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**A review of the East Asian species of
Mickelomyrme LELEJ, 1995
(Hymenoptera, Mutillidae)**

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Abstract

Thirteen East Asian species of genus *Mickelomyrme* LELEJ, 1995 from tribe Smicromyrmini are reviewed with some new combinations and a key to the species is given. Two new species, *M. yunnanensis* sp. nov. from South China (Yunnan) and *M. kuznetsovi* sp. nov. from North Vietnam (Shon La) are described.

Zusammenfassung

Dreizehn ostasiatische Arten der Gattung *Mickelomyrme* LELEJ, 1995, Tribus Smicromyrmini, werden revidiert, einige neu kombiniert sowie mit einem Bestimmungsschlüssel versehen. Zwei neue Arten, *M. yunnanensis* sp. nov. von Süd-China (Yunnan) und *M. kuznetsovi* sp. nov. von Nord-Vietnam (Shon La) werden beschrieben.

In my previous paper (LELEJ 1995) 13 Palaearctic and Oriental species of the genus *Nemka* LELEJ, 1985 were reviewed and a new genus, *Mickelomyrme* close to *Nemka*, was described. Thirteen East Oriental and East Palaearctic species of *Mickelomyrme* are reviewed in this paper. For this purpose 35 specimens of 8 species from different collections as noted in the Acknowledgments were studied.

Material depositories. Institutional collections in which the material examined is deposited are abbreviated in the text as follows: IBP = Institute of Biology and Pedology, Vladivostok; NSMT = National Science Museum (Nat. Hist.) Tokyo; ZIS = Zoological Institute, Sankt-Petersburg; ZMMU = Zoological Museum of Moscow University.

Tribe Smicromyrmini BISCHOFF, 1920
Genus *Mickelomyrme* LELEJ, 1995

Mickelomyrme LELEJ, 1995: 17 (type species *Mutilla hageni* ZAVATTARI, 1913, by original designation).

Smicromyrme (part.): MICKEL 1935: 271; CHEN 1957: 178.

Generic diagnosis and discussion see LELEJ 1995.

Species included. Thirteen Oriental and East Palaearctic species in two groups: *hageni* group (inner margin of male hind coxae lamellate and squarely truncate posterad; tegulae not elongate) - *M. hageni* (ZAVATTARI, 1913), *M. athalia* (PAGDEN, 1949), *M. yunnanensis* sp. nov., *M. kuznetsovi* sp. nov., *M. bicristata* (CHEN, 1957), *M. bakeri* (MICKEL, 1934), *M. tanoi* (TSUNEKI, 1972), *M. semperi* (ASHMEAD, 1904) and *exacta* group (inner margin of male hind coxae rounded posterad, tegulae elongate with more or less developed inner lamella) - *M. exacta* (SMITH, 1879), *M. exiloides* (MAGRETTI, 1892), *M. norma* (ZAVATTARI, 1913), *M. abnormalis* (CHEN, 1957) and *M. ilanica* (TSUNEKI, 1972). Probably *Smicromyrme zebina* (SMITH, 1861) from the Philippines and North Borneo (MICKEL 1934, 1935; TSUNEKI et al. 1993) belongs to *Mickelomyrme* also but the descriptions of male and female are insufficient for including this species in my key.

Range. Oriental region and Eastern Palaearctic.

Key to East Asian species

- | | | |
|---|--|---|
| 1 | Females (unknown for <i>M. exacta</i> , <i>M. exiloides</i> , <i>M. bakeri</i> , <i>M. tanoi</i> , <i>M. norma</i> , <i>M. abnormalis</i> , <i>M. ilanica</i>) | 2 |
| - | Males (unknown for <i>M. kuznetsovi</i> , <i>M. bicristata</i>) | 7 |
| 2 | Gastral tergum 4 black, gastral tergum 2 posterad with small pale patch medially (Figs 1, 2) | 3 |
| - | Gastral tergum 4 with wide pale band sometimes interrupted medially, gastral tergum 2 posterad without pale patch medially (Fig. 3) | 4 |
| 3 | Vertex with black pubescence. Scape and femorae brown. Hairs of lateral felt line on gastral tergum 2 brown. 3.8 - 5.5 mm | 1. <i>M. hageni</i> (ZAVATTARI) |
| - | Vertex with appressed pale pubescence. Scape ferruginous red, femorae reddish brown. Hairs of lateral felt line on gastral tergum 2 pale. 5.5 - 6.0 mm | 3. <i>M. yunnanensis</i> sp. nov. |
| 4 | Pronotum postero-sublaterally with 2 obliquely transverse golden yellow spot. Punctures on thoracic dorsum moderately coarse, rugoso-confluent, more so on posterior propodeal slope. 4.0 - 4.2 mm | 5. <i>M. bicristata</i> (CHEN) |
| - | Pronotum postero-sublaterally at most with a small wedge of appressed pale pubescence | 5 |
| 5 | Gastral tergum 2 distinctly broadly depressed along the median longitudinal line. 4.0 - 6.5 mm | 8a. <i>M. semperi semperi</i> (ASHMEAD) |
| - | Gastral tergum 2 evenly convex throughout | 6 |
| 6 | Thoracic dorsum with prescutellar row of denticles. Posterior propodeal slope denticulate above. 4.5 mm | 4. <i>M. kuznetsovi</i> sp. nov. |
| - | Thoracic dorsum without prescutellar row of denticles. Posterior propodeal slope confluent punctate above. 6.0 mm | 2. <i>M. athalia</i> (PAGDEN) |

- 7 Tibiae and femorae ferruginous red. Tegulae with long inner rounded lamella extending to half of scutellum. 14.5 - 17.0 mm 9. *M. exacta* (SMITH)
- Tibiae and femorae black or brownish 8
- 8 Hind coxae inside armed its full length with a sharp carina, the carina lamellate posterad and the coxae squarely truncate, the posterior inner angle of hind coxae prominently angulate 9
- Hind coxae inside armed with a short carina, the carina not lamellate poterad, the posterior inner angle of hind coxae rounded 14
- 9 Gastral segments 1-2 ferruginous. 7.0 - 11.0 mm 8a. *M. semperi semperi* (ASHMEAD)
- Gaster entirely black 10
- 10 Gastral tergum 7 with more or less definite impunctate or glabrous elongate space medially 11
- Gastral tergum 7 at most with sparser and larger punctate space medially . . 12
- 11 Gastral terga 3-6 are narrowed anterad and posterad separately. Clypeus without preapical triangular carinated space medially. Mesoscutum with black pubescence only. Gastral tergum 2 with large dense punctures, anterad and laterad the distance between the punctures less than diameter of the latters. 8.0 - 12.5 mm 1. *M. hageni* (ZAVATTARI)
- Gastral terga 3-6 not narrowed anterad and posterad. Clypeus with preapical triangular weakly carinated space medially. Mesoscutum with silvery pubescence and a few darker hairs. Gastral tergum 2 with moderate separate punctures. 7.2 mm 2. *M. athalia* (PAGDEN)
- 12 Full length of volsellar cuspis inside with long setae (Fig. 12). 6.5 - 9.0 mm 3. *M. yunnanensis* sp. nov.
- Apical fourth or third of volsellar cuspis inside with long setae 13
- 13 Clypeus without preapical triangular carinated space medially. Ratio POD : OOD = 0.9. 8.0 mm 6. *M. bakeri* (MICKEL)
- Clypeus with preapical triangular carinated space medially. Ratio POD : OOD = 0.8. 9.0 - 10.0 mm 7. *M. tanoi* (TSUNEKI)
- 14 Basal gastral segments ferruginous 15
- Gaster entirely black. Tegulae testaceous, somewhat darker basally, posterad extending beyond scuto-scutellar suture. Gastral terga 1-4 with dense yellowish transverse bands posterad. 10.0 - 12.0 mm 10. *M. exiloides* (MAGRETTI)
- 15 Clypeus with median triangular process basally 16
- Clypeus without any median triangular process basally. Outer basivolsellar setae longer than cuspis (Fig. 10). Gaster with second sometimes first and third segments ferruginous red. 8.0 - 8.7 mm 12. *M. abnorma* (CHEN)
- 16 Clypeus with two curved preapical weak ridges, anterad of ridges and medially glabrous and shining (Fig. 7). Outer basivolsellar setae shorter than cuspis (Fig. 11). 8.5 - 13.0 mm 11. *M. norna* (ZAVATTARI)
- Clypeus without transverse preapical ridges, lower triangular part irregularly coarsely rugose. Outer basivolsellar setae longer than cuspis. 16.5 mm 13. *M. ilanica* (TSUNEKI)

1. *Mickelomyrme hageni* (ZAVATTARI, 1913)

Mutilla hageni ZAVATTARI, 1913: 32, male [lectotype, designated by MICKEL (1933b), male: Formosa, Kankau, 7.IV.1912 (H. SAUTER) in Deutsch. Entomol. Inst., Eberswalde].

Mutilla alberici ZAVATTARI, 1913: 31, female [lectotype, designated by MICKEL (1933b), female: Formosa, Tainan, VIII.1911 (H. SAUTER) in Deutsch. Entomol. Inst., Eberswalde]. Synonymized by LELEJ & YAMANE (1992).

Mutilla discreta: MATSUMURA & UCHIDA 1926: 50, male (Ishigaki-jima). Corrected by YASUMATSU (1938).

Smicromyrme hageni: MICKEL 1933b: 417, male (Formosa); 1935: 291, male (Formosa); YASUMATSU 1938: 447, male (Ishigaki-jima); CHEN 1957: 202, male (Taiwan, Fujian, Guangdong); TSUNEKI 1972a: 20, male (listed); 1972b: 220, male (Taiwan); LELEJ & YAMANE 1992: 631, male, female, part. (Okinawa-jima, Iriomote-jima).

Smicromyrme alberici: MICKEL 1933b: 421, female (Formosa); 1935: 293, female (Formosa); CHEN 1957: 208, female (Taiwan); TSUNEKI 1972b: 19, female (Taiwan); 1973: 23, female (Ishigaki-jima); 1993: 20, female (Taiwan).

Material [additional to studied (LELEJ & YAMANE 1992)]. Taiwan: 3 males, Hori, 28., 29.IV.1929 (K. SATO) [NSMT]; 1 male, Kiaru, 3.IV.1937 (K. IWATA) [NSMT].

Range. Japan (Okinawa-jima, Iriomote-jima, Ishigaki-jima), China (Taiwan, Fujian, Guangdong).

Remarks. In spite of that the pair in copula from Yunnan (China) misidentified by me as *M. hageni* really belongs to *M. yunnanensis* sp. nov., I think that the female *alberici* and male *hageni* belong to one species. Both sexes are close to those of *M. yunnanensis* respectively. Both sexes of *M. hageni* were collected in southern Ryukyus where one species of *Mickelomyrme* was discovered. My figure of female gaster (LELEJ 1995: Fig. 1) was incorrect, the same one see Fig. 1 in current paper.

2. *Mickelomyrme athalia* (PAGDEN, 1949)

Smicromyrme athalia PAGDEN, 1949: 219, male, female [holotype, male: Malaysia, Kuala Lumpur, 24.V.1936, No 0242 (H.T. PAGDEN) in Selangor Museum, Kuala Lumpur].

Mickelomyrme athalia: LELEJ 1995: 17 (listed).

Material. No specimens examined.

Range. Malaysia (Malay Pen.).

3. *Mickelomyrme yunnanensis* LELEJ sp. nov.

Smicromyrme (Nemka) hageni: LELEJ & YAMANE 1992: 631, male, female (part.).

Type material (4 males, 2 females). Holotype, male: China, Yunnan, Niner(Puer) - Dajie(Jinggu), 5.IV.1957 (A. MONCHADSKIJ) [ZMMU]. Paratypes: 1 female taken in copula and pinned with holotype), [ZMMU]; 1 male, China, Yunnan, Simao-Puwen, 950-1200 m, 11.V.1957 (Hong Guang-di) [ZMMU]; 1 female, Thailand, Fang, 12.VI.1965 (Japan-US Cooperative Sci. Program) [NSMT]; 1 male, Laos, Vientiane Prov., Gi Sion vill., de Tha Ngone, 24.-31.X.1966 (native collector, Bishop) with label *Smicromyrme athalia* PAGDEN, B. PETERSEN det. 1980 [IBP]; 1 male, Laos, Wapikhamthong, Prov. Wapi, 30.III.1967 (native collector, Rondon-Bischof Mus. Collection, light trap) with label *Smicromyrme athalia* PAGDEN, B. PETERSEN det. 1980 [IBP].

Description. Male. Length 6.5 - 9.0 mm. Black, wings infuscated; mandibles brownish red preapically; tegulae chestnut, darker basally; fore spurs brownish, mid- and hind spurs white.

Clypeus, scape, frons, genae, antennal tubercles, mandibles basally clothed with appressed short and scattered long raised pale pubescence; vertex with scattered long raised pale pubescence; inner eye orbit with a few black setae. Pronotum dorsally, mesopleurae except anterior and posterior margins, legs with dense appressed short and scattered raised long whitish pubescence; scutellum, axillae and metanotum medially with scattered raised long whitish pubescence, scutellum with a few additional appressed short pale hairs; mesoscutum and tegulae basally with brownish pubescence, apical half of tegulae with appressed pale pubescence; scutellum laterally, metanotum laterally and propodeal dorsum basally with dense appressed pale microsetae; other portions of propodeum with scattered long raised whitish pubescence; pronotum laterally and metapleurae with pale appressed micropubescence. Gastral segments 1-5 with scattered long raised and short recumbent pale pubescence, terga 6-7 and sterna 6 and 8 with black one; tergum 1 posterad with pale narrow band; terga 2-5 and sterna 2-6 with whitish fringes; segment 2 laterally with yellowish felt lines.

Relative width of head and thorax including tegulae 6.2 : 7.6. Mandibles bidentate at the apex, deeply emarginate and toothed beneath near the base. Clypeus weakly convex, the median portion of the margin very shallowly emarginate, with transverse submarginal impression, surface of clypeus very finely and closely punctate; median area triangular, without lateral ridges. Scape distinctly bicarinate beneath. Ocelli small, ratio $POD : OOD = 0.8$. Frons with longitudinal median sulcus. Antennal segment 3 is 1.5 times as segment 2 and 0.55 times as segment 4, the latter equal to antennal segment 5 (Fig. 14). Antennal tubercles with the carina on upper margin sharply angulated and its outer branch reaching the inner margin of eye. Frons and vertex longitudinally striate, occiput and genae confluent punctate.

Mesoscutum with notauli reaching its foremargin, short parapsidal lines and well developed raised parascutal (= parategular) carinae. Scutellum simple, without longitudinal median furrow anterad; prescutellar transverse fovea deep and shining. Propodeum reticulate, dorsally with median elongate triangular closed area, propodeal posterior face without median longitudinal carina. Pronotum dorsally and mesoscutum confluent punctate; scutellum, mesopleurae, median portion of metanotum densely punctate. Lateral pronotal lobes except posterior margin weakly longitudinally striate with vertical anterior carina. Mesosternum without any precoxal tubercles. Midcoxae moved off, metasternum longitudinally striate. Hindcoxae inside armed its full length with a sharp carina, the carina lamellate posterad and the coxae squarely truncate. Tegulae slightly protruding beyond axillae, smooth and shining basally and outside, shallowly punctate inside. Wing venation as Fig. 4.

Gastral segment 1 long, carinate beneath, median length of tergum 1 is 0.75 times as tergum 2; gastral sternum 2 densely punctate with short lateral felt line; gastral tergum 2 with long lateral felt lines and moderate distinct punctures, close at the base and sides, sparse medially, the diameter of punctures less than one on sternum. Last tergum convex, densely punctate, median longitudinal part sparser and coarser punctate; sternum 7 widely depressed; sternum 8 (hypopygium) with deep median fovea basally and glabrous translucent apical margin, sparsely punctate ventrally. Volsella inside as Fig. 12; full length of volsellar cuspis inside with long setae; outer basivolsellar setae slightly longer than cuspis.

Female. Length 5.5 - 6.0 mm. Head and gaster black; mandibles except apex, clypeus, antennal tubercles, antennal segments 1-3, thorax and coxae ferruginous-red; palps, femorae, tibiae, tarsi and other antennal segments beneath brownish red; gastral segments 1 and gaster ventrally chestnut.

Frons with sparse appressed copper pubescence, vertex with denser yellowish, genae with denser whitish one. Eye orbit, front and vertex with rare long raised black setae. Thorax dorsally with sparse short recumbent and long raised black hairs. Mesopleurae in lower half with vertical row of long raised pale setae. Pronotum anterad and propodeum posterad with scattered long raised pale setae. Meso- and metapleurae beneath with moderately dense appressed silvery pubescence. Legs with sparse subappressed and raised pale pubescence. Gastral tergum 1 with scattered long raised pale setae, without fringe posterad. Gastral tergum 2 with basal median and lateral spots arranged in a transverse line and posterior apical narrow band, triangularly widened medially, of appressed yellowish pubescence, the distance between median spot and band equal to spot diameter (Fig. 2). Tergum 3 with broad entire band of pale pubescence. Terga 2-5 laterally and gastral sterna with scattered pale pubescence; sterna 2-5 with pale fringe posterad. Felt lines of gastral tergum 2 yellowish. Tergum 6 with pale pygidial fringes. Other parts of gastral terga with black pubescence.

The relation of longitudinal eye diameter to distance between eye and mandible base is 2.45. Clypeus without any tubercles on anterior margin, strongly elevated basally with basal median blunt tubercle and transverse concave preapical glabrous furrow limited above by transverse arched carina. Antennal segment 2 slightly wider than its length; antennal segment 3 is 1.6 times as segment 2 and 1.1 times as segment 4, antennal segments 5 and 6 slightly wider than its length. Frons and vertex densely not confluent punctate, vertex with smaller punctures. Hypostomal carina slightly elevated in middle between mandible base and mouth emargination base.

Scutellar scale very wide, laterad of it with a row of denticles; two prescutellar tubercles well developed. Hindcoxae carinate inside. Thoracic dorsum anterad of scutellar scale coarsely confluent punctate, sometimes denticulate; propodeum dorsally and its posterior upper part denticulate. Thorax laterally glabrous and microsculptured.

Gastral sternum 1 longitudinally carinate. Gastral tergum 2 densely punctate and longitudinally striate; gastral sternum 2 with dense separate punctures. Pygidial area elongate, carinate laterally, longitudinally and slightly divergently striate; apical fourth glabrous and shining.

Range. China (Yunnan), Thailand, Laos.

Discussion. Male of *M. yunnanensis* has resemblance to that of *M. hageni* but differs from the latter by sparse small punctures on gastral tergum 2 and unmodified gastral terga 3-6 (in *M. hageni* gastral tergum 2 with large dense punctures and gastral terga 3-6 are narrowed anterad and posterad separately). Female of *M. yunnanensis* is close to that of *M. hageni* but distinguished by pale appressed pubescence on vertex (in *M. hageni* the vertex with black pubescence only). In other hand, male and female of *M. yunnanensis* are close to those of *M. athalia* also but differ by absence of pale band on gastral tergum 4 in female and sculpture of gastral tergum 7 in male (in *M. athalia* female with pale band on gastral tergum 4 and male tergum 7 with an ill-defined elongate space medially, sides of space parallel).

Etymology. The name of species originates from Yunnan, Province of China.

4. *Mickelomyrme kuznetsovi* LELEJ sp. nov.

Type material (4 females). Holotype, female: North Vietnam, Prov. Quang Ninh, Il. Phong Vong, 20°47'N, 107°25'E, 185 m, open glade with rare grass (former drill square), 10.X.1990 (V. KUZNETSOV) [ZIS]. Paratypes: 3 females from the same place, 9., 10.Oct.1990 (V. KUZNETSOV) [IBP].

Description. **Female.** Length 4.5 mm. Head and gaster black; mandibles except apex, antennal tubercles, antennal segments 1-3, palps, thorax, coxae, femorae except apex (in holotype and paratypes) ferruginous red; clypeus, femorae (in two paratypes), tibiae, tarsi and other antennal segments beneath and gastral sternum 1 brownish red.

Frons with sparse appressed copper pubescence, vertex with denser yellowish, genae with denser whitish one. Eye orbit, front and vertex with rare long raised black setae. Thorax dorsally with sparse short recumbent and long raised copper and yellowish hairs; mesonotum antero-sublaterally and propodeal dorsum sublaterally with a few recumbent silvery setae. Mesopleurae in lower half with vertical row of long raised pale setae. Pronotum anterad and propodeum posterad with scattered long raised pale setae. Meso- and metapleurae beneath with moderately dense appressed silvery pubescence. Legs with sparse subappressed and raised pale pubescence. Gastral tergum 1 with scattered long raised pale setae, without fringe posterad. Gastral tergum 2 with basal median larger yellowish and lateral smaller whitish spots, arranged in a transverse line, of appressed pubescence, the distance between median spot and lateral one slightly more than half of median spot diameter; one paratype has small median pale tuft on second gastral tergum posterad (Fig. 3). Terga 3-4 with broad entire band of pale pubescence, indistinctly interrupted medially on tergum 4. Terga 2-5 laterally and gastral sternum with scattered pale pubescence; sternum 2-5 with pale fringe posterad. Felt lines of gastral tergum 2 yellowish. Tergum 6 with pale pygidial fringes. Other parts of gastral terga 2 and 5 with black pubescence.

The relation of longitudinal eye diameter to distance between eye and mandible base is 2.35 - 2.45. Clypeus without any tubercles on anterior margin, strongly elevated basally with small basal median blunt tubercle and transverse concave preapical glabrous furrow limited above by transverse arched carina. Antennal segment 2 slightly wider than its length; antennal segment 3 is 1.6 times as segment 2 and 1.1 times as segment 4, antennal segment 5 and 6 slightly wider than its length. Frons and vertex densely not confluent punctate, vertex with smaller punctures. Hypostomal carina slightly elevated in middle between mandible base and mouth emargination base.

Scutellar scale very wide, laterad of it with a row of denticles; prescutellar row of tubercles well developed. Hindcoxae carinate inside. Thoracic dorsum anterad of prescutellar row coarsely confluent punctate, sometimes tuberculate; propodeum dorsally and its posterior upper part denticulate. Thorax laterally glabrous and microsculptured.

Gastral sternum 1 longitudinally carinate. Gastral tergum 2 densely punctate; gastral sternum 2 with larger and sparser punctures. Pygidial area elongate, carinate laterally, longitudinally and slightly divergently striate; apical fourth glabrous and shining.

Male unknown.

Range. North Vietnam (Quang Ninh).

Discussion. The female of *M. kuznetsovi* sp. nov. belongs to the group of species with pale band on gastral tergum 4 (*M. athalia*, *M. bicristata* and *M. semperi*). It differs from one of *M. bicristata* by smaller whitish lateral spots on gastral tergum 2

and denticulate sculpture of propodeum posteriorly (in *M. bicristata* medial and lateral spots on gastral tergum 2 are golden, being subequal in size with interspace about 1.5 times of the diameter; posterior propodeal slope with coarse rugoso- confluent punctures). The differences between female of the new species and those of *M. athalia* and *M. semperi* see in the key above.

Etymology. This species is dedicated to Victor N. KUZNETSOV who collected mutillid wasps during trips to Vietnam in 1987 and 1990.

5. *Mickelomyrme bicristata* (CHEN, 1957) comb. nov.

Smicromyrme bicristata CHEN, 1957: 182, 211, female [holotype, female: China, Hainan, Ryosui, 10.XI.1942 (Miwa & Mitono) in Taiwan Agric. Research Inst., Taipei].

Material. No specimens examined.

Range. China (Hainan).

6. *Mickelomyrme bakeri* (MICKEL, 1934)

Smicromyrme bakeri MICKEL, 1934: 212, male [holotype, male: Palawan, Puerto Princesa (C. BAKER) in U.S. Nat. Mus.]; 1935: 291, male (Labuan); BALTAZAR 1966: 209 (listed).

Mickelomyrme bakeri: LELEJ 1995: 17 (listed).

Material (1 male). Philippines: 1 male, Balabac, Dalawan Bay, 9.X.1961, Malaise trap (Noona Dan. Exp. 61-62) with label *Smicromyrme bakeri* MICKEL, B. PETERSEN det., 1980 [IBP].

Range. Philippines (Palawan, Balabac), North Borneo (Labuan).

7. *Mickelomyrme tanoi* (TSUNEKI, 1972)

Smicromyrme tanoi TSUNEKI, 1972a: 19, male [holotype, male: North Borneo, Mt. Kinabalu, 19.VIII.1971 (T. TANO) in TSUNEKI's collection].

Mickelomyrme tanoi: LELEJ 1995: 17 (listed).

Material. No specimens examined.

Range. Malaysia (Sabah).

8a. *Mickelomyrme semperi semperi* (ASHMEAD, 1904) comb. nov.

Mutilla semperi ASHMEAD, 1904: 135, male [holotype, male: Manila (Luzon) in U.S. Nat. Mus.].

Smicromyrme semperi semperi: MICKEL 1934: 210, male, female (Luzon, Panay, Negros); 1935: 273, 291 (key); BALTAZAR 1966: 210 (listed); TSUNEKI et al. 1993: 13, male (Luzon).

Material. No specimens examined.

Range. Philippines (Luzon, Panay, Negros).

8b. *Mickelomyrme semperi nigrogastra* (MICKEL, 1934) comb. nov.

Smicromyrme semperi nigrogastra MICKEL, 1934: 212, male [holotype, male: Luzon, Zambales Prov. (C. BAKER) in U.S. Nat. Mus.]; 1935: 273, 291 (key); BALTAZAR 1966: 210 (listed); TSUNEKI et al. 1993: 13, male (Palawan).

Material. No specimens examined.

Range. Philippines (Luzon, Palawan).

Remarks. MICKEL (1934) in his description of *nigrogastra* notes that male of this subspecies differs from nominative one by totally black gaster. Probably *nigrogastra* is a separate species but the short original description is insufficient for including it in my key.

9. *Mickelomyrme exacta* (SMITH, 1879)

Mutilla exacta SMITH, 1879: 201, male [holotype - male, China, Shanghai, in Brit. Mus. Nat. Hist.]; DALLA TORRE 1897: 38 (listed); ANDRE 1903: 39 (listed).

Smicromyrme exacta: MICKEL 1933a: 323, male (Shanghai); CHEN 1957: 201, male (Anhui, Jiangxi).

Mickelomyrme exacta: LELEJ 1995: 17 (listed).

Material (5 males). China: 2 males, Guangdong Prov., reserve Chebaling, open glade with loess soil near the river, 20, 21.VI.1990 (A. LELEJ) [IBP]; 3 males, Sichuan Prov., Wumeng Shan, 24., 25.VI.1955 (HUANG Re-ren) [ZMMU].

Range. China (Shanghai, Anhui, Jiangxi, Sichuan, Guangdong).

Remarks. BINGHAM (1897) suggested that *Mutilla remota* CAMERON, 1897 (female from Sri Lanka) may be the opposite sex of *M. exacta* but the former belongs to genus *Orientilla* LELEJ, 1979 or *Stenomutilla* ANDRE, 1896.

10. *Mickelomyrme exiloides* (MAGRETTI, 1892)

Mutilla exiloides MAGRETTI, 1892: 232, male [type locality: Karen Hills (Myanmar)]; BINGHAM 1897: 48; DALLA TORRE 1897: 39 (listed); ANDRE 1903: 39 (listed).

Mickelomyrme exiloides: LELEJ 1995: 17 (listed).

Material (2 males). Laos: 2 males, Vientiane Prov., Ban Van Eue, 30.III, 15.V.1966 (native collector, Rondon-Bischof Mus. Collection), both with label *Smicromyrme exiloides* (MAGR.), B. PETERSEN det., 1980, 1 male collected with light trap [IBP].

Range. Myanmar, Laos (new record).

11. *Mickelomyrme norma* (ZAVATTARI, 1913)

Mutilla norma ZAVATTARI, 1913: 40, male [lectotype, designated by MICKEL (1933b), male: Formosa, Taihorin, V.1909 (H. SAUTER) in Zool. Muz. of Berlin University].

Smicromyrme norma: MICKEL 1933b: 417, male (Taiwan); 1935: 288, male (Taiwan).

Smicromyrme norma norma: CHEN 1957: 203, male (Taiwan).

Mickelomyrme norma: LELEJ 1995: 17 (listed).

Material (2 males). China, Taiwan: 1 male, 9.IX.1928 (T. KANO) [NSMT-I-Hym No 1091]; 1 male, Nantou Hsien, Nanshanch, 800 m, 30.VI.1965 (R. ISHIKAWA) [NSMT-I-Hym No 4706].

Range. China (Taiwan).

12. *Mickelomyrme abnormalis* (CHEN, 1957) stat. et comb. nov.

Smicromyrme norma abnormalis CHEN, 1957: 180, 203, male [holotype, male: China, Jiangxi, Kuling, 13.VIII.1935 (O. PIEL) in Musee Heude, Shanghai].

Material (3 males). China: 1 male, Yunnan, Jinping, 1200 m, 23.V.1956 (HUANG Ke-ren et al.) [ZMMU]; 1 male, Yunnan, 30 km SW Jinping, 500 m, 2.V.1956 (HUANG

Ke-ren et al.) [ZMMU]. Vietnam: 1 male, Prov. Shon La, vicinities of Song Ma, 400-600 m, 3.-14.V.1986 (A. GOROCHOV) [ZIS].

Redescription. Male. Length 8.0 - 8.7 mm. Black, gaster with segment 2 sometimes with segment 1 and 3 ferruginous red, wings subhyaline; mandibles brownish red preapically; tegulae chestnut, darker basally; fore spurs pale, mid- and hind spurs white.

Clypeus, scape, frons, genae, antennal tubercles, mandibles basally, mesopleurae and legs clothed with appressed short and scattered long raised pale pubescence; vertex with scattered long raised pale pubescence; inner eye orbit with 2-3 black setae. Pronotal hindmargin with fringe of pale recumbent short pubescence. Pronotum dorsally, scutellum, axillae and metanotum medially with scattered raised long whitish pubescence mixed on pronotum with a rare recumbent short whitish hairs; mesoscutum with brownish pubescence; tegulae except outer margin and upper portion with appressed pale pubescence; scutellum laterally, metanotum laterally with dense appressed silvery microsetae, such pubescence on propodeal dorsum basally rare and not closed the sculpture; other portions of propodeum with scattered long raised whitish setae; pronotum laterally and metapleurae with pale appressed micropubescence. Gastral terga 1-5 and gastral sterna 1-8 with scattered long raised and short recumbent pale pubescence; terga 6-7 with black one; tergum 1 posterad with pale narrow band; terga 1-5 and sterna 2-6 with whitish fringes; segment 2 laterally with yellowish felt lines.

Relative width of head and thorax including tegulae 6.1 : 7.4. Mandibles bidentate at the apex, deeply emarginate and toothed beneath near the base. Clypeus weakly convex, the median portion of anterior margin almost stright, with two weak apical ridges more visible in frontal view (Figs 8, 9), surface of clypeus covered with dense appressed pubescence clothed the sculpture; median area triangular, not elevated, without lateral ridges and basal tubercle. Scape obscurely bicarinate beneath. Ocelli small, ratio POD : OOD = 0.9. Antennal segment 3 is 1.75 times as segment 2 and 0.5 times as segment 4, the latter equal to antennal segment 5 (Fig. 13). Antennal tubercles with the carina on upper margin sharply angulated and its outer branch reaching the inner margin of eye. Frons and vertex longitudinally striate, occiput confluently and genae separately punctate.

Mesoscutum with notauli, reaching its foremargin, short parapsidal lines and well developed raised parascutal (= parategular) carinae. Scutellum simple; prescutellar transverse fovea deep and shining. Propodeum reticulate, dorsally with median elongate triangular closed area, propodeal posterior face without median longitudinal carina. Pronotum dorsally confluently punctate; mesoscutum and scutellum densely punctate. Lateral pronotal lobes except posterior margin longitudinally striate with vertical anterior carina. Mesosternum with short longitudinal blunt precoxal carina. Midcoxae moved off, weakly carinate inside, metasternum longitudinally striate. Hindcoxae carinate inside but carina not widened posterad and the coxae rounded posterad. Tegulae protruding beyond axillae and reaching almost half of scutellum, smooth and shining basally and outside, shallowly punctate inside. Forewing venation as Fig. 6.

Gastral segment 1 long, carinate beneath, median length of tergum 1 is 0.9 times as tergum 2; gastral sternum 2 with strong median basal carina and short lateral felt lines, densely punctate; gastral tergum 2 with longer lateral felt lines, separately punctate, closer at the base and sides, sparser medially. Last tergum convex, densely punctate, with ill-defined median longitudinal narrow impunctate space. Sternum 7 not depressed;

sternum 8 (hypopygium) separately punctate ventrally. Volsella as Fig. 10; outer basivolsellar setae equal to cuspis.

Female unknown.

Range. China (Anhui, Jiangxi, Zhejiang, Fujian, Yunnan), Vietnam, Shon La (new record).

Discussion. Redescription of *M. abnormalis* based on three males from South China and North Vietnam is given above because original short description of this taxon was given in the key (CHEN 1957). CHEN regards his *abnormalis* from mainland China as a color subspecies of *M. norma* (ZAVATTARI), distributed in Taiwan. The males of these species are distinguished by the clypeus (Fig. 8 vs. Fig. 7), forewing venation (Fig. 6 vs. Fig. 5), genitalia (Fig. 10, vs. Fig. 11) and the punctures of gastral tergum 2. The male of *M. abnormalis* is similar with one of *M. ilanica* in having long basivolsellar setae but differs by another clypeus structure and smaller size.

13. *Mickelomyrme ilanica* (TSUNEKI, 1972)

Smicromyrme ilanica TSUNEKI, 1972b: 16, male [holotype, male: Taiwan, Ilan Pref., Tsukeng, 22.Aug.1966 (K. TSUNEKI) in TSUNEKI's collection].

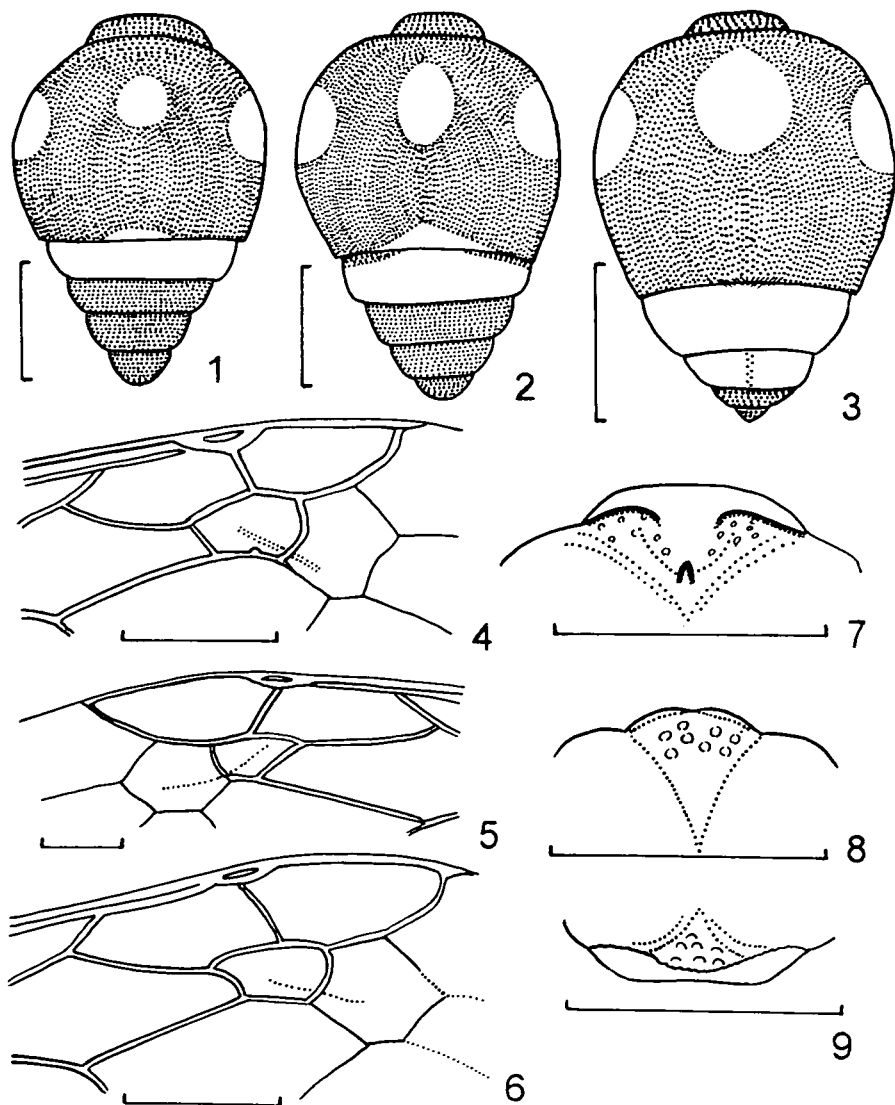
Mickelomyrme ilanica: LELEJ 1995: 17 (listed).

Material. No specimens examined.

Range. China (Taiwan).

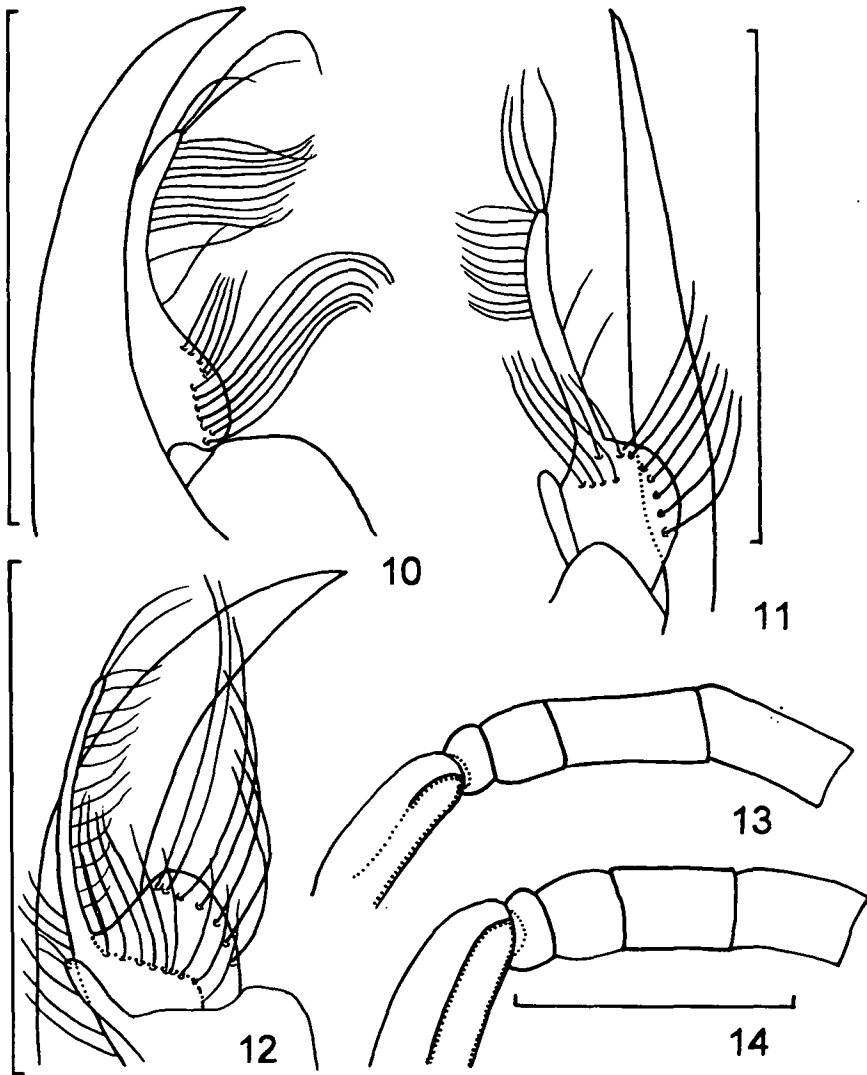
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Figs. 1-9: *Mickelomyrme* spp.,

- 1-3 female gaster: 1) *M. hageni* (ZAVATTARI), Okinawa II.; 2) *M. yunnanensis* sp. nov., paratype, Thailand; 3) *M. kuznetsovi* sp. nov., paratype, North Vietnam.
 4-6 part of male forewing: 4) *M. yunnanensis* sp. nov., holotype; 5) *M. norna* (ZAVATTARI), Taiwan; 6) *M. abnormalia* (CHEN), North Vietnam.
 7-9 male clypeus: 7) *M. norna* (ZAVATTARI), in dorsal view, Taiwan;
 8, 9) *M. abnormalia* (CHEN) (8 in dorsal view, 9 in frontal view).
 Scale line 1 mm.



Figs. 10-14. *Mickelomyrme* spp.

10-12 male genitalia:

- 10) *M. abnormalis* (CHEN), in lateral-ventral view, North Vietnam; 11) *M. norra* (ZAVATTARI), in ventral view, Taiwan; 12) *M. yunnanensis* sp. nov., in inner view, paratype, Laos.

13-14 male antennal segments 1-5:

- 13) *M. abnormalis* (CHEN), Yunnan; 14) *M. yunnanensis* sp. nov., paratype, Yunnan.

Scale line 1 mm.

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Nilsson, A.N., Holmen, M. (1995): The aquatic Adepaga (Coleoptera) of Fennoscandia and Denmark. II. Dytiscidae. - E.J. Brill Verlag, Leiden, 192 S., zahlr. s/w-Zeichnungen.

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M. CARL

Honomichl, K., Bellmann, H. (1996): Biologie und Ökologie der Insekten. Ein Lexikon auf CD-ROM mit 1201 Zeichnungen, 1001 Farbbildern sowie Video- und Tonsequenzen. - Gustav Fischer Verlag, 1 CD-ROM.

Mit den Worten "Der Jacobs/Renner auf CD!" kündigt der Verlag sein neuestes digitales Wunderwerk an. Für den Rezensenten war es daher von besonderem Interesse, ob das Computerlexikon diesem hohen Anspruch gerecht wird. Ein wesentlicher Aspekt ist die Handhabung der digitalisierten Daten. Nach der Installation (die weniger als 1MB auf der Festplatte beansprucht, der Rest bleibt auf der CD) und dem Programmstart glänzt der übliche Windows-Bildschirm durch einen klaren Aufbau und wenige, dafür aber große und leicht zu "treffende" Symbolschaltknöpfe. Diese sind in einer Leiste am unteren Bildrand angeordnet und ermöglichen eine schnelle und effektive Stichwort- und Volltextsuche. Am rechten Bildrand erscheint beim Programmstart stets ein Fenster mit der kompletten Stichwortliste. Doch nun zur praktischen Arbeit mit diesem PC-Lexikon:

Nach Auswahl eines Stichwortes erscheint ein Fenster mit dem dazugehörigen Text. Im Text, der keineswegs immer so ausführlich wie der des Jacobs/Renner ist!, finden sich grüne Querverweiswörter, blaue Hinweise wie "Bild", "Video" oder "Ton". Das Anklicken der Querverweise ermöglicht ein schnelles Springen zu Stichworten (in neuen Fenstern), die thematisch mit dem vorher gewählten Suchbegriff zusammenhängen. Diese Schnelligkeit hat den Nachteil, daß der Bildschirm in Windeseile mit Fenstern zugemüllt wird, die sich glücklicherweise mit einem Schaltknopf auf einen Schlag eliminieren lassen. Hinter dem blauen Verweis "Bild" verstecken sich zwei Sorten von Abbildungen: s/w-Zeichnungen aus dem Jacobs/Renner und Farbfotos von Heiko Bellmann. Hier spielt das Medium PC seine volle Stärke aus, denn erstens bietet der Jacobs/Renner keine Farbfotos und zweitens ist die Zuordnung der Bilder zum Text unmittelbarer als in einem Buch. Allen Abbildungen gemeinsam ist die miserable Auflösung der Scans. Dies ist vom Verlag wohl so beabsichtigt, damit die Abbildungen nicht für andere Zwecke mißbraucht werden können. Hinzu kommt, daß die Farbfotos fast durchwegs unter soßiger Kontrastarmut leiden. Wer hier Ansprüche stellt, ist nach wie vor mit Hochglanzdrucken in Bildbestimmungsbüchern etc. am besten bedient. Hinter dem Verweis "Video" verbergen sich einige Sekunden lange Videosequenzen, deren Darstellungsqualität stark von der eingesetzten Hardware abhängig ist. Auch auf einem hochwertigen 17 Zoll-Monitor mit 800 x 600 Auflösung und 64K Farben reißen den Betrachter die 9,5 x 7,5 cm großen Filmchen nicht gerade vom Hocker. Die Tondokumente können natürlich nur dann genossen werden, wenn eine Soundkarte eingebaut ist. Die Literaturliste kann nicht nach Stichworten durchsucht werden, ist aber über die Zwischenablage (auch in Teilen) kopierfähig und damit in jeder Textverarbeitung zu verwenden.

Fazit: Unbestreitbarer Vorteil des PC-Lexikons ist die Schnelligkeit, mit der Informationen sowohl in Text- als auch in Bildform verfügbar sind. Einschränkend muß man jedoch hinzufügen, daß dies nur bei schon laufendem PC gilt. Bedenkt man die Präliminarien eines Systemstartes, so wird der Geschwindigkeitsvorteil wieder relativiert. Unbestreitbarer Vorteil des papiernen Jacobs/Renner ist der ausführlichere und in der letzten Ausgabe immer noch sehr aktuelle Textteil, die Möglichkeit des entspannten Blätterns bei längeren Textpassagen sowie die Tatsache, daß ein Buch auch bei Stromausfall funktioniert. Die zu Beginn erwähnte Verlagsankündigung scheint mir doch etwas zu vollmundig zu sein. Übrigens: Versuchen Sie nie, das Programm zu starten, wenn die CD nicht eingelegt ist. Dies führt zumindest unter Windows 3.11 unweigerlich zum Systemabsturz.

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