in the reddish brown clypeus and mesonotum, but distinguished from *M. mongolica* by having denser punctation near the lateral margin of gastral tergite 2 (distance between punctures equal to or less than their diameter) and acute spiracular tubercles on tergite 1, and from *M. nigrofasciata* by having gastral sternite 1 with an elevated and posteriorly acute carina and clypeus with a weak transverse preapical carina; in *M. nigrofasciata* the sternal carina posteriorly with a rectangular angle and clypeal carina distinctly elevated.

Specimens examined. Primorskij Krai—1 ♀ 1 ♂ (in copula), River Ilistaya near Nikolajevka, 24 July 1986, N. KURZENKO (IBPV). Korea—1 ♀ 1 ♂ (probably in copula), Suigen [Suwon], Sept. 1928, K. SATO (NSMT).

Distribution. Russia (Primorskij Krai); Korea. New to Korea.

***Squamulotilla pungens* (SMITH, 1873)**

Specimens examined. Kyûshû—1 ♀, Momiki, Gokanoshô (700 m alt.), 8 Aug. 1991, A. LELEJ (IBPV).

Distribution. Japan (Honshû, Kyûshû).

***Squamulotilla bidentata* TSUNEKI, 1972**

Specimens examined. Yaku-shima—1 ♂, Hanayama (890 m alt.), 20 Aug. 1983, Sk. YAMANE (KU).

Distribution. Japan (Honshû, Yaku-shima). New to Yaku-shima.

Remarks. Probably *S. bidentata* represents the male sex of *S. pungens*.

***Squamulotilla ardescens* (SMITH, 1873)**

Specimens examined. Kyûshû—1 ♀, Nagasaki (ZIS).

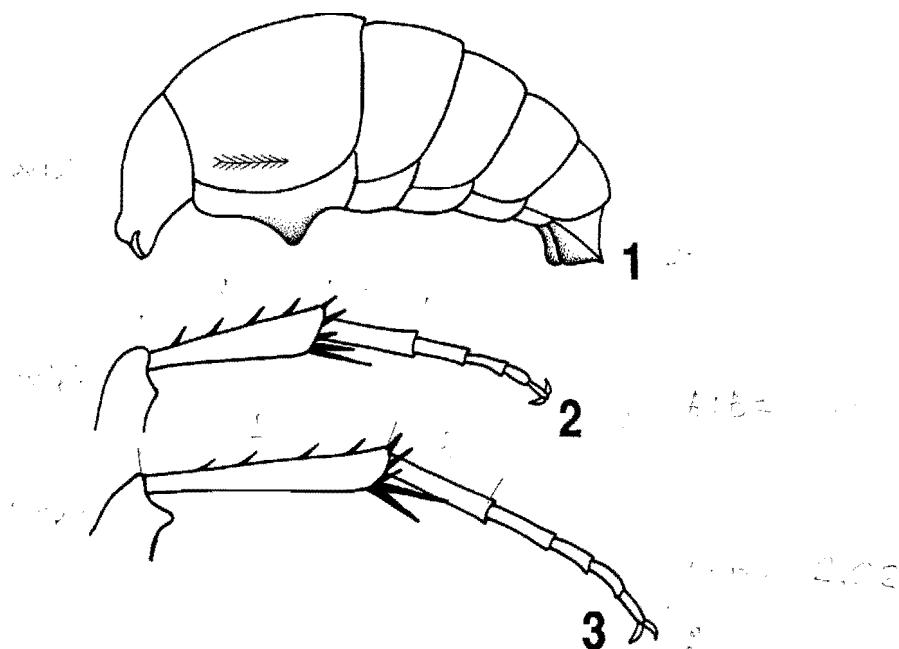
Distribution. Japan (Honshû, Kyûshû, Amami-ôshima). New to Kyûshû.

Remarks. Probably *S. unidentata* TSUNEKI represents the male sex of *S. ardescens*.

***Squamulotilla exilipunctata* CHEN, 1957**

Squamulotilla exilipunctata CHEN, 1957, 141, 146, ♀ (holotype: ♀, Nanking, Jiangsu, 14 Aug. 1934).

Male (hitherto unknown). Body 7.5 mm long. POL: OOL=0.6:1. Clypeus with a slightly emarginate transverse carina and with lateral angles weakly dentate. Frontal furrow distinct only between antennal tubercles. Rounded transverse carina at the upper margin of antennal scrobe not reaching eye. Antennal segment 3 slightly longer than segment 4. Posterior face of propodeum gently sloping; propodeal dorsum with a large median triangular area. Forewing with two radio-



Figs. 1-3. 1-2, *Squamulotilla exilipunctata* CHEN; 3, *S. strangulata* (SMITH). — 1, Male gaster in profile; 2-3, hind tibia and tarsus of male, female

medial cells. Gastral tergites 3-6 each with a median longitudinal line which is glabrous. Tergite 7 (epipygium) with a longitudinal, slightly impressed area and punctate over its surface.

Head and gaster black; preapical part of mandible, antennal segments 1 and 2, legs (except trochanters), inferior part of mesopleuron, tegula and mesonotum largely brownish red; rest of alitrunk, trochanters and gastral sternite 1 ferruginous red. Body and legs with greyish-white erect hairs sparsely; frons, vertex, mesonotum and tergites 2-6 with brownish or black erect hairs sparsely.

Specimens examined. Korea—1 ♂, Sugien [Suwon], Sept. 1928, K. SATO (NSMT); 1 ♀, Suigen, 15 May 1931, K. SATO (NSMT).

Distribution. China (Hebei, Jiangsu, Zhejiang, Fujian); Korea. New to Korea.

Remarks. Male of *S. exilipunctata* is very close to that of *S. unidentata* TSUNEKI in having gastral sternite 2 with a longitudinal median carina which is highly elevated, and sternite 8 (hypopygium) with two longitudinal lateral carinae (Fig. 1); it is distinguished from the latter by the ferruginous red alitrunk (black in the latter). Female of *S. exilipunctata* is similar to those of *S. strangulata* (SMITH), *S. ardescens* (SMITH) and *S. pungens* (SMITH), from which it differs in that the lateral face of propodeum has fine sparse punctures and that segment 1 of hind tarsus is relatively long as compared with tibia (Fig. 2 vs. Fig. 3).

Neotrogaspidia
 [*Trogaspidia*] *pustulata* (SMITH, 1873)

Specimens examined. Tsushima—1 ♀ 1 ♂ (in copula), Sasuna, 11–16 Sept. 1968, R. ISHIKAWA (NSMT); Kyûshû—4 ♀, Kitakyûshû, 4 Aug. 1991, T. SAIGUSA & A. LELEJ (IBPV); 2 ♀, Momiki, Gokanoshô (700 m alt.), 8 Aug. 1991, A. LELEJ (IBPV); Tanega-shima—1 ♀, 21 July 1984, S. WATAHIKI (IBPV), 1 ♂, Komona, 5 Aug. 1986, M. TATSUNO (IBPV); Amami-ôshima—1 ♂, Ookawa, 22 July 1963, Y. KUROSAWA (NSMT); Miyako-jima—1 ♂, Gusukube, 17 July 1987, Sk. YAMANE (IBPV). Korea—1 ♂, Suigen, 7 Sept. 1923, K. SATO (NSMT). China—1 ♂, Omeishan, Sichuan (580 m alt.), 24 June 1955, HUANG Ke-reng (ZMMU).

Distribution. Japan (Honshû, Kyûshû, Tsushima, Yaku-shima, Tanega-shima, Amami-ôshima, Bonin Is.); South and East China including Taiwan (CHEN, 1957); Korea (YASUMATSU, 1938 a). New to Tsushima and Tanega-shima.

Remarks. We accept CHEN's opinion (CHEN, 1957) that *T. elpinice* MICKEL, 1933 (type loc.: Taiwan) is a synonym of *T. pustulata*.

Petersenidia LELEJ, gen. nov.

Type species: *Smicromyrme fukudai* TSUNEKI, 1972.

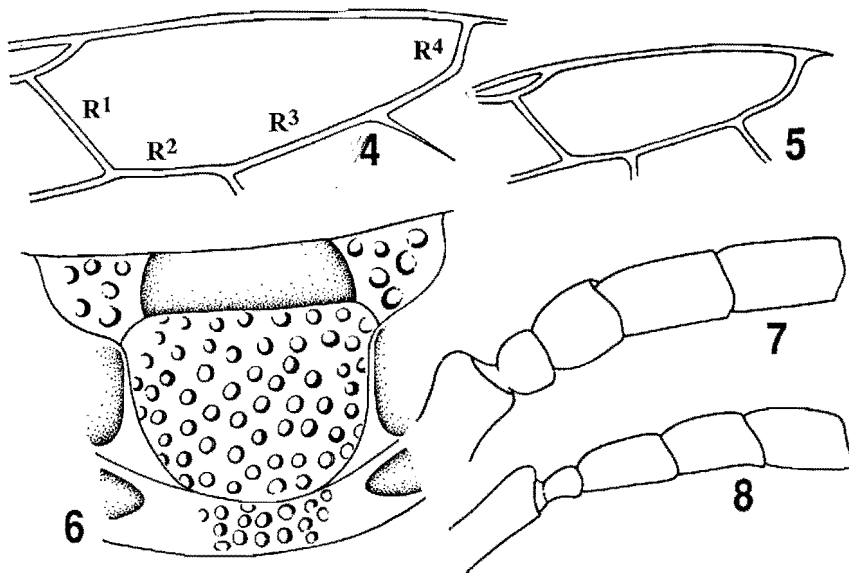
Male. Head broader than high. Clypeus weakly modified, with more or less elevated median part. Antennal segment 3 slightly longer than segment 4; segment 1 bicarinate beneath. Mandible bidentate, distinctly excised and with a tooth beneath. Ocelli small; POL: OOL 0.5–0.7: 1. Scutellum without elevated tooth, carina or glabrous median line (Fig. 6). Tegula posteriorly not extended beyond the level of posterior mesonotal margin. In forewing, segment 1 of R longer or slightly shorter than segment 2. Posterior face of propodeum gently sloping. Gastral sternite 8 (hypopygium) simple, without any longitudinal carina or tubercle. Lateral margin of sternite 2 without any trace of felt line. Genitalia with volsella usually long but somewhat shorter than gonostyle; penial valvae symmetrical.

Alitrunk black or ferruginous red; gaster black or with some segments yellowish red; gastral tergites with or without light bands.

Female. Eye enlarged, larger than gena in height (in lateral view). Segment 3 of antenna 1.5 times longer than segment 4; segments 4–10 each broader than long. Alitrunk broadest in pronotum and narrowest before propodeal spiracles. Fore tarsus without comb; apical thorn in tarsal segment 1 shorter than tarsal segment 2. Scutellar scale distinct. Gastral sternite 6 glabrous, without distinct pygidial area.

Anterior part of gastral tergite 2 with two light spots (sometimes with a broad band); tergites 3–5 with 1–3 light bands. Antennal segment 1 and legs very often ferruginous.

Besides the type species, the new genus includes the following species: *P. rapa*



Figs. 4-8. 4, 6, 8, *Petersenidia fukudai* (TSUNEKI); 5, 7, *Smicromyrme exacta* (SMITH). —
4-5, Radial cell of forewing; 6, scutellum; 7-8, antennal segments 1-5 of male.

(ZAV.), *P. friekae* (ZAV.), *P. gutrunae* (ZAV.), *P. basirufa* (CHEN), *P. recessa* (CHEN), *P. impressa* (CHEN), *P. scaphella* (CHEN), *P. subfossata* (CHEN), *P. emarginata* (CHEN), *P. obscurilamina* (CHEN) (all are new combinations), and probably a large group of species (known only from the female) with two light spots on gastral tergite 2 and without distinct pygidial area on tergite 6, and assigned by CHEN (1957) to the genus *Smicromyrme*.

Remarks. The new genus belongs to the tribe Trogaspidiini. The male of *Petersenidia* is similar to that of *Smicromyrme* THOMSON in the structure of scutellum and hypopygium, but differs from the latter in having antennal segment 3 longer (Fig. 8 vs. Fig. 7), gastral sternite 2 laterally without any trace of felt line, and forewing with a longer segment 2 of R (in *Smicromyrme* segment 1 of R 1.5-2 times as long as segment 2; Fig. 4 vs. Fig. 5). The male of *Petersenidia* is also similar to that of *Trogaspidia* ASHMEAD in the length of antennal segment 3 and the condition of sternite 2, but is easily distinguished from the latter by the simple structure of scutellum and hypopygium.

The female of the new genus is very similar to that of *Trogaspidia*, but differs from the latter in having an indistinct pygidial area on tergite 6, and enlarged eye (in *Trogaspidia* eye remarkably shorter than gena in lateral view).

Because of these character conditions, the species of *Petersenidia* have been treated as belonging to *Trogaspidia* (MICKEL, 1933, 1935; TSUNEKI, 1972 a) or *Smicromyrme* (CHEN, 1957; TSUNEKI, 1972 a).

Probably the species of *Petersenidia* parasitize host insects which do not nest in soil, because the female wasp does not possess a distinct pygidial area and a comb on fore tarsus. Moreover, one female was collected by A. LELEJ in Guangdong (South China) on a leaf of a tree at 1.5–2 m above the ground in a dark forest.

The name of the new genus is dedicated to Dr. Borge PETERSEN (Denmark), a hymenopterist specialized in the Mutillidae.

Petersenidia fukudai (TSUNEKI, 1972), comb nov.

Smicromyrme fukudai TSUNEKI, 1972 a, 18, ♂ (holotype: ♂, Yaku-shima, Kagoshima Pref., 14 Aug. 1967, H. FUKUDA).

Trogaspidia fukudai TSUNEKI, 1972 a, 14, ♀ (holotype: ♀, Yaku-shima, 14 Aug. 1967, H. FUKUDA), **syn. nov.**

Smicromyrme fukudai tokunosimana TSUNEKI, 1973, 24, ♂ (holotype: ♂, Mt. Inokawa, Tokuno-shima, Ryukyus, 2 Aug. 1972, T. NAMBU), **syn. nov.**

Trogaspidia fukudai tokunosimana TSUNEKI, 1973, 24, ♀ (holotype: ♀, Mt. Inokawa, Tokuno-shima, Ryukyus, 2 Aug. 1972, T. NAMBU), **syn. nov.**

Specimens examined. Amami-ôshima—1 ♂, 22 June 1987, Sk. YAMANE (IBPV); 1 ♂, Naze, 14 July 1988, A. NAGATOMI (IBPV); Kakeroma-jima—1 ♂, 25 Sept. 1984, A. NAGATOMI (KU); Okinawa-jima—6 ♂, Yona, 6–8 Oct. 1987, A. NAGATOMI (KU).

Distribution. Japan: Ryukyus (Yaku-shima, Amami-ôshima, Kakeroma-jima, Tokuno-shima, Okinawa-jima). New to Amami-ôshima, Kakeroma-jima and Okinawa-jima.

Remarks. The male of *Smicromyrme fukudai* and the female of *Trogaspidia fukudai* are opposite sexes of one and the same species. Holotypes of these species were collected in the same place and on the same day; moreover the female and male of the forms of Tokuno-shima, which were treated by TSUNEKI as belonging to different genera, are very probably paired specimens collected in copula (TSUNEKI, 1973).

The alleged subspecific characteristics in the structure of male clypeus and female pygidial area in the forms of Tokuno-shima probably reflect the small size of specimens and do not permit us to recognize a distinct subspecies.

Smicromyrme (Smicromyrme) lewisi MICKEL, 1935

Specimens examined. Kyûshû—1 ♀, Handa-kôgen, Mts. Kujû (900 m alt.), 6 Aug. 1991, A. LELEJ (IBPV); 1 ♀ 1 ♂, Shiratori-yama, Gokanoshô (1300 m alt.), 8 Aug. 1991, A. LELEJ (IBPV); Tanega-shima, Osumi Is.—2 ♀ 2 ♂, Kaminaka, 11 July 1983, Sk. YAMANE (2 ♀ 1 ♂ in KU, 1 ♂ in IBPV).

Distribution. Japan (Hokkaidô, Honshû, Kyûshû, Tsushima, Tanega-shima); Russia (Irkutsk region, Transbaikalia, Amur region, Khabarovskij Krai, Primorskij Krai, Sakhalin, Kunashiri Is.); Mongolia; North-east and East China; Korea

(LELEJ, 1985). New to Tanega-shima.

Smicromyrme (Nemka) hageni (ZAVATTARI, 1913)

Mutilla hageni ZAVATTARI, 1913, 32, ♂ (lectotype: ♂, Kankau, Formosa, 7 Apr. 1912, H. SAUTER).
Mutilla alberici ZAVATTARI, 1913, 31, ♀ (lectotype: ♀, Tainan, Formosa, Aug. 1911, H. SAUTER),
 syn. nov.

Mutilla discreta: MATSUMURA & UCHIDA, 1926, 50, ♂.

Smicromyrme hageni: MICKEL, 1933, 417, ♂; 1935, 291, ♂. — YASUMATSU, 1938 b, 447, ♂. —
 CHEN, 1957, 202, ♂. — TSUNEKI, 1972 a, 20, ♂; 1972 b, 20, ♂.

Smicromyrme alberici: MICKEL, 1933, 421, ♀; 1935, 293, ♀. — CHEN, 1957, 208, ♀. — TSUNEKI,
 1972 b, 19, ♀; 1973, 23, ♀.

Specimens examined. Okinawa-jima—1 ♂, Motobu, 2 Oct. 1987, A. NAGATOMI (IBPV); 6 ♀, Yona, Kunigami-chô, 14–15 Aug. 1991, Sk. YAMANE & A. LELEJ (5 ♀ in IBPV, 1 ♀ in KU); Iriomote-jima—3 ♀, Funaura, 20 Aug. 1991, A. LELEJ (2 ♀ in IBPV, 1 ♀ in KU). China—1 ♂, Sima-Puwen, Yunnan (950–1200 m alt.), 11 May 1957, HONG Guang-di (ZMMU); 1 ♀ 1 ♂ (in copula), Niner (Puer)-Dajie (Jinggu), Yunnan, 5 Apr. 1957, A. MONCHADSKIJ (ZMMU).

Distribution. Japan (Okinawa-jima, Ishigaki-jima, Iriomote-jima); China (Taiwan, Fujian, Guangdong, Yunnan). New to Okinawa-jima, Iriomote-jima and Yunnan.

Remarks. The problem concerning the sex combination of this species has been solved after studying one pair collected in copula. We chose the name *hageni* for this species.

In the Ryukyus some females of this species were collected at small glades in the forest. Such places have sandy or clay soil and very poor vegetation. Two females were collected on a road in a plantation of *Saccharum officinarum*.

Smicromyrme (Nemka) wotani (ZAVATTARI, 1913)

Specimens examined. Tanega-shima—7 ♀ 1 ♂, Hamada, 2 Aug. 1984, Sk. YAMANE & Y. HARADA (6 ♀ 1 ♂ in KU, 1 ♀ in IBPV).

Distribution. Japan (Tanega-shima); China (Taiwan). New to Japan.

Ephutomma naja (ZAVATTARI, 1913)

Specimens examined. Ishigaki-jima—1 ♂, Omoto-dake, 22 Aug. 1991, A. LELEJ (IBPV).

Distribution. Japan (Ryukyus: Ishigaki-jima); China (Taiwan). New to Japan.

Remarks. This species belongs to the genus *Ephutomma* ASHMEAD or *Promecilla* ANDRÉ by having short antennal segment 3 and by the absence of any trace of felt line near the lateral margin of gastral sternite 2, showing an intermediate state

between these two genera. A separate genus may be erected for this species.

Acknowledgments

We thank Dr. A. SHINOHARA of the National Science Museum (Nat. Hist.), Tokyo and Dr. A. ANTROPOV of the Zoological Museum of Moscow University for their loan of specimens. We are much indebted to Prof. A. SIBATANI of Kyoto Seika University, Prof. T. SAIGUSA of Kyushu University, Prof. S. AZUMA and Mrs. M. YAFUSO of the University of the Ryukyus for their kind help during the collection trip in 1991 in Japan.

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(Received March 26, 1992; Accepted May 20, 1992)