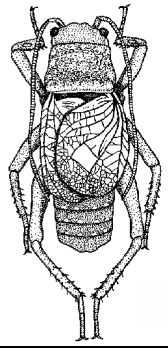

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TO THE KNOWLEDGE OF VELVET ANTS OF THE GENERA *ARTIOTILLA* INVREA, *RADOSZKOWSKITILLA* LELEJ AND *TAIWANOMYRME* TSUNEKI (HYMENOPTERA: MUTILLIDAE)

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Summary. The genera *Artiotilla* Invrea, *Radoszkowskitilla* Lelej and species *A. afghanica* (Suárez) and *R. aulica* (Smith) are newly recorded from Pakistan and *A. afghanica* is the first record from Iran. *Taiwanomyrme cheni* **sp. n.** (China: Yunnan) is described and illustrated. A new synonymy is proposed for *Radoszkowskitilla aulica* (Smith, 1855), **comb. n.** = *R. karnataka* Lelej, 2005, **syn. n.** and *R. ceylonica* (Lelej, 1993) = *R. tamila* Lelej, 2005, **syn. n.** A new combination is proposed for *Artiotilla mesopotamica* (Bischoff, 1914), **comb. n.** from genus *Trogaspidia* Ashmead. The keys to the species in males and females of the genera *Radoszkowskitilla* and females of *Taiwanomyrme* are given.

Key words: Hymenoptera, Mutillidae, Trogaspidiini, taxonomy, new species, new synonymy, new records, Oriental region, Palaearctic, India, Pakistan, Iran.

А. С. Лелей. К познанию ос-немок родов *Artiotilla* Invrea, *Radoszkowskitilla* Lelej and *Taiwanomyrme* Tsuneki (Hymenoptera: Mutillidae) // Дальневосточный энтомолог. 2020. N 410. С. 1-10.

Резюме. Роды *Artiotilla* Invrea. *Radoszkowskitilla* Lelej и виды *A. afghanica* (Suárez) и *R. aulica* (Smith) впервые указываются для Пакистана, а *A. afghanica*

впервые для Ирана. Описывается *Taiwanomyrme cheni* **sp. n.** (Китай: Юньнань). Предложена новая синонимия: *Radoszkowskitilla aulica* (Smith, 1855), **comb. n.** = *R. karnataka* Lelej, 2005, **syn. n.** и *R. ceylonica* (Lelej, 1993) = *R. tamila* Lelej, 2005, **syn. n.** Новая комбинация предложена для *Artiotilla mesopotamica* (Bischoff, 1914), **comb. n.** из рода *Trogaspidia* Ashmead. Даны определительные таблицы видов самцов и самок родов *Radoszkowskitilla* и самок *Taiwanomyrme.*

INTRODUCTION

The group of genera of tribe Trogaspidiini with males having symmetrical penis valves (former trbe Petersenidiini) is represented in Oriental region by seven genera: *Krombeinidia* Lelej, 1996, *Orientidia* Lelej, 1996, *Pagdenidia* Lelej, 1996, *Petersenidia* Lelej, 1992, *Radoszkowskitilla* Lelej, 2005, *Taiwanomyrme* Tsuneki, 1993, *Zavatilla* Tsuneki, 1993), and in Palaearctic by one genus *Artiotilla* Invrea, 1950. Of them the genera *Orientidia* and *Taiwanomyrme* penetrate to Palaearctic China, and *Zavatilla* to mountain Nepal. Among this group there are three genera with mandible beneath without subbasal tooth: *Artiotilla*, *Taiwanomyrme*, *Radoszkowskitilla* which are rare in the collection. In the last time I received additional material on these three genera which permit to describe new species, propose new synonymy and combinations.

MATERIAL

The following abbreviations are used for material discussed in this study.
BMNH – Natural History Museum, London, Great Britain.
IBSS – Federal Scientific Center of the East Asia Terrestrial Biodiversity (formerly Institute of Biology and Soil Science), Vladivostok, Russia.
MZUF – Università di Firenze, Museo Zoologico "La Specola", Florence, Italy.
NMNH – National Museum of Natural History, Washington DC, USA.
OLML – Oberoesterreichisches Landesmuseum Linz, Austria.
ZIN – Zoological Insitute of Russian Academy of Sciences, St Petersburg, Russia.
ZMB – Museum für Naturkunde an der Humboldt-Universität, Berlin, Germany.

The classification of the Mutillidae follows Brothers and Lelej (2017). The general distribution of the species follows Lelej (2002, 2005) with addition. The new records are asterisked (*).The following abbreviations are used: S1, S2, S3, etc., to denote the first, second, third, etc. metasomal sterna; T1, T2, T3, etc., to denote the first, second, third, etc. metasomal terga.

Genus *Artiotilla* Invrea, 1950

Artiotilla Invrea, 1950: 22.

Glossomyrme Suárez, 1979: 72. Type species *Glossomyrme afghanica* Suárez, 1979 by original designation. Synonymized by Lelej & Kabakov, 1980: 191.

Glossomyrme Suárez, 1981: 158. Type species. *Glossomyrme afghanica* Suárez, 1979, ♂, by original designation. Objectively invalid name: junior homonym and junior objective synonym of *Glossomyrme* Súarez, 1979.

Type species: *Mutilla biguttata* Costa, 1858 by original designation.

SPECIES INCLUDED. Originally the genus included type species only, *Artiotilla biguttata*. Lelej and Kabakov (1980) added *A. aghanica* (Suárez, 1979) and *A. ariana* Lelej, 1980 to the list, but the latter species became the type species of new genus *Kurzenkotlla* Lelej, 2005. Here I replace additional species *Mutilla mesopotamica* Bischoff, 1914 from the genus *Trogaspidia* to genus *Artiotilla*.

Artiotilla afghanica (Suárez, 1979)

Glossomyrme afghanica Suárez, 1979: 74, ♂, holotype, Afghanistan: Darunta, Prov. de Nengrahar (!), 700 m, 11.IV 1966, Povolný & Tenora [Afghanistan: Nangarhar Prov.] in Musei Moraviae, Brno, Czech Republic.

Glossomyrme afghanica Suárez, 1981: 160, ♂, holotype, Afghanistan: Darunta, Prov. de Nengrahar (!), 700 m, 11.IV 1966, Povolný & Tenora. Objectively invalid name: junior homonym and junior objective synonym of *Glossomyrme afghanica* Suárez, 1979.

MATERIAL EXAMINED. **Aghanistan:** Nuristan Province, Kamdesh, 1400–2200 m, 15–20.IX 1971, 1 ♂ (O. N. Kabakov) / *Glossomyrme afghanica* Suár., ♂, F. Suárez det. 1978 [IBSS]; Avragal, Pech River, 18.VI 1971, 1 ♂ (O.N. Kabakov) [IBSS]. **Pakistan:** Balochistan, 19 km W of Kach vill., 30°35'N 67°16'E, 28.VII 2005, 2 ♂ (S.V. Ovchinnikov); Wam vill., Pil Forest, 30°26'18"N 67°26'23", 2213 m, 29.VII–5.VIII 2005, 6 ♂ (S.V. Ovchinnikov); same place, 7.IX 2005, 3 ♂ (S.V. Ovchinnikov); Loralal–Zhob Road, Sulaiman Range before Zhob, 9.VIII 2005, 1 ♂ (S.V. Ovchinnikov); North-West Frontier [currently Khyber Pakhtunkhwa], Peshawar–Islamabad Road, bridge across Indus River, 33°53'N 72°18'E, 1.IX 2005, 1 ♂ (S.V. Ovchinnikov) [all specimens in IBSS]. **Iran**: Sistan va Balouchestan, Nikshahr, 8–10.IV 1973, 1 ♂ (Borumand & Safavi); Hormozgan, Kuh-e-Geno Bagh Tang, 410 m, 7–8.V 1977, 1 ♂ (A. Pazuki).

DISTRIBUTION. Afghanistan: Nuristan, Nangarhar; *Pakistan: Khyber Pakhtunkhwa, Balohistan, *Iran: Sistan va Balouchestan, Hormogan.

Artitilla biguttata (Costa, 1858)

REMARKS. The synonymy, examined material and distribution of this species see: Lelej, 1985, 2002. Recently (Lelej *et al*., 2017) the genus *Artiotilla* and *A. biguttata* were recorded from Russia (North Caucasus).

Artiotilla mesopotamica (Bischoff, 1914), comb. n.

Mutilla mesopotamica Bischoff, 1914: 15, ♂, holotype, "Mesopotamien, Tell Halaf, felsige Steppen am Kebbes, 21.III 1913. Exp. Oppenheim, Kohl S." [Sirya, Al Hasakah Province, Expedition Baron Max von Oppenheim in Northern Syria and Mesopotamia. The Tell Halaf Archeological Campaign was in 1911-1913], [ZMB], examined.

Trogaspidia mesopotamica: Lelej, 2002: 85, ♀; Pagliano *et al.* 2020: 286.

MATERIAL EXAMINED. The holotype was examined in 2011 during my trip to the Museum für Naturkunde an der Humboldt-Universität, Berlin**.**

DISTRIBUTION. North-East Syria: Al Hasakah Province.

Genus *Radoszkowskitilla* Lelej, 2005

Indratilla: Lelej 1993: 233, part., ♀ non ♂.

Radoszkowskitilla Lelej, 2005: 75, 187, figs 190–196. ♀, ♂; Lelej & Brothers 2008: 51; Brothers & Lelej 2017: 60, 96; Pagliano *et al.* 2020: 258, figs 407–409.

Type species: *Indratilla ceylonica* Lelej, 1993, by original designation.

SPECIES INCLUDED. Including current data the genus numbers three species: *Radoszkowskitilla aulica* (Smith, 1855), **comb. n.**, *R. ceylonica* (Lelej, 1993) and *R. sinhala* Lelej, 2005.

DISTRIBUTION. Oriental region: Sri Lanka, India, *Pakistan.

REMARKS. The male of *Radoszkowskitilla* differs from male of Palaearctic *Artiotilla* by lacking any felt line on sternum 2 (short line in *Artiotilla*), by having longitudinal shiny medial line on mesoscutellum (lacking in *Artiotilla*), by sparse pale setae on T3 and T4 (well developed band of pale setae in *Artiotilla*). The female of *Radoszkowskitilla* differs from that of *Artiotilla* by having weakly sculptured carinated pygidial area (indistinct, not carinated in *Artiotilla*), by mandible without inner subbasal tooth (with such tooth in *Artiotilla*), by T2 posteriorly and T3 with 2 spots of silver setae (T2 posteriorly without spots, T3 with band of yellowish setae in *Artiotilla*).

Radoszkowskitilla aulica (Smith, 1855), comb. n.

Figs 1–4

Mutilla aulica Smith, 1855: 37, ♀, type "Northern India", syntypes in BMNH; Sichel & Radoszkowski, 1869: 158, 1870: 258, ♀ (? Northern India); Cameron, 1892: 117, pl. 1, fig. 4, ♀, North India, Poona [Pune, Maharashtra]; André, 1894: 476, 482; Cameron, 1897: 82, ♀, Dalla Torre, 1897: 13, ♀, India; Bingham, 1897: 4, 13, ♀, Northern India, Ceylon [Sri Lanka]; André, 1902: 38, ♀, India.

Trogaspidia aulica: Lelej, 2005: 88, ♀, Northern India, Maharashtra; Pagliano *et al*., 2020: 279, India.

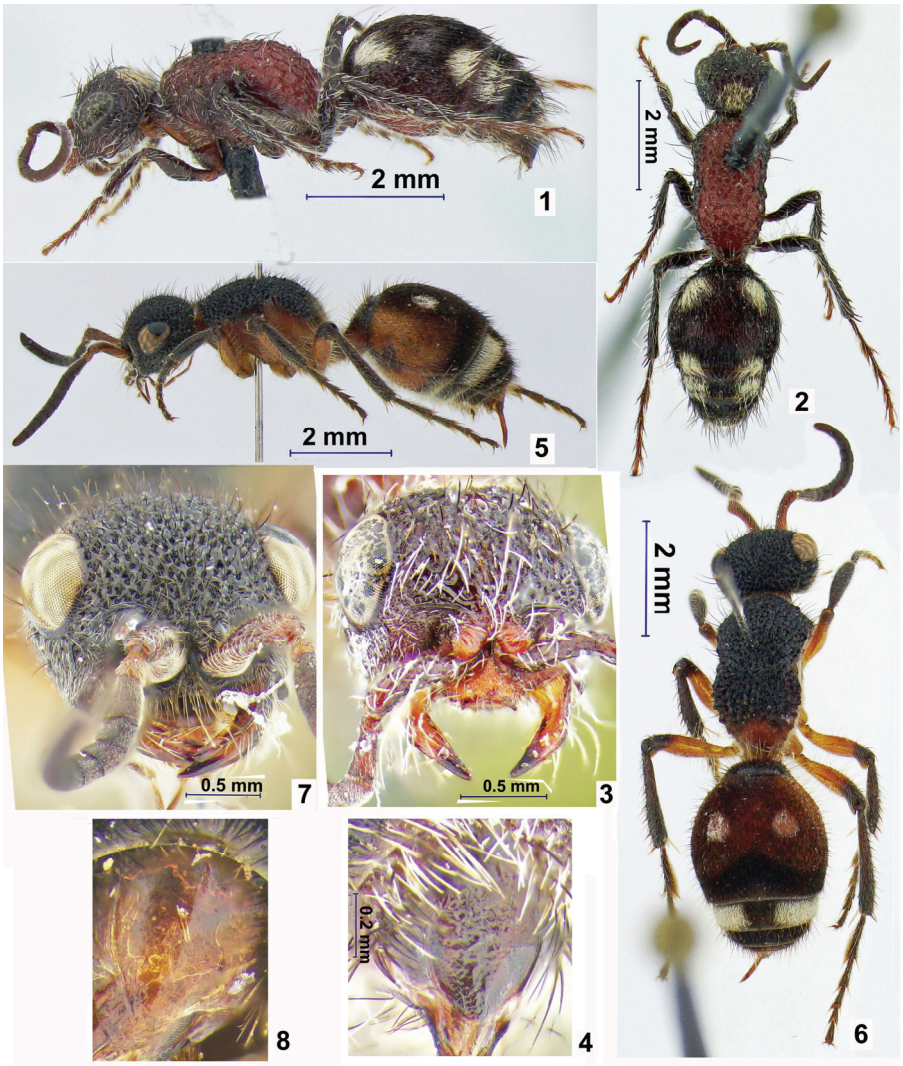
Radoszkowskitilla karnataka Lelej, 2005: 76, 190, ♀, ♂, holotype, ♀, India, Karnataka, 15 km N Bangalore, KT, 23–24.VII 1996, K. Werner & L. Lorenz [MZUF], examined, **syn. n.**; Pagiano *et al*., 2020: 259, ♀, ♂, figs 408, 409.

MATERIAL EXAMINED. Paratypes of *Radoszkowskitilla karnataka*, **India**: 3♂, with the same labels as holotype. Additional naterial. **Pakistan**: North-West Frontier [currently Khyber Pakhtunkhwa], Peshawar, Forestry Campus of Agricultural University, 14–26.VIII 2005, 1 ♀ (S.V. Ovchinnikov) [IBSS].

DISTRIBUTION**.** *Pakistan: Khyber Pakhtunkhwa; India: North India, Maharashtra, Karnataka. Probably widely distributed in India.

REMARKS. For a long time we discussed with late B. Petersen the status of *Mutilla aulica* Smith, 1855 described from North Pakistan (former North India) Børge Petersen who have had possibilities to study the species described by F. Smith from Oriental region and regarded my *Indratilla ceylonica* Lelej, 1993 as

junior synonym of *Trogaspidia aulica* (Smith, 1855) (Petersen, in litt., 1993). According to the original description (Smith, 1855) the female of *Mutilla aulica* Smith differs from the female of *ceylonica* Lelej by having spots of bright silvery setae on each side of T3 and T4 (such spots located in *ceylonica* on T2 posterad and T3. When I studied the female from Peshawar (North Pakistan, type locality of *aulica* Smith and the photos of female *aulica* identified by B. Petersen in the National



Figs 1–8. 1–4 – *Radoszkowskitilla aulica*, ♀; 5–8 – *Taiwanumyrme cheni* sp. n., ♀, holotype. 1, 2, 5, 6 – habitus (1, 5 – lateral view, 2, 6 –dorsal view); 3, 7 – face view; 4, 8 – T6, pygidial area.

Pusa collection, New Delhi, India (many thanks for Nithya Chandran for that) I accepted the idea that *aulica* belongs to the genus *Radoszkowskitilla*. In this genus *aulica* related with *R. karnataka* Lelej, 2005 which is known by female and male and I regard the latter as a junior subjective synonym of *aulica*.

***Radoszkowskitilla ceylonica* (Lelej, 1993)**

Indratilla ceylonica Lelej, 1993: 235, figs 2, 4, 5, ♀, holotype, Sri Lanka, Anuradhapura District: 9 km SW Anuradhapura, dry forest, 10.X 1982 (G. Medvedev) [ZIN], examined.
Radoszkowskitilla ceylonica: Lelej, 2005: 75, 188, ♀; Pagiano *et al*., 2020: 258, fig. 407, ♀.
Radoszkowskitilla tamila Lelej, 2005: 76, 189, figs 193–196, ♂, holotype, Sri Lanka, Mannar District: 0.8 km NE Kokmotte Bungalow, Wilpattu National Park, 21–25.V 1976, K. Krombein, P. Karunaratne, S. Karunaratne, D. Balasooriya / *Pristomutilla ianthis* Turner, B. Petersen det., 1980 [NMNH], examined, **syn. n.**; Pagiano *et al*., 2020: 259, ♂.

MATERIAL EXAMINED. Paratype of *Radoszkowskitilla tamila*, ♂, **Sri Lanka**: Trincomalee District: Trincomalee, China Bay, Ridge Bungalow, 25-50 ft, 26.II 1979, K. Krombein, T. Wijesinhe, S. Siriwardane, L. Jayawickrema, T. Gunawardane / *Pristomutilla ianthis* Turner, B. Petersen det., 1980 [IBSS]. Additional material. **Sri Lanka**: Mannar District: Marichchukkaddi, 25.I 1978, 1 ♀ (K. Krombein et al.) NMNH]; 0.8 km NE Kokmotte Bungalow, Wilpattu National Park, 21–25.V 1976, 1 ♀ (K. Krombein, P. Karunaratne, S. Karunaratne, D. Balasooriya) MNH]; same place, 5-8.X 1977, 3 ♀ (K. Krombein et al.) [NMNH]; same place, 15–16.II 1979, 5 ♀ (K. Krombein et al.) [NMNH]. **India**: Karnataka, 15 km N Bangalore, KT, 23–24.VII 1996, 2 ♀ (K. Werner, L. Lorenz) [MZUF, IBSS]. Tamil Nadu, Auroville, 10 km N Pondicherry, 18.III 2007, 1 ♀ (F. Burger) [IBSS], same place, discipline forest, 21.I 2009, 1 ♀ (F. Burger) [IBSS],

DISTRIBUTION. India: Karnataka, *Tamil Nadu; Sri Lanka: Northern Province, North Central Province, Eastern Province,

REMARKS. One male of *Radoszkowskitilla tamila* and one female of *R. ceylonica* were collected in Sri Lanka at the same place and time by the same collectors. I think that they are opposite sexes of the same species and younger name *tamila* is a junior subjective synonym of *ceylonica*.

***Radoszkowskitilla sinhala* Lelej, 2005**

Radoszkowskitilla sinhala Lelej, 2005: 76, 191, ♂, holotype, Sri Lanka, [Kegalla District], Kitulgala, IV 1927 / *Trogaspidia* sp., Petersen det. / Holotype, *Radoszkowskitilla sinhala* Lelej [NMK], examined.

MATERIAL EXAMINED. Holotype only.

DISTRIBUTION: Sri Lanka: Sabaragamuwa Province.

Key to the *Radoszkowskitilla* species

1. Males 2
– Females 4

2. Flagellomere 1 flattened curved, pedicel and flagellomere 1 with tuft of silver setae. 8.0–8.8 mm ..... ***R. ceylonica*** (Lelej)
– Flagellomere 1 not flattened nor curved, pedicel and flagellomere 1 without tuft of silver setae 3
3. Metasoma ferruginous except black T5–T7 and S5–S8. T3–T6 with sublateral spots of golden setae. 7.6–10.8 mm ..... ***R. aulica*** (Smith)
– Metasoma black. T3–T6 posterad with narrow pale fascia. 13.8 mm ..... ***R. sinhala*** Lelej
4. Fore coxa with large lamellate tooth.T2 without medial basal carina, with weak lateral longitudinal carina. Pygidial area sculptured except shiny apical third. Larger species: 7.4–10.4 mm ..... ***R. aulica*** (Smith)
– Fore coxa with acute tubercle. T2 with medial basal carina and extremely developed lateral longitudinal carina. Pygidial area shiny with weakly sculptured basal third. Smaller species: 5.6–7.6 mm ..... ***R. ceylonica*** (Lelej)

Genus *Taiwanomyrme* Tsuneki, 1993

Taiwanomyrme Tsuneki 1993: 44 (as subgenus of *Smicromyrme* Thomson, 1870); Lelej 1995: 2 (as genus), 1996: 6, Lelej & Brothers, 2008: 61; Lelej, 2002: 81; 2005: 76; Tu *et al*., 2015: 588; Pagliano *et al*., 2020: 262.

Type species: *Smicromyrme taiwanus* Tsuneki, 1993, ♂, Taiwan, by original designation (junior subjective synonym of *Mutilla friekae* Zavattari, 1913, ♂).

SPECIES INCLUDED. Six species: *T. friekae* (Zavattari, 1913), ♂ (China: Jiangsu, Zhejiang, Anhui, Fujian, Taiwan); *T. impressus* (Chen, 1957), ♂ (China: Jiangxi, Fujian and Sichuan); *T. impressoides* Tu, Lelej et Chen, 2015, ♂ (China: Zhejiang, Fujian, Hunan); *T. basirufus* (Chen, 1957), ♂, ♀ (China: Zhejiang, Fujian, Jiangxi, Sichuan, Hunan and Yunnan); *T. latisquamula* Tu, Lelej et Chen, 2015, ♀ (China: Guizhou) and *T. cheni* Lelej sp. n. (China: Yunnan).

Taiwanomyrme cheni Lelej, sp. n.

http://zoobank.org/NomenclaturalActs/D0F3F3EF-3C88-4261-A1A2-66C4E11FF7A8

Figs 5–8

MATERIAL EXAMINED. Holotype – ♀, **China**: Yunnan, [CH07-19] Dehong Dai Aut[onomous]. Pref. mount[ain] Range, 31 km E Luxi, 2280 m, 24°29'31" N, 98°52'58" E, second[ary] pine forest with old deciduous trees, litter sifted, 3.VI 2007, A. Pütz [OLML].

DIAGNOSIS. FEMALE. Genal carina distinct, forming tooth at hypostomal carina junction. Scutellar scale narrow, T2 anteriorly with a pair of transversely arranged, circular spots of silver setae, T2 apical band of black setar medially expanded. T3 with interrupted medially band of dense silver setae. Pygidial area carinated laterally, glabrous shiny. Body black; mesosoma laterally, coxae, femora, T2 except posterior band, S2 except posterior band ferruginous-red. MALE unknown.

DESCRIPTION. FEMALE. Body length 7.8 mm. Ratio of head width and pronotal maximal width 98:85. Ratio of mesosoma length and pronotal maximal width

125:85. Mandible bidentate, not excised beneath. Clypeus anteriorly transversely concave, smooth and shiny, posteriorly subtriangular, elevated and punctate, with median tubercle. Antennal tubercle carinate above; first flagellomere 1.2 × as long as its maximal width, 1.4 × as long as flagellomere 2. Genal carina distinct, forming tooth at hypostomal carina junction. Frons, vertex and gena with dense coarse punctures. Humeral angle of mesosoma prominent. Ratios of width at humeral angle, widest point of pronotum, anterior spiracle, propodeal spiracle and widest point of propodeum 80:85:80:70:80. Scutellar scale narrow. Mesosoma dorsally and posterior propodeal face with coarse dense confluent punctures. Pleuron smotth, propodeum laterally with a few shallow punctures. Lateral and posterior propodeal faces separated by wavy subdentate carina. Legs with sparse suberect whitish and black setae. Meso- and metatibia each with two rows of 4–5 fuscous spines. Metatibiotarsal ratios of 90:40:25:18:10:18. T1 with elongate shallow sparse punctures. T2 with separate punctures, posteriorly denser. T3–T5 with fine dense small punctures. S1 with simple longitudinal carina. S2 with sparse large punctures. S3–S5 posteriorly with fine dense confluent punctures. Pygidial area carinate laterally, glabrous shiny.

Colour and setation. Body black, mesosoma laterally, coxae, femora, T2 except posterior band, S2 except posterior band ferruginous-red. Mandible, antennae, mesosoma ventrally tinted reddish. Tibial spurs reddish. Frons and vertex with sparse suberect and erect black setae; gena with sparse recumbent greyish setae. Mesosoma dorsally and posterior propodeal face with sparse suberect fuscous to black setae. Pleuron and propodeum laterally with pale yellow recumbent micropubescence. T1 and T6 with long, sparse erect greyish to black setae. T2 anteriorly with a pair of bilateral circular spots of pale yellow setae, ratios of spot diameter, spot interspace and longitudinal eye diameter 20:40:40, posteriorly with medially widened band of black setae. Felt line on T2 rufous. T3 with interrupted medially band of dense silver setae. T4 and T5 with erect black setae. All metasomal sterna with sparse whitish setae, which form apical fringe on S2 and S3.

DISTRIBUTION. China (Yunnan).

REMARKS. The female of this new species is similar to that of *T. basirufus* (Chen, 1957), but differs by having interrupted medially band of silver setae on T2 (non interrupted band in *T. basirufus*) by narrower mesosoma before propodeal spiracles (0.82 × maximal mesosomal width in *T. cheni vs*. 0.90 × in *T. basirufus*).

ETYMOLOGY. The specific name is dedicated to Prof. Chen Xue-xin for his contribution to the study of Chinese Mutillidae.

Key to the species of *Taiwanomyrme* (females)

1. Pronotum laterally (dorsal view) with two blunt tubercles. Scutellar scale very small, pointed. Pygidial area smooth 2
– Pronotum laterally (dorsal view) with two sharp tubercles. Scutellar scale wide, V-shaped. Pygidial area microstriate ..... ***T. latisquamula*** Tu, Lelej et Chen
2. T2 with interrupted medially band of silver setae. Mesosomal width before propodeal spiracles 0.82 × maximal mesosomal width ..... ***T. cheni*** Lelej, sp. n.
– T2 with non interrupted band of silver setae. Mesosomal width before propodeal spiracles 0.90 × maximal mesosomal width ..... ***T. basirufus*** (Chen)

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