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## **A review of the genus *Dexia* Meigen in the Palearctic and Oriental Regions (Diptera: Tachinidae)**

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## Abstract

The Palearctic and Oriental species of the genus *Dexia* Meigen are revised. Thirty-one described species are recognized as valid, viz. *D. atripes* (Malloch), *D. basifera* Walker, *D. bivittata* Townsend, *D. caldwelli* Curran, *D. divergens* Walker, *D. extendens* Walker, *D. flavida* (Townsend), *D. flavipes* Coquillett, *D. fraseri* (Malloch), *D. fulvifera* Röder, *D. fusiformis* Walker, *D. gilva* Mesnil, *D. hainanensis* Zhang, *D. lepida* Wiedemann, *D. longipennis* (Townsend), *D. longipes* (Townsend), *D. luzonensis* (Townsend), *D. major* (Malloch), *D. maritima* Kolomiets, *D. montana* (Baranov), *D. monticola* Malloch, *D. rustica* (Fabricius), *D. seticincta* Mesnil, *D. subnuda* (Malloch), *Dexia sumatrensis* (Townsend, 1926), status nov. (originally described as *Eomyoceropsis sumatrensis* Townsend, 1926 and here removed from synonymy with *D. fulvifera*), *D. vacua* (Fallén), *D. velutina* (Mesnil), *D. ventralis* Aldrich, *D. vicina* (Mesnil), *D. violovitshi* Kolomiets and *D. vittata* (Baranov). Five species are described as new to science: *D. alticola* Zhang et Shima, **sp. nov.**, *D. chaoi* Zhang et Shima, **sp. nov.**, *D. chinensis* Zhang et Chen, **sp. nov.**, *D. kurahashii* Zhang et Shima, **sp. nov.**, and *D. tenuiforceps* Zhang et Shima, **sp. nov.** Some species are newly recorded from Japan and Southeast and South Asian countries. A key to 36 species of *Dexia* is given and 96 diagnostic figures of the male terminalia are included.

**Key words:** Diptera, Tachinidae, *Dexia*, new species, key, Palearctic, Oriental

## Introduction

*Dexia* Meigen, 1826 is a large genus in the tribe Dexiini (Tachinidae: Dexiinae), and is almost exclusively distributed in the Old World (the only exception being *Dexia ventralis* Aldrich, which is present in the New World by introduction). Crosskey (1976, 1980) recognized 23 species of *Dexia* from the Oriental Region and 12 from the Afrotropical Region. The Palearctic *Dexia* were well studied by Mesnil (1980), who recognized nine species from the region. He classified *Dexia* into seven subgenera, *Scotiptera* Macquart, *Dexia* s. str., *Eomyocera* Townsend, *Sumatrodexia* Townsend, *Calotheresia* Townsend, *Eoptilodexia* Townsend and *Phasiodexia* Townsend. Among these, South American *Scotiptera* Macquart is not included in this study because it appears to have different male terminalia as discussed below; i.e., the distal membranous portion of the distiphallus is longer than the basal sclerotized portion. Guimarães (1971) and Barraclough (1992) treated *Scotiptera* as an independent genus in the Neotropical Region, because it “differs most markedly from Old World *Dexia* by having reduced ocellar setae and a black abdomen with 6 tergal spots” Barraclough (1992: 1146). Herting (1984) and Herting and Dely-Draskovits (1993) cataloged 11 species of *Dexia* from the Palearctic Region. Although Palearctic species of *Dexia* are rather well studied, a number of species have been published in scattered literature from the Oriental Region and consequently it is virtually impossible to identify *Dexia* from the entire area encompassing the Palearctic and Oriental Regions, particularly species in the eastern Palearctic and East Asia. It is therefore difficult to study the phylogenetic relationships of the Palearctic and Oriental species.

*Dexia* as here defined is almost the same as that of Crosskey (1976), Mesnil (1980), Barraclough (1992) and Tschorsnig and Richter (1998). The species of *Dexia* have in common a yellowish head with parafacial bare, facial carina well developed, arista plumose, second costal sector of the wing hairy ventrally, abdominal syntergite 1+2 medially excavate to posterior margin or virtually so, tergites 3 to 5 usually with discal setae, male terminalia with pregonite short and bent posteriorly, distiphallus long, sclerotized basal part longer than membranous apical part.

We examined a large number of type specimens and other specimens of *Dexia* from the Palearctic and Oriental Regions and recognized 31 previously described species from both regions. Five new species are described and some species are newly recorded from Japan, and from Southeast and South Asian countries. A key to 36 species of *Dexia* from the Palearctic and Oriental Regions is given along with species distributions and 96 diagnostic figures. We found that *D. atripes* (Malloch), *D. basifera* Walker, *D. bivittata* (Townsend), *D. divergens* Walker, *D. fulvifera* Röder, *D. fusiformis* Walker, and *D. kurahashii* Zhang et Shima **sp. nov.** are distributed in Lombok or Sulawesi (= Celebes) in Indonesia or Mindanao in the Philippines, but *Dexia* is absent from New Guinea and Pacific Islands. Our results support Barraclough’s (1992) conclusion that the eastern limit of *Dexia* appears to coincide exactly with Weber’s Line. We do not adopt the subgeneric

classification of Mesnil (1980), since it does not appear to be applicable for many Oriental and Palearctic species based on characters used in his classification.

The 1st instar larvae of *Dexia* species have a pair of long setae on the tip of abdominal segment VIII that is much longer than the spiracle-bearing processes (Richter & Farinets 1983, and our observations). Perhaps it is a diagnostic character of *Dexia* that separates it from other genera of Dexiini. *Dexia* species are parasitic on larvae of Scarabaeidae (Coleoptera) in soil; females lay fully incubated eggs in the vicinity of hosts and newly hatched 1st instar larvae actively search for hosts (Herting 1960; Mesnil 1980). East Asian *D. ventralis* Aldrich was introduced into New Jersey, USA for biocontrol of the Japanese beetle and established there (Sabrosky & Arnaud 1965; Arnaud 1978). Hosts of *D. rustica* and *D. vacua* have been recorded from Europe (Tschorsnig & Herting 1994), and a host of *D. ventralis* is newly recorded from China.

## Material and methods

This study was based on over one thousand specimens in Biosystematics Laboratory, Kyushu University, Fukuoka, Japan (BLKU), Institute of Zoology, Chinese Academy of Sciences, Beijing, China (IZCAS) and Shenyang Normal University, Shenyang, China (SNU). Additional specimens were examined from the following collections:

BMNH	Natural History Museum, London, UK
BPBM	Bishop Museum, Honolulu, Hawaii, USA
CAU	Insect Collection, China Agricultural University, Beijing, China
CNC	Canadian National Collection of Insects, Ottawa, Canada
DEI	Deutsches Entomologisches Institut, Müncheberg, Germany
RMNH	National Natuurhistorisch Museum Naturalis [formerly Rijksmuseum van Natuurlijke Historie], Leiden, Netherlands
SEMC	Shanghai Entomological Museum, Chinese Academy of Sciences, Shanghai, China
SMNH	Swedish Museum of National History, Stockholm, Sweden
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany
SMT	Staatliches Museum für Tierkunde, Dresden, Germany
SYU	Biological Museum of Sun Yat-Sen University, Guangzhou, China
USNM	National Museum of Natural History, Smithsonian Institution, Washington, USA
ZMU	Zoological Museum of the University, Helsinki, Finland
ZMUA	Zoological Museum of Amsterdam University, Amsterdam, Netherlands

Terminology of the male terminalia follows Sinclair (2000) and that of other structures follows McAlpine (1981). Measurements were taken as follows: the width of the frons was measured at the narrowest point between inner margins of the eyes in comparison with the width of the head in dorsal view (Tschorsnig & Richter 1998). The parafacial was measured at mid-height and the gena height in comparison with the eye height in lateral view. The pedicel and 1st flagellomere were measured in lateral view. Dissected male terminalia were preserved in glycerine in small plastic tubes pinned together with the specimens. Drawings were done using an Olympus SD–STB3 and SZ series stereoscopic microscope equipped with an ocular micrometer. Newly recorded distributions are marked with an asterisk (\*).

## Taxonomy

### Genus *Dexia* Meigen, 1826

*Dexia* Meigen, 1826: 33. Type species: *Musca rustica* Fabricius, 1775: 777, by designation under Plenary Powers of ICZN, 1988: 74 [Palearctic]. — Robineau-Desvoidy 1830: 311. — Macquart 1834: 190, 1835: 211. — Zetterstedt 1859: 6173. — Robineau-Desvoidy 1863b: 384. — Brauer & Bergenstamm 1889: 120 (key), 1893: 174. — Wulp

- 1896: 138. — Pandellé 1896: 152. — Coquillett 1910: 532 (type species of *Dexia* and *Dexilla*). — Stein 1924: 237. — Lundbeck 1927: 268. — Curran 1927: 103 (key and descriptions). — Townsend 1936: 11, 274 (diagnosis of *Dexiini*, including *Dexia*). — Emden 1954: 30 (key). — Herting 1960: 125 (biology). — Zimin *et al.* [1969] 1988: 1273 (key). — Kolomiets 1970: 53 (redescription). — Crosskey 1976: 45, 177 (*Dexia* of usage and catalog). — Crosskey 1977: 601 (catalog). — Mesnil 1980: 38 (Palearctic *Dexia*, with *Dexilla* in synonymy). — Dear & Crosskey 1982: 115 (key). — Richter & Farinets 1983: 813 (key to larvae). — Herting 1984: 143 (catalog). — Crosskey *et al.* 1986: 282 (proposed type species designation for *Dexia*). — Shima 1989: 869 (list). — Chao & Liang 1992: 805 (key). — Herting & Dely-Draskovits 1993: 365 (catalog). — Tschorsnig & Herting 1994: 14, 80, 156 (key and notes). — Chao *et al.* 1998: 2154 (notes). — Ziegler & Shima 1996: 429 (checklist). — Tschorsnig & Richter 1998: 737 (Palearctic key). — Ziegler 1998: 29, 101, 164–165, 185 (larvae and puparia). — Sabrosky 1999: 109 (family-group names). — Richter 2004: 355 (key). — Zhang & Shima 2004: 49 (Chinese *Dexia*). — Zhang *et al.* 2004: 127 (checklist). — Zhang *et al.* 2005: 304 (list). — O'Hara *et al.* 2009: 28 (catalog). — Chao *et al.* 2009: 575 (fauna).
- Dexilla* Westwood, 1840: 140. Type species: *Musca rustica* Fabricius, 1775, by original designation. — Townsend 1938: 276 (redescription). — Crosskey 1967: 107.
- Ida* Robineau-Desvoidy, 1863b: 389. Type species: *Ida petiolata* Robineau-Desvoidy, 1863 (= *Musca rustica* Fabricius, 1775), by monotypy. Preoccupied by Jay 1836. — Bezzi & Stein 1907: 445 (as syn. of *Dexia*). — Herting 1974: 40 (as syn. of *Dexia*). — Mesnil 1980: 38. — Evenhuis *et al.* 2010: 93.
- Phasiodesia* Townsend, 1925: 250. Type species: *Plasiodesia flavida* Townsend, 1925, by original designation. — Crosskey 1967: 96 (as syn. of *Dexilla*). — Crosskey 1976: 178 (as syn. of *Dexia*). — Mesnil 1980: 39 (as subgenus of *Dexia*).
- Sumatrodexia* Townsend, 1926a: 26. Type species: *Sumatrodexia brevisrostris* Townsend, 1926 (= *Dexia extendens* Walker, 1856), by original designation. — Baranov 1932: 213. — Crosskey 1967: 96 (as syn. of *Dexilla*). — Crosskey 1976: 177 (as syn. of *Dexia*). — Mesnil 1980: 39 (as subgenus of *Dexia*).
- Calotheresia* Townsend, 1926a: 29. Type species: *Calotheresia sumatrensis* Townsend, 1926 (= *Dexia fulvifera* Röder, 1893), by original designation. — Baranov 1932: 213. — Crosskey 1967: 96 (as syn. of *Dexilla*). — Crosskey 1976: 178 (as syn. of *Dexia*). — Mesnil 1980: 39 (as subgenus of *Dexia*).
- Eomyoceropsis* Townsend, 1926a: 29. Type species: *Eomyoceropsis longipennis* Townsend, 1926, by original designation. — Baranov 1932: 213. — Crosskey 1967: 96 (as syn. of *Dexilla*). — Crosskey 1976: 178 (as syn. of *Dexia*).
- Eoptilodexia* Townsend, 1926b: 535. Type species: *Eoptilodexia longipes* Townsend, 1926, by original designation. — Baranov 1932: 213. — Crosskey 1967: 96 (as syn. of *Dexilla*). — Crosskey 1976: 177 (as syn. of *Dexia*). — Mesnil 1980: 39 (as subgenus of *Dexia*).
- Eomyocera* Townsend, 1926b: 537. Type species: *Eomyocera carinata* Townsend, 1926, by original designation. — Baranov 1932: 213. — Malloch 1935: 581. — Crosskey 1967: 96 (as syn. of *Dexilla*). — Crosskey 1976: 177 (as syn. of *Dexia*). — Mesnil 1980: 39 (as subgenus of *Dexia*).
- Asbellopsis* Townsend, 1928: 378. Type species: *Asbellopsis luzonensis* Townsend, 1928, by original designation. — Crosskey 1976: 178 (as syn. of *Dexia*).
- Barydexia* Townsend, 1928: 379. Type species: *Barydexia bivittata* Townsend, 1928, by original designation. — Baranov 1932: 213 — Crosskey 1976: 178 (as syn. of *Dexia*).
- Calotheresiopsis* Baranov, 1932: 214. Type species: *Calotheresiopsis orientalis* Baranov, 1932 (= *Dexia basifera* Walker, 1859), by original designation. — Crosskey 1967: 96 (as syn. of *Dexilla*). — Crosskey 1976: 178 (as syn. of *Dexia*).
- Dexillina* Kolomiets, 1970: 57 (as subgenus of *Dexia*). Type species: *Musca vacua* Fallén, 1817, by original designation. — Crosskey 1976: 178.
- Dexillosa* Kolomiets, 1970: 57. Type species: *Dexia (Dexillosa) amurensis* Kolomiets, 1970 (= *Dexia fulvifera* Röder, 1893), by original designation. — Crosskey 1976: 178. — Mesnil 1980: 38.

**Diagnosis.** Facial carina usually developed; parafacial wide; gena broad, about as high as length of antennal pedicel and 1st flagellomere combined; eye bare; arista long plumose; proepisternum usually bare; second costal sector of wing hairy ventrally; legs elongate, mid tibia usually with 1 (male) or 2 (female) anterodorsal setae; abdomen usually broadly yellowish, abdominal syntergite 1+2 medially excavate to its hind margin; male terminalia with surstyli usually narrow and pointed apically or sometimes bluntly rounded at apex; pregonite short and bent posteriorly, distiphallus long plate-like, sclerotized basal part longer than membranous apical part.

**Generic description. Head.** Sexually dimorphic; frons usually less than 1/7 of head width in male, more than 1/3 of head width or eye width in female; parafacial bare, 1.5–3 times as wide as 1st flagellomere; facial carina developed, usually high, long and pointed on ridge; gena broad, higher than length of antenna or 1/3 eye height; lower margin of face slightly protruding forward. Inner vertical seta 0.3–0.4 times as long as eye height, outer vertical seta hair-like; ocellar seta strong; frontal setae descending at most to level of upper

margin of pedicel; fronto-orbital plate at most with some short and fine hairs on inner portion; prevertical and orbital setae absent in male, 1 prevertical and 2 proclinate orbital setae present in female; vibrissa inserted above lower margin of face; upper occiput with several black hairs behind postocular setae. Antenna with 1st flagellomere 2–5 times as long as wide or at most as long as genal height; arista plumose, total width including plumosity 2–4 times as wide as 1st flagellomere. Prementum 2.5–6.0 times as long as wide. Palpus usually developed, slender, not inflated, rarely very small. Eye bare.

**Thorax.** Broadly brown-black in ground color, scutellum usually reddish yellow; scutum with reddish yellow to yellowish white pruinosity, four brownish longitudinal black vittae present on scutum, sometimes inner and outer vittae merged to form 2 broad vittae. Prosternum bare, usually twice as long as wide, in *D. flavipes* sometimes with 1–4 hairs; proepisternum usually bare, rarely haired; postpronotal lobe with 2–3 setae, if 3 then arranged in a straight line; 0–2 presutural and 1–2 postsutural acrostichal setae; 2–3 presutural and 3 (rarely 4) postsutural dorsocentral setae; 1–3 postsutural intra-alar setae; 2–3 postsutural supra-alar setae, 1st one distinctly shorter than notopleural seta; scutellum with 3 pairs of marginal and 1 pair of discal setae; 2 or 3 katepisternal setae; katepimeron bare or hairy. Anterior and posterior lappets of posterior thoracic spiracle unequal in size; posterior lappet larger and subcircular. Anatergite bare below lower calypter. **Wing** pale brownish hyaline, sometimes brown or dark tinged; lower calypter yellowish or milky white or brown, with short or long fringe on outer margin. Costagial seta undeveloped; costal spine present or absent; second costal sector always with fine hairs ventrally; basal node of vein  $R_{4+5}$  with 2–3 hairs on dorsal and ventral surfaces; vein M at bend nearly right-angled, appendix short, at least as long as half of crossvein r-m; cell  $R_{4+5}$  narrowly open. Lower calypter large, yellowish or white, bare on dorsal surface, with long or short fringe on outer margin. **Legs** long and slender, inner anterior surface of fore coxa bare or predominantly bare; fore tarsi distinctly longer than head height, tarsi and claws black, pulvilli yellowish, fore claws and pulvilli longer than or equal to tarsomere 5 in male, and shorter than tarsomere 5 in female; fore tibia with a row of short anterodorsal setae on basal 2/3 and 2 posterior setae; mid tibia usually with 1 (male) or 2 (female) anterodorsal setae, 2–3 posterodorsal and 1 ventral setae; hind tibia with 2–4 anterodorsal, 1–3 posterodorsal and 2–3 ventral setae, 2 preapical dorsal and 2 apical ventral setae.

**Abdomen.** Syntergite 1+2 always medially excavated to its posterior margin; tergites 3 to 5 of male usually with 1–2 pairs of median discal setae, females usually without them; tergite 3 usually with 2 median marginal setae, tergites 4 and 5 each with a row of marginal setae. Abdominal sternites concealed beneath margins of tergites. **Male terminalia.** V-shaped median cleft of sternite 5 deep and wide, posterior lobe blunt apically; cerci long and pointed at apex; surstylus slender, narrow and pointed apically or bluntly rounded at apex; pregonite short, slightly bent posteriorly; postgonite as long as or shorter than basiphallus; distiphallus long, flat and plate-like, with spinules on ventral membranous surface, membranous apical part shorter than sclerotized basal part.

**Distribution.** *Dexia* species are found in the Oriental, Palearctic and Afrotropical Regions of the Old World. Land distribution pattern: *Dexia alticola*, *D. caldwelli*, *D. chaoi*, *D. chinensis*, *D. fraseri*, *D. maritima*, *D. rustica*, *D. tenuiforceps*, *D. vacua*, *D. ventralis* and *D. violovitshi* are distributed in parts of Eurasia. *Dexia flavida* perhaps extended to islands from Asian mainland. Island distribution pattern: *Dexia atripes*, *D. basifera*, *D. bivittata*, *D. fusiformis*, *D. hainanensis*, *D. kurahashii*, *D. lepida*, *D. longipes*, *D. longipennis*, *D. luzonensis*, *D. major*, *D. montana*, *D. seticincta*, *D. subnuda*, *D. sumatrensis*, *D. velutina*, *D. vicina* and *D. vittata* are only distributed on islands of China, Indonesia, Malaysia and Philippines. *Dexia divergens*, *D. extendens*, *D. flavipes*, *D. gilva* and *D. monticola* perhaps extended to Asian mainland from above islands. Wide Palearctic-Oriental distribution pattern: *Dexia fulvifera* is distributed from Sri Lanka to Japan, NE China and Russian Far East.

**Remarks.** It is usually difficult to define the genera of Dexiini on the basis of diagnostic characters and *Dexia* is not an exception. *Dexia* is distinguished from other similar genera by a combination of characters, as given in the diagnosis above. Most of these characters are usually found in other genera of Dexiini. One character state, the long basal sclerotized part in comparison with distal membranous part of the distiphallus, appears to be a synapomorphy of *Dexia*, although it may occur in a few other genera of Dexiini as a homoplasy.

*Dexia* is most similar to *Philippodexia* Townsend in the Oriental Region in having a yellowish head with arista plumose, and abdominal syntergite 1+2 always medially excavated to its posterior margin; but the latter genus has a bare ventral second costal sector of the wing, pregonite long and bent posteriorly, and sclerotized basal part of distiphallus shorter than membranous apical part.

### Key to species of *Dexia* of the Palearctic and Oriental Regions

1. Costal spine absent or very small, if present then less than 1/3 length of r-m crossvein; thoracic scutum usually with 2 broad longitudinal black vittae..... 2
  - Costal spine usually more than twice as long as costal setae, rarely short, but distinct and more than 1/2 length of r-m crossvein; thoracic scutum usually with 2 outer and 2 inner longitudinal black vittae, inner and outer vittae sometimes merged on postsutural scutum..... 8
2. Three katapisternal setae; abdominal tergites 4 and 5 with median discal setae in male ..... 3
  - Two katapisternal setae; abdominal tergites with or without discal setae..... 5
3. Proepisternum bare; prementum more than 3/5 as long as eye height; base of vibrissa with or without sparse pruinosity; legs black; abdomen reddish yellow, with a narrow mid-dorsal longitudinal black vitta ..... 4
  - Proepisternum haired; prementum about 1/2 as long as eye height; base of vibrissa with pruinosity; legs yellow; abdomen broadly translucent reddish yellow with a broad mid-dorsal longitudinal black vitta and faint brownish markings on sides of each tergite..... *D. caldwelli* Curran
4. Wing tinged with pale brown basally and dark brown medially; lower calypter with short fringe .....
  - .....*D. fusiformis* Walker
  - Wing weakly tinged with yellow basally, pale brown anteriorly and medially; lower calypter with long fringe .....
    - .....*D. bivittata* (Townsend)
5. Abdomen with median discal setae on tergites 3 to 5 in male, broadly translucent yellow with broad longitudinal black vitta and faint pale brownish spot on posterolateral portion of each tergite; legs reddish yellow except tarsi and claws, at most narrowly darkened on apices of femora and very weakly on tibiae; lower calypter with short fringe. 6
  - Abdominal tergites without median discal setae, yellow, more or less dark brown on posterior margin of each tergite and mid dorsal longitudinal portion; legs with distal portion of femora and basal and distal portions of tibiae more or less darkened; lower calypter with long or short fringe..... 7
6. Scutellum with a pair of fine discal setae; abdominal tergites 4 and 5 wholly covered with grayish white pruinosity; proepisternum bare or hairy; palpus shorter than 1st flagellomere..... *D. montana* (Baranov)
  - Scutellum without discal setae; abdominal tergites 4 and 5 covered with very thin silvery white pruinosity on dorsum, dense on sides of tergite 5; proepisternum with a few black hairs; palpus at least as long as 1st flagellomere .....*D. vittata* (Baranov)
7. Thoracic pleura with pale hairs at least on lower portion of katapisternum and anepimeron; 3 supra-alar setae, anterior seta shifted outward; palpus slightly longer than pedicel and 1st flagellomere combined; distal portion of femora and basal and distal portions of tibiae darkened; longitudinal black vitta on thoracic scutum usually separated into broad outer and narrow inner vittae on presutural area; lower calypter with short fringe on outer margin .....
  - .....*D. major* (Malloch)
  - Thoracic hairs all black; 2 supra-alar setae, if 3, then anterior seta only slightly shifted outward; palpus shorter than combined length of pedicel and 1st flagellomere; femora mostly reddish yellow, distal portion weakly darkened, tibiae weakly darkened; thoracic scutum with 2 broad longitudinal black vittae; lower calypter with long fringe .....
    - ..... *D. extendens* Walker
8. Femora dark brown to black; lower calypter usually with short fringe; thoracic scutum with 4 dark longitudinal vittae, though sometimes darkened on area between inner and outer vittae..... 9
  - Femora yellow to reddish brown, if darkened then lower calypter with long fringe..... 17
9. Three katapisternal setae; wing at most evenly and rather weakly tinged with pale brown ..... 10
  - Two katapisternal setae; wing with distinct markings on anterior portion ..... 13
10. Prementum about 6 times as long as wide; wing at most evenly and rather weakly tinged with pale brown; syntergite 1+2 with 1 pair of median marginal setae..... 11
  - Prementum 3–4 times as long as wide; wing with distinct markings on anterior portion; syntergite 1+2 without median marginal setae..... 12
11. Thoracic pleura, abdominal sternite 1 and mid ventral portion of syntergite 1+2 with yellowish white hairs; 2 presutural dorsocentral setae; costal spine shorter than 1/2 length of crossvein r-m; abdomen with narrow mid dorsal



- longitudinal black vitta ..... *D. longipes* (Townsend)
- Thorax and abdomen with black hairs; 3 presutural dorsocentral setae; costal spine about as long as crossvein r-m; abdomen with a dark triangular marking on posteromedian portion of each tergite ..... *D. kurahashii* Zhang et Shima **sp. nov.**
12. Antenna dark brown except reddish yellow on basal 1/2–1/3 of 1st flagellomere; 3 supra-alar setae, 1st seta fine and shifted outward..... *D. chaoi* Zhang et Shima **sp. nov.**
- 1st flagellomere reddish yellow, pedicel reddish brown; 2 supra-alar setae..... *D. chinensis* Zhang et Chen **sp. nov.**
13. Thoracic scutum with 2 broad black vittae; wing pale yellowish basally and dark brownish anteriorly and medially ..... 14
- Thoracic scutum with 2 narrow inner and 2 broad outer vittae, inner and outer vittae sometimes merged on median portion; wing only weakly and evenly tinged with pale brown ..... 16
14. Proepisternum bare ..... 15
- Proepisternum hairy ..... *Dexia vicina* (Mesnil)
15. Scutellum with silvery white pruinosity; alula and lower calypter white; frons about 1/5 head width in male, 2/7 in female ..... *Dexia veltina* (Mesnil)
- Scutellum with pale yellowish white pruinosity; alula and lower calypter pale yellowish; frons about 1/7 head width in male, slightly more than 1/4 in female ..... *Dexia atripes* (Malloch)
16. Costal spine short, about 1/2 as long as r-m crossvein; frons 0.17–0.20 times as wide as head width in male, 0.33 times in female; male abdomen with 2 pairs of median discal setae on tergites 3 and 4; usually 1 presutural and 1–2 postsutural acrostichal setae ..... *Dexia fulvifera* Röder
- Costal spine strong, at least as long as r-m crossvein; frons 0.13–0.2 times as wide as head width in male, 0.31–0.34 times in female; abdominal tergites 3 and 4 of male each with 1 pair of median discal setae; usually 0 presutural and 1 postsutural acrostichal setae..... *Dexia sumatrensis* (Townsend)
17. Lower calypter with short fringe on outer margin; usually 3 katepisternal setae ..... 18
- Lower calypter with long fringe on outer margin; 2 katepisternal setae..... 22
18. Two katepisternal setae; 2 presutural dorsocentral setae; abdominal sternite 1 with pale yellowish hairs ..... *D. basifera* Walker
- Three katepisternal setae; 2–3 presutural dorsocentral setae; abdominal sternite 1 with black hairs ..... 19
19. Two presutural dorsocentral setae; abdominal syntergite 1+2 without median marginal setae..... 20
- Three presutural dorsocentral setae; abdominal syntergite 1+2 with or without 2 median marginal setae..... 21
20. Thoracic scutum with 4 longitudinal black vittae, inner vittae almost subequal on postsutural scutum; abdomen dark brown on mid dorsal longitudinal portion of syntergite 1+2 to tergite 5, posterior 1/4 of tergite 3 and 1/3 of tergite 4, with dense pale yellowish pruinosity on anterior 1/5 of tergite 3 and entire tergites 4 and 5..... *D. fraseri* (Malloch) (female)
- Thoracic scutum with 4 narrow longitudinal vittae, 2 black inner vittae merged and forming a dark transverse band on anterior 2/5 of postsutural scutum; abdomen almost without pruinosity, tergite 3 with a large triangular black marking extending to lateral margins on posterior portion, tergites 4 and 5 each with a dark median longitudinal stripe and 2 brown lateral spots..... *D. flavida* (Townsend)
21. 1st flagellomere about twice as long as pedicel; abdominal syntergite 1+2 without median marginal setae; body with dense yellowish pruinosity..... *D. rustica* (Fabricius)
- 1st flagellomere about 4 times as long as pedicel; abdominal syntergite 1+2 with 1 pair of median marginal setae; tergites 4 and 5 with thin grayish white pruinosity on entire dorsum..... *D. tenuiforceps* Zhang et Shima **sp. nov.**
22. Two presutural and 3 postsutural dorsocentral setae..... 23
- Three presutural and 3–4 postsutural dorsocentral setae ..... 24
23. Postpronotal lobe reddish in ground color; thorax with yellowish pruinosity; scutellum reddish yellow except dark brown on basal 1/3; abdominal tergites 3 and 4 each with one pair of median discal setae in male, female without discal setae ..... *D. longipennis* (Townsend)
- Postpronotal lobe black; thoracic scutum and pleura with grayish white pruinosity; scutellum dark brown; abdominal tergites 3 and 4 each with 2 pairs of discal setae in male, female without discal setae..... *D. monticola* (Malloch)
24. Four postsutural dorsocentral setae; abdominal tergite 3 with a complete row of marginal setae; gena about 0.47 times as wide as eye height in male; postpronotal lobe black ..... *D. seticincta* Mesnil
- Three postsutural dorsocentral setae; abdominal tergite 3 usually with 1 pair of median marginal and 1–2 lateral marginal setae ..... 25

25. Prosternum narrow, 3–4 times as long as wide.....*D. violovitshi* Kolomiets  
 - Prosternum 2–2.5 times as long as wide..... 26
26. Antenna wholly reddish yellow ..... 27  
 - 1st flagellomere blackish brown on apical half, reddish yellow on basal half .....*D. alticola* Zhang *et* Shima **sp. nov.**
27. Abdominal tergite 3 without median discal setae in both sexes, tergite 4 rarely with short and fine discal setae; abdomen with dense yellowish white pruinosity on anterior 1/5 of tergite 3, 2/5 of tergite 4 and 1/2 of tergite 5 .....  
 ..... *D. luzonensis* (Townsend)  
 - Either or both abdominal tergites 3 and 4 with median discal setae in both sexes, if female lacking discal setae, then abdomen more or less with pruinosity on narrow anterior portion of tergites 3 or 4 and anterior portion of tergite 5 ..  
 ..... 28
28. Abdomen with dense yellowish pruinosity at least on anterior 1/4 of tergite 3, 1/2 of tergite 4; tegula reddish to brown, sometimes dark ..... 29  
 - Abdomen with thin yellowish pruinosity only on narrow anterior margin of tergites 3 and 4; tegula usually black or dark brown ..... 32
29. Palpus shorter than 1st flagellomere ..... 30  
 - Palpus subequal in length to, or longer than 1st flagellomere ..... 31
30. Frontal vitta wider than or subequal in width to fronto-orbital plate at middle; black inner vitta of thoracic scutum 1/2–1/3 as wide as pruinose portion between inner and outer vittae; head and thorax with dense yellowish pruinosity; tegula reddish to brown; abdomen with dense yellowish pruinosity on anterior 1/3 of abdominal tergite 3, 1/2 of tergite 4 and 4/5 of tergite 5 ..... *D. gilva* Mesnil  
 - Frontal vitta narrower than fronto-orbital plate at middle; black inner longitudinal vitta of thoracic scutum 1/3–1/4 as wide as pruinosity portion between inner and outer vittae; head and thorax with dense pale yellowish white pruinosity; tegula reddish yellow; abdominal tergites 3 to 5 each with rather thin yellowish white pruinosity on anterior 1/3–1/5 ..... *D. flavipes* Coquillett
31. Thoracic scutum with 4 very narrow dark longitudinal vittae; scutellum with sparse pruinosity; tegula yellowish brown, basicosta brown..... *D. maritima* Kolomiets (female)  
 - Thoracic scutum with 4 wider dark longitudinal vittae; scutellum with dense grayish yellow pruinosity; tegula reddish yellow or reddish brown on basal half and dark brown on apical half ..... 32
32. Gena 0.45–0.49 times as wide as eye height in male, 0.59 in female; tegula reddish yellow to dark brown; abdomen of male at most with rather dense yellowish pruinosity on anterior 1/2 of each tergite; palpus subequal in length to pedicel and 1st flagellomere combined..... *D. ventralis* Aldrich  
 - Gena about 0.4 times as wide as eye height in male, 0.52 in female; tegula usually reddish yellow; abdominal dorsum almost entirely with grayish white pruinosity in male, sometimes broadly bare on posterior sides of tergite 3 and narrow posterior margins of tergites 3 and 4, about anterior 1/2 or more of each tergite in female; palpus about as long as 1st flagellomere ..... *D. vacua* (Fallén)
33. Abdominal syntergite 1+2 with 1 pair of median marginal setae in male; tergite 5 with grayish white pruinosity on anterior 1/4, 1/2 on side; 1 presutural and 2 postsutural acrostichal setae..... *D. lepida* Wiedemann  
 - Abdominal syntergite 1+2 without median marginal seta in male; grayish white pruinosity on anterior 1/3 of tergite 5 ..... 34
34. Tibiae brown; abdominal tergite 5 brown or dark brown; female with 1 pair of median discal setae only on abdominal tergite 3.....*D. subnuda* (Malloch)  
 - Tibiae reddish yellow; female with 1 pair of median discal setae on abdominal tergites 3 and 4; tergite 5 broadly reddish yellow in male, darkened at most on basal 1/2 in female, with whitish pruinosity on anterior 1/3..... 35
35. Abdominal tergite 3 with 1 pair of marginal and 1–2 lateral marginal setae in both sexes; an inner vitta of thoracic scutum about 1/2 as wide as pruinose portion between inner and outer vittae; tegula dark brown, sometimes reddish brown, broadly pale yellowish on basal 1/2..... *D. divergens* Walker  
 - Abdominal tergite 3 with a complete row of marginal setae in both sexes; an inner vitta of thoracic scutum 1/3–1/4 pruinose portion between inner and outer vittae; tegula wholly dark brown..... *D. hainanensis* Zhang

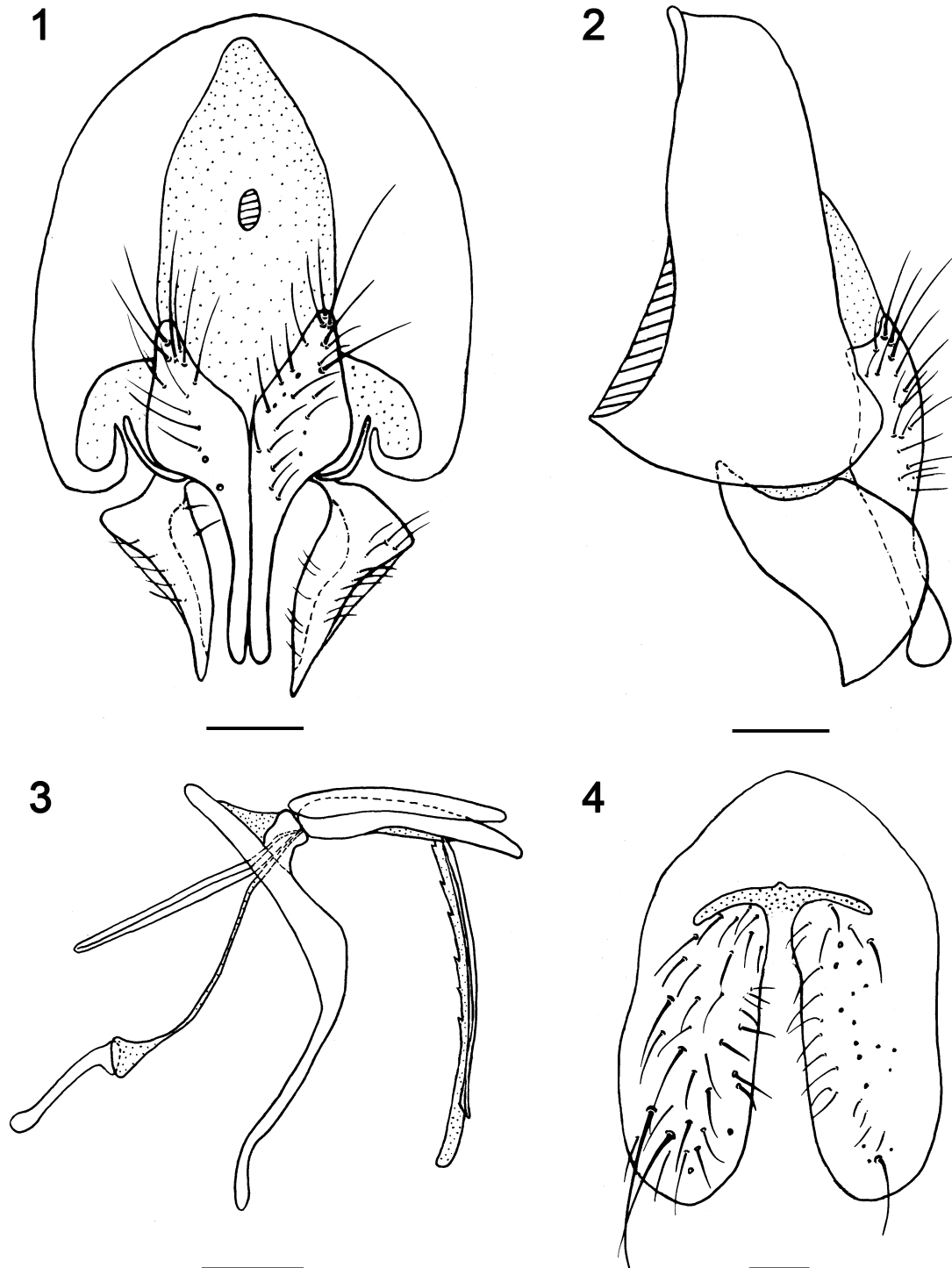
## Species descriptions

*Dexia alticola* Zhang et Shima, sp. nov.

Figs. 1–4

**Diagnosis.** Antenna reddish yellow except dark brown on distal half of 1st flagellomere; 3 presutural and 3 postsutural dorsocentral setae; 2 supra-alar setae; 2 katepisternal setae; femora reddish brown.

**Description.** Body length. 7.0–9.3 mm.



**FIGURES 1–4.** *Dexia alticola* sp. nov. 1–2. Epandrium, cerci and surstyli in dorsal and lateral views. 3. Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, distiphallus in lateral view. 4. Sternite 5. Scale bars = 0.25 mm.

**Male. Head** with grayish white pruinosity on fronto-orbital plate and parafacial; frontal vitta brownish black; lunule brown; gena reddish brown. Antenna reddish yellow except brownish black on apical half of 1st flagellomere. Palpus and labella reddish yellow. Frons  $1/6$ – $1/8$  head width, frontal vitta slightly wider than fronto-orbital plate, parafacial bare, about 2.5 times as wide as 1st flagellomere; facial carina longer than 1st flagellomere and nearly straight in lateral view; gena 0.43–0.46 times as wide as eye height, lower margin of face protruding forward. Inner vertical seta 0.28–0.31 times as long as eye height, shorter than ocellar seta; ocellar seta about as long as upper frontal setae; 8–10 inclinate frontal setae; vibrissa inserted above lower margin of face. Antenna falling short of lower margin of face by about length of 1st flagellomere, the latter about 3 times as long as pedicel; total width of arista including plumosity about 3 times as wide as 1st flagellomere. Palpus about as long as prementum, longer than 1st flagellomere.

**Thorax** black in ground color, with yellowish gray pruinosity and 4 brown-black longitudinal vittae on dorsum, outer vitta widened posteriorly, about 3 times as wide as inner vitta, an inner vitta  $1/4$ – $1/5$  as wide as pruinose portion between inner and outer vittae on prescutural scutum, scutellum reddish yellow at apex; pleura with grayish pruinosity. Proepisternum bare; 1–2 presutural and 1–2 postsutural acrostichal setae; 3 pre- and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 2 supra-alar setae; 2 katapisternal setae; apical scutellar setae longer than scutellum and shorter than subapical scutellar setae. Wing brownish, tegula usually reddish yellow or brown; basicosta black; costal spine slightly longer than crossvein r–m; relative lengths of 2nd, 3rd and 4th costal sectors approximately 3:6:4; vein M from dm-cu crossvein to its bend 2.0–2.5 times distance between the bend and wing margin, sometimes with a short appendix. Halter reddish yellow. Calypters yellowish, lower calypter with long fringe on outer margin. Legs yellow to reddish brown on femora and reddish yellow on tibiae, mid and hind tibiae darkened at apex; mid tibia with 2 posterodorsal setae; hind tibia slightly flattened at base, with 3–5 anterodorsal, 2 posterodorsal and 2 ventral (upper one fine) setae.

**Abdomen** long ovate, translucent yellow, with a wide black median longitudinal vitta (about  $1/3$  width of tergite 4), and dark brown posterior margins of syntergite 1+2 and tergite 3, posterior  $1/5$ – $1/3$  of tergite 4 and posterior  $1/2$  of tergite 5; dorsum with grayish white pruinosity on anterior  $1/3$  of tergite 3, anterior  $1/3$ – $1/2$  of tergite 4, anterior  $1/2$  of tergite 5. Abdominal syntergite 1+2 with 1 lateral marginal seta, without median marginal setae; tergite 3 with 2 pairs of median discal, 1 pair of median marginal and 1–3 lateral marginal setae; tergite 4 with 2 pairs of median discal and a row of marginal setae; tergite 5 with a row of discal and marginal setae. **Male terminalia.** Cerci slender on distal half, surstylus pointed apically; pregonite short and bent posteriorly; postgonite slightly shorter than basiphallus; distiphallus long and thin, with some small spinules on ventral membranous surface.

**Female.** Frons  $1/3$ – $2/5$  head width, frontal vitta narrower than fronto-orbital plate, 5 inclinate frontal setae; 1 outwardly directed prevertical and 2–3 strong proclinate orbital setae; outer vertical seta about  $1/2$  as long as inner vertical seta. Mid tibia with 2 anterodorsal, 2 posterodorsal and 1 ventral seta. Abdomen black, with grayish white pruinosity on anterior  $1/2$ – $1/4$  of each tergite, tergites 3 and 4 each with or without a pair of fine median discal setae; tergite 5 without discal setae. Other characters are almost as in male.

**Type material.** Holotype male, **CHINA**, Xueshangou, 3400 m, Jiuzhaigou, Sichuan, 31.vii.1993, H. Shima (IZCAS). Paratypes. **CHINA**. Gansu: 1 female, Qilian, Xishui, 23.viii.2006 (SNU). 21 males, 3 females, Datulugou, 2300–2350 m, Yongdeng, 20.vii.2009, C. Fu & Y.-Y. Zhou (SNU). Qinghai: 1 male, Xiaosumeng, 3750–4100 m, Yushu, 6.vii.1964, S.-Y. Wang. 2 males, Gelong, 3700 m, Yushu county, 11–12.vii.1964, S.-Y. Wang (IZCAS). 1 male, Yushu, 29.vi.1959, Z.-Z. Chen (SEMC). 2 males, Beishan Forest Park, Huzhu, 2500–2900 m, 23.vii.2009, C. Fu. 2 males, 2 females, Tianchi, 2400–2600 m, 27–28.vii.2009, Mengda, Xunhua, Z. Zhao & C. Fu (SNU). Sichuan: 2 males, 3 females, Erdaogou vil., 3400 m, Nanping, 2.vii.1993, H. Shima (BLKU). 11 males, Xueshangou, 3400 m, Jiuzhaigou, 31.vii.1993, H. Shima (BLKU). 32 males, 3 females, Huasheng, 3100 m, Songpan County, 8.viii.1993, H. Shima (BLKU). 2 males, Mt. Paoma, 2600–3500 m, Kangding, 18.viii.1993, X. Lin (BLKU). 2 males, 1 female, Daoban, 2400 m, Jiuzhaigou, 3.viii.1993, H. Shima (BLKU). 5 males, 22 females, Yulin, 3000 m, Kangding, 20.viii.1993, H. Shima (BLKU). 1 male, Xingduqiao, 3700 m, Kangding, 22.viii.1993, H. Shima (BLKU). 2 males, 6 females, Zheduo Shan, 3000–4000 m, Kangding, 19–24.viii.1993, H. Shima, X. Lin, W.-X. Zhang (BLKU). 1 male, 3100 m, 4.viii.1983, H. Cai (IZCAS). 2 males, Kangding, 14.vii.2005, L. Chang, J.-Y. Liu. 2 males, 2 females,

Kangding, 7.vii.2006, C.-T. Zhang, L.-Y. Feng (SNU). 1 female, Tagong Grassland, Kangding, 29.vii.2004, Y.-F. Tong (SNU). 15 males, 2 females, Gongga Shan, Yanzigou, 2000–2800 m, Luding, 12.vii.2005, L. Chang, J.-Y. Liu, H. Ao; 12 males, 5 females, same locality as previous, 17.vii.2006, C.-T. Zhang, J.-Y. Liu, L.-Y. Feng (SNU). 26 males, 17 females, Laoyulin to Yajiageng, 3000–4000 m, Kangding, 6.vii.2006, C.-T. Zhang, J.-Y. Liu, L.-Y. Feng (SNU). 1 male, Lubuzaka, 3800–3900 m, Daocheng, 9.vii.2006, C.-T. Zhang (SNU). 9 males, 5 females, Geka to Echu Shan, 2260–4100 m, Daocheng, 14.vii.2006, C.-T. Zhang, J.-Y. Liu, L.-Y. Feng (SNU). 4 males, Chengtu, 5000', 6–16.viii.1933, D.C. Graham; 1 male, Suifo–Kiating, 13.vi.1929 (USNM). Xizang (= Tibet): 1 male, Jiangda, 3800 m, 27.vii.1975, Z. Wang (IZCAS). 3 males, Médong, 31.vii.1983, G.-T. Jin (SEMC). 4 males, Lang County, 5.vii.1977, J.-Y. Wu. 1 female, Beibeng, 28.vii.1977, J.-Y. Wu. 4 males, Linzi, 9.vii.1979, J.-Y. Wu. 2 males, 1 female, Milin, 2.viii.1980, 11.vii.1984, J.-Y. Wu, Y.-H. Zhong (SEMC). 1 female, Paizhen, 3000 m, Milin, 7.viii.2003, M.-F. Wang (SNU). 1 male, Yin–kuan–Tsai, 13000–15000 ft, 25.vii.1930, D.C. Graham (USNM). Yunnan: 1 male, Wuliang Shan, 2300 m, Jingdong, Simao, 24.viii.1990, L. Su (BLKU). 1 male, Baoshan, Mt. NE Shan, 1200–1800 m, Keleinofsky, 28.v.1955 (IZCAS). 1 male, Adong, 2700 m, Deqin, 5.ix.1981, X.-Z. Zhang (IZCAS). 2 males, 1 female, Napahai, 3300 m, Zhongdian (= Shangri-La), 1.vii.2006, M.-F. Wang. 1 male, 13 females, Geze, Shangri-la, 3200 m, 18.viii.2010, C.-T. Zhang, Q. Wang (SNU). 1 female, Gaoligong Shan, 2500 m, 17.vii.2008, X.-D. Fei (SNU). 1 female, Baima Xueshan, 4200 m, 26.vii.2008, S.-C. Bai (SNU). 1 male, Wuliang Shan, 2800 m, Jingdong, Simao, 9.vi.2010, C. FU (SNU). 8 males, Shika Xueshan, 3200 m, Shangri-la, 30.vi.2010, C. Fu & Y.-Y. Zhou (SNU). 1 female, Shigu Town, 1800 m, Lijiang, 20.viii.2010, Q. Wang (SNU).

**Etymology.** The specific epithet refers to the collection of this species at high altitude, “alta” (altus) from the Latin for high place and “cola” for dweller.

**Distribution.** China (Gansu, Qinghai, Sichuan, Xizang, Yunnan).

**Remarks.** This species is mainly found at high altitudes (2400–4000 m) in southwest China. It is similar to *D. violovitshi*, but differs from it in having the apical half of 1st flagellomere dark brown, lunule brown, prosternum 2.0–2.5 times as long as wide, and tergite 5 black on posterior half.

### *Dexia atripes* (Malloch, 1935)

Figs. 5–8

*Calotheresia atripes* Malloch, 1935c: 592.

*Dexilla atripes*: Crosskey 1967: 106.

*Dexia atripes*: Crosskey 1976: 178.

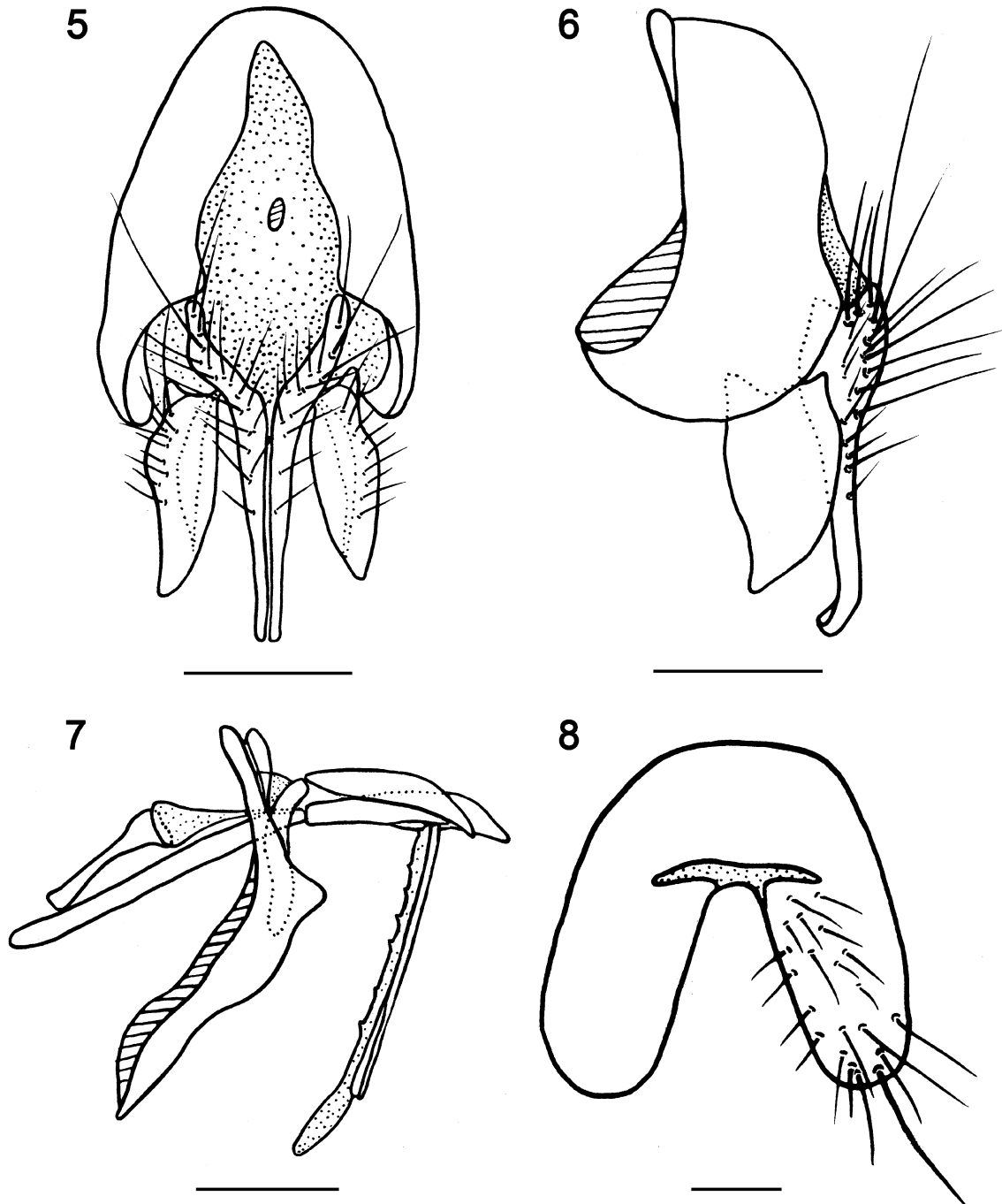
**Diagnosis.** Prementum 5–6 times as long as wide; inner and outer vittae on thorax merged on postsutural scutum; scutellum with grayish white pruinosity on apical 2/3; 2 presutural and 3 postsutural dorsocentral setae; femora black.

**Description.** Body length. 8.0–14.1 mm.

**Male. Head** with dark brown frontal vitta and lunule; fronto-orbital plate, parafacial and gena with silvery white pruinosity; antenna with pedicel dark brown, 1st flagellomere reddish yellow, arista brown; prementum gleaming black, palpus reddish, darkened basally. Frons about 1/7 head width; parafacial 2–3 times as wide as 1st flagellomere; facial carina developed, high and sharp on ridge; gena about 0.38 times as wide as eye height; lower margin of face protruding forward. Inner vertical seta about 0.35 times as long as eye height; ocellar setae strong, slightly longer than frontal seta or inner vertical seta; fronto-orbital plate and parafacial bare; 8–10 inclinate frontal setae; vibrissa inserted above lower level of face. Antenna falling short of lower margin of face by about 1/2 length of 1st flagellomere, 1st flagellomere about 4 times as long as pedicel; total width of arista including plumosity about 4 times as wide as 1st flagellomere. Palpus as long as antenna, about 3/5 prementum length, latter 5.0–6.0 times as long as wide.

**Thorax** black in ground color, with yellow pruinosity and 4 longitudinal black vittae on dorsum, inner vitta narrow, 1/4–1/5 as wide as outer vitta and subequal in width to pruinose portion between inner and outer vittae, inner and outer vittae merged on posterior portion of presutural and postsutural scutum and appearing

as 2 broad stripes; scutellum reddish yellow, basal 1/3 black, apical 2/3 with grayish white or pale yellowish white pruinosity, pleura with grayish white pruinosity except anepimeron and anterior part of katepisternum. Prosternum 2.0–2.5 times as long as wide. Proepisternum bare; 2 postsutural acrostichal setae; 2 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 3 supra-alar setae, anterior one hair-like, 2 postpronotal setae. **Wing** hyaline, yellow on base, brown to dark brown on anterior portion; tegula and basicosta black; calypter yellowish. Costal spine 1.0–1.3 times as long as crossvein r-m; vein M with an appendage on its bend, which is 0.5–1.0 times as long as crossvein r-m. Lower calypter with short fringe on outer margin. **Legs** black, fore tibia brownish yellow, mid and hind tibiae brown. Mid tibia with 2 posterodorsal setae, without ventral seta; hind tibia with 2–3 anterodorsal, 2–3 posterodorsal and 1 ventral setae.



**FIGURES 5–8.** *Dexia atripes* (Malloch). 5–6. Epandrium, cerci and surstyli in dorsal and lateral views. 7. Aedeagal apodeme, ejaculatory apodeme, hyandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. 8. Sternite 5. Scale bars = 0.25 mm.

**Abdomen** long ovate, translucent yellow in ground color, black on posterior margin of each tergites and mid dorsal longitudinal vitta, with yellowish white pruinosity on anterior 1/8 of tergite 3, 1/5–1/4 of tergite 4, and 1/3–1/2 of tergite 5. Syntergite 1+2 with 1 pair of median marginal and 1 lateral marginal setae; tergite 3 with 1 pair of median discal, 1 pair of median marginal and 1 lateral marginal setae; tergite 4 with a pair of median discal and a row of marginal setae; tergite 5 with regular rows of discal and marginal setae. **Male terminalia.** Posterior lobe of sternite 5 with fine setulae on inner surface, V-shaped median cleft deep and wide; cerci slender on apical 2/3; surstylus slightly pointed apically; pregonite short and bent; postgonite shorter than basiphallus; distiphallus long, plate-like.

**Female.** Frons about 0.18 times as wide as head width; frontal vitta slightly wider than fronto-orbital plate at middle; parafacial slightly narrower than 3 times width of 1st flagellomere; face well concave, facial carina rather high and long, ridge rather sharp; gena about 0.48 times as wide as eye height. Inner vertical seta about 3/5 eye height; outer vertical seta about 1/2 as long as inner seta; ocellar seta slightly shorter than inner vertical seta; 1 outwardly directed prevertical seta, subequal in length to ocellar seta; 2 proclinate orbital setae stronger than inner vertical setae; 7–8 frontal setae. 1st flagellomere about 5.4 times as long as pedicel. 3 postpronotal setae, 2 supra-alar setae, pre-alar seta absent. **Wing** black from base to level of costagial break, distinctly brownish on cells  $R_1$  and  $R_{2+3}$ , pale brownish and hyaline on other portion; relative lengths of 2nd, 3rd and 4th costal sectors approximately 4:9:4; vein M from dm-cu crossvein to its bend about 2.3 times distance between the bend and wing margin, appendix about 1/2 length of r-m crossvein. **Leg.** Hind tibia with 2 anterodorsal, 2 posterodorsal and 1 ventral seta. **Abdomen** broadly reddish yellow, black on mid dorsal longitudinal area of syntergite 1+2 to tergite 5, posterior 1/5 of tergite 3, posterior 2/5 of tergite 4 and 1/2 of tergite 5, venter more broadly reddish yellow; scutum with rather dense yellowish white pruinosity on narrow mid dorsal and lateral margin of tergite 3, anterior 1/5–1/6 of tergite 4 and 1/2 of tergite 5, very thin whitish pruinosity visible on tergite 4 with direction of light. Syntergite 1+2 with 2 rather short median marginal; discal setae absent on tergites 3 to 5. Other characters as in male.

**Type material examined.** Holotype female of *Calothesia atripes* Malloch, N. Borneo, Mt. Kinabalu, Kenokok 2300 ft, 25.iv.1929, MALAYSIA, H.M. Pendlebury (BMNH). Paratype female, 26.iv.1929, same data as holotype (BMNH).

**Additional material examined. INDONESIA.** 1 male, Noongan, 10 km S. of Menado, 1200 m, 2–10.xii.1973, H. Shima. 1 male, Mt. Sampana, Toloko Punchak–Rantepao–Palopo, Sulawesi, 19.ix.1999, N. Kashiwai (BLKU). 3 females, Tengah Toili, 90 km W of Luwuk, 100 m, Sulawesi, 26–30.viii.1997, H. Kurahashi (NSM, BLKU).

**Distribution.** Oriental: Indonesia\* (Sulawesi), Malaysia (Sabah).

**Remarks.** This species is similar to *D. velutina* and *D. fulvifera*, but differs from them in having a long prementum, grayish white pruinosity on scutellum, and dark brown apex of halter.

### *Dexia basifera* Walker, 1859

*Dexia basifera* Walker, 1859: 129. — Crosskey 1967: 103 (designation of lectotype). — Crosskey 1976: 178 (catalog). *Calothesia orientalis* Baranov, 1932: 214. — Crosskey 1967: 101 (as syn. of *D. basifera*).

**Diagnosis.** Tegula dark brown; lower calypter with short fringe on outer margin; 3 supra-alar setae; abdominal sternite 1 with pale yellowish hairs; abdominal tergite 3 widened at posterior margin.

**Description.** Body length. 9.4–15.7 mm.

**Male. Head** with dense yellow pruinosity, golden on fronto-orbital plate; antenna yellowish; palpus yellowish, somewhat reddish yellow at apex. Frons about 0.19 times as wide as head width; frontal vitta about 1/2 as wide as fronto-orbital plate at middle; parafacial slightly widened below, slightly more than twice width of 1st flagellomere; gena about 0.4 times as wide as eye height; face well concave, facial carina developed, longer than antenna, weakly pointed on upper 1/2 and flat on lower 1/2, continuous to produced lower margin of face. Inner vertical seta rather fine, about 2/5 as long as eye height; outer vertical seta fine but distinct, about 3/4 length of inner seta; ocellar seta longer than inner vertical seta; 7 frontal setae, lowest seta nearly

level with upper margin of lunule; fronto-orbital plate with only a few fine hairs among row of frontal setae; parafacial with very minute black hairs on upper 1/2–2/3, which are only visible at high magnifications; gena bare; vibrissa inserted slightly above level of lower margin of face. Antenna falling short of lower margin of face by about twice length of pedicel; 1st flagellomere about 4.3 times as long as pedicel; total width of arista including plumosity about 2.5 times as wide as 1st flagellomere. Prementum slender, about 3/5 as long as eye height; palpus subequal in length to 1st flagellomere.

**Thorax** black in ground color, broadly reddish on postpronotal lobe, notopleural area and scutellum except base, with dense yellowish white pruinosity; supra-alar region, postalar callus, posterior 1/4 of postsutural scutum and anterior 1/4 of scutellum with brownish pruinosity; 1 pair of broad outer and 1 pair of narrow inner longitudinal black vittae, outer vitta obscure marginally with brownish pruinosity on inner portion, outer and inner vittae merged on postsutural scutum. All thoracic hairs black; 2–3 postpronotal setae; 1 postsutural acrostichal seta; 2 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 3 supra-alar setae, pre-alar seta fine but distinct; 2 katapisternal setae, katapisternum only with a row of fine hairs in front of mid coxa; scutellum with fine hair-like discal setae, sometimes without them (absent in lectotype). **Wing** hyaline, brown-black on anteroproximal area between costa and stem vein R from base to level of costagial break, pale yellowish white to brownish on other portion; tegula and basicosta black; lower calypter pale brownish. Costal spine slightly longer than r-m crossvein; relative lengths of 2nd, 3rd and 4th costal sectors approximately 3.5:9.5:3; vein  $R_{4+5}$  with 4 setae dorsally extending to 1/3 way to r-m crossvein; vein M from dm-cu crossvein to its bend about 3.5 times distance between the bend and wing margin, appendix about 3/5 as long as r-m crossvein. Lower calypter with short fringe. **Legs** reddish yellow, tibiae brown. Mid tibia with 2 posterodorsal setae; hind tibia with 2 anterodorsal, 2 posterodorsal and 1 ventral setae.

**Abdomen** translucent reddish yellow, narrow posterior margin of syntergite 1+2, posterior 1/5 of tergite 3, 1/6 of tergite 4 and very narrow anterior margin of tergite 5 brown-black, mid dorsal triangular area brownish black on posterior 2/3 of syntergite 1+2, 1/2 of tergite 3 and 1/3 of tergite 4; thin yellowish pruinosity on narrow dorsomedian anterior margin of tergite 3, narrow anterior margin and mid dorsal longitudinal area of tergite 4 and anterior 1/2 of tergite 5. Long ovate in shape, widest at posterior margin of tergite 3. Hairs black except on sternite 1 which bears pale yellowish hairs, fine short dense and recumbent on tergites 2 to 4, suberect on tergite 5 and longer on venter. Syntergite 1+2 with 1 pair of fine median marginal and 1 rather long lateral marginal setae, median marginal setae sometimes absent; tergite 3 with 2 fine irregularly set median discal, 1 pair of strong median marginal and 1 strong lateral marginal setae, median discal setae sometimes indistinct; tergite 4 with 2 pairs of rather fine and irregularly set median discal and a row of strong marginal setae; tergite 5 with 2 regular rows of strong discal and marginal setae.

**Female.** Frons about 0.32 times as wide as head width; frontal vitta about 3/5 as wide as fronto-orbital plate at middle; parafacial about 3 times as wide as 1st flagellomere; all head setae strong, inner vertical seta about 3/4 eye height, 1 outwardly directed prevertical seta, 2 strong proclinate frontal setae; inner and outer vittae of thoracic scutum merged on posterior 1/2 of presutural area of scutum; wing more distinctly tinged, brownish area expanded almost to whole cells  $r_{4+5}$  and dm and contrasting to pale basal area; distal portion of femora darkened; abdominal tergites without discal setae.

**Type material examined.** Lectotype male of *Dexia basifera* Walker (by designation of Crosskey 1967: 103), **INDONESIA**, Macassar, Celebes (= Sulawesi), A.R. Wallace (BMNH). Paralectotypes 2 males, 1 female; same locality as lectotype (BMNH).

**Distribution.** Indonesia (Sulawesi).

**Remarks.** This species is similar to *D. flavida*, but is distinguished from it in having dark tegula, 3 supra-alar setae, abdominal sternite 1 with pale yellowish hairs, tergite 3 with yellowish pruinosity on anterior margin, and with 2 fine irregularly set median discal setae.



*Dexia bivittata* (Townsend, 1928)

Figs. 9–12

*Barydextra bivittata* Townsend, 1928: 380. — Baranov 1932: 215.*Dexilla bivittata*: Crosskey 1967: 106.*Dexia bivittata*: Crosskey 1976: 178.

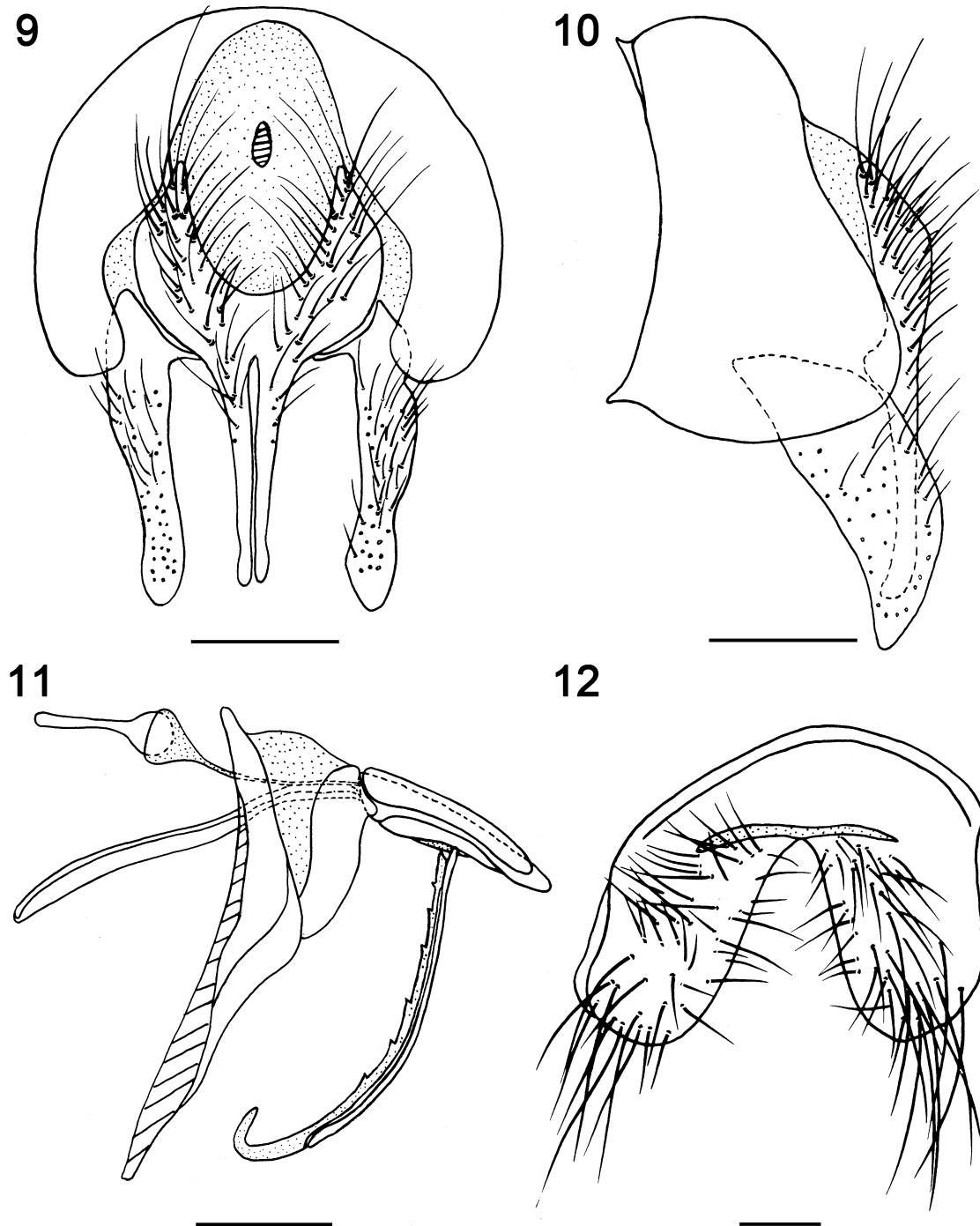
**Diagnosis.** Prementum about 6 times as long as wide; thorax with 2 broad longitudinal black vittae; wing dark on median portion, costal spine short; legs black; abdominal syntergite 1+2 without median marginal setae; tergites 3 and 4 usually without discal setae; surstylus narrow and pointed apically.

**Description.** Body length. Male: 13.5–14.5 mm, female: 8.8–12.7 mm.

**Male. Head** with dense pale grayish white pruinosity, yellowish on fronto-orbital plate; frontal vitta black; gena-brown, with thin pruinosity; 1st flagellomere reddish yellow, pedicel brown; palpus yellowish brown on apical 1/3 and brown on basal 2/3. Frons 1/6–1/7 head width; parafacial nearly parallel-sided, 3–4 times as wide as 1st flagellomere; facial carina long and high, rather flattened on ridge, arched in lateral view; gena about 0.5 times as wide as eye height or slightly more; lower margin of face well protruded. Inner vertical seta about 0.4 times as long as eye height and shorter and weaker than upper frontal setae; outer vertical seta slightly less than 1/2 as long as inner seta; ocellar seta as long as, or slightly longer than inner vertical seta; 11–12 strong frontal setae, lowest seta nearly level with base of pedicel; fronto-orbital plate with a few fine short hairs among row of frontal setae; parafacial bare; gena only with a row of fine and short setae on lower portion; vibrissa inserted above level of lower margin of face by about length of pedicel. Antenna falling short of lower margin of face by 1/2 length of 1st flagellomere, 1st flagellomere 4–5 times as long as pedicel; arista long plumose, total width of arista including plumosity about 4 times as wide as 1st flagellomere. Prementum about 6 times as long as wide and more than 1/2 eye height; palpus as long as antenna.

**Thorax** black in ground color, scutum with dense grayish white or pale yellowish white pruinosity, 1 pair of broad longitudinal black vittae extending to anterior margin of scutellum, posterior margin of postsutural scutum and supra-alar area, base of Wing and postalar callus dark brown, longitudinal vitta about twice as wide as pruinose portion between the vittae; scutellum with dense grayish white or pale yellowish white pruinosity on apical 3/4; pleura with rather dense grayish white, somewhat silvery, pruinosity on upper 2/3 of proepisternum, posterior 2/3 of anepisternum, 2/3 of katepisternum, anterior and posterior 1/3 of meron and anatergite; brownish on other portion. Proepisternum bare; 2–3 postpronotal setae; 1 presutural and 2 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 1 postsutural intra-alar seta; 3 supra-alar setae, anterior one about 1/2–3/4 as long as posterior setae; 3 katepisternal setae. **Wing** tinged with pale reddish brown on humeral cell and basal 1/2 area of basal cell, pale brownish on other area except darker median portion, alula pale brown; tegula and basicosta dark brown; calypters yellowish brown. Costal spine absent or very short, shorter than 1/2 length of crossvein r-m; relative lengths of 2nd, 3rd and 4th costal sectors approximately 3:6:2.5; short M appendix sometimes present, vein M from dm-cu crossvein to its bend about 4 times distance between the bend and wing margin. Lower calypter with long fringe on outer margin. **Legs** dark brown; mid leg longest; hind tibia straight; mid tibia with 2–3 posterodorsal setae; hind tibia with 2–3 anterodorsal, 2 posterodorsal and 1 ventral seta.

**Abdomen** long ovate, translucent reddish yellow in ground color, darkened on median depression and posterior 1/5 of syntergite 1+2, posterior 1/5–2/5 of tergite 3, and posterior 1/3–1/2 of tergite 4; pruinosity indistinct on tergites 3 and 4, and only thinly visible on anterior 2/3 of tergite 5. Hairs black, dense fine short and suberect on dorsum and long on lateral portion; syntergite 1+2 with 1 lateral marginal seta, without median marginal setae; tergite 3 with 1 pair of median marginal and 1 lateral marginal setae, without median discal setae; tergite 4 with or without a pair of fine median discal, and with a row of strong marginal setae; tergite 5 with regular rows of discal and marginal setae. **Male terminalia.** Surstylus slender, apex slightly pointed, with dense setulae; cerci slender on apical 3/5; postgonite slightly shorter than basiphallus; distiphallus slender.



**FIGURES 9–12.** *Dexia bivittata* (Townsend). **9–10.** Epandrium, cerci and surstyli in dorsal and lateral views. **11.** Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **12.** Sternite 5. Scale bars = 0.25 mm.

**Female.** Smaller than male; fronto-orbital plate yellowish; frons 1/3–1/4 head width, 7–8 inclinate frontal setae, 1 reclinate prevertical and 2 proclinate orbital setae; mid tibia with 2 anterodorsal and 2 posterodorsal setae. Abdomen ovate, reddish brown in ground color, with yellowish white pruinosity on tergites, dark brown on posterior margin of syntergite 1+2, on posterior 1/3 of tergites 3 and 4, tergite 3 with a black longitudinal vitta, tergite 5 with yellowish white pruinosity. Other characters same as in male.

**Type material examined.** Lectotype male of *Barydextra bivittata* Townsend (by designation of Crosskey 1976: 178), **PHILIPPINES**, Mt. Banahao, P.I. Baker (USNM).

**Additional material examined.** PHILIPPINES. 11 males, 3 females, Lake Binado–Summit, Mt. Apo, 1350–2850 m, Mindanao, 4–5.viii.1978, A. Nakanishi and O. Yata (BLKU). 1 male, Baguio, Benguet, Baker (USNM). 2 males, Mountain Province, Mayoyao, Ifugao, 1200–1500 m, 28.vii.1966, 10.viii.1966, H.M. Torrevillas. 1 female, Bukidnon, 1250 m, Mt. Katanglad, Mindanao, 4–9.xii.1959, L.W. Quate (BPBM).

**Distribution.** Philippines (Luzon, Mindanao).

**Remarks.** This species was described from an unknown number of specimens. Townsend (1938: 320) designated a “Ht male” from “Mount Banahao, Luzon”, but this is not accepted as a valid lectotype fixation following O’Hara *et al.* (2009: 11). Crosskey (1976: 178) examined the “Lectotype” male of *Sumatrodexia bivittata* Townsend in USNM and this is accepted as the lectotype fixation.

This species is similar to *D. longipes*, but is distinguished from it in having 1 pair of broad longitudinal black vittae on thoracic dorsum, 3 presutural and 3 postsutural dorsocentral setae, thorax and abdomen with black hairs, abdominal syntergite 1+2 without median marginal setae, and surstylus pointed apically.

### *Dexia caldwelli* Curran, 1927

Figs. 13–16

*Dexia caldwelli* Curran, 1927: 8. — Crosskey 1976: 178 (catalog). — Zhang & Shima 2004: 52 (Chinese *Dexia*). — Zhang *et al.* 2004: 127. — Zhang *et al.* 2005: 305. — O’Hara *et al.* 2009: 28 (catalog).

*Sumatrodexia incisuralis* Baranov, 1932: 215. — Sabrosky & Crosskey 1969: 52 (type material). — Zhang & Shima 2004: 52 (as syn. of *D. caldwelli*). — Hao *et al.* 2008: 99 (list).

*Dexilla caldwelli*: Crosskey 1967: 106.

*Dexia incisuralis*: Crosskey 1976: 179.

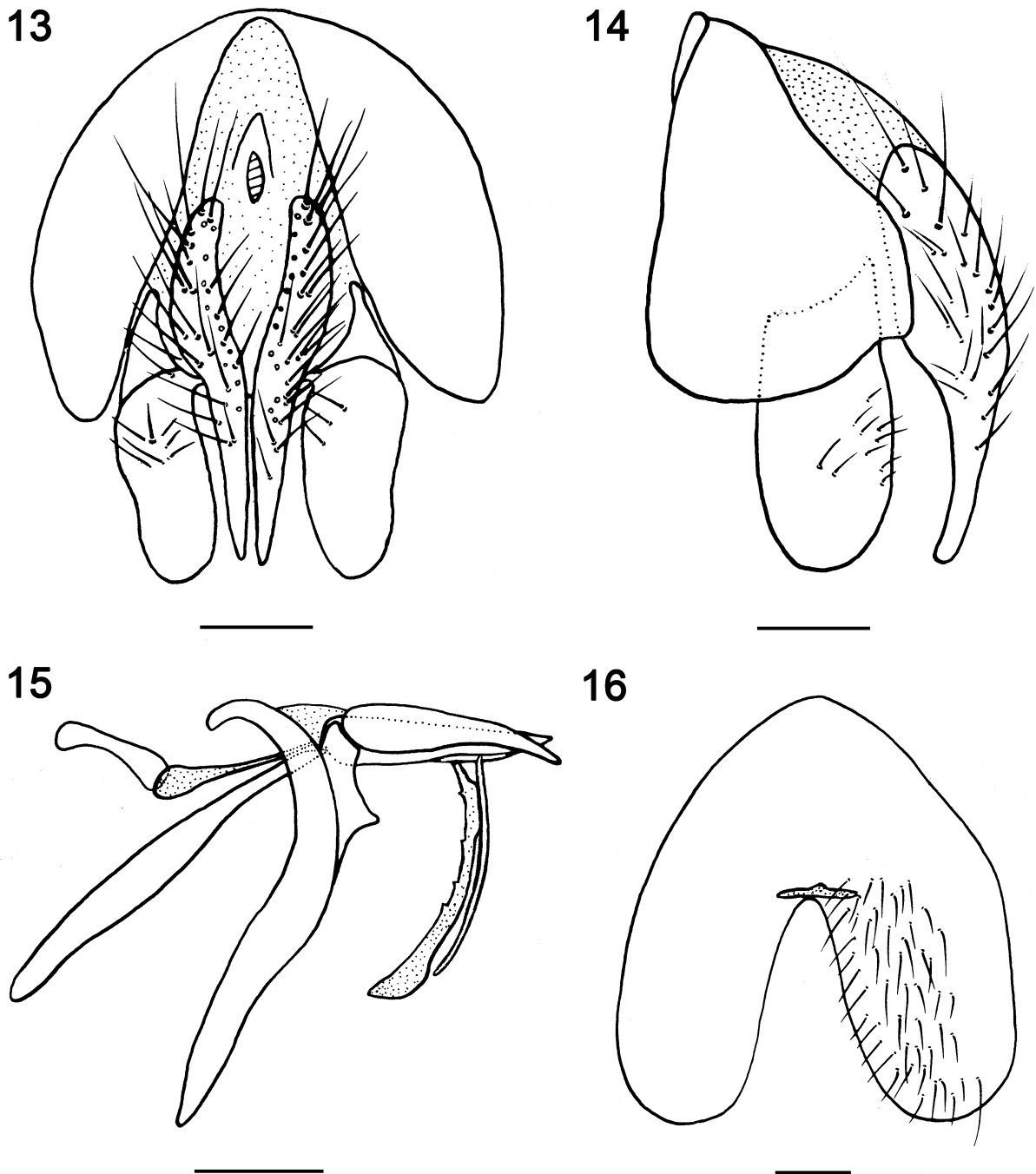
**Diagnosis.** Large species; thoracic scutum with 1 pair of broad longitudinal black vittae; proepisternum hairy; abdominal tergites each with brownish markings on sides and with median discal setae; surstylus bluntly rounded apically.

**Description.** Body length. 11.3–20.0 mm.

**Male. Head** with pale yellowish pruinosity; antenna reddish yellow; palpus reddish yellow. Frons 0.16–0.17 times as wide as head width; frontal vitta 1.5–2.0 times as wide as fronto-orbital plate at middle; parafacial slightly widened below, 3–4 times as wide as 1st flagellomere at middle; facial carina long and high, ridge rather flattened, lower margin of face weakly protruded; gena 0.33–0.54 times as wide as eye height. Inner vertical setae 0.3–0.6 times as long as eye height; ocellar seta 1.2–1.4 times as long as inner vertical seta; 11–12 inclinate frontal setae, lowest seta nearly level with base of antenna; fronto-orbital plate with several fine short hairs; parafacial bare; gena with sparse short black hairs on lower and posterior 1/2; vibrissa inserted above level of lower margin of face by about length of pedicel; occiput with 1–2 rows of black hairs. Antenna falling short of lower margin of face by about length of pedicel and 1st flagellomere combined; 1st flagellomere 3–4 times as long as pedicel, total width of arista including plumosity 3–4 times as wide as 1st flagellomere. Prementum 4–5 times as long as wide; palpus slightly longer than antenna, shorter than prementum.

**Thorax** pale brown in ground color, reddish on postpronotal lobe and lateral portion of scutum; scutum with dense pale yellowish pruinosity, with 1 pair of broad longitudinal brownish black vittae, about twice as wide as pruinose portion between vittae; scutellum mostly brown except apical margin; pleura with thin pale yellowish white pruinosity. Anterior and posterior spiracles dark brown. Prosternum about 2.5 times as long as wide; proepisternum with several pale hairs; 2 postpronotal setae; 0–1 presutural and 0–1 postsutural acrostichal setae; 3 (seldom 2) presutural and 3 postsutural dorsocentral setae; 1–2 postsutural intra-alar setae, anterior one very fine; 3 supra-alar setae, middle one larger; 3 katapisternal setae, katapisternum with dense black hairs on upper half and black or yellowish brown hairs on lower half. **Wing** evenly tinged with pale brown; tegula and basicosta pale brown to brown; lower calypter pale brown. Costal spine absent; relative lengths of 2nd, 3rd and 4th costal sectors approximately 2:4–4.5:1.5–2; vein  $R_{4+5}$  without setulae dorsally, with 2–5 fine setulae ventrally; vein M from dm-cu crossvein to its bend 3–4 times distance between the bend

and wing margin, without or at most with very short appendix. Lower calypter with long fringe on outer margin. **Legs** reddish yellow, tarsi brown. Hind leg longer than others; hind tibia sinuate at basal 1/3. Mid tibia with 2 posterodorsal setae; hind tibia with 1–2 anterodorsal, 2 posterodorsal and 1–2 ventral setae. Claws and pulvilli very long.



**FIGURES 13–16.** *Dexia caldwelli* Curran. **13–14.** Epandrium, cerci and surstyli in dorsal and lateral views. **15.** Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **16.** Sternite 5. Scale bars = 0.25 mm.

**Abdomen** long, well extending beyond wing apex. Orange yellow except brown-black broad mid dorsal longitudinal portion of syntergite 1+2 to tergite 4, reddish brown on mid dorsal longitudinal portion of tergite 5; dorsum with thin pale yellowish white pruinosity on very narrow anterior portion of tergites 3 and 4 and entire 5, side and venter of tergite 5 with thin whitish pruinosity. Hairs black except on sternite 1 and venter of

syntergite 1+2 which bear pale brownish or yellowish hairs, dense short fine and suberect, fine and erect on tergite 5; syntergite 1+2 with 1 short lateral marginal seta, without median marginal setae; tergite 3 with 0–2 pairs of discal, 1 pair of rather long median marginal and 1 short lateral marginal setae; tergite 4 with 2 pairs of median discal and a row of rather long marginal setae; tergite 5 with many discal and a row of marginal setae. **Male terminalia.** Posterior lobe of sternite 5 wide and bluntly rounded; surstylus long and wide, blunt apically; cerci narrow on apical half, pointed apically; pregonite short, slightly bent apically, with a protruding at middle; postgonite slightly longer than basiphallus.

**Female.** Frons about 1/3 head width; gena 0.50–0.57 times as wide as eye height. Fronto-orbital plate with dense hairs. Inner vertical setae crossed, about 3/5 eye height; outer vertical seta present, 1/2–1/3 as long as inner vertical seta; ocellar seta shorter than inner vertical seta; 2 subequally long proclinate orbital setae subequal in length to inner vertical seta; 1 outward directed prevertical seta shorter than ocellar seta; 6–8 inclinate frontal setae, lowest seta nearly level with base of pedicel. Tegula dark brown; vein  $R_{4+5}$  with 3–4 setulae dorsally; lower calypter with short fringe. Abdomen short, more broadly darkened on mid dorsal longitudinal portion on each tergite and without median discal seta on tergite 3 to 5. Other characters almost same as in male.

**Type material.** Holotype male of *Dexia caldwelli* Curran, **CHINA**, Fujian, Nanping [Yen-ping] (AMNH) (not examined). Holotype male of *Sumatrodedia incisularis* Baranov (antennae and male terminalia missing), **CHINA**, Tatsienlu [= Kangding], Szetschwan [= Sichuan], v.1928 (SMT) (examined).

**Additional material examined.** **BHUTAN.** 1 female, Thimphu 2500 m, 12.vii.1993, T. Saigusa. **CHINA.** Fujian: 2 males, Siqian, 450–600 m, Guangze, 19.iv–2.v.1960, G.-T. Jin, X. Lin. 1 male, Xiyang, Yongan, 26.iv.1962, G.-T. Jin (SEMC). 1 male, Xingping, 11.viii.1980. 1 female, Jianyang, Guilin, 270–410 m. Guangdong: 1 female, Heishiding, Fengkai, 11.ix.1985, Z.-Y. Chen (SYU). Guangxi: 1 male, 1 female, Neicuijiang, Huaping, 7.vi.1963, J. -K. Yang (CAU). 1 male, Baiyan, Longsheng, 21.vi.1963, Y.-S. Shi (IZCAS). Hainan: 1 male, Mt. Jianfengling, 14.ix.1983, M.-B. Gu (SNU). Jiangxi: 2 males, Tonggu, 16.ix.1982, Jiangxi Communist University (SNU). 1 male, Quannan, 650 m, 28.vii.2008, S.-C. Li (SEMC). Sichuan: 1 male, 9 miles SW of Tatsienlu, 8500–13000 ft, 25.vi.1923, D.C. Graham (USNM). Xizang: 1 male, Yigong, 2300 m, 30.vii.1978, F.-S. Li (CAU). 24 males, 5 females, Jilong, 2800 m, Jilong county, 27.vii.1975, X.-Z. Zhang and Z. Wang (IZCAS). 1 male, Tongmai, 1.ix.1977, G.-T. Jin (SEMC). Yunnan: 2 females, Menglun, Xishuangbanna, 1.viii.1959, 12.x.1959, Y.-Y. Zhang, L.-C. Zang. 1 female, Mt. Dawei, 2000 m, Pingbian, 23.vi.1956, K.-R. Huang. Zhejiang: 1 male, Tianmu Shan, 11.viii.1935 (SYU). **INDIA.** 2 males and 2 females identified as *D. caldwelli* by Crosskey (BMNH). **MYANMAR.** 1 male, S. Shan States Road 40 km, E. of Taunggyi, 25.ix–13.x.1934, Malaise (SMNH). **NEPAL.** 1 male, Thankot, 4.v.1980, Amnon Freidberg (USNM). 1 female, Godawari, Kathomanru, 24.v.1964, R. Kano. 1 female, Gokarna, 1400 m, Kathomanru, 30.viii.1988, T. Taoka. 1 female, Papun to Chanlung, 2100–1250 m, 18.vii.1972, H. Shima (BLKU). **THAILAND.** 1 female, Chiangmai, Doi Suthop, 900 m, 14.xi.1957, J.L. Gressitt (BPBM). **VIETNAM.** 1 male, Cao Bang Prov., Mt. Pia Oac, 1320 m, 23–27.v.1999, H. Kurahashi (BLKU).

**Distribution.** Bhutan, China (Fujian, Guangdong, Guangxi, Hainan, Jiangxi, Sichuan, Xizang, Yunnan, Zhejiang), India (Himachal Pradesh, Punjab), Myanmar, Nepal, Thailand, Vietnam.

**Remarks.** This is a characteristic species and we consider that *Sumatrodedia incisularis* is the same as this species based on identified specimens of *D. caldwelli* in BMNH. This species is rather similar to *D. extendens*, but differs from it in having 3 katepisternal setae, yellow legs, and abdominal tergites with median discal setae.

### *Dexia chaoi* Zhang et Shima, sp. nov.

Figs. 17–20

**Diagnosis.** Antenna brownish black except basal 1/2–1/3 of 1st flagellomere reddish yellow; scutellum with a reverse triangular black marking on dorsal surface; abdominal syntergite 1+2 without median marginal setae.

**Description.** Body length. 12.6–15.0 mm.

**Male. Head** with antenna brownish black except basal 1/2–1/3 of 1st flagellomere reddish yellow; palpus reddish yellow, sometimes dark brown basally or mostly. Frons 1/6–1/8 head width; frontal vitta about twice as wide as fronto-orbital plate; parafacial about twice as wide as 1st flagellomere; facial carina arched in lateral view, flattened on ridge below; gena 0.4–0.5 times as wide as eye height; lower margin of face protruding forward. Inner vertical seta 0.3–0.4 times as long as eye height and slightly shorter than ocellar seta; 12 inclinate frontal setae; ocellar seta as strong as upper frontal seta; fronto-orbital plate and parafacial bare; vibrissa inserted above lower margin of face by about length of pedicel. Antenna falling short of lower margin of face by about length of 1st flagellomere, latter about 2.5 times as long as pedicel; arista long plumose, total width including plumosity 3–4 times as wide as 1st flagellomere. Prementum 3–4 times as long as wide; palpus longer than antenna, shorter than prementum.

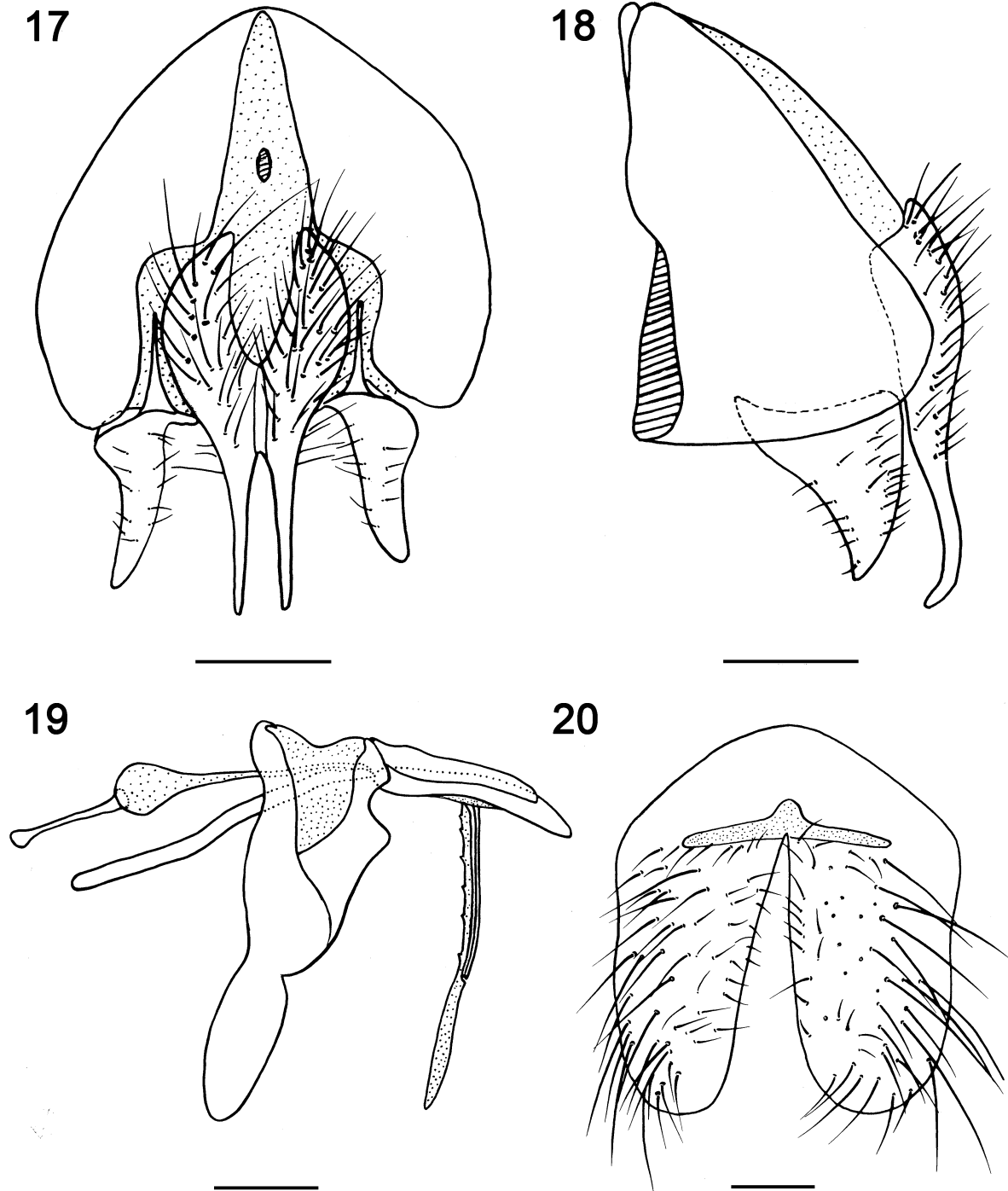
**Thorax** black in ground color, with mostly brown pruinosity on scutum, grayish pruinosity on pleura, 2 pairs of longitudinal black vittae on dorsum, extending back to anterior 1/2–2/3 postsutural scutum, narrow inner vitta 1/3 as wide as pruinose portion between inner and outer vittae on presutural scutum; scutellum with a reverse triangular black marking, yellowish gray pruinosity marginally. Prosternum twice as long as wide; proepisternum bare; postpronotal lobe with 3–4 setae; 1–2 presutural and 2–3 postsutural acrostichal setae; 2 (rarely)–3 (mostly) presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 3 supra-alar setae, anterior one about 1/2 as long as middle one; katepimeron with hairs on anterior and posterior portion, 3 katepisternal setae. **Wing** hyaline, brownish tinged; tegula and basicosta brownish black; calyptre yellow; halter yellow. Costal spine slightly shorter than crossvein r-m; relative lengths of 2nd, 3rd and 4th costal sectors approximately 1.2:2.2:1, short M appendix present or absent. Calypter with short fringe on outer margin. **Legs** long, brownish black; claws black, pulvillus yellowish. Fore tibia with 3–5 short anterodorsal setae on upper 2/3 and 2 posterior setae; mid tibia with 2–3 posterodorsal setae; hind tibia slightly sinuate, with 2–4 anterodorsal, 2 posterodorsal and 2 ventral setae.

**Abdomen** long ovate, yellow in ground color, with a wide black mid dorsal longitudinal vitta, with grayish white pruinosity on anterior margin of abdominal tergites 3 and 4, and almost entire tergite 5; syntergite 1+2 without brown markings on basal areas of lateral marginal setae, tergite 4 with brown posterior band, tergite 5 with an irregular brown median spot. Syntergite 1+2 without median marginal setae; tergite 3 with 2 pairs of fine median discal, rarely without them, and 1 pair of median marginal setae; tergite 4 with 2 pairs of median discal and a row of marginal setae; tergite 5 with some discal and a row of marginal setae. **Male terminalia.** V-shaped median cleft of sternite 5 deep, about 3/4 times as long as the sternite, posterior lobe wide and bluntly rounded at apex, with strong setae on outside and some smaller setulae on inside; distal half of cerci slender and pointed apically; surstylus slightly pointed at apex; pregonite with a protruding on upper median portion; postgonite shorter than basiphallus.

**Female.** Frons about 2/5 head width; gena 0.6–0.7 times as wide as eye height; 1 prevertical and 2 proclinate orbital setae, outer vertical seta about 1/2 as long as inner vertical seta. Abdomen ovate, dark brown except for apical half of tergite 5, which are mostly covered with yellowish white pruinosity, without median discal seta on tergites. Other characters almost same as in male.

**Type material.** Holotype male, **CHINA**, Lidiping, 3200–3300m, Weixi, Yunnan, 15.viii.1984, R. Wang (IZCAS). Paratypes **CHINA**. Qinghai: 1 male, Yushu, Xiaosumang, 3750–4000 m, 6.vii.1964, S.-Y. Wang (IZCAS). 7 males, Nangqian, 6–7.vii.1975, Q.-S. Fan, J.-S. He (SEMC). Shaanxi: 5 males, Ganquan, Qingquangou, 30.vii–22.viii.1971, J.-K. Yang (CAU). Sichuan: 1 male, Huasheng, 2800 m, Songpan, 8.viii.1993, H. Shima. 1 male, Mt. Paoma, 2600 m, Kangding, 18.viii.1993, H. Shima. 1 male, 4 females, Yajiang, 2800–3100 m, 23.viii.1993, H. Shima and X. Lin. 3 males, Zheduo Shan, 3000–3060 m, Kangding, 19–24.viii.1993, H. Shima (BLKU). 1 male, Markang, 2900 m, 18.viii.1983, X.-Z. Zhang. 3 males, Yidun, 3500 m, Batang, 16.viii.1982, S.-Y. Wang & H.-C. Cai (IZCAS). 3 males, Kangding, 7.vii.2006, C.-T. Zhang, J.-Y. Liu & L.-Y. Feng. 9 males, Gongga Shan, Yanzigou, 2000–2800 m, Luding, J.-Y. Liu, L. Chang, 17.vii.2005. 14 males, 2 females, same locality as previous, C.-T. Zhang, J.-Y. Liu, L.-Y. Feng, 17.vii.2006. 1 female, Kasi, 2750–3000 m, Daocheng, 12.vii.2006, L.-Y. Feng. 3 males, Daocheng, Geka to Echu Shan, 2260–4100 m, 14.vii.2006, L.-Y. Feng. 1 male, Luhuo, 16.viii.2006 (SNU). 2 males, 5000 ft, Chengtu, 6–16.viii.1933, D.C. Graham. 1 male, Wenchuan, 5000–9000 ft, 20–26.viii.1933, D.C. Graham (USNM).

Xizang: 6 males, Yigong, 2300 m, 16.vi., 29-31.vii.1978, F.-S. Li. 1 male, Linzi, 3050 m, 6.vii.1978, F.-S. Li. 1 male, Tongmai, 2050 m, 27.vii.1978, F.-S. Li (CAU). 17 males, 1 female, Jitang, 3600 m, Chaya, 2.ix.1976, Y.-H. Han (IZCAS). 10 males, 3 females, Linzi, 8-11.vii.1977, J.-Y. Wu. 1 male, Milin, 2.viii.1980, J.-Y. Wu (SEMC). 4 males, Linzi, 3000 m, 5.viii.2003, M.-F. Wang (SNU). Yunnan: 2 males, 1 female, Yunshanping, Lijiang, 3200 m, 28.viii.1996, H. Shima. 1 female, Dagaoping, Baoshan, 1900-2400 m, 7-9.ix.1996, W.-X. Zhang. 1 male, Zhongdian, Tuguancun, 2500-3000 m, Deqin, 3-5.vi.1994, W.-X. Zhang (BLKU). 1 male, 1 female, Lidiping, 3200-3300 m, Weixi, 13-15.viii.1984, R. Wang & S.-Y. Wang (IZCAS). 3 males, 4 females, Geze, Shangri-la, 3200 m, 18.viii.2010, C.-T. Zhang, Q. Wang (SNU).



**FIGURES 17-20.** *Dexia chaoi* sp. nov. 17-18. Epandrium, cerci and surstyli in dorsal and lateral views. 19. Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. 20. Sternite 5. Scale bars = 0.25 mm.

**Etymology.** Specific name is dedicated to the late Prof. Chien-Ming Chao for his contributions to the systematic work of Chinese Diptera.

**Distribution.** China (Qinghai, Shaanxi, Sichuan, Xizang, Yunnan).

**Remarks.** This new species is similar to *D. bivittata*, but differs from it in having dark apical half of 1st flagellomere, short prementum, thorax with 4 longitudinal black vittae on presutural scutum, and abdominal tergite 3 usually with 2 pairs of median discal setae.

***Dexia chinensis* Zhang et Chen, sp. nov.**

Figs. 21–24

**Diagnosis.** Antenna reddish yellow; prementum 3–4 times as long as wide; 3 katepisternal setae; legs black; abdominal syntergite 1+2 without median marginal setae.

**Description.** Body length. Male: 13.0–14.5 mm, female: 12.5–13.5 mm.

**Male. Head** with grayish white pruinosity, frontal vitta brownish black; gena reddish brown, with thin grayish pruinosity; antenna reddish yellow, pedicel and arista brownish; prementum black; palpus reddish yellow. Frons  $1/8$ – $1/9$  head width; parafacial about 3 times as wide as 1st flagellomere; face well concave, lower margin slightly protruding forward; facial carina developed, sharp on ridge; gena about 0.4 times as wide as eye height. Inner vertical seta fine, 0.2–0.3 times as long as eye height and distinctly shorter than ocellar seta; outer vertical seta hair-like; 10–12 inclinate frontal setae; fronto-orbital plate with sparse hairs on inner side; parafacial bare; ocellar seta as strong as upper frontal seta; vibrissa inserted above lower margin of face. Antenna falling short of lower margin of face by about length of antenna; 1st flagellomere about 2.5 times as long as pedicel; total width of arista including plumosity about 3 times as wide as 1st flagellomere. Prementum 3–4 times as long as wide; palpus longer than antenna, subequal in length to prementum.

**Thorax** black in ground color, with grayish brown pruinosity on scutum and gray pruinosity on pleura, 2 pairs of longitudinal black vittae on dorsum, which extend back to anterior  $2/5$ – $2/3$  postsutural scutum, narrow inner vitta  $1/3$  as wide as pruinose portion between inner and outer vittae on presutural scutum; scutellum brownish black on basal  $1/2$ – $2/3$ , with yellowish gray pruinosity at apex. Prosternum 2.0–2.5 times as long as wide; proepisternum bare; hairs all black; postpronotal lobe with 3–4 setae, 3 basal setae set in a triangle; 1–2 presutural and 2 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 2 supra-alar setae; 2–3 pairs of discal scutellar setae; 3 katepisternal setae. **Wing** hyaline, brownish; tegula and basicosta brownish black; lower calypter yellow. Costal spine slightly shorter than crossvein r-m; relative lengths of 2nd, 3rd and 4th costal sectors approximately 1:2.2:1.1, vein M from dm-cu crossvein to its bend about 3 times distance between the bend and wing margin, appendix absent. Lower calypter with short fringe on outer margin. **Legs.** Femora brownish black; tibiae reddish yellow except darkened on apical  $1/3$  and basal  $1/3$  ventrally; claws black, pulvilli yellowish. Mid tibia with 2 (seldom 1) posterodorsal setae; hind tibia with 2 anterodorsal, 2 posterodorsal and 2 ventral setae. Claws and pulvilli slightly longer than tarsomere 5.

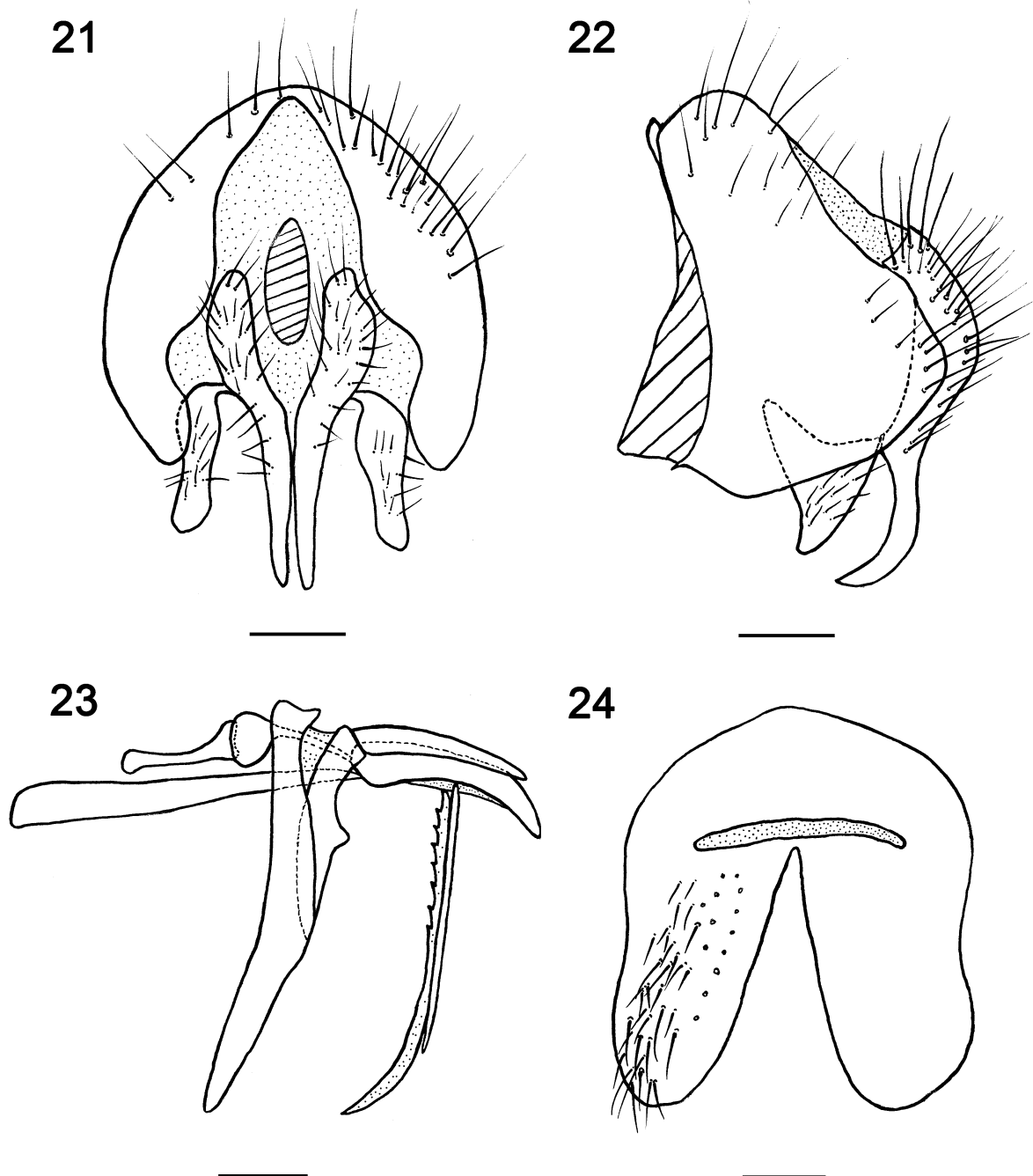
**Abdomen** long ovate, yellow, dark brown to black on mid-dorsal longitudinal portion, posterior portion of tergite 4 and almost entire tergite 5, with grayish white pruinosity on anterior margin of tergites 3 and 4, and almost entire tergite 5; syntergite 1+2 to tergite 4 each with a brown or dark markings on basal areas of lateral marginal setae. Syntergite 1+2 without median marginal setae; tergite 3 with 1 pair of median discal and 1 pair of median marginal setae; tergite 4 with 2 pairs of median discal, 0–1 lateral discal and a row of marginal setae; tergite 5 with several discal and a row of marginal setae. **Male terminalia.** Sternite 5 rectangular, V-shaped median cleft deep, about  $2/3$  length of the sternite, posterior lobe bluntly rounded at apex; distal half of cerci slender and pointed apically; surstylus short and narrow, slightly pointed at apex; pregonite short, bent posteriorly; postgonite shorter than basiphallus; distiphallus long, plate-like.

**Female.** Frons widened anteriorly, 0.3–0.4 times as wide as head width at narrowest point; gena 0.6–0.7 times as wide as eye height; 1 prevertical and 2 proclinate orbital setae; outer vertical seta about  $1/2$  as long as inner vertical seta. 1–2 pairs of discal scutellar setae. Fore claws shorter than tarsomere 5. Abdomen ovate,



reddish brown except for black mid-dorsal longitudinal portion and brown venter of tergite 4 and 5, grayish white pruinosity on anterior margin of tergite 3, anterior 2/3 of tergite 4 and entire tergite 5; tergites 3 to 5 without discal seta. Other characters same as in male.

**Type material.** Holotype male, **CHINA**. Heshangmao Forestry Center, 106°26'E, 35°35'N, 2100–2300 m, Jingyuan, Ningxia, 23–24.vi.2008, Z.-Y. Yao (SNU). Paratypes. **CHINA**, Beijing: 1 male, Xiaolongmen, 13.vii.2005, (light trap), K.-Y. Zhang. 1 female, Tangzigou, 730–920 m, Songshan, 24.vii.2009, D. Zhang (SNU). Guizhou: 1 male, Fanjing Shan, 1300–1900 m, 29.vii.2001, W.-Z. Cai (CAU). Hebei: 2 males, 1 female, Mt. Xiaowutai, 21–29.vi.2009, Y.-Y. Zhou & C. Fu. Ningxia: 1 female, same data as holotype. 1 male, 1 female, Lüyuan Forestry Center, 1700–1800 m, Jingyuan, 30.vi.2008, Z.-Y. Yao & J.-Y. Liu. 1 female, Qiuqianjia Forestry Center, 1800 m, Jingyuan, 4.vii.2008, J.-Y. Liu (SNU).



**FIGURES 21–24.** *Dexia chinensis* sp. nov. 21–22. Epandrium, cerci and surstyli in dorsal and lateral views. 23. Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. 24. Sternite 5. Scale bars = 0.25 mm.

**Etymology.** Specific epithet is taken from the country of origin, China.

**Distribution.** China (Beijing, Guizhou, Hebei, Ningxia).

**Remarks.** This new species is similar to *D. chaoi*, but differs from it in having wholly reddish yellow 1st flagellomere and 2 supra-alar setae, and tergite 4 dark brown on posterior portion.

### *Dexia divergens* Walker, 1856

Figs. 25–28

*Dexia divergens* Walker, 1856a: 21. — Wulp 1896: 138 (catalog). — Crosskey 1976: 178 (catalog). — Zhang & Shima 2004: 54 (Chinese *Dexia*). — Zhang *et al.* 2004: 128 (list). — Zhang *et al.* 2005: 304 (list). — Hao *et al.* 2008: 99 (list). — O'Hara *et al.* 2009: 28 (catalog).

*Eomyocera carinata* Townsend, 1926: 538. — Baranov 1932: 216. — Crosskey 1967: 101 (as syn. of *D. divergens*).

**Diagnosis.** Dark inner thoracic vitta 1/2–1/4 as wide as pruinose portion between inner and outer vittae; 3 presutural and 3 postsutural dorsocentral setae; abdominal tergites with whitish pruinosity only on anterior margin; tergites 3 and 4 each with median discal setae in both sexes.

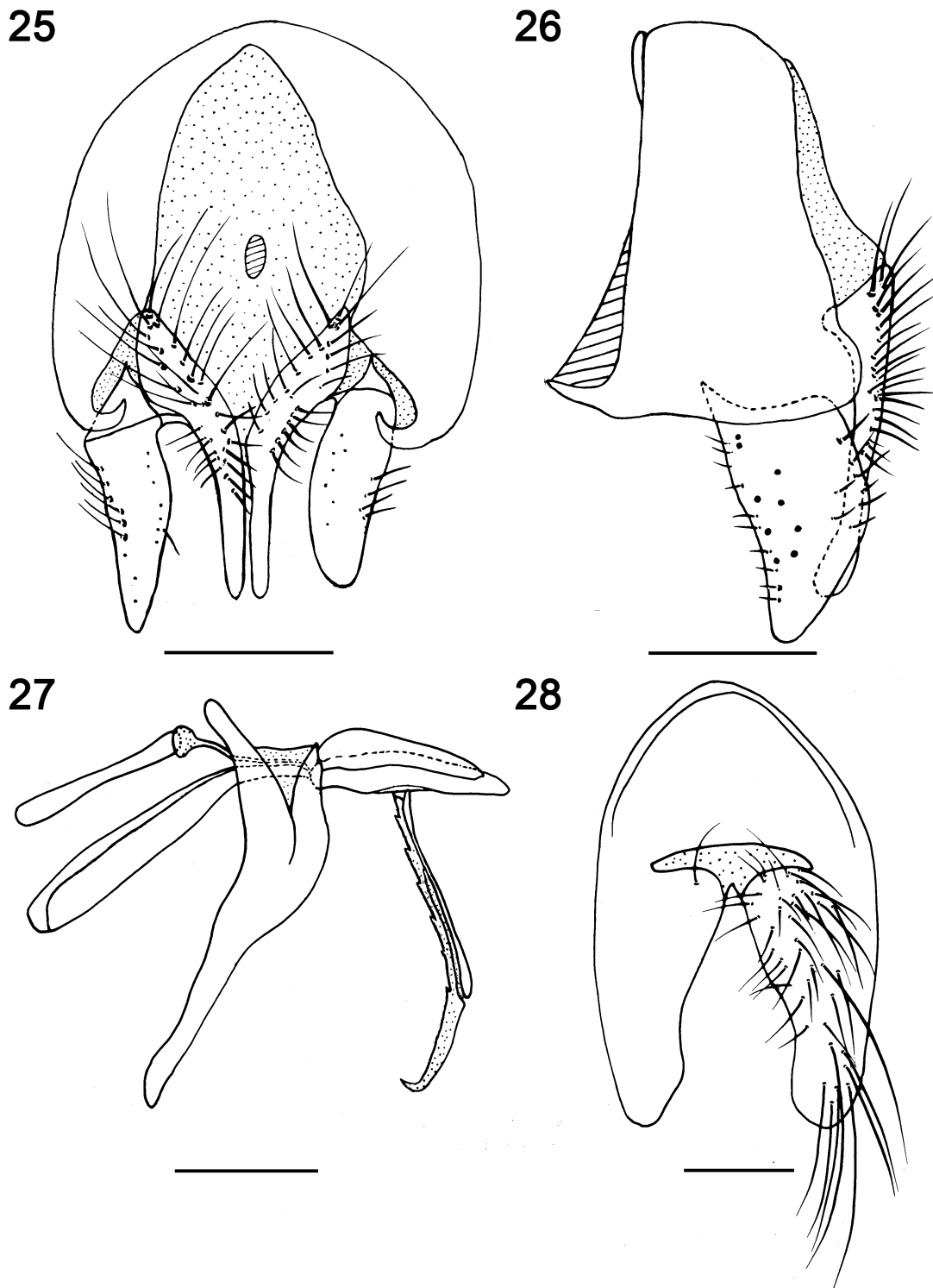
**Description.** Body length. 7.5–14.3 mm.

**Male. Head** with grayish white pruinosity, fronto-orbital plate and parafacial slightly pale yellowish; antenna and palpus yellow. Frons 0.15–0.18 times as wide as head width, frontal vitta slightly narrower than fronto-orbital plate at middle, parafacial nearly parallel-sided, 2.0–2.5 times as wide as 1st flagellomere; face rather well concave, facial carina long and sharp on ridge, lower margin of face slightly protruding forward; gena about 0.4 times as wide as eye height, with several fine and long hairs on lower portion. Inner vertical seta 0.35–0.38 times as long as eye height, fine, about twice as long as hair-like outer vertical setae; ocellar seta slightly longer than postocellar seta, as strong as frontal seta; 8–9 inclinate frontal setae, lowest seta nearly level with base of antenna; vibrissa inserted slightly above level of lower of face; fronto-orbital plate with a row of several fine rather long hairs; parafacial nearly bare, several minute hairs visible at high magnifications; gena with several fine and rather long hairs on lower portion; occiput without black hairs behind postocular setae. Antenna falling short of lower margin of face by about length of 1st flagellomere, 1st flagellomere about 3 times as long as pedicel; total width of arista including plumosity 2.5–3 times as wide as 1st flagellomere. Prementum 3 times as long as wide; palpus subequal in length to antenna or prementum.

**Thorax** black in ground color, postpronotal lobe reddish, with grayish white pruinosity, pruinosity on scutum slightly pale yellowish; scutum with 4 longitudinal black vittae that do not extend back to scutellum, inner vitta 1/2–1/4 as wide as pruinose portion between inner and outer vittae; scutellum darkened on basal 1/2. All thoracic hairs black, prosternum about twice as long as wide; usually 1 presutural and 2 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae, anterior one smaller; 2 supra-alar setae; 2 katepisternal setae. **Wing** hyaline, slightly and evenly tinged with pale brown; tegula reddish yellow or pale brown on apical 1/2 and dark on basal half; basicosta brown to dark; halteres yellow. Lower calypter pale brown, with long fringe on outer margin. Costal spine 1.0–1.5 times as long as r-m crossvein; relative lengths of 2nd, 3rd and 4th costal sectors approximately 1:2:1; vein M from dm-cu crossvein 3–4 times distance between the bend and wing margin, appendix about 1/2 length of r-m crossvein. **Legs** reddish yellow, tarsi brown-black. Hind leg longest, hind femur distinctly longer than other femora, hind tibia slightly sinuate at basal 1/3. Mid tibia with 2–6 posterodorsal setae; hind tibia with 2–4 anterodorsal, 2 posterodorsal and 1–3 ventral setae

**Abdomen** long ovate, translucent reddish yellow; black on mid dorsal longitudinal portion of syntergite 1+2 to tergite 5, anterior and posterior margin of syntergite 1+2, posterior 1/6 of tergites 3 and 4 and narrow posterior margin of tergite 5, with rather dense whitish pruinosity on anterior 1/7 of tergite 3, 1/6–1/8 of tergite 4 and 1/3–4/5 of tergite 5. Hairs black, rather dense fine short and suberect, finer on tergite 5 and longer on venter; syntergite 1+2 without median marginal setae, with 1 lateral marginal seta; tergite 3 with 1–2 pairs of median discal, 1 pair of median marginal and 1–2 lateral marginal setae, tergite 4 with 1–2 pairs of median discal, a row of marginal, and 1 laterodiscal setae; tergite 5 with some discal and a row of marginal

setae, marginal setae shifted forward on median portion. **Male terminalia.** Surstylus long, bluntly rounded apically; postgonite shorter than basiphallus; distiphallus long.



**FIGURES 25–28.** *Dexia divergens* Walker. **25–26.** Epandrium, cerci and surstyli in dorsal and lateral views. **27.** Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **28.** Sternite 5. Scale bars = 0.25 mm.

**Female.** Frons about 0.34 times as wide as head width, frontal vitta about 1/2 as wide as fronto-orbital plate; parafacial about 3 times as wide as 1st flagellomere, genal 0.57–0.59 times as wide as eye height; all

head setae strong, outer vertical seta more than 3/5 eye height, about 1/2 as long as inner vertical seta, ocellar seta shorter than inner vertical seta, 1 prevertical and 2 strong proclinate orbital setae, 4–6 frontal setae. Basicosta pale. Abdomen reddish yellow, syntergite 1+2 and tergite 3 dark brown on mid dorsal portion and posterior margin; grayish white pruinosity on anterior 1/4–1/2 of tergites; tergites 3 and 4 each with a pair of median discal setae; tergite 5 without discal setae. Other characters almost same as in male.

**Type material examined.** Holotype male of *Eomyocera carinata* Townsend, Island of Penang, MALAYSIA, Baker (USNM). Lectotype male of *Dexia divergens* Walker (by fixation of Crosskey 1976: 178), MALAYSIA, Mt. Ophir, Johore, Malay Peninsula, 68, A.R. Wallace (BMNH).

**Additional material examined.** CHINA. Formosa (= Taiwan): 1 female, Gebiet des Shisha-stammes, v–vi.1912, H. Sauter (USNM). Fujian: 6 males, 5 females, Zhangpu, 23–28.v.1962, G.-T. Jin leg. 3 males, 1 female, Ninghua, 17–24.v.1959, G.-T. Jin, Y.-M. Lin. 1 male, Chongan, Xing village, 7.vi.1960, G.-T. Jin, Y.-M. Lin. 1 male, Jianyang, Huangkeng, 5.vii.1960, G.-T. Jin, Y.-M. Lin. Jiangxi: 1 male, Jinggang Shan, Ciping, 28.iv.1981, X.-W. Liu, G.-T. Jin (SEMC). Guangdong: 351 males, Huguang, Zhanjiang, 7.iv.1981, 11.vii.1981, 20.viii.1981, Z. Liang (IZCAS). 10 males, 3 females, Lingnan Univ. campus, Guangzhou, 6.viii.1927, K.-S. Chan. 5 males, Honam Island, Panyu District, 1931 (SYU). Guangxi: 1 male, Longsheng, 140 m, 1.v.1963, Y.-S. Shi. 1 male, Longzhou, 640 m, 1.v.1963, Y.-S. Shi (IZCAS). 1 male, Jinxiu, 10.xi.1981, G.-T. Jin leg (SEMC). Shaanxi: Hua Shan, 4.viii.1978, G.-T. Jin (SEMC). Sichuan: 1 male, Emei Shan, 16.v.1955, K.-R. Huang, and G. Jin. Xizang: 2 males, Médong, 23.x.1979, J.-W. Wu (SEMC). Yunnan: 1 male, Dongbiguan, 1200–1400m, Dehong, 15–16.ix.1996, H. Shima. 1 male, Wuliang Shan, Jingdong, 24.viii.1990, H. Shima. 1 female, Haishuihe, 2700 m, Lijiang, 28.viii.1996, H. Shima (BLKU). 1 male, Damenglong, Xishuangbanna, 17.iv.1955, S.-Y. Wang. 1 male, Baoshan, Mt. NE. 1200–1800 m, 28.v.1955. 1 male, Jingdong, 1170 m, 28.v.1956, Kelexiangnovski. 1 male, Mt. Kongming, 2200 m, Xishuangbanna, 23.ix.1957, L.-C. Zang. 2 males, Xiaomengyang, 800 m, 3–4.v.1957, Bangfelov, S.-Y. Wang. 1 male, Pianma, 2100 m, Lushui, 29.v.1981, C.-M. Chao. 1 male, Adong, 2700 m, Deqin, 5.ix.1981, X.-Z. Zhang (IZCAS). 9 males, Menglun-Jincang, Xishuangbanna, 11.v–9.vi.1983, J.-M. Fang. Zhejiang: 1 male, Qingyuan, Baishanzu, 23.vii.1963, G.-T. Jin (SEMC). INDONESIA. 1 male, Mt. Pusuk. 300 m, Lombok, 23.xii.1973, S. Shinonaga. 3 males, Suranad, 100 m, Lombok, 19–21.xii.1973, H. Kurahashi and S. Shinonaga. 1 male, Mt. Tjemere, 400–1400 m, Grebon, Java, 19–25.xi.1973, R. Kano. 3 males, Kupang, 20 m, Timor, 15–18.xii.1973, S. Shinonaga (BLKU). MALAYSIA. 1 male, Malaya, Island of Penang, 1916, Baker. INDIA. 1 male, Ammatti, S. Coorg., 3100 ft, v.1951, P. S. Nathan. 1 female, Naduvatam, Nilgiri Hills, 6000 ft, v.1958, P. S. Nathan. 1 female, Anamalai Hills, Cinonona, 3500 ft, v.1959, P. S. Nathan (USNM).

**Distribution.** China (Fujian, Guangdong, Guangxi, Hainan, Jiangxi, Shaanxi, Sichuan, Xizang, Yunnan, Zhejiang), India, Indonesia (Java, Lombok, Timor), Malaysia (Pen. Malaysia).

**Remarks.** This species is similar to *D. subnuda*, but is distinguished from it in having reddish yellow tibiae, abdominal tergite 5 reddish yellow in male, at least on basal 1/2 in female, with whitish pruinosity on anterior 1/3–4/5, and female with 1 pair of median discal setae on tergite 4.

### *Dexia extendens* Walker, 1856

Figs. 29–32

*Dexia extendens* Walker, 1856b: 126. — Crosskey 1976: 178 (catalog). — Dear & Crosskey 1982: 116 (key). — Zhang & Shima 2004: 53 (notes). — Zhang *et al.* 2004: 127 (list). — O'Hara *et al.* 2009: 28 (catalog).

*Dexia festiva* Wulp, 1881: 41. — Wulp 1896: 138 (catalog). — Crosskey 1967: 101 (as syn. of *D. extendens*).

*Thelaira extendens*: Wulp 1896: 138 (catalog).

*Sumatrodexia brevisrostris* Townsend, 1926a: 27. — Baranov 1932: 215. — Crosskey 1967: 101 (as syn. of *D. extendens*). — Crosskey 1969: 101 (type material).

**Diagnosis.** Thorax with 2 wide longitudinal black vittae; proepisternum hairy; 2 supra-alar setae; 2 katepisternal setae; abdominal tergites without median discal setae; surstylus blunt apically.

**Description.** Body length. 9.4–15.4 mm.

**Male. Head** with yellowish white pruinosity on fronto-orbital plate, more yellowish on parafacial and upper occiput; antenna and palpus reddish yellow. Frons 0.2–0.22 times as wide as head width; frontal vitta 1.1–1.5 times as wide as fronto-orbital plate at middle; parafacial slightly widened below, about twice as wide as 1st flagellomere at middle height; face well concave, facial carina long, sharp on ridge, lower margin weakly produced forward; gena 0.46–0.47 times as wide as eye height. Inner vertical setae 0.35–0.4 times as long as eye height, finer and shorter than frontal seta and ocellar seta; outer vertical seta fine, about 1/2 as long as inner vertical seta; ocellar seta slightly shorter than inner vertical seta; 10–12 inclinate frontal setae, lowest seta nearly level with base of antenna; fronto-orbital plate with a few fine short hairs on upper portion and several very minute hairs on lower portion, the latter invisible at low magnifications; parafacial bare; vibrissa inserted slightly above level of lower margin of face. Antenna falling short of lower margin of face by about 3 times length of pedicel, 1st flagellomere 2.5–3.0 times as long as pedicel; total width of arista including plumosity about 3 times as wide as 1st flagellomere. Prementum 3 times as long as wide, 5/11 eye height; palpus weakly clavate, slightly shorter than pedicel and 1st flagellomere combined.

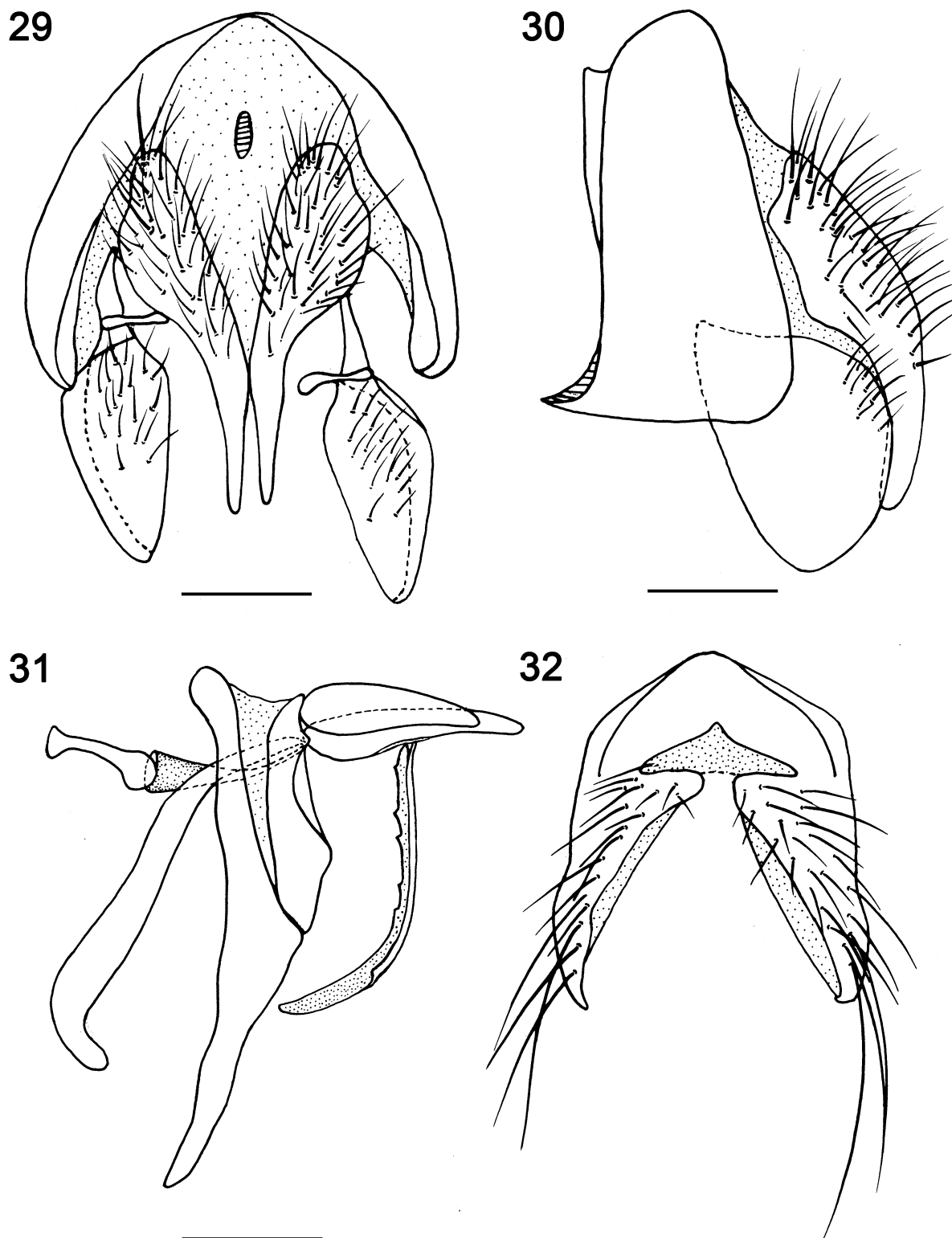
**Thorax** black in ground color, postpronotal lobe, notopleural region and posterior portion of scutellum reddish; scutum with dense yellowish white pruinosity, 2 broad longitudinal brownish-black vittae present, supra-alar region, posterior portion of postsutural scutum and basal 1/2 of scutellum dark brown; pleura pale brown in ground color, with yellowish white pruinosity; anterodorsal corner of anepisternum to lower 1/2 of proepisternum via anterior spiracle and lower portion of proepimeron obliquely brown-black. Prosternum about twice as long as wide; hairs black; 0–1 presutural and 1–2 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 1 postsutural intra-alar seta; 2–3 supra-alar setae, anterior one fine or absent, proepisternum hairy; 2 katapisternal setae, katapisternum with 2–3 rows of hairs in front of mid coxa; discal scutellar seta fine. **Wing** hyaline, evenly tinged with pale brown; tegula black; basicosta brown to dark brown; lower calypter pale yellowish. Costal spine indistinct; relative lengths of 2nd, 3rd and 4th costal sectors approximately 2.5:4.5:2; vein M from dm-cu crossvein to its bend about 4 times distance between the bend and wing margin, appendix present or absent. Lower calypter with long fringe on outer margin. **Legs** reddish yellow, distal portion of femora and basal and distal portion of tibiae brown. Mid leg longest, hind tibia weakly sinuate on basal 1/4. Mid tibia with 2 posterodorsal setae; hind tibia with 1–2 anterodorsal, 1–2 posterodorsal and 1 ventral setae. Claw and pulvillus subequal in length to tarsomere 5.

Abdomen translucent reddish yellow, black on mid-dorsal longitudinal portion and posterior margin of tergites 3 and 4 and posteroventral portion of tergite 5, very thin whitish pruinosity visible on narrow anterior margin and narrow mid dorsal longitudinal portion of tergites 3 and 4 and entire tergite 5, the pruinosity with shifting appearance with direction of light on tergite 5. Syntergite 1+2 with 1 lateral marginal seta, without median marginal setae; tergite 3 without median discal setae, with 1 pair of median marginal and 1 lateral marginal setae; tergites 4 and 5 rarely with discal setae, each with a row of marginal setae. Male terminalia. V-shaped median cleft of sternite 5 deep and broad, posterior lobe narrow, slightly pointed apically, with long setae apically; cerci slender on apical half; surstylus wide and bluntly rounded at apex; basiphallus distinctly longer than postgonite; distiphallus long.

**Female.** Frons about 0.32 times as wide as head width; frontal vitta slightly wider than fronto-orbital plate; parafacial about 3 times as wide as 1st flagellomere at middle height; gena about 1/2 eye height; palpus about as long as prementum; head setae strong, inner vertical seta about 1/2 eye height and twice as long as outer vertical seta; ocellar seta shorter than inner vertical seta; 1 outwardly directed prevertical and 2 strong proclinate orbital setae; 9–10 inclinate frontal setae; antenna falling short of lower margin of face by about length of pedicel and 1st flagellomere combined, 1st flagellomere about 3.5 times as long as pedicel. Scutellum black on basal two-thirds and yellowish gray on distal 1/3. Wing rather pale yellowish from base to level of dm-cu crossvein and brownish toward apex, the brown tinge dense on area from bm-cu crossvein to level of dm-cu crossvein between costa and vein M and along veins M and CuA<sub>1</sub>, fading marginally; vein M at bend with appendage. Abdomen black on most of syntergite 1+2, posterior 1/2–1/3 tergites 3 and 4 and entire tergite 5, with dense whitish pruinosity on reddish portion. Other characters as in male.

**Type material examined.** Lectotype female of *Dexia extendens* Walker (by fixation of Crosskey 1976: 178), MALAYSIA, Sarawak, Borneo (BMNH). Lectotype male of *Dexia festiva* Wulp (by fixation of

Crosskey 1976: 178), **INDONESIA**, Moeara Laboe, xi.1877 (RMNH). Holotype male of *Sumatrodexia brevirostris* Townsend, **INDONESIA**, Sumatra, Fort de Kock [= Bukittinggi], 920 m, 1925, E. Jacobson (ZMA).



**FIGURES 29–32.** *Dexia extendens* Walker. 29–30. Epandrium, cerci and surstyli in dorsal and lateral views. 31. Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. 32. Sternite 5. Scale bars = 0.25 mm.

**Additional material examined.** CHINA. 1 male, Daluo, Menghai, Xishuangbanna, Yunnan, 26.iv.1990, C.-T. Zhang (SNU). INDIA. Assam, Shillong, 1 male, 1 female, 6, 15.x.1920, R. Senior White, B.M. (BMNH). INDONESIA. 1 male, Aur Kumanis, Sumatra, iii.1915, E. Jacobson (ZMUA). MALAYSIA. 3 males, Muara Mongkos, 100 km NE Kuching, Borneo Sarawak, 25–27.xi.1975, H. Shima. 3 males, 30 miles N. Tapah, 300–800 m, 28.x.1975, H. Shima. 1 female, Mt. Kinabalu, Poring, 500 m, Borneo Sabah, 8.xi.1975, H. Shima. 1 female, Palawan Montible, 500 m, 28.x.1975, H. Kurahashi (BLKU). 1 male, Selangor, 15 miles, Lombak, 26.vii.1957, Usamru (USNM). 1 male, Borneo: Sarawak, Kampong, Pueh Lundu District, 690–1500 m, 25–31.v.1958, T.C. Maa. PHILIPPINES. 1 male, Palawan, 8–13 km E. of Tarumpitao Pt. 70 m, in Jungle, 21.v.1958, H.E. Milliron (BPBM).

**Distribution.** Myanmar, China (Yunnan), India, Indonesia, Malaysia (Sarawak, Sabah, Pen. Malaysia), Philippines (Palawan).

**Remarks.** This species is similar to *D. montana*, but differs from it in having long palpus, distal portion of femora and basal and distal portions of tibiae more or less darkened, lower calypter with long fringe, and lacking discal setae on abdominal tergites.

### *Dexia flavida* (Townsend, 1925)

Figs. 33–36

*Phasiodexia flavida* Townsend, 1925: 251.

*Dexia flavida*: Crosskey 1976: 179. — Zhang & Shima 2004: 54 (notes). — Zhang *et al.* 2004: 128 (list). — O'Hara *et al.* 2009: 28 (catalog).

*Phasiodexia formosana* Townsend, 1927: 284. — Zhang & Shima 2004: 54 (as syn. of *D. flavida*)

*Eomyocera obtusa* Malloch, 1935: 588. — Crosskey 1976: 178 (as syn. of *D. flavida*).

*Dexilla flavida*: Crosskey 1967: 106.

*Dexilla formosana*: Crosskey 1967: 106.

*Dexilla obtusa*: Crosskey 1967: 106.

*Dexia formosensis*: Crosskey 1976: 178.

**Diagnosis.** Thoracic dorsum with 2 dark inner thoracic vittae merged to form a dark brown rectangular band on anterior 2/5 of postsutural scutum; abdominal tergites almost lacking pruinosity; tergite 3 without median discal setae; tergite 5 with sparse hairs on discal area.

**Description.** Body length. 7.0–12.2 mm.

**Male. Head** with grayish white pruinosity, antenna and palpus reddish yellow, prementum brown. Frons 0.11–0.15 times as wide as head width; frontal vitta slightly narrower than fronto-orbital plate at middle; parafacial about twice as wide as 1st flagellomere at middle height; facial carina high; gena 0.3–0.4 times as high as eye height, lower margin of face not protruding forward. Inner vertical seta 0.3–0.36 times as long as eye height, finer and shorter than ocellar seta; 10–11 inclinate frontal setae; ocellar seta as strong as upper frontal setae; fronto-orbital plate and parafacial bare; vibrissa inserted slightly above level of lower margin of face. Antenna falling short of lower margin of face by about 1/2 length of 1st flagellomere; 1st flagellomere 3–4.5 times as long as pedicel; total width of arista including plumosity about 4 times as wide as 1st flagellomere. Prementum about 5 times as long as wide, longer than palpus; palpus about as long as antenna.

**Thorax** black in ground color, postprontal lobe reddish yellow in ground color; supra-alar area and postalar callus brown to dark brown, with dense yellowish white pruinosity, 2 pairs of longitudinal black vittae on scutum, inner vitta 1/3–1/4 times as wide as pruinose portion between inner and outer vittae on presutural scutum, 2 inner vittae merged on anterior 2/5 of postsutural scutum forming a dark brown rectangular band; anterior portion of anepisternum just posterior to anterior spiracle, anterior 1/3 of katepisternum and anepimeron dark brown; scutellum black on base and yellow on distal 2/3. Prosternum about twice as long as wide; proepisternum bare; postprontal lobe with 2 setae; 1 presutural and 1–2 postsutural acrostichal setae; 2 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 2–3 supra-alar setae, if 3, then anterior one fine; katepisternal setae usually 3, rarely 2. **Wing** brownish, hyaline, tegula brownish black and basicosta brown to dark brown; lower calypter brownish yellow; halter yellow. Costal spine small, shorter

than 1/2 length of crossvein r-m; relative lengths of 2nd, 3rd and 4th costal sectors approximately 3.5:7.0:3.0; M appendix slightly shorter than r-m crossvein; vein M from its bend to wing margin about 4 times distance between the bend and crossvein r-m. Lower calypter with short fringe on outer margin. **Legs** yellow except black tarsi; mid tibia with 2 posterodorsal setae; hind tibia with 2 anterodorsal, 2 posterodorsal and 2 ventral setae.

**Abdomen** long ovate, broadly translucent yellow, dark brown on mid-dorsal longitudinal portion, anterior and posterior margin of syntergite 1+2, posterior 1/5 of tergites 3 and posterior 1/3 of tergite 4; tegite 5 usually reddish yellow, with a pair of brown subcircular lateral spots on posterior 1/2; dorsum almost without pruinosity. Hairs dense erect black on tergites 2 to 4, sparse and fine on tergite 5; syntergite 1+2 with 1 lateral marginal seta, without median marginal setae; tergites 3 without discal setae, with a row of 6–8 marginal setae; tergite 4 with 0–1 pair of discal setae and a row of marginal setae; tergite 5 with 1–2 pairs of discal setae and a row of marginal setae. **Male terminalia.** Cerci slender on apical half, pointed apically; surstylus narrow and slightly rounded at apex; postgonite shorter than basiphallus.

**Female.** Frons about 0.3 times as wide as head width; fronto-orbital plate with sparse fine black hairs on upper portion; gena 0.42–0.43 times as high as eye height; 4–7 inclinate frontal setae; 2 proclinate orbital setae; 1 reclinate orbital seta. Abdomen ovate, tergite 3 with a large triangular black marking extending to lateral margin of posterior portion; tergites 4 and 5 each with a dark marking and 2 brown lateral markings; abdomen with recumbent hairs, without discal seta; tergite 5 with median marginal setae shifted forward. Other characters almost same as in male.

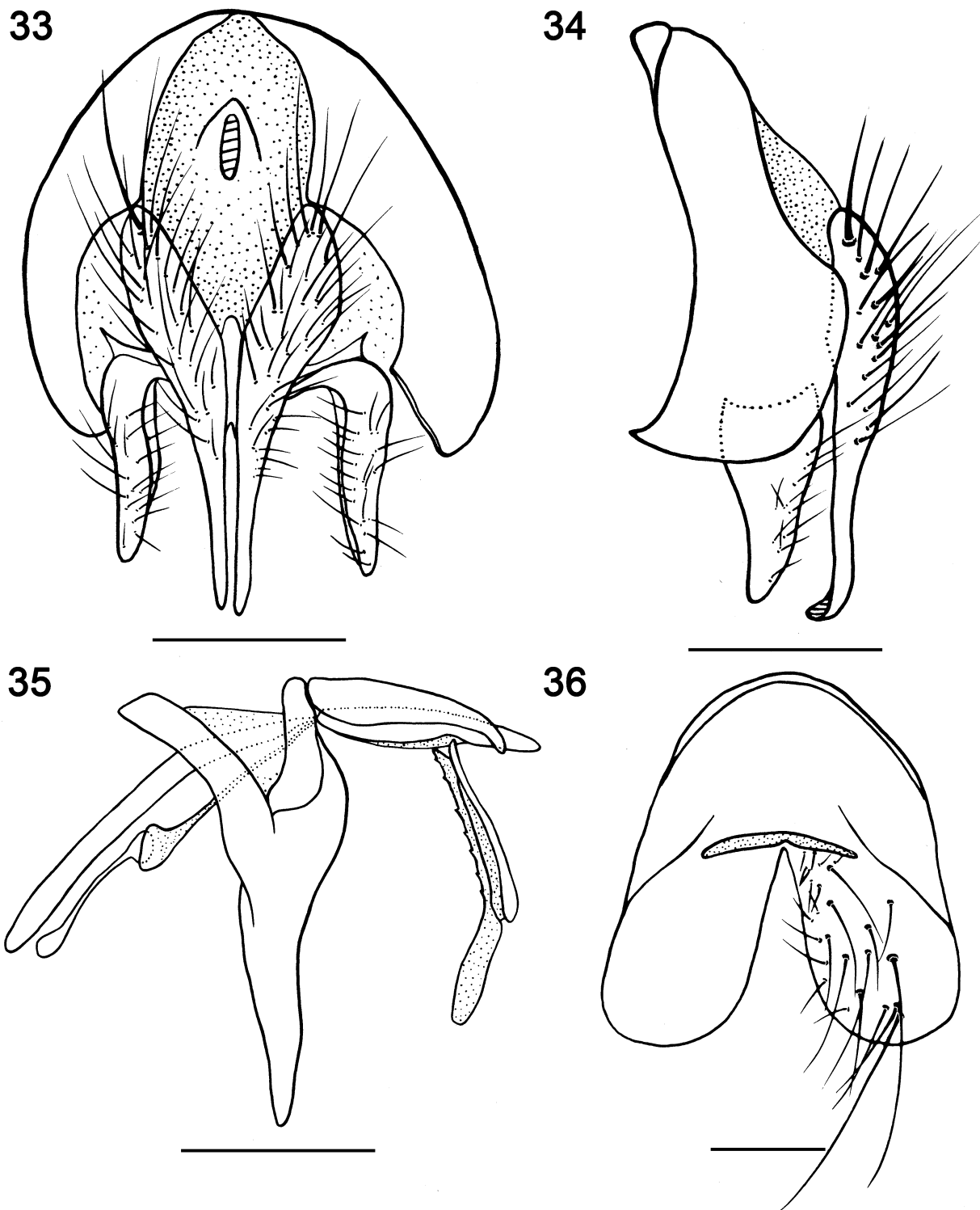
**Type material examined.** Holotype female of *Eomyocera obtusa* Malloch, Pahang, Kuala Teku 300', in Beluka, MALAYSIA, 3.xii. 1921, H.M. Pendlebury (BMNH). Holotype male of *Phasiodexia flavida* Townsend, INDONESIA, Sumatra, Fort de Kock [= Bukittinggi], 920 m, v.1924, E. Jacobson (RMNH). Paratype female, MALAYSIA, Pahang, Kuala Teku 300' in Beluka, 3.xii.1921, H.M. Pendlebury (BMNH). Holotype female of *Phasiodexia formosana* Townsend, Formosa [=Taiwan], Nantou Hsien, Toa Tsui Kutsu [= Chitou], v.1914, H. Sauter (DEI).

**Additional material examined.** CHINA. Anhui: 1 female, Mt. Huo, Foziling, 29.ix.1964, G.-T. Jin (SEMC). Fujian: 1 female, Guangze, Siqian, 5.v.1960. 1 male, Wuyi Shan, 24.ix.1982. 1 male, 1 female, Chongan, Xing village, 22.v.1960, 17.vi.1960. 1 female, Chongan, Mt. Huanggang, Daan, 3.vii.1960. 1 female, Chongan, Genmu, 790–1155 m, 29.vi.1960. 2 females, Chongan, Chengguan, 22.v.1960, all by G.-T. Jin, Y.-M. Lin (SEMC). Guizhou: 2 females, Fanjing Shan, 1200 m, 10.ix.1993, Y.-S. Cui and H.-W. Chen. Hainan: 10 males, Mt. Jianfengling, 500–950 m, 20.v.1993, 19–20.v.2004, Y.-S. Cui, C.-T. Zhang (SNU). Jiangxi: 1 male, Kuling (= Lu Shan), 4.vi.1926, C.-Y. Wong. 1 male, Shaowu, Taohulan, 1000 m, 1–3.vi.1943, T. Maa (BPBM). 1 male, Guling (= Lu Shan), 27.viii.1935, Musé Houde (SYU). Shaanxi: 1 male, Taibai Shan, Gaoping, 980 m, 1.ix.1992, Y.-S. Cui (SNU). Sichuan: 5 males, Jiulaodong, Emei Shan, 1300–1900 m, 22–27.vii.1957 and 5–14.viii.1957, K.-R. Huang, Y. Yu, Z.-Y. Wang, Y.-C. Lu. 2 males, Xixiangchi, 1800–2000 m, Emei Shan, 14–19.viii.1957, F.-X. Zhu, K.-R. Huang (IZCAS). Xizang: 4 males, Chuona, 26–30.vi.1977, J.-Y. Wu (SEMC). Yunnan: 1 female, Laowo, 2000–2400 m, Nujiang, 4–5.ix.1996, H. Shima. 1 female, 15 km S., 1200 m, Simao, 21.x.1989, H. Shima (BLKU). 1 female, Gaoligong Shan, 2500 m, 17.vii.2008, S.-C. Bai (SNU). Zhejiang: 4 males, 1 female, Tianmu Shan, 29.viii–11.ix.1947. 1 male, Longqi Shan, Lishan, 21.v.1991, Y.-S. Shi (IZCAS). INDIA. 2 males, Musore, UP, 7500 ft, 18.vi.1944, D.E. Hardy (USNM). INDONESIA. 1 male, Noongan, 50 km S. of Menado, 1200 m, Sulawesi, 2–10.xii.1973, H. Kurahashi. MALAYSIA. 1 female, Mt. Kinabalu, moss forest, Sabah, 1–2.v.1979, H. Kurahashi (BLKU). 1 male, Pahang Tanah Rate, 1480 m, 10.i.1990, J.R. Vockeroth (CNC). NEPAL. 3 females, Bogara, 1700–2200 m, 19–20.ix.1971, A. Nakanishi. 1 female, Dobang Kharka, 2400 m, 13.x.1972, A. Nakanishi. 1 male, 1 female, Basantapur, 2300 m, 26–28.vii.1972, H. Shima and H. Makihara. 1 male, Jiri to Bhandar, Ramaechap Dist., 1950–2194 m, 25.vii.1992, H. Kurahashi. 1 male, Narayani, Kathmandu to Bhandar, Tistung, 2030 m, 8.viii.1992, H. Kurahashi. 1 female, Bagmati, Kathmandu town, 1300 m, 28.ix.1990, H. Kurahashi. 3 females, Rolwaling valley, Ketang Cave to Simigaon, 2150–2650 m, 22.x.1992, M. Iwasa (BLKU). 1 male, Thankot, 4.v.1980, Amnon Freidberg. VIETNAM. 1 female, 15 km NW of Dalat, 1850 m, 5.v.1960, L.W. Quate (BPBM).



**Distribution.** China (Anhui, Fujian, Guizhou, Hainan, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang Yunnan, Zhejiang), India\*, Indonesia (Java, Sumatra, Sulawesi), Malaysia (Pen. Malaysia), Myanmar, Nepal\*, Vietnam\*.

**Remarks.** This species is close to *D. divergens*, but differs from it in having merged inner vittae on anterior 2/5 of postsutural scutum, abdominal tergite 3 without median discal setae, and tergite 5 with sparse hairs on discal area.



**FIGURES 33–36.** *Dexia flavida* (Townsend). 33–34. Epandrium, cerci and surstyli in dorsal and lateral views. 35. Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. 36. Sternite 5. Scale bars = 0.25 mm.

***Dexia flavipes* Coquillett, 1898**

Figs. 37–40

*Dexia flavipes* Coquillett, 1898: 332. — Mesnil 1980: 43 (redescription). — Herting 1984: 143 (list). — Shima 1989: 869 (list). — Herting & Dely-Draskovits 1993: 366 (catalog). — Richter 2004: 355 (key).

*Eomyocera carinata* of Baranov, 1952: 119, not Townsend, 1926, misidentification. — Herting 1984: 143 (as syn. of *flavipes*).

**Diagnosis.** Palpus subequal in length to 1st flagellomere; prementum 2–2.5 times as long as wide; 3 presutural and 3 postsutural dorsocentral setae; 2 katepisternal setae; legs reddish yellow; abdominal tergite 3 lacking black hind band.

**Description.** Body length. 9.8–12.0 mm.

Mesnil (1980) redescribed this species in detail. Here we give measurements and some additional characters.

**Male. Head.** Frons 0.14–0.16 times as wide as head width, parafacial 1.5–2.0 times as wide as 1st flagellomere; gena 0.42–0.43 times as wide as eye height. Inner vertical seta about 1/3 as long as eye height; ocellar seta about 1/2 eye height; fronto-orbital plate with only several fine short hairs among frontal setae. Antenna with 1st flagellomere 2.5–3.5 times as long as pedicel; total width of arista including plumosity about 3 times as wide as 1st flagellomere. Prementum 2.0–2.5 times as long as wide; palpus slightly shorter than 1st flagellomere. **Thorax** black in ground color, postpronotal lobe and apex of scutellum reddish, with yellowish white pruinosity; scutum with 2 pairs of longitudinal black vittae, an inner vitta about 1/4 as wide as pruinose portion between inner and outer vittae; brownish gray pruinosity on basal 3/4 of scutellum. Prosternum usually bare, sometimes with 2–3 hairs on both sides; proepisternum bare. **Wing** Costal spine about as long as crossvein r-m; relative lengths of 2nd, 3rd and 4th costal sectors approximately 4.5:10:5.5; vein M from dm-cu crossvein to its bend about 3 times distance between the bend and wing margin. Lower calypter with long fringe on outer margin. **Legs** reddish yellow. Mid tibia with 2 posterodorsal setae, hind tibia with 2–4 anterodorsal, 2 posterodorsal and 2–3 ventral setae. **Abdomen.** Hairs rather dense, fine and short; syntergite 1+2 with 5–6 lateral discal and 1–2 lateral marginal setae, without median marginal setae; tergite 3 lacking black posterior band, with 1–2 pairs of median discal, 1 pair of median marginal, and 2 lateral marginal setae, without lateral discal setae; tergite 4 with 1–2 pairs of median discal and a row of marginal setae; tergite 5 with an irregular row of discal setae. **Male terminalia.** Cerci slender on apical 1/2; surstylus narrow and slightly pointed apically; pregonite short; postgonite about as long as basiphallus; distiphallus long.

**Female.** Frons about 0.37 times as wide as head width; fronto-orbital plate 2.5–3.0 times as wide as frontal vitta; gena about 1/2 eye height. Inner vertical seta as strong as frontal setae; 5 frontal setae; 2 proclinate and 1 upwardly directed prevertical setae. Thorax with gray pruinosity; postpronotal lobe, postalar callus and distal scutellum yellow in ground color. Mid tibia with 1 posterodorsal seta; hind tibia with 2 anterodorsal, 1 posterodorsal, and 2 ventral setae. Abdomen ovate, black in ground color, with yellowish gray pruinosity on anterior 1/2–2/3 of tergites 3 to 5, without discal seta.

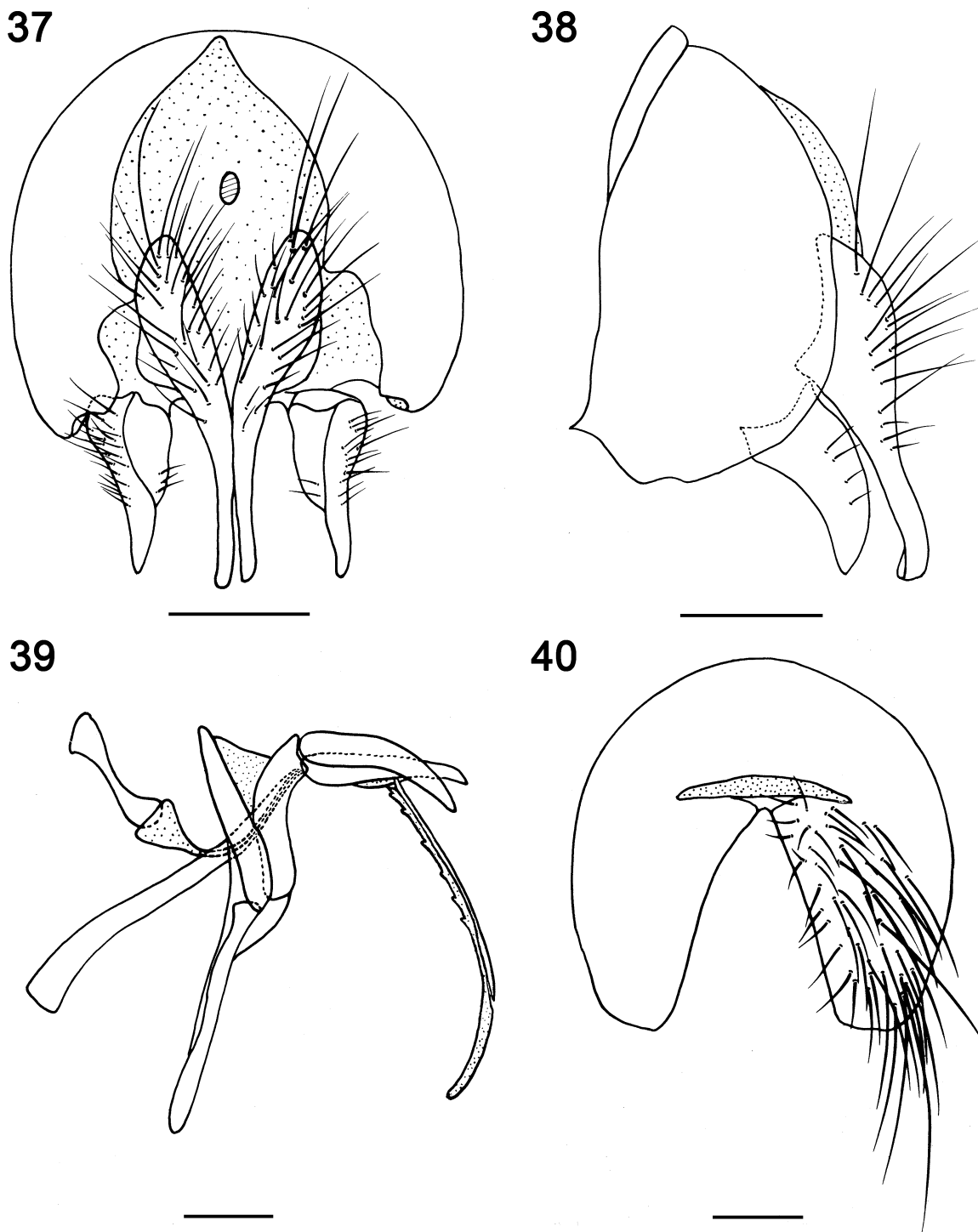
**Type material examined.** Holotype male of *Dexia flavipes* Coquillett, JAPAN, Gifu, 25.x.1890 (USNM).

**Additional material examined. CHINA.** Hebei: 1 male, 2 females, Yangjiaping, 800 m, Xiaowutai Shan, 27.vi.2009, C. Fu and Y.-Y. Zhou. 4 males, 1 female, Haojiagou, 800 m, Xiaowutai Shan, 29.vi.2009, C. Fu and Y.-Y. Zhou (SNU). **JAPAN.** Hokkaido: 2 males, Toyotomi-cho, 30.vii–3.viii.1996, M. Sueyoshi & T. Tachi. Honshu: 1 male, Karuizawa, Nagahinata, Nagano, 12.vii.1962, H. Shima. 1 male, Azukisawa, Hokuryu town, 15.vi.1973, H. Kurahashi. 1 male, Mt. Iozen, Kaga, Ishikawa. 1 female, Tateoka, Kizukuri, Amori, 9.viii.1980, Sho Fukushima. 1 male, Karasawa Pass, Chino, Nagano, 31.viii.1996, M. Sueyoshi. 1 male, Ogawa, Okuwa vil., Nagano, 2.vii.1996, T. Tachi. 1 male, Kamikuisiki vil., light, Yamanashi, 3.viii.1995, T. Tachi. 1 male, Mt. Kongou, Kinki, Osaka, 25.vii.1995, T. Tachi. 1 male, Hanase Pass, Kyauto city, Kyoto, 14.vii.1997, M. Sueyoshi. 1 female, Ichinose, Mt. Hakusan, Ishikawa, 14.x.1997, T. Nakamura. 1 female, Mt. Kakezu, Geihoku-t, Hiroshima, 17.vii.1998, T. Tachi. Shikoku: 1 male, Yura, Kumakogen, Kamiukena, Ehime Pref., 20.ix.1907, Malaise trap, E. Yamamoto. Kyushu: 2 females, Yutsubo and Shonai, Asono, Oita, 5.x.1996, R.

Matsumoto. 3 males, 2 females, Shonai, Ason, Oita, 23.viii.1985, 21.vi.1995, 18.vii.1995 (all in BLKU).  
Hokkaido: 1 male, Obihiro, Kushiro, 13.vii.1951, S. Takano (CNC).

**Distribution.** China\* (Hebei), Japan (Hokkaido, Honshu, Shikoku, Kyushu).

**Remarks.** *Eomyocera carinata* Townsend was misidentified as a junior synonym of *Dexia flavipes* by Herting (1984: 143), following Baranov (1952: 119). *Dexia flavipes* is similar to *D. gilva*, but differs from it in having narrow frontal vitta, narrow pruinose portion between inner and outer vittae on scutum, and abdominal tergite 3 lacking black posterior band. We recognize this species as newly recorded from Hebei, China.



**FIGURES 37–40.** *Dexia flavipes* Coquillett. 37–38. Epandrium, cerci and surstyli in dorsal and lateral views. 39. Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. 40. Sternite 5. Scale bars = 0.25 mm.

***Dexia fraseri* (Malloch, 1935)**

*Eomyocera fraseri* Malloch, 1935: 587.

*Dexilla fraseri*: Crosskey 1967: 106.

*Dexia fraseri*: Crosskey 1976: 178. — Crosskey 1977: 602 (catalog).

**Diagnosis.** 1st flagellomere 3–4 times as long as pedicel; 2 presutural and 3 postsutural dorsocentral setae; 3 katepisternal setae; legs reddish yellow.

**Description.** Body length. Female: 14.0–14.6 mm.

**Female. Head** with densely white pruinosity; antenna and palpus yellow. Frons about 0.28 times as wide as head width; frontal vitta slightly narrower than fronto-orbital plate at middle; parafacial nearly parallel-sided, about 3 times as wide as 1st flagellomere at middle height; facial carina arched in lateral view, ridge rather blunt, longer than antenna; lower margin of face protruding forward; gena about 0.48 times as wide as eye height. Inner vertical seta about 2/3 as long as eye height; outer vertical seta about 1/2 length of inner vertical seta; ocellar seta about 3/4 as long as inner vertical seta; prevertical seta subequal in length to ocellar seta; 2 proclinate orbital setae, anterior seta slightly longer than inner vertical seta; fronto-orbital plate with a few fine hairs; gena with some very short fine hairs on anteroventral portion and longer hairs on posteroventral portion; vibrissa inserted nearly level with lower margin of face. Antenna falling short of lower margin of face by slightly less than length of pedicel; 1st flagellomere 3–4 times as long as pedicel; total width of arista including plumosity about 4 times as wide as 1st flagellomere. Prementum slightly longer than 1/2 eye height; palpus subequal in length to pedicel and 1st flagellomere combined.

**Thorax** dark brown on median portion of scutum in ground color, broadly pale brownish on postpronotal lobe, lateral area of scutum, posterior portion of scutellum and pleura; scutum with rather dense pale yellowish white pruinosity and 4 longitudinal black vittae, an inner vitta distinctly narrower than outer vitta on presutural area but almost subequal on postsutural scutum; pleura with more whitish pruinosity. Hairs black; postpronotal lobe with 4 setae, 3 basal setae standing in a triangle; 1 presutural and 2 postsutural acrostichal setae; 2 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 3 supra-alar setae; 3 katepisternal setae. **Wing** weakly tinged with pale brown, rather strongly tinged along veins and anterior portion; tegula reddish brown; basicosta brown; lower calypter pale brown. Costal spine slightly longer than r-m crossvein; relative lengths of 2nd, 3rd and 4th costal sectors approximately 4.5:11:5; vein M from dm-cu crossvein to its bend about 4 times distance between the bend and wing margin, appendix short. Lower calypter with short fringe. **Legs** reddish yellow. Mid tibia with 2 posterodorsal setae; hind tibia with 2 anterodorsal, 2 posterodorsal and 2 ventral (upper one fine) setae. Claws and pulvilli shorter than tarsomere 5.

**Abdomen** reddish yellow in ground color, dark brown on mid dorsal longitudinal portion of syntergite 1+2 to tergite 5, posterior 1/4 of tergite 3 and 1/3 of tergite 4, with dense pale yellowish pruinosity on anterior 1/5 of tergite 3 and entire tergites 4 and 5, the pruinosity thin and with shifting appearance on posterior 1/4–1/5 of tergites 4 and 5. Hairs short fine dense and recumbent; discal setae absent; syntergite 1+2 without median marginal setae, with 1 lateral marginal seta; tergite 3 with 1 pair of median marginal and 1 lateral marginal setae; tergites 4 and 5 each with a row of marginal setae.

**Type material examined.** Holotype female of *Eomyocera fraseri* Malloch, MALAYSIA, Malay Peninsula, Pahang, Fraser's Hill, 4200 ft, 5.vii.1931 (BMNH).

**Distribution.** Malaysia (Pen. Malaysia).

**Remarks.** This species appears to be close to *D. rustica*, but differs from it by 1st flagellomere 3–4 times as long as pedicel, 2 presutural and 3 postsutural dorsocentral setae, and postpronotal lobe reddish in ground color. The male of this species is still unknown.

***Dexia fulvifera* Röder, 1893**

Figs. 41–44

*Dexia fulvifera* Röder, 1893: 235. — Wulp 1896: 138 (catalog). — Crosskey 1976: 178 (catalog). — Crosskey 1977: 602 (catalog). — Mesnil 1980: 51 (redescription). — Dear & Crosskey 1982: 115 (key). — Herting 1984: 143 (catalog).

— Herting & Dely-Draskovits 1993: 366 (catalog). — Richter 2004: 355 (key). — Zhang & Shima 2004: 54. — Zhang *et al.* 2004: 128. — Zhang *et al.* 2005: 304. — Hao *et al.* 2008: 99. — O'Hara *et al.* 2009: 28 (catalog).  
*Dexia fuscicostalis* Wulp, 1896: 139. — Crosskey 1976: 178 (as syn. of *D. fulvifera*).  
*Calothesia sumatrensis* Townsend, 1926a: 29. — Baranov 1932: 214. — Crosskey, 1969: 92 (paralectotype discussion). — Sabrosky & Crosskey 1969: 36.  
*Calothesia formosensis* Townsend, 1927: 284. — Baranov 1932: 214. — Crosskey 1976: 179 (as syn. of *D. fulvifera*).  
*Calothesia bivittata* Townsend, 1928: 380. — Baranov, 1932: 214. — Crosskey 1976: 179 (as syn. of *D. fulvifera*).  
*Dexia (Dexillosa) amurensis* Kolomiets, 1970: 73. — Mesnil 1980: 51 (as syn. of *D. fulvifera*).  
*Eomyoceropsis sumatrensis* of Crosskey, 1976: 178 (as syn. of *D. fulvifera*), not Townsend, 1926 misidentification.

**Diagnosis.** Prementum 3–4 times as long as wide; 2 katepisternal setae; costal spine subequal in length to crossvein r-m or more; wing strongly tinged with yellow on base, brown on anterior and median portion; femora dark; syntergite 1+2 with 1 pair of median marginal setae.

**Description.** Mesnil (1980) redescribed this species in detail. Here we briefly add some characters.

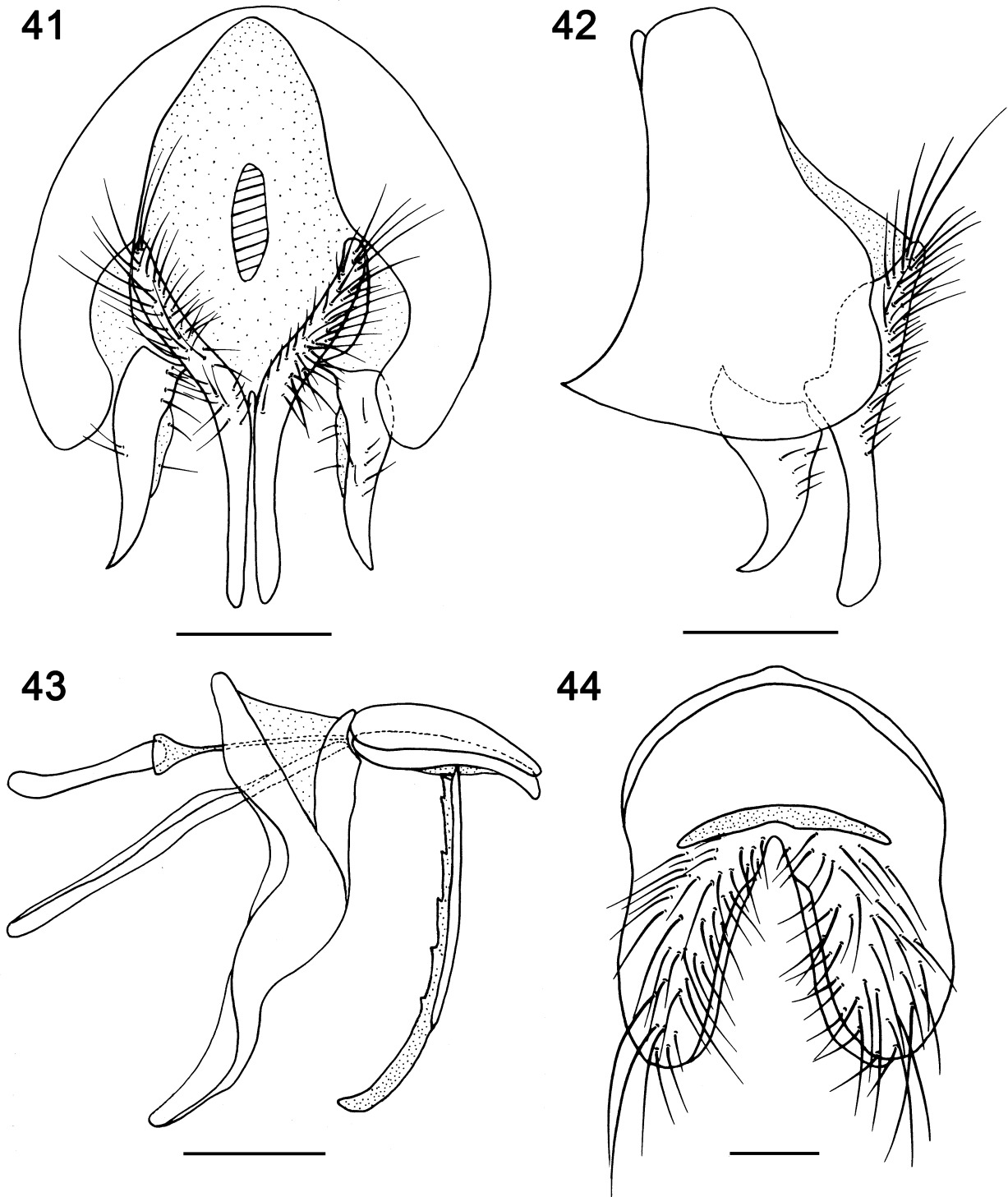
Body length. 12.0–15.0 mm.

**Male.** Frons 0.13–0.17 times as wide as head width; gena 0.38–0.39 times as wide as eye height. Inner vertical seta 0.29–0.33 times as long as eye height, shorter than ocellar seta, 1.5–2 times as long as outer vertical seta. 1st flagellomere 3–4 times as long as pedicel; total width of arista including plumosity 3–4 times as wide as 1st flagellomere. Prementum 3–4 times as long as wide; palpus 3/8 eye height. **Thorax** with dense grayish yellow pruinosity and 2 pairs of longitudinal black vittae, an inner vitta 1/2–1/4 as wide as pruinose portion between inner and outer vittae. Scutellum with yellowish pruinosity except black base. 2 presutural and 3 postsutural dorsocentral setae; 2 katepisternal setae; proepisternum bare. **Wing** hyaline, strongly tinged with yellow on base, brown on anterior and median portion; tegula and basicosta brownish black; calypter yellow. Costal spine subequal in length to crossvein r-m or slightly longer; relative lengths of 2nd, 3rd and 4th costal sectors approximately 1:2:1; vein M from dm-cu crossvein to its bend 2.2–4.0 times distance between the bend and wing margin. Lower calypter with short fringe. **Legs** brownish black, tibiae yellow, apex of femora brownish yellow ventrally. Mid tibia with 2 posterodorsal setae. **Abdomen** reddish yellow in ground color, black on mid-dorsal longitudinal portion and posterior margin of tergites; tergites 3 and 4 with pale yellowish pruinosity on anterior 1/2–1/5; tergite 5 mostly with gray pruinosity. Syntergite 1+2 with 1 pair of median marginal and 1 lateral marginal setae; tergite 3 with 2 pairs of median discal, 1 pair of median marginal and 1 lateral marginal seta; tergite 4 with 2 pairs of median discal and a row of marginal setae; tergite 5 with irregularly set discal and a row of median marginal setae. **Male terminalia.** Cerci slender on apical 1/2; surstylus black, slender, apex pointed and bent outward and backward; postgonite about as long as flattened basiphallus.

**Female.** Smaller than male. Frons 0.31–0.34 times as wide as head width; gena 0.5–0.54 times as wide as eye height; inner vertical seta about 0.6 times as long as eye height, twice as long as outer vertical seta; 6–8 inclinate frontal setae; 2 proclinate orbital setae stronger than frontal seta; 1 outwardly directed prevertical seta about as long as ocellar seta; palpus subequal in length to 1st flagellomere. Dark outer thoracic vitta 4–5 times as wide as inner vitta; anterior and median portion of wing dark brown; claw of fore leg about 1/2 length of tarsomere 5. Abdomen ovate, orange brown, broadly blackish on mid longitudinal portion of tergites 3 and 4, and posterior 1/3–2/5 of tergite 3 and 1/2 of tergites 4 and 5, with rather dense yellowish white pruinosity on anterior 1/5–1/4 of tergite 3, 1/3–3/5 of tergites 4 and 5; syntergite 1+2 without median marginal setae, tergites 3 to 5 without discal seta. Other characters as in male.

**Type material examined.** Holotype male of *Calothesia bivittata* Townsend, **PHILIPPINES**. Surigao, Mindanao, Baker (USNM). 5 male and 6 female syntypes of *Calothesia formosensis* Townsend, **CHINA**. Taiwan, Chiai Hsien, Suisharyo [= Shuisheliao], x.1911, Pingtung Hsien, Kankau (Koshun), near Hengchun [= Changkou], vii.1912, Nantou Hsien, Toa Tsui Kutsu [= Chitou], v.1914, H. Sauter (DEI). Paralectotype female of *Calothesia sumatrensis* Townsend (by designation of Crosskey 1969: 92), Gunung Singgalang (= Sumatra's Westkust), 1800 m, 1925, E. Jacobson (ZMUA).

**Additional material examined.** **CHINA**. Anhui: 1 male, 2 females, Huang Shan, 21.viii.1964, G.-T. Jin (SEMC). Beijing: 6 males, Pinggu, Beizhai, 21.vi.1949. 1 female, Changping, Heishanzhai, 5.ix.2006, L.



**FIGURES 41–44.** *Dexia fulvifera* Roder. **41–42.** Epandrium, cerci and surstyli in dorsal and lateral views. **43.** Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **44.** Sternite 5. Scale bars = 0.25 mm.

Zheng. Hebei: 1 male, Beidaihe, 27.viii.1984, F.-S. Li (CAU). Fujian: 1 male, 1 female, Sidu, Yueting, 8.v.1958. 1 male, Ninghua, 24.v.1955, G.-T. Jin, X. Lin. 4 males, Jianning, 1–2.vi.1959, G.-T. Jin. 6 males, Daan, Chongan, 22–26.vi.1959, G.-T. Jin. 6 males, Xing villege, Chongan, 3–4.vi.1960, G.-T. Jin, X. Lin. 1 male, Changkeng, Jianyang, 7.vii.1960, G.-T. Jin (SEMC). Guangdong: 3 males, 2 females, Heishiding, Fengkai, 10.ix.1985, 5.vii.1986, L. Li, X. Yu and X. Wu (SYU). 2 males, 2 females, Shipai, Guangzhou,

iii.1953 and V.1957, G. Liu. 1 female, Liuxihe, 300–500 m, Conghua, Guangzhou, 6.vi.2004, C.-T. Zhang. 1 male, Mt. Bijia, Qingxin, 23.x.1004, C.-T. Zhang (SNU). Guangxi: 1 male, Piaoli-Sanmen, 3.vi.1963, J.-K. Yang (CAU). 1 female, Niuhanling, 1255m, Jinxiu, 13.ix.1981, G.-T. Jin, X. Lin (SEMC). Liaoning: 1 male, Pingshan, Benxi, 24.vi.1957, W.-Q. Xue. 5 males, 1 female, Shuangshuidong, Shajianzi, Huanren, 17–19.ix.1974, W.-Q. Xue. 1 male, Mt. Tiecha, 900 m, Nandian, Benxi, 10.ix.1980, W.-Q. Xue. Shaanxi: 3 males, 3 females, Taibai Shan, 9–16.vi.1989, M.-F. Wang (SNU). 1 male, Hua Shan, Qingping, 7.viii.1978, G.-T. Jin. Sichuan: 1 female, S. Ya'an, 29.vi.2006, Y. Feng (SNU). 1 male, Bchluhdin, 1000 ft, D.C. Graham (USNM). Taiwan: 32 males, 1 female, Kenting park, Ping Tang, Hsien, 10–15.vi.1970, K. Nishida & H. Kurahashi. 1 male, Chipen, Taitung, Hsien, 15.xi.1985, K. Kanmiy. 1 female, Antung, Hualine hsien, 12.x.1985, K. Kanmiya. 1 female, Janai (Mushia) Mantou Hsien, 28.ix.1965, K. Kaneko (BLKU). Koshun, 1 male, 1909, 1 male, 1912, H. Sauter. 2 females, Taihcrinsho, xi.1909, H. Sauter. 1 female, Toa Tsui Kutsu, H. Sauter, v.1914. 1 male, Kao Hsiung Co., 10–11 km NE Chiahsien, ca 300 m, forest, 3–8.vii.1980, D.R. Davis (USNM). Xizang: 1 male, Yigong, 2300 m, 30.vii.1978, F.-S. Li (CAU). 2 males, Métong, 24.v.1980, G.-T. Jin (SEMC). Yunnan: 2 males, Dagaoping, 1600 m, Simao, 7–9.ix.1996, H. Shima. 1 male, Nanping, 1600 m, Simao, 12.viii.1990, H. Shima. 1 male, Simao, 31.vii.1990, S. Lin (BLKU). 1 male, Nanxi, 300 m, Hekou, 5.vi.1956, Bangfeilov. 1 male, Xiaomengyang, 1850 m, Xishuangbanna, 28.vi.1953, L. Zhang (IZCAS). 1 female, Heilongtan, 2100 m, Kunming, 5.viii.1993, H.-W. Chen. 1 male, Gaoligong Shan, 2400 m, Pianma, Lushui, 22.vi.2010, Y.-Y. Zhou. 2 males, same locality as previous, 2200–2800 m, 13.viii.2010, C.-T. Zhang (SNU). Zhejiang: 1 male, Tianmu Shan, Linan, 16.ix.1947. 1 male, same locality as previous, 14.v.1963, G.-T. Jin (SEMC). 1 male, 1 female, same locality as previous, 10.xii.1990, X. Gao (SNU). **JAPAN.** Okinawa: 2 males, Ryukyu Syonehara, Ishikakijima, 9.iv.1996, T. Tachi. 1 male, Iriomote I., Tyae-yama-gun, 24.x.2001, M. Yago. 1 male, Kurokawa, Echigo, 7.viii.1954, K. Baba. 1 male, same locality as previous, 10.v.1991, Kazuo Miyoshi. 5 males, 1 female, Ryukyus, Omoto dake, 5 and 9.iv.1996, T. Tachi. Same locality as previous, 1 female, 2.xii.1993, Matsumoto; 2 males, 2–7.vii.1998, M. Sueyoshi. 2 males, Banna park, Ishikakijiam, 8.iv.1996, Matsumoto. 1 male, Nagamagawa, Iriomote I., 29.iii.2002, K. Odagiri leg. 5 males, Ryukyu, Iriomote I., Mt. Ushika, 100–300 m, Shiranama, 3–7, 10–14.xi.1963, S.A. Samuelson (BLKU). **LAOS.** 1 male, Vientiane Prov., Ban Vah Eue, 31.vii.1965, native collector (BPBM). **MALAYSIA.** 1 female, Muara Mongkos, 100 km NE, Kuching, Boreno, Sarawak, 25–27.xi.1975, H. Shima (BLKU). **NEPAL.** 3 males, Kahre, 1745 m, Syaui Bazai, 1195 m, 29.vii.1990, S. Shinonaga & K. Kanmiya. 6 males, Syaui bazar, 1195 m, Gandlung, 1995 m, 30.vii.1990, S. Shinonaga and K. Kanmiya. 1 male, Bagmati, Mt. Pulchoki, 1540–2760 m, 6–7.viii.1992, H. Kurahashi. 1 male, 1 female, Gokarna, Kathmandu valley, 2–7.viii.1992, R. Kano. 1 male, Solukhumbu, Chumoa–Lakla, 2715–2800 m, 3.viii.1992, H. Shima. 1 male, Solu Khunbu, Bhandar-sete, 1540–2574 m, 26.viii.1992, M.M. Singh. 1 male, Kharru Pokhari, Taplelung, 3000 m, 17.vii.1963, T. Yasuda. 1 male, 1 female, Godavari, Kathmandu, 1600–2000 m, 5.vi.1972 and 17.viii.1972, H. Nakihara, Kyushu Univ. col. 1 male, Shawa, 2300 m, Papun, 2100 m, 10.vi.1972, Kyushu Univ. col. 4 males, Takara, 1500 m–Lelep, 1700 m, E. Nepal, viii.1972, H. Shima. 1 male, Kathmandu, 1300 m, Water supply, 23.viii.1987, H. Kurahashi. 1 female, Godayara, Konakhola, 30.viii.1987, E. Sugiyama. 1 female, Godawari, 1500 m, Kathmandu, 30.x.1992, M. Iwasa. 1 male, Solu-khumbu, Bandarsete, 2150–2575 m, 26.vi.1992, H. Shima. 1 male, 1 female, Bansbari, Godavari, 1400 m, in Kathmandu, 4.vii.1964, 31.viii.1988, T. Inaoka, R. Kano. 1 female, Bagmati Kathmandu, 1300 m, town, 28.ix.1990, H. Kurahashi. 1 male, Gandaki Kashi, Chomrong–Ghandruk, 1970–2050 m, 14.x.1990, H. Kurahashi (BLKU). **PAKISTAN.** 1 male, Swat Kalam, 1800 m, village, 9.viii.1987, H. Kurahashi. 1 male, Shangle Pass, 2000 m, 8.viii.1988, S. Shinonaga. 1 male, 1 female, NWF Prov., 1700 m, Shangula Pass, 9.viii.1988. 1 female, NWF Prov., Miandam, 1300 m, 4.viii.1988, H. Kurahashi (BLKU). **PHILIPPINES.** 1 male, Baguio Abatan, 13.vi.1964, H.M. Torrevillas (BPBM). **SRI LANKA.** 1 male, Hatton, 70 km E. of Avissawella, 24.ix.1987, H. Kurahashi. 7 males, 2 females, Mt. Pidurutalagala, 2524 m, 25.ix.1987, H. Kurahashi. 4 males, 3 females, Nuwara Eliya, Mt. Piddlugala, 25.ix.1987, M. Iwasa. 1 female, Wellawaya, 26.vii.1989, H. Kurahashi. 4 males, Nuwara Eliya to Patipola, 26.ix.1987, M. Iwasa. 1 female, Nuwara Eliya town, 2000 m, 27–28.ix.1987, H. Kurahashi. 1 male, Nuwara cow farm, 27.ix.1987, M. Iwasa (BLKU). 1 male, Kandy Rose Nith Est., 31.x.1966, J.F.G. Clarke, Theima M. Clarke. NE Dist., Kanda–ela Reservoir, 5.6 ml, SW, Nuwara Eliya, 6200 ft. 1 male, 10–21.ii.1970,

Davis & Rowe, 1 male, 14.iii.1973, Baumann & Cross. 2 males, NE Dist., World End, 6800 ft. Horton Plains, 21.ii.1970, Davis & Rowe. 1 female, Mt. Pidurutalagala, 1 mi N. Nuwara Eliya, 7500–8200 ft, 14.ii.1970, Davis & Rowe. 1 female, NE Dist., Adams Peak Trail, 4–5 mi W. Maskeliya, 1610–1690 m, 20–21.x.1977, W. Maskeliya. 1 male, Botanic garden, 23–25.ii.1977, K.V. Krombein. 2 males, Kan Dist. Udawattakele Sanct, 1800 ft, 1–2.ix.1980, P.B. Karunaratne, T. Wijessinhe, L. Jayawickrema, V. Gunawardane. 1 male, 3 females, NE. Dist. Hakgala Sanctuary, 23–24.iv.1981, K.V. Krombein, T. Wijesinhe, L. Weeratunge, W.N. Mathis, L. Jayawickrema. 1 male, Gal Dist., Kanneliya, Sinharaja Jungle, 24–26.i.1979, K.V. Krombein, T. Wijesinhe, L. Weeratunge. 4 males, Nuwara Eliya, 6000 ft, 26.ix.1980, P.B. Karunaratne, T. Wijessinhe, L. Jayawickrema, V. Gunawardane (USNM).

**Distribution.** China (Anhui, Beijing, Fujian, Gansu, Guangdong, Guangxi, Hainan, Hebei, Hongkong, Liaoning, Shanxi, Shaanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang), India, Indonesia (Borneo, Java), Japan (Ryukyus), Laos, Malaysia (Pen. Malaysia, Sarawak), Myanmar, Nepal, Pakistan, Philippines (Mindanao), Russia (S. Far East). Sri Lanka.

**Remarks.** We did not see the type specimen of this species (type not located in Humboldt University Museum by Crosskey 1976: 178) and follow Mesnil (1980) on the identification of the species. Crosskey (1969: 92, 1976: 179) considered *Eomyoceropsis sumatrensis* Townsend as a male of *Calotheresia sumatrensis* Townsend, described from females only, and treated both as junior synonyms of this species, but we consider the former as a distinct species and redescribe it below. This species is widely distributed in the Palearctic and Oriental Regions. It appears to be close to the Oriental *D. sumatrensis*, but differs from it by shorter prementum, narrower frons, and longer costal spine. The specimens from Sri Lanka are rather different from specimens from other areas, having darker and more grayish body color and longer legs, but are here tentatively treated as the same species.

### *Dexia fusiformis* Walker, 1861

*Dexia fusiformis* Walker, 1861: 266. — Wulp 1896: 138 (catalog). — Crosskey 1976: 179 (catalog).

**Diagnosis.** Thorax with 2 broad longitudinal black vittae; proepisternum bare; 3 katapisternal setae; wing reddish brown to dark on basal area and along veins; legs black.

**Description.** Body length. 15.0–16.2 mm.

**Male. Head** with dense whitish pruinosity, upper fronto-orbital plate and upper occiput with yellowish pruinosity, lunule and upper 2/3 of facial carina yellow, base of vibrissa shining black; antenna brown, apex of pedicel narrowly reddish; palpus reddish yellow, darkened on basal 2/5. Frons about 0.15 times as wide as head width; frontal vitta about 3 times as wide as fronto-orbital plate at middle; parafacial nearly parallel-sided, about 3 times as wide as 1st flagellomere; facial carina long and high, apical portion rather broadly flattened on entire length, lower margin of face well produced forward; gena about 3/7 times as wide as eye height; occiput well bulged. Inner vertical seta fine, less than 1/2 eye height; outer vertical seta about 2/5 as long as inner vertical seta; ocellar seta fine hair-like, at most as long as outer vertical seta; 14–15 frontal setae, lowest seta nearly level with base of antenna; fronto-orbital plate with a row of fine hairs close to row of frontal setae; gena with several fine short hairs on anterior portion and several longer ones on posterior portion; vibrissa inserted above level of lower margin of face by about length of pedicel. Antenna falling short of lower margin of face by about 1/2 length of 1st flagellomere, 1st flagellomere about 4.5 times as long as pedicel; total width of arista including plumosity 2–3 times as wide as 1st flagellomere. Prementum slender, about 2/3 as long as eye height; palpus slightly longer than pedicel and 1st flagellomere combined.

**Thorax** black in ground color, supra-alar region, postalar callus and basal half of scutellum dark brown, apical half of scutellum reddish; scutum with dense yellowish white pruinosity and 2 broad longitudinal black vittae, pruinose portion between vittae about 3/5 as wide as a vitta; pleura with rather dense grayish white pruinosity. Hairs black; 2 postpronotal setae; 1 presutural and 2 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 3 supra-alar setae, 2 katapisternal setae; proepisternum bare, katapisternum densely haired. **Wing** tinged with reddish brown from base to level of



bifurcation of veins  $R_{2+3}$  and  $R_{4+5}$  between costa and stem of vein  $R_{2+3}$  and  $R_{4+5}$  and from base to level of base of cell  $bm$  below, tinged with brown from costa to vein  $R_{4+5}$  and along veins and crossveins, the tinge fading marginally; tegula and basicosta black; lower calypter brown. Costal spine absent; relative lengths of 2nd, 3rd and 4th costal sectors approximately 6:11:4.5; vein  $M$  from  $dm-cu$  crossvein to its bend about 4.5 times distance between the bend and wing margin. Lower calypter with short fringe on outer margin. **Legs** black. Mid tibia with 2–3 posterodorsal setae; hind tibia with 3–5 anterodorsal, 1 posterodorsal and 1 ventral setae.

**Abdomen** translucent reddish yellow, black on syntergite 1+2, mid dorsal longitudinal portion of tergites 3 to 5, posterior 1/3 of tergite 3, 2/5 of tergite 4 and 1/2 of tergite 5; thin whitish pruinosity visible on side and venter of tergite 5 when seen from behind. Hairs dense, fine, short and recumbent, erect on tergite 5; syntergite 1+2 without median marginal setae, with 1 lateral marginal seta; tergite 3 without discal setae, with 2 short median marginal and 1 strong lateral marginal seta; tergite 4 with 4 irregularly set short median discal and a row of marginal setae; tergite 5 with regular rows of strong discal and marginal setae.

**Female.** Frons 0.31–0.32 times as wide as head width; frontal vitta about 1.5 times as wide as fronto-orbital plate at middle; parafacial about 4 times as wide as 1st flagellomere at middle height; gena about 0.55 times as wide as eye height; facial carina high, broad and flattened apically. All head setae strong, ocellar seta slightly longer than prevertical seta, shorter than outer vertical seta; inner vertical seta 2.5 times as long as outer vertical seta, slightly more than 1/2 of eye height; 2 proclinate orbital setae, anterior seta slightly longer and subequal in length to inner vertical seta. Prementum longer than 3/5 of eye height. Postsutural scutum with black transverse band in front of scutellum. Wing dark on basal area and along veins; costal spine absent or very small. Abdomen black in ground color, with dense gray-white pruinosity on anterior 2/5 of tergite 3, 1/3–1/2 of tergite 4 and 1/2–4/5 of tergite 5; tergites 3 to 5 without discal setae. Other characters almost same as in male.

**Type material examined.** Holotype male of *Dexia fusiformis* Walker, **INDONESIA**, Tondano, Celebes [= Sulawesi], A.R. Wallace (BMNH).

**Additional material examined.** **INDONESIA.** Sulawesi: 1 female, Noongan, 50 km S. of Manado, 1200 m, 2–10.xii.1973, H. Kurahashi. 1 female, Toloko, Rantepao-Palopo, Sulawesi, Sulatan, 21.ix.1979, N. Kashiwai. 1 female, 50 km W of Paso, 1000 m, Sulawesi Tengah Mountain, 2.ix.1997, H. Kurahashi. 1 female, Nokilalaki, 1500 m, Sulawesi Tengah Mt., 3.ix.1997, H. Kurahashi (BLKU). Sulawesi: 1 female, Nord-Celebes, Toli, ix–xii.1895, H. Fruhstorfer (BMNH). 1 female, Celebes. Minahasa, Tomohon, 1–9.iv.1954, A.H.G. Alston (BMNH).

**Distribution.** Indonesia (Sulawesi).

**Remarks.** This species is similar to *D. caldwelli*, but is distinguished from it in having prementum longer than 3/5 eye height, lower margin of face well produced forward, bare proepisternum, lower calypter with short fringe on outer margin, and black femora.

### *Dexia gilva* Mesnil, 1980

Figs. 45–48

*Dexia (Eomyocera) gilva* Mesnil, 1980: 44. — Herting 1984: 143 (catalog). — Shima 1989: 869 (list). — Herting & Dely-Draskovits 1993: 366 (catalog). — Chao *et al.* 2002: 832 (note). — Zhang *et al.* 2004: 128 (list). — O'Hara *et al.* 2009: 29 (catalog).

*Dexia subflava* Zhang, Pang & Chao, 2005: 304. *Nomen nudum*.

**Diagnosis.** Palpus subequal in length to 1st flagellomere or shorter; prementum 2.5–3 times as long as wide; thoracic inner black longitudinal vitta 0.3–0.5 as wide as pruinose portion between inner and outer vittae; 3 presutural and 3 postsutural dorsocentral setae; 2 katepisternal setae; and legs reddish yellow.

**Description.** Mesnil (1980) described this species in detail. We add here measurements and some diagnostic features.

Body length. 8.0–13.0 mm.

**Male. Head:** Frons 0.13–0.18 times as wide as head width, facial carina weakly developed; parafacial about twice as wide as 1st flagellomere; gena 0.4–0.5 times as wide as eye height. Inner vertical seta 0.25–0.36 times as long as eye height; 9–10 inclinate frontal setae as long as ocellar seta, longer than inner vertical seta. 1st flagellomere 2.5–3 times as long as pedicel. Prementum 2.5–3 times as long as wide; palpus at most as long as 1st flagellomere. **Thorax** black, with yellowish pruinosity, with 4 longitudinal black vittae on dorsum, an inner vitta 0.3–0.5 times as wide as pruinose portion between inner and outer vittae; scutellum black, with yellowish pruinosity. Proepisternum bare, postpronotal lobe with 2 strong setae; 2 presutural and 3 postsutural dorsocentral setae; 2–3 supra-alar setae, anterior one strongest; 2 katapisternal setae. **Wing** hyaline, brownish, tegula and basicosta reddish to dark brown; costal spine as long as crossvein r-m; relative lengths of 2nd, 3rd and 4th costal sectors approximately 1:2:1. Lower calypter with long fringe on outer margin. **Legs** yellow; mid tibia with 1–2 posterodorsal setae; hind tibia with 2–3 anterodorsal, 2–3 posterodorsal and 2 ventral setae. **Abdomen** translucent yellow, broadly black on mid longitudinal portion and posterior margin of tergites (sometimes reddish yellow); grayish white pruinosity on anterior 1/5–1/3 of tergite 3, 1/4–1/2 of tergite 4 and 1/2–3/5 of tergite 5. Syntergite 1+2 with 1–3 lateral marginal setae, without median marginal setae; tergite 3 with 1–2 pairs of discal setae, 1 pair of median marginal and 1–3 lateral marginal setae; tergite 4 with 1–2 pairs of discal setae; tergite 5 with a row of discal setae. **Male terminalia.** Cerci slender and slightly pointed apically; surstylus short, narrow and pointed apically; postgonite slightly shorter than basiphallus.

**Female.** Frons 1/3–2/5 times as wide as head width; parafacial 3–4 times as wide as 1st flagellomere; gena about 1/2 eye height; 4–5 inclinate frontal setae; 2 strong proclinate and 1 reclinate orbital setae; latter about as long as ocellar seta; outer vertical setae about 1/2 as long as inner vertical seta. Thorax with yellowish gray pruinosity. Wing brown, vein M with short appendage at bend. Mid tibia with 2–3 posterodorsal setae; hind tibia with 2–4 anterodorsal, 2 posterior and 1–2 ventral setae. Abdomen reddish yellow, anterior and posterior portion of synternite 1+2 dark brown; median portion reddish brown, gleaming black on posterior 2/3–4/5 of tergite 3; 1/2–3/5 of tergites 4 and 5; gray pruinosity on anterior 1/4 of tergite 3, 1/2–2/3 on tergites 4 and 5; tergites without regular discal setae.

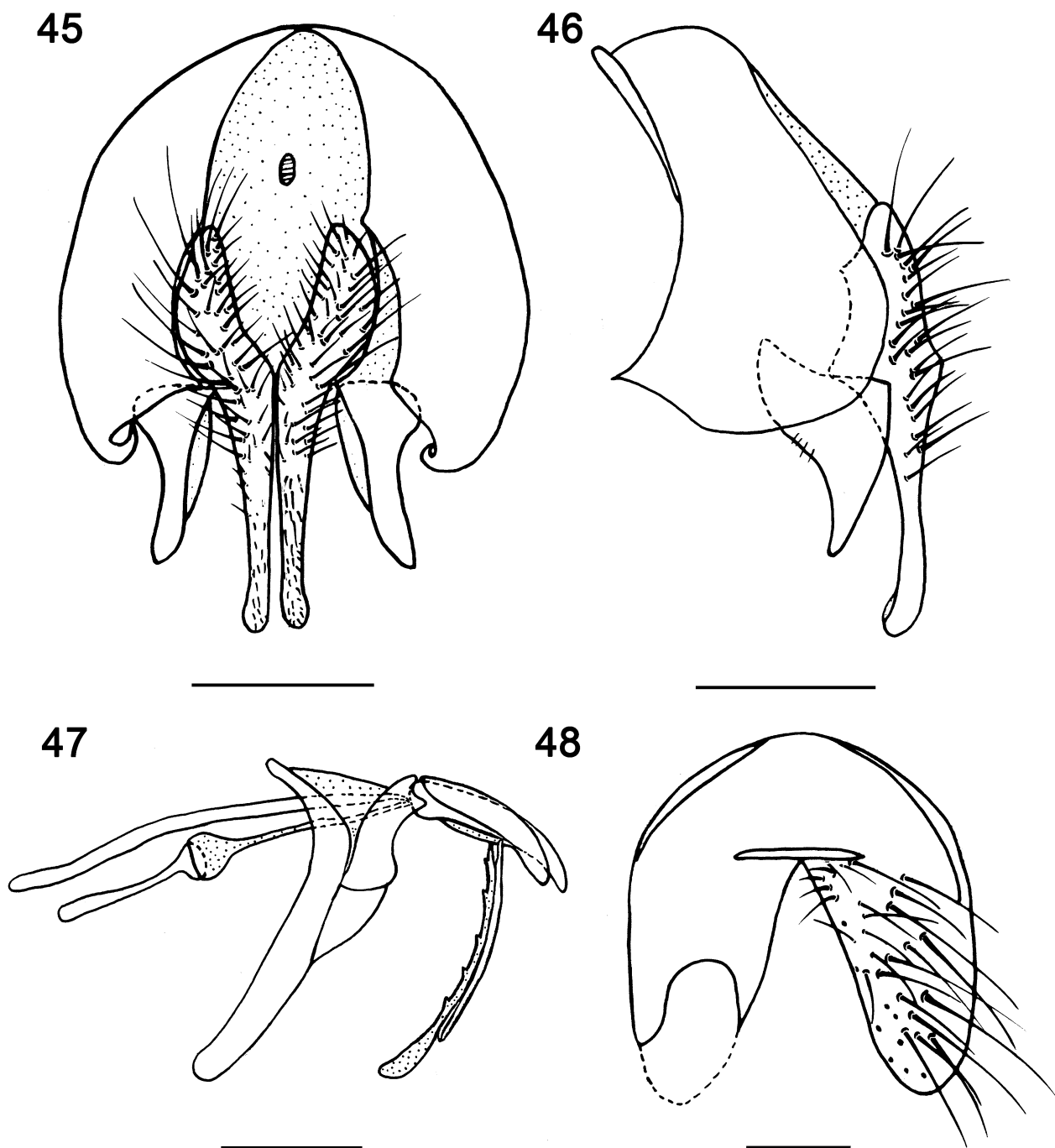
**Type material examined.** Holotype male of *Dexia gilva* Mesnil, Shinmura, Amami-Oshima, Ryukyu Islands, **JAPAN**, 5.xi.1966, T. Okuno (BLKU). Paratypes. **JAPAN**: 13 males, Amami-Oshima and Tokunoshima Islands, xi.1966, T. Okuno (BLKU).

**Other material examined. CHINA.** Anhui: 1 male, Mt. Mei, 21.vii.1964, G.-T. Jin. 6 males, 2 females, Huoshan, Foziling, 11–23.ix.1964, G.-T. Jin. 1 male, Huoshan, Dahuaping, 4.ix.1964, G.-T. Jin (SEMC). Guangxi: 1 female, Maoer Shan, 1200 m, 15–18.v.2004, M.-F. Wang (SNU). Hubei: 1 male, Songluo, 900 m, Shennengjia, 14.vi.1981, Y.-H. Han. Sichuan: 1 male, Emei Shan, 6.vi.1955, K.-R. Huang (IZCAS). 1 male, 1 female, Emei Shan, Jingshui, 700 m, 15.viii.1998, T. Saigusa. 2 males, 2 females, Tianquan Xian, 1100–1200 m, 30.viii.1993, X. Liang. 1 female, Erdaogou, 1690 m, Nanping, 2.viii.1993, H. Shima (BLKU). 1 male, Zhongjiang, 27.x.1981, X.-S. Li (SEMC). 2 males, Erlang Shan, 1100–2100 m, Luding, 18.vii.2006, J.-Y. Liu (SNU). Xizang: 1 male, Xiaojilong, 2800 m, Jilong, 27.vii.1975, Z. Wang (IZCAS). 5 males, 6–25.iv.1980, G.-T. Jin, J.-Y. Wu. 6 males, Linzi, 9.vii.1977, J.-Y. Wu. 1 male, Beibeng, 28.vii.1977, J.-Y. Wu. 1 male, Lang Xian, 8.vii.1977, J.-Y. Wu. Yunnan: 1 female, Haishuihe, 2700m, Lijiang, 28.viii.1996, H. Shima (BLKU). 1 male, Liude, 2400 m, Yongsheng, 8.viii.1984, S.-Y. Wang (IZCAS). Zhejiang: 1 male, 1 female, Taishun, 29.vi.1963, G.-T. Jin. 1 male, Tianmu Shan, 8.v.1963, G.-T. Jin. 1 male, 1 female, Mt. Yandang, 11–18.vi.1963, G.-T. Jin (SEMC). **JAPAN.** Okinawa: 2 males, Asahiga-Oka, Tokunoshima, Ryukyu, 7.xi.1966, T. Okuno leg. 1 female, Mt. Inokawa, Tokunoshima, 10.xi.1971, S. Shinonaga. 1 male, Izumi, 29.vi.1982, K. Ohara. 1 male, Yoma, 21.x.1994, R. M. Ryukyus: 1 female, Urangani, Amami-Oshima Is., 30.x.1966, T. Okuno. 1 male, Amami Is., 16.iv.1967, K. Honda. 2 males, 2 females, Yuwan dake, Amami-Oshima, 22–25.iv.1996, T. Tachi. 2 males, 2 females, Tete, Inokawadake, Tokunoshima, 24.iv.1996 and 28–30.iv.1996, M. Sueyoshi and R. Matsumoto (BLKU). 1 female, Amami Oshima I., Naze city, 14.vii.1963. 1 female, Amami Oshima I., Yuwan-dake, 10–300 m, 29.vii.1963, Malaise Trap, J. L. Gressitt. 1 male, Okinawa I., Hentona, 25.iii.1964, C.S. Yoshimoto (BPBM). **VIETNAM.** 1 female, Sapa 1500 m, Laocai, 13.v.1995, Y. Nishikawa. 1 male, Lai Chau, Mt. Phang, Si Pang, N. ridg., 1970 m, 4.x.1995, H. Kurahashi. 5

males, 3 females, Sapa, 1700 m, Lao Cai Prov., 26–30.v.1997, R. Matsumoto. 1 male, 1 female, same locality as previous, 20.vi.1999, M.S. 2 males, Lao Cai Prov., nr. Sapa Deo Tram Ton, 1950 m, 27–29.vi.1997, 31.v.1999, H. Kurahashi (BLKU).

**Distribution.** China (Anhui, Guangxi, Hubei, Sichuan, Xizang, Yunnan, Zhejiang); Japan (Ryukyus), Vietnam.

**Remarks.** *Dexia gilva* is similar to *D. flavipes* from Japan, but differs from it in having wider frontal vitta, 3 supra-alar setae, inner thoracic vitta about 1/2 as wide as pruinose portion between inner and outer vittae, and reddish to dark brown tegula.



**FIGURES 45–48.** *Dexia gilva* Mesnil. **45–46.** Epandrium, cerci and surstyli in dorsal and lateral views. **47.** Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **48.** Sternite 5. Scale bars = 0.25 mm.

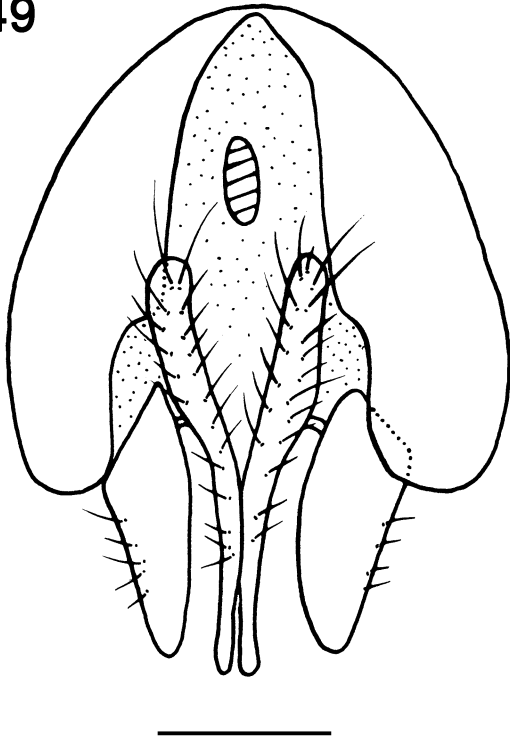
*Dexia hainanensis* Zhang, 2005

Figs. 49–52

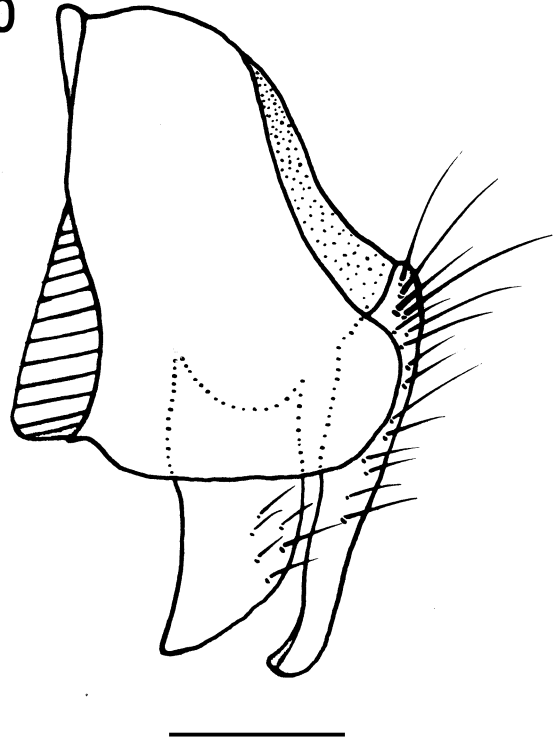
*Dexia hainanensis* Zhang, 2005: 436. — O'Hara *et al.* 2009: 29 (catalog).

**Diagnosis.** Thoracic dorsum with 4 longitudinal vittae, of which inner longitudinal black vitta is about 1/4 as wide as pruinose portion between inner and outer vittae on presutural scutum; abdominal tergites 3 and 4 each with a complete row of marginal setae in both male and female.

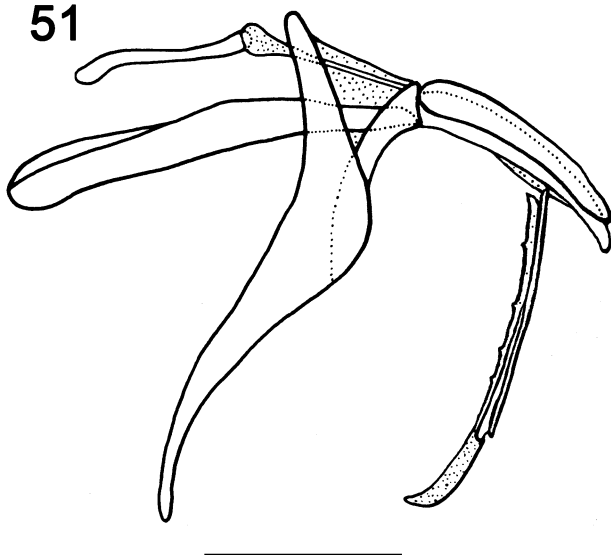
49



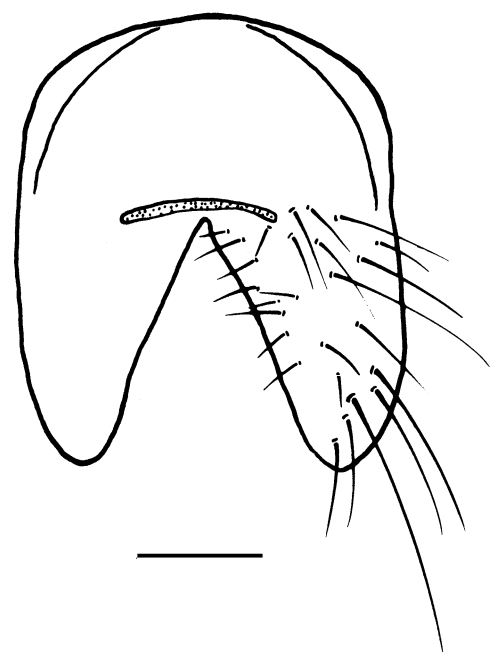
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**FIGURES 49–52.** *Dexia hainanensis* Zhang. **49–50.** Epandrium, cerci and surstyli in dorsal and lateral views. **51.** Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **52.** Sternite 5. Scale bars = 0.25 mm.

**Description.** Zhang (2005) described this species in detail. Here we give some diagnostic characters.

Body length. 9.0–15.0 mm.

**Male.** Frons 0.14–0.17 times as wide as head width; parafacial slightly more than twice width of 1st flagellomere; gena 0.4–0.44 times as wide as eye height. Inner vertical seta slightly more than 1/3 eye height, and twice as long as outer vertical seta; ocellar seta stronger than inner vertical seta. 1st flagellomere 3.5–4 times as long as pedicel. Prementum 2.5–3 times as long as wide; palpus about as long as antenna. **Thorax** black in ground color, postpronotal lobe and apical half of scutellum reddish yellow, covered with thin pale yellowish pruinosity; scutum with 4 longitudinal black vittae, inner vitta about 1/4 as wide as pruinose portion between inner and outer vittae. Proepisternum bare. All thoracic hairs black; postpronotal lobe with 3–4 setae (2 strong), 3 basal setae standing nearly in a straight line; 3 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 2 supra-alar setae; 2 katepisternal setae. **Wing** pale brownish hyaline; tegula and basicosta dark brown, tegula sometimes reddish yellow on base. Costal spine about as long as crossvein r-m; relative lengths of 2nd, 3rd and 4th costal sectors approximately 1:2.2:1.2; vein M from dm-cu crossvein to its bend 4–6 times distance between the bend and wing margin. Lower calypter with long fringe on outer margin. **Legs** reddish yellow. Mid tibia with 2 posterodorsal setae; hind tibia with 4–5 anterodorsal, 2–5 posterodorsal and 2 ventral setae. **Abdomen** translucent yellow, black on mid-dorsal longitudinal area and posterior margin of syntergite 1+2 to tergite 5, with rather dense whitish pruinosity on anterior 1/6–1/5 of tergites 3 to 5. Syntergite 1+2 with 1 lateral marginal seta, without median marginal setae; tergites 3 and 4 each with 2 pairs of median discal and a row of marginal setae; tergite 5 with rows of discal and marginal setae. **Male terminalia.** Cerci slender and apically pointed; surstylus about 3 times as long as wide, apex blunt or weakly pointed; postgonite slightly shorter than basiphallus; distiphallus long, sclerotized basal part about 3 times as long as membranous apical part.

**Female.** Frons 0.3–0.4 times as wide as head width; gena about 0.52 times as wide as eye height; inner vertical seta about 2/3 eye height; outer vertical seta slightly less than 1/2 length of inner vertical seta; ocellar seta as long as inner vertical seta; 1 weak outwardly directed prevertical and 2 strong proclinate orbital setae; 6–8 frontal setae. Lower calypter yellowish, with short fringe on outer margin. Abdomen yellow, dark brown on posterior margin of syntergite 1+2, posterior 1/3 of tergite 3 and posterior 2/3 of tergites 4 and 5; grayish white pruinosity on anterior 1/4–1/5 of tergite 3 and anterior 1/3 of tergites 4 and 5; tergite 3 with 1–2 pairs of median discal setae and tergite 4 with a pair of median discal setae. Other characters almost same as in male.

**Type material examined.** Holotype male of *Dexia hainanensis* Zhang, CHINA, Jianfengling, 800 m, Hainan, 20.v.1993, Y.-S. Cui. Paratypes. Hainan: 1 male, 1 female, same data as holotype; 1 male, Wuzhi Shan, 1200 m, 14.v.1993, Y.-S. Cui (SNU).

**Additional material examined.** CHINA. Hainan: 1 male, Jianfengling, 20.vi.1981, Z.-Q. Chen (IZCAS). 2 females, Diaoluo Shan, 500–950 m, 22–24.v.2003, C.-T. Zhang (SNU).

**Distribution.** China (Hainan).

**Remarks.** This species appears to be close to *D. divergens*, but differs from it in having narrow inner thoracic vitta, abdominal tergite 3 with a complete row of marginal setae in both sexes, and narrower cerci.

### *Dexia kurahashii* Zhang et Shima, sp. nov.

Figs. 53–56

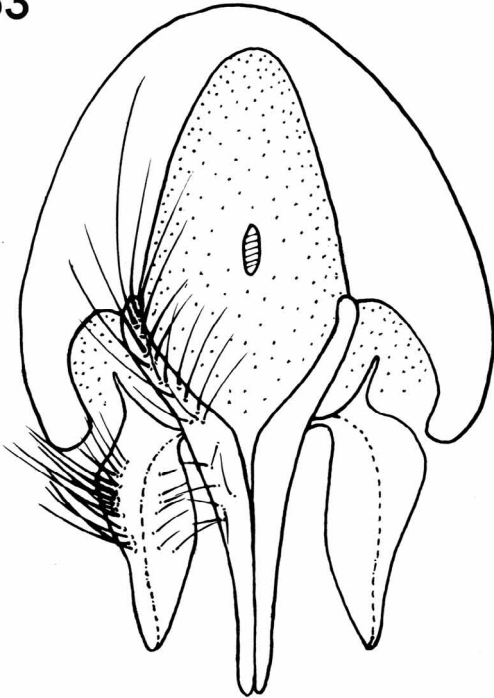
**Diagnosis.** Prementum about 6 times as long as wide; inner and outer thoracic vittae merged on postsutural scutum; 3 katepisternal setae; legs black; abdominal tergites 3 to 5 each with a triangular black marking; syntergite 1+2 with 1 pair of median marginal setae.

**Description.** Body length. 9.1–14.3 mm.

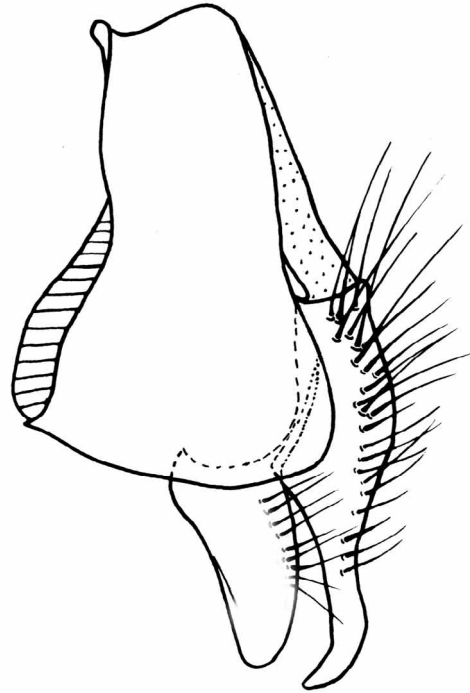
**Male. Head** with yellowish white pruinosity; frontal vitta brownish black; gena reddish brown; 1st flagellomere yellow, pedicel reddish to brown; palpus reddish yellow. Frons 0.16–0.17 times as wide as head width; frontal vitta widened anteriorly, wider than fronto-orbital plate; parafacial about 3 times as wide as 1st flagellomere; facial carina well developed, flattened apically; gena 0.4–0.5 times as wide as eye height; lower

margin of face slightly protruding forward. Inner vertical seta 0.4–0.5 times as long as eye height, outer vertical seta hair-like, 0.6–0.7 times as long as inner vertical seta; ocellar seta slightly longer than inner vertical seta; 11–12 inclinate frontal setae, lowest one nearly level with base of scape; vibrissa inserted slightly above level of lower margin of face. Antenna falling short of lower margin of face by 0.6–0.8 length of 1st flagellomere; 1st flagellomere 3.5–4 times as long as pedicel, total width of arista including plumosity about 4 times as wide as 1st flagellomere. Prementum about 6 times as long as wide; palpus longer than antenna.

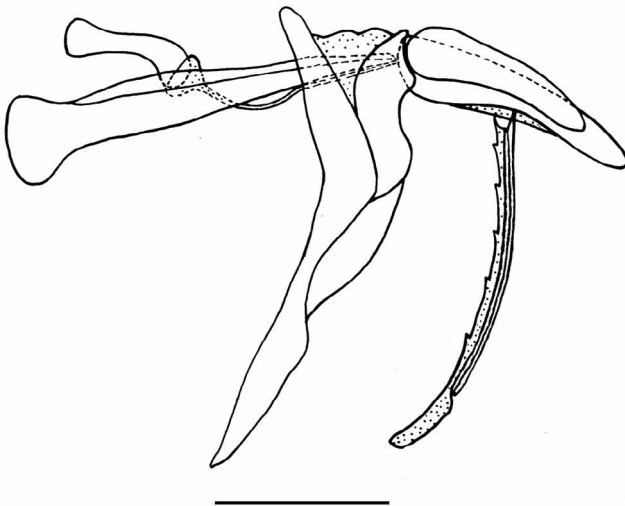
53



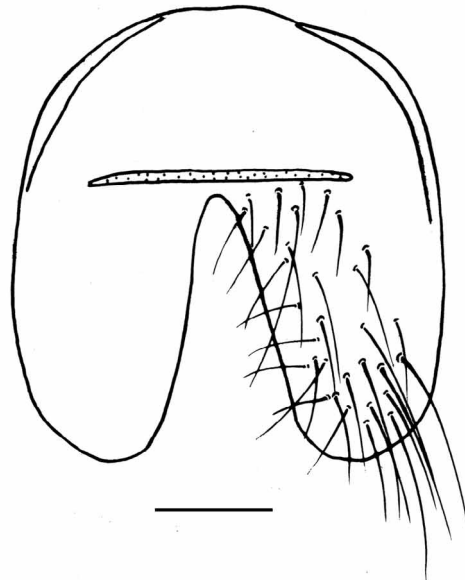
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**FIGURES 53–56.** *Dexia kurashii* sp. nov. **53–54.** Epandrium, cerci and surstyli in dorsal and lateral views. **55.** Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **56.** Sternite 5. Scale bars = 0.25 mm.

**Thorax** black in ground color, with dense yellowish gray pruinosity on scutum, gray pruinosity on pleura except for anterior portion of katepisternum and anepimeron; with 2 pairs of longitudinal black vittae on dorsum, inner and outer vittae merged on posterior half of presutural scutum; scutellum reddish yellow on apical 3/5. All thoracic hairs black; proepisternum bare; postpronotal lobe with 3 setae nearly in a straight line; 1 presutural and 2 postsutural acrostichal setae; 2 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 3 supra-alar setae, 1st one about 1/4 as long as second, shorter than intra-alar seta; 3 katepisternal setae. **Wing** hyaline, yellowish at base, brown along veins C, R<sub>1</sub>, R<sub>2+3</sub>, and R<sub>4+5</sub>; tegula and basicosta black; lower calypter yellowish. Costal spine about as long as crossvein r-m. Relative lengths of 2nd, 3rd, and 4th costal sectors approximately 5.5:12:5; vein M from dm-cu crossvein to its bend about 3 times distance between the bend and wing margin, appendix short; cell r<sub>4+5</sub> narrowly open at wing margin; last sector of vein CuA<sub>1</sub> about 1/2 as long as dm-cu crossvein. Lower calypter with short fringe on outer margin. **Legs** black, pulvilli brownish. Mid tibia with 2–4 posterodorsal setae; hind tibia with a row of 3–5 anterodorsal, 2 posterodorsal and 2 ventral setae.

**Abdomen** long ovate, translucent yellow, black on median excavation and anterolateral portion of syntergite 1+2 and a triangular black median marking on posterior 1/4–3/4 of each tergite; grayish white pruinosity on anterior margin of tergite 3, anterior 1/4–1/5 of tergite 4 and entire tergite 5. Syntergite 1+2 with 1 pair of median marginal and 1 lateral marginal setae; tergite 3 with 1–2 pairs of fine median discal, 1 pair of median marginal and 1–2 lateral marginal setae; tergites 4 and 5 each with 1–2 pairs of widely apart median discal and a row of marginal setae. **Male terminalia.** Sternite 5 subsquare, posterior lobe blunt apically; apical half of cerci slender and pointed at apex; surstylus apically narrowed and blunt; pregonite short, slightly bent at apex; basiphallus longer than postgonite and distiphallus long and plate-like.

**Female.** Frons widened anteriorly, about 1/3 head width at narrowest point; 6–7 inclinate frontal setae; 2 strong proclinate orbital setae and 1 small outclinate prevertical seta; inner vertical seta about 2/3 eye height, twice as long as outer vertical setae. Mid tibia with 2 anterodorsal, 2 posterodorsal setae. Abdomen ovate, reddish yellow, a triangular black marking on posterior 3/4 of tergite 3, 1/2 of tergite 4 and 1/4 of tergite 5; grayish white pruinosity on anterior 1/4–1/2 of tergite 3, 1/2–2/3 of tergite 4, and 3/4–4/5 of tergite 5. Other characters as in male.

**Type material.** Holotype male, **INDONESIA**, Suranadi, 100 m, Lombok, 18–21.xii.1973, H. Kurahashi (BLKU). Paratypes. **INDONESIA**. 1 female, Beratan, 1000 m, Bali Is., 15.xii.1973, H. Kurahashi. 14 males, 18 females, Suranadi, Sesaot and Sembella, 100–300m, Lombok, 18–22.xii.1973, H. Kurahashi & S. Shinonaga. 3 males, Wolowaru, 600 m, Flores, 20.xii.1973, H. Kurahashi. 2 males, Senaru, 750 m, Lombok I., 30.ix.2000, T. Tachi. 1 male, Pusuk Pass (monkey forest), 260 m, Lombok I., 1.x.2000, T. Yamauchi (BLKU).

**Etymology.** Specific name is dedicated to Dr. H. Kurahashi for his contribution to systematics of Diptera.

**Distribution.** Indonesia (Bali, Flores, Lombok).

**Remarks.** This new species closely resembles *D. longipes*, but differs from it in having black hairs on thoracic pleura and abdominal sternite 1, outer and inner black vittae merged on postsutural scutum, abdominal tergites each with a large triangular black marking.

### *Dexia lepida* Wiedemann, 1830

Figs. 57–60

*Dexia lepida* Wiedemann, 1830: 376. — Wulp, 1896: 138 (catalog). — Crosskey, 1966: 662 (types). — Crosskey 1976: 179 (catalog).

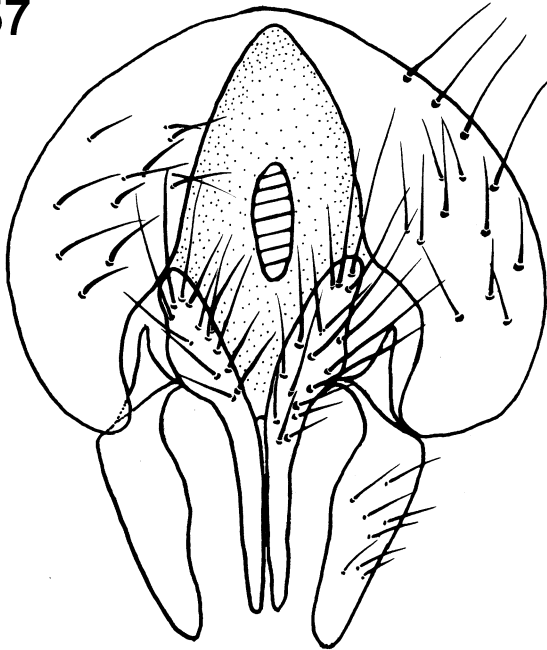
**Diagnosis.** Thorax with 1 presutural and 2 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; and abdominal syntergite 1+2 with 1 pair of median marginal setae.

**Description.** Body length. Male: 9.2–12.8 mm.

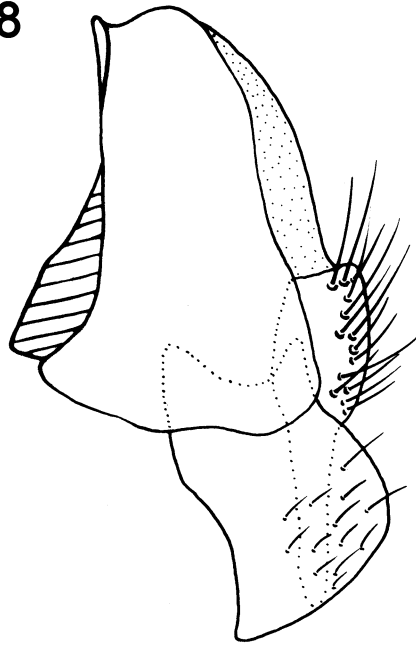
**Male. Head** with dense pale yellowish white pruinosity, more yellowish on fronto-orbital plate; antenna reddish yellow, with brown arista; palpus reddish yellow. Frons 0.16 times as wide as head width; frontal vitta 1.5–2 times as wide as fronto-orbital plate at middle; parafacial slightly widened below, about twice as wide

as 1st flagellomere at middle height; facial carina long and high, rather sharp at basal 1/2 and weakly flattened below, lower margin of face well warped forward; gena 0.40–0.44 times as wide as eye height. Inner vertical seta fine, less than 2/5 eye height; outer vertical seta still fine, hair-like, about 1/2 as long as inner seta; ocellar seta strong (missing in type specimen); 11–13 frontal setae, lowest seta nearly level with base of antenna; fronto-orbital plate with a few fine short hairs inside row of frontal setae; gena with very fine short hairs on lower portion; vibrissa inserted slightly above level of lower margin of face. Antenna falling short of lower margin of face by about 1/2 length of 1st flagellomere, latter about 5 times as long as pedicel; total width of arista including plumosity about 2.5 times as wide as 1st flagellomere. Prementum about 1/2 as long as eye height; palpus subequal in length to pedicel and 1st flagellomere combined.

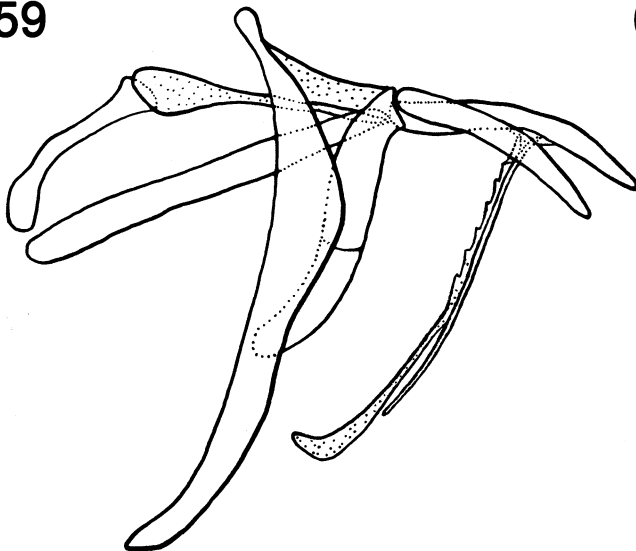
57



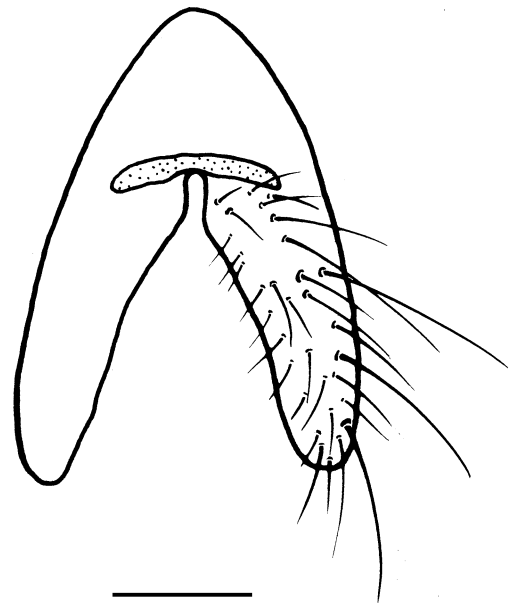
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**FIGURES 57–60.** *Dexia lepida* Wiedemann. **57–58.** Epandrium, cerci and surstyli in dorsal and lateral views. **59.** Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **60.** Sternite 5. Scale bars = 0.25 mm.



**Thorax** black, with dense grayish white pruinosity on dorsum and yellowish gray pruinosity on pleura; 2 pairs of longitudinal brownish-black vittae, inner vittae narrow, a vitta about as wide as pruinose portion between inner and outer vittae on presutural scutum; scutellum dark brown on basal half. Hairs black; proepisternum bare; postpronotal lobe with 2 setae; 1 presutural and 2 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 2 supra-alar setae; 2 katepisternal setae, katepisternum with 1–2 rows of hairs. **Wing** hyaline, faintly and evenly pale yellowish tinged; tegula reddish brown on basal 1/3 and brownish-black on apical portion; basicosta brownish black; lower calypter pale brownish, with long fringe on outer margin. Costal spine slightly longer than r-m crossvein; relative lengths of 2nd, 3rd and 4th costal sectors approximately 4.5:10.5:5.0; vein M from dm-cu crossvein to its bend about 3 times distance between the bend and wing margin, appendix short. **Legs** reddish yellow, tibiae darkened on basal and distal portions; tarsi black; claws brown, pulvilli pale brown. Mid tibia with 2 posterodorsal setae; hind tibia with 2 anterodorsal and 1–2 posterodorsal setae, without ventral seta. Claws and pulvilli long, fore claw and pulvillus slightly longer than tarsomere 5.

**Abdomen** long ovate, translucent yellow, blackish brown on mid dorsal longitudinal portion of syntergite 1+2 to tergite 4 (widened posteriorly on each tergite), posterior margin of syntergite 1+2, posterior 1/6–1/4 of tergite 3, posterior 1/3–2/5 of tergite 4 and entire tergite 5; tergites 3 and 4 with thin whitish pruinosity on narrow anterior margin, tergite 5 with rather dense pruinosity on anterior 1/4, the pruinosity expanded posteriorly to anterior 1/2 of side. Hairs dense and erect, long and black on scutum, very sparse on mid dorsal area of tergite 5; syntergite 1+2 with 1–2 pairs of median marginal and 1–2 lateral marginal setae; tergite 3 with 1–2 pairs of median discal, 1 pair of median marginal and 1 lateral marginal setae, anterior discal setae rather fine; tergite 4 with 2 pairs of median discal and a row of marginal setae; tergite 5 with 2–4 discal and a row of marginal setae. **Male terminalia.** Sternite 5 triangular, V-shaped median cleft deep, about 2/3 length of the sternite, posterior lobe blunt apically; cerci slender on apical 1/2 and pointed apically; surstylus long and bluntly rounded, narrowed at apex; postgonite slightly shorter than basiphallus; distiphallus long, plate-like.

**Female.** Unknown.

**Type material examined.** Lectotype male of *Dexia lepida* Wiedemann (designated by Crosskey 1966: 662), **INDONESIA**, Kuhr, Java. Paralectotype male of *Dexia lepida* Wiedemann, no data (RMNH).

**Additional material examined.** **INDONESIA.** 1 male, Puncak, 1300 m, Java, 14–15.xi.1973, H. Kurahashi (BLKU). 2 males, Goanoanc Gadeh, Java, iii.1911, E. Jacobscon (ZMUA).

**Distribution.** Indonesia (Java).

**Remarks.** This species resembles *D. subnuda*, but differs from it in having 2 pairs of longitudinal brownish-black vittae, 1 presutural and 2 postsutural acrostichal setae, 3 presutural and 3 postsutural dorsocentral setae, and abdominal syntergite 1+2 with 1 pair of median marginal setae.

### *Dexia longipennis* (Townsend)

*Eomyoceropsis longipennis* Townsend, 1926a: 29. — Baranov 1932: 216. — Crosskey 1969: 94 (type material). — Shima 1989: 869 (list).

*Dexilla longipennis* (Townsend): Crosskey 1967: 106.

*Dexia longipennis* (Townsend): Crosskey 1976: 179.

**Diagnosis.** Thorax with 2 presutural and 3 postsutural dorsocentral setae; tibiae reddish yellow, mid and hind tibiae slightly darkened; lower calypter with short fringe.

**Description.** Body length. 7.9–11.1 mm.

**Male. Head** with dense pale yellowish white pruinosity; fronto-orbital plate more whitish; antenna orange yellow, with reddish yellow arista; palpus reddish yellow. Frons 0.16–0.17 times as wide as head width; frontal vitta about twice as wide as fronto-orbital plate; parafacial about 2.5 times as wide as 1st flagellomere at middle height; facial carina curved, sharp at apex; lower margin of face slightly produced forward; gena about 0.4 times as wide as eye height. Inner vertical seta fine, about 2/5 eye height; outer vertical seta about 3/5 as long as inner seta; ocellar seta stronger than inner vertical seta; 10–12 frontal setae, lowest seta nearly

level with base of antenna; fronto-orbital plate almost bare; vibrissa inserted slightly above level of lower margin of face; gena with 1–2 rows of several fine hairs. Antenna falling short of lower margin of face by about 1/2 length of pedicel and 1st flagellomere combined; 1st flagellomere about 4.8 times as long as pedicel. Total width of arista including plumosity about 3 times as wide as 1st flagellomere. Prementum about 1/3 as long as eye height; palpus slightly shorter than 1st flagellomere.

**Thorax** black in ground color, scutum with rather dense yellowish white pruinosity, 2 broad outer and 2 narrow inner vittae, outer vitta about twice as wide as inner one and inner vitta subequal in width to pruinose portion between outer and inner vittae on presutural scutum; posteromedian portion of postsutural scutum slightly brownish; scutellum with yellowish gray pruinosity, dark on basal 1/3; pleura with rather dense grayish white pruinosity. Hairs black; 2–3 postpronotal setae; 1 presutural and 2 postsutural acrostichal setae; 2 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 2 supra-alar setae; 2 katapisternal setae, katapisternum with dense hairs. **Wing** evenly pale brownish tinged; tegula dark brown, basal portion slightly pale; basicosta black; lower calypter translucent pale brown, with long fringe on outer margin. Costal spine as long as r-m crossvein; relative lengths of 2nd, 3rd and 4th costal sectors approximately 1.1:2.6:1.3; vein M from dm-cu crossvein to its bend about 3 times distance between the bend and wing margin, appendix short. **Legs** reddish yellow; tarsi and claws brown-black; pulvilli brown. Mid and hind legs subequal in length and slightly longer than fore leg; hind tibia nearly straight. Mid tibia with 2 posterodorsal setae; hind tibia with 4 anterodorsal, upper 3 fine, 1 posterodorsal and 1 ventral setae. Claws and pulvilli slightly shorter than tarsomere 5.

**Abdomen** translucent reddish yellow, brownish-black on mid-dorsal longitudinal portion of syntergite 1+2 to tergite 4, posterior margin of syntergite 1+2, posterior 1/5 of tergites 3 and 4 and entire tergite 5; rather dense yellowish white pruinosity on anterior portion of tergites 3 and 4 (about anterior 1/8–1/10) and anterior 1/3 of tergite 5, the pruinosity band on tergite 5 narrowed on mid dorsal portion. Hairs dense fine short erect and black; syntergite 1+2 with 1 lateral marginal seta, without median marginal setae; tergite 3 with 1 pair of median discal, 1 pair of median marginal and 2 lateral marginal setae; tergite 4 with 1 pair of median discal and a row of marginal setae; tergite 5 with 2 pairs of median discal and a row of marginal setae; all setae strong.

**Female.** Frons about 0.29 times as wide as head width; frontal vitta narrower than fronto-orbital plate at middle; gena about 0.52 times as wide as eye height; all head setae strong, outer vertical seta slightly shorter than 4/5 eye height, about 2/5 as long as inner vertical seta; ocellar seta 5/7 as long as inner vertical seta; prevertical seta subequal in length to ocellar seta; 2 strong proclinate orbital setae, anterior seta stronger and slightly longer than inner vertical seta; 5–6 frontal setae; 1st flagellomere about 6 times as long as pedicel. Thoracic scutum more brownish; legs short, claws and pulvilli short. Abdomen broadly black on mid dorsal longitudinal portion of tergites, and on posterior 1/3–1/4 of tergite 3, posterior 3/4 of tergite 4 and 4/5 of tergite 5; tergites 3 to 5 without discal setae. Other characters almost same as in male.

**Type material examined.** Lectotype male of *Eomyceropsis longipennis* Townsend (by designation of Crosskey 1969: 94), **INDONESIA**, Tjibodas, Java, ii.1916, E. Jacobson (USNM).

**Additional material examined.** **MALAYSIA.** 1 male and 11 females, Pahang (BMNH).

**Distribution.** Japan (Irimote Is.), Indonesia (Java), Malaysia (Pen. Malaysia)\*.

**Remarks.** This species was described from two males. Crosskey (1969: 94) examined the “Lectotype male [by fixation of Townsend, 1938: 331]” in USNM, and this is here accepted as the lectotype of *Eomyceropsis longipennis* Townsend. Following O’Hara *et al.* (2009: 11), lectotype fixation by Townsend (1928: 331) is not accepted.

This species is similar to *D. monticola*, but differs from it in having short fringe on outer margin of lower calypter, and abdominal tergites 3 and 4 each with a pair of discal setae in male and without them in female.

### *Dexia longipes* (Townsend, 1926)

Figs. 61–64

*Eoptilodexia longipes* Townsend, 1926b: 536. — Baranov 1932: 215.

*Dexilla longipes*: Crosskey 1967: 106.

*Dexia longipes*: Crosskey 1976: 179. — Dear & Crosskey 1982: 115 (key).

**Diagnosis.** Prementum about 6 times as long as wide; 3 katepisternal setae; legs black; thoracic pleura and venter of abdominal base with long pale hairs; syntergite 1+2 with 1 pair of median marginal setae; entire tergite 5 with rather densely grayish pruinosity.

**Description.** Body length. 9.8–14.5 mm.

**Male. Head** with dense grayish white pruinosity; frontal vitta dark brown; lunule reddish brown; antenna with 1st flagellomere reddish yellow, pedicel and arista reddish brown; palpus reddish yellow. Frons about 0.15 times as wide as head width; frontal vitta about 1.5 times as wide as fronto-orbital plate at middle; parafacial nearly parallel-sided, 2–2.5 times as wide as flagellomere; facial carina high, sharp on ridge; lower margin of face rather strongly produced forward; gena 0.40–0.44 times as wide as eye height. Inner vertical seta about 0.44 times as long as eye height, outer vertical seta fine, 3/5 as long as inner vertical setae; 11–12 frontal setae, lowest frontal seta nearly level with base of pedicel; ocellar seta strong, longer than inner vertical seta and subequal to upper frontal setae; fronto-orbital plate with only a few fine short hairs; gena with several fine hairs on lower portion; vibrissa inserted above level of lower margin of face by about 1/2 length of pedicel. Antenna falling short of lower margin of face by about 1.5 times length of pedicel; 1st flagellomere 4–5 times as long as pedicel; total width of arista including plumosity about 4 times as wide as 1st flagellomere. Prementum slender, about 6 times as long as wide or 0.7 times as long as eye height; palpus subequal in length to pedicel and 1st flagellomere combined.

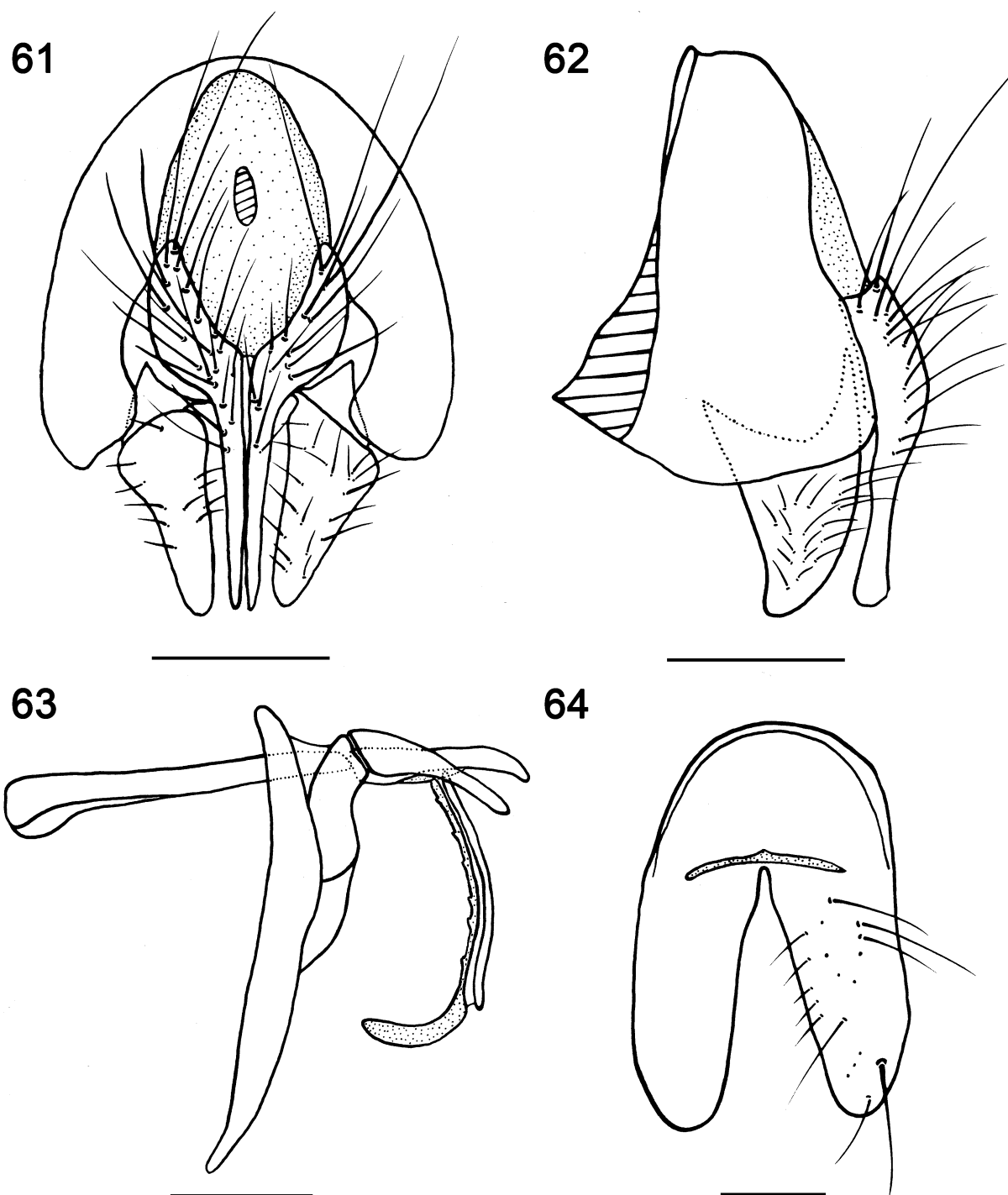
**Thorax** black, covered with dense grayish white pruinosity; scutum with 4 longitudinal black vittae on presutural scutum and 5 on postsutural scutum, an inner vitta slightly wider than or as wide as pruinose portion between inner and outer vittae, outer vitta about twice as wide as inner one on presutural area, median vitta 1/2–1/3 as wide as inner vitta on postsutural scutum; scutellum with dark brown to brown pruinosity from base to apex. Hairs black on scutum, pleura with dense long pale hairs on katepisternum, anepimeron and meron, some black hairs mixed on upper portion; prosternum about twice as long as wide; proepisternum bare; 2 postpronotal setae; 1 presutural and 1–2 postsutural acrostichal setae; 2 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 2 supra-alar setae; 3 katepisternal setae; discal scutellar seta fine, slightly longer than scutellum. **Wing** hyaline, slightly and evenly tinged with pale brown; tegula and basicosta black. Costal spine shorter than 1/2 length of crossvein r-m; relative lengths of 2nd, 3rd and 4th costal sectors approximately 1:2.3:1.1; vein M from dm-cu crossvein to its bend about 5 times distance between the bend and wing margin, appendix short. Lower calypter pale brown, with short fringe on outer margin. **Legs** long, brownish black; pulvilli pale brownish. Coxae, trochanters and base of femora with pale yellowish hairs mixed with black ones; mid tibia with 3 posterodorsal setae; hind tibia with 3 anterodorsal, 2 posterodorsal and 2 ventral setae (upper one very fine). Claws and pulvilli long, fore claws and pulvilli slightly longer than tarsomere 5.

**Abdomen** long ovate, translucent yellow, dark brown on mid-dorsal longitudinal portion of syntergite 1+2 to tergite 4, posterior margin of tergites 3 and 4, and entire dorsum of tergite 5; very thin whitish pruinosity on anterior margin of tergites 3 and 4, and rather dense grayish pruinosity on entire tergite 5, the pruinosity on tergite 5 with tessellate appearance. Hairs rather fine long dense and black, suberect on tergite 5, pale yellowish hairs on sternite 1 and venter of syntergite 1+2; syntergite 1+2 with 1 pair of median marginal and 1 lateral marginal setae; tergite 3 with 2–3 pairs of fine median discal, 1 pair of strong median marginal, 1 strong and some weak lateral marginal setae; tergite 4 with 2–3 pairs of long median discal and a row of strong marginal setae; tergite 5 with a pair of strong median discal and a row of marginal setae. **Male terminalia.** Cerci slender on apical half and pointed apically; surstylus long and wide, weakly rounded at apex; postgonite about as long as basiphallus.

**Female.** Frons about 0.28 times as wide as head width; parafacial 2.5–3.0 times as wide as 1st flagellomere; gena about 0.47 times as wide as eye height; 5 frontal setae; 2 proclinate orbital setae; 1 prevertical seta. Fore claw and pulvillus shorter than tarsomere 5; mid and hind tibiae each with 2 anterodorsal, 3 posterior and 1 ventral setae. Abdomen ovate, with a wide longitudinal dark brown median vitta; tergites 3 and 4 each brown on posterior 1/4–1/3; tergite 5 reddish yellow, entirely covered with grayish

white pruinosity. Abdominal syntergite 1+2 without median marginal setae; tergites 3 to 5 without discal setae; tergite 5 with a row of marginal setae. Other characters almost same as in male.

**Type material examined.** Paralectotype male of *Eoptilodexia longipes* Townsend (by designation of Crosskey 1976: 268), **PHILIPPINES**, Baguio, Benguet, Luzon, Baker (USNM).



**FIGURES 61–64.** *Dexia longipes* (Townsend). **61–62.** Epandrium, cerci and surstyli in dorsal and lateral view. **63.** Aedeagal apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **64.** Sternite 5. Scale bars = 0.25 mm.

**Additional material examined.** **PHILIPPINES.** 1 female, same locality as paralectotype (USNM). 1 male, Mountain Prov., Abatan, Buguias, 60 km S. of Bontoc, 1800–2000 m, 1.vi.1964. 2 males, Luzon,

Mountain Prov., Ifugao, Mayoyao, 1000–1500 m, 4–6.vii.1966. 1 male, Ifugao, Jacmal Bunhian, 24 km E. Mayayao, 800–1000 m, 10.v.1967, all by H.M. Torreallas (BPBM).

**Distribution.** Philippines (Luzon).

**Remarks.** This species is similar to *D. major* in having the thoracic pleura and venter of abdominal base with long pale hairs, but is distinguished from it in having longer prementum, 2 pairs of longitudinal black vittae on presutural scutum, 3 katepisternal setae, black femora, and abdominal syntergite 1+2 with 1 pair of median marginal setae.

### *Dexia luzonensis* (Townsend, 1928)

*Asbellopsis luzonensis* Townsend, 1928: 379.

*Dexia luzonensis*: Crosskey 1976: 179. — Crosskey 1977: 603 (catalog).

**Diagnosis.** Gena more than 1/2 times as wide as eye height; thoracic dorsum with 4 longitudinal vittae; 3 presutural and 3 postsutural dorsocentral setae; 2 katepisternal setae; lower calypter with long fringe; costal spine strong; tibiae reddish yellow; abdominal tergite 3 and 4 without discal setae.

**Description.** Body length. Female: 8.8 mm.

**Female. Head** with pale yellowish white pruinosity, upper fronto-orbital plate yellowish; antenna and arista yellow; palpus yellow. Frons about 0.37 times as wide as head width; frontal vitta 0.75 times as wide as fronto-orbital plate at middle; parafacial nearly parallel-sided, about 2.6 times as wide as 1st flagellomere; face well concave, facial carina long and low, sharp on ridge; lower margin of face not produced forward; gena about 0.57 times as wide as eye height; occiput weakly bulged. Inner vertical seta about 2/3 as long as eye height; outer vertical seta fine, about 1/2 as long as inner seta; ocellar seta fine, slightly less than 2/3 length of inner vertical seta; 6–7 frontal setae, lowest seta nearly level with base of antenna; 1 prevertical and 2 proclinate orbital setae, the former slightly shorter than inner vertical seta and anterior seta of the latter very strong; fronto-orbital plate only with a few fine short hairs; gena with a few minute black hairs on lower portion; vibrissa inserted nearly level with lower margin of face. Antenna falling short of lower margin of face by about 1/2 length of pedicel and 1st flagellomere together; 1st flagellomere about 4 times as long as pedicel; total width of arista including plumosity about twice as wide as 1st flagellomere. Palpus slightly shorter than 1st flagellomere.

**Thorax** black, postpronotal lobe, notopleural area and narrow anterior portion of scutellum reddish; scutum with dense yellowish gray white pruinosity, 2 broad outer and 2 narrow inner longitudinal vittae on presutural area, outer vitta about 4 times as wide as inner one; scutellum with brownish pruinosity on anterior 1/2; pleura with dense pale yellowish white pruinosity. 2 postpronotal setae; 1 presutural and 1 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae, anterior one very fine; 2 supra-alar setae, prealar seta absent; 2 katepisternal setae, katepisternum with dense fine short hairs on posterior portion; discal scutellar seta fine. **Wing** hyaline, evenly pale brownish tinged; tegula reddish brown, pale at base; basicosta brown; lower calypter pale brown, with dense long fringe on outer margin. Costal spine longer than r-m crossvein; vein M from dm-cu crossvein to its bend slightly more than twice distance between the bend and wing margin, appendix 0.5 times as long as r-m crossvein. **Legs** reddish yellow, tibiae darkened basally and distally; tarsi and claw black. Fore tibia with 2 anterodorsal and 2 posterior setae; hind tibia with 3 anterodorsal, 2 posterodorsal and 2 ventral setae.

**Abdomen** reddish yellow, dark brown on anterior and posterior margin of syntergite 1+2, mid dorsal triangular portion and posterior 1/3–1/4 of tergite 3, mid dorsal longitudinal area and posterior 2/3 of tergite 4; dense whitish pruinosity on anterior 1/5 of tergite 3, 2/5 of tergite 4 and 1/2 of tergite 5. Hairs fine rather sparse and recumbent, absent on pruinose portion of tergites 3 to 5; syntergite 1+2 with 1 lateral marginal seta, without median marginal setae; tergite 3 with 2 strong median marginal and 2 lateral marginal setae; tergites 4 and 5 each with a row of strong marginal setae; tergites without discal setae.

**Male.** Unknown.

**Type material examined.** Holotype female of *Asbellopsis luzonensis* Townsend, PHILIPPINES, Los Baños, Luzon, Baker (USNM).

**Distribution.** Philippines (Luzon).

**Remarks.** This species is similar to *D. flavida*, but differs from it in having broad gena which is more than 1/2 eye height, distinct black inner vittae on postsutural scutum, more broad pruinosity on abdominal tergites, and dense yellowish white pruinosity on anterior 1/2 of tergite 5. We have not seen a male of this species.

### *Dexia major* (Malloch, 1935)

*Calotheresia major* Malloch, 1935: 590.

*Dexilla major*: Crosskey 1967: 106.

*Dexia major*: Crosskey 1976: 179. — Crosskey 1977: 603 (catalog).

**Diagnosis.** Thoracic pleura and venter of abdominal base with pale yellowish hairs; inner and outer black thoracic vittae merged on anterior half of postsutural scutum; abdominal tergites without discal setae and tergite 3 without median marginal setae in male.

**Description.** Body length. 14.6–17.1 mm.

**Male. Head** with grayish white pruinosity; frontal vitta dark brown; upper fronto-orbital plate and upper occiput yellow; gena reddish brown in ground color, with thin grayish white pruinosity. Antenna reddish yellow, with arista brown. Prementum dark brown; palpus reddish yellow, darkened basally. Frons about 0.18 times as wide as head width; frontal vitta wider than fronto-orbital plate; parafacial weakly widened below, 3–3.5 times as wide as 1st flagellomere at middle height; face well concave, facial carina developed, widened below and flattened on ridge; lower margin of face slightly produced forward; gena about 0.4 times as wide as eye height. Inner vertical seta 0.25–0.35 times as long as eye height, slightly longer than ocellar seta; outer vertical seta 3/4 as long as inner vertical seta; 12–14 inclinate frontal setae; lowest seta nearly level with base of antenna; fronto-orbital plate almost bare; gena with a few hairs on lower portion; vibrissa inserted above level of lower margin of face by about 3/4 length of pedicel. Antenna falling short of lower margin of face by about length of 1st flagellomere; 1st flagellomere 3.0–3.5 times as long as pedicel; total width of arista including plumosity 3–4 times as wide as 1st flagellomere. Prementum about 0.38 times as long as eye height; palpus subequal in length to pedicel and 1st flagellomere combined.

**Thorax** black in ground color, postpronotal lobe, notopleura and apical 1/2 of scutellum reddish; scutum with dense whitish, somewhat pale yellowish, pruinosity, 2 broad outer and 2 narrow inner longitudinal black vittae on presutural scutum, outer vitta about 5 times as wide as inner one, broadly brown-black on area between outer vittae of anterior 1/2 of postsutural scutum, posterior 1/3 of supra-alar area, posterior margin of postsutural scutum and basal 1/2 of scutellum; pleura with rather dense whitish pruinosity. Thoracic hairs black on scutum, whitish on katapisternum except upper portion and pale yellowish on meron and anepimeron except upper portion. Prosternum about twice as long as wide; proepisternum bare; 3–4 postpronotal setae, basal 3 setae nearly in a straight line; usually 1 presutural and 2 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 1 postsutural intra-alar seta; 3 supra-alar setae, anterior one fine, short, and outwardly shifted; 2 katapisternal setae, katapisternum with dense white hairs; discal scutellar seta slightly shorter than scutellum. **Wing** hyaline, slightly pale yellowish from base to level of base of vein  $R_1$  and pale brownish toward apex, the tinge dense along veins and on anterior portion; tegula and basicosta black; lower calypters pale yellowish, with short fringe on outer margin. Costal spine absent; relative lengths of 2nd, 3rd and 4th costal sectors approximately 3:5:2.5; vein M from dm-cu crossvein to its bend about 3 times distance between the bend and wing margin, appendix absent. **Legs** reddish yellow, femora darkened on distal 1/4–2/5 especially on ventral surface, tibiae brown except pale median portion, tarsi and claws black, pulvilli brownish. Hind leg longer than body length, hind femur about as long as abdomen, hind tibia sinuated near middle. Mid tibia with 2 posterodorsal setae; hind tibia with 1 anterodorsal, 1–2 posterodorsal and 1–2 ventral setae. Claws and pulvilli subequal in length to tarsomere 5.

**Abdomen** translucent yellow, tergite 5 reddish yellow to dark brown, mid dorsal longitudinal portion of syntergite 1+2 to tergite 5 rather narrowly black, posterolateral portion of syntergite 1+2 to tergite 4 triangularly brown-black, and posterior narrow margin of syntergite 1+2 and posterior 1/4–1/5 of tergites 3 and 4 darkened; narrow anteromedian portion of tergite 4 and entire tergite 5 with rather thin whitish pruinosity. Hairs dense short fine and recumbent, rather sparse and erect on tergite 5, pale yellowish white on sternite 1 and mid ventral portion of syntergite 1+2; syntergite 1+2 and tergite 3 each with a lateral marginal seta, without median marginal setae; tergite 4 with a row of strong marginal setae; tergite 5 with rows of discal and marginal setae.

**Female.** Head with dense yellowish pruinosity, golden yellowish on upper fronto-orbital plate; frons about 0.34 times as wide as head width; parafacial about 4 times as wide as 1st flagellomere; gena about 0.48 times as wide as eye height; head setae strong, inner vertical seta slightly more than 1/2 length of eye height, twice as long as outer vertical seta; ocellar seta about 3/4 as long as inner vertical seta; fine prevertical seta shorter than outer vertical seta; 2 strong proclinate orbital setae; 8–9 frontal setae; antenna falling short of lower margin of face by about 4/5 length of 1st flagellomere, 1st flagellomere 4.5–5 times as long as pedicel. Thoracic pleura with dense pale yellowish white pruinosity, hairs mainly black except pale brownish ones on posterior portion of anepimeron; legs short, hind tibia not sinuate, claws and pulvilli very short. Abdomen more broadly black on mid dorsal longitudinal portion and posterior portion of tergites 3 and 4, with rather dense pale yellowish pruinosity on narrow anterior portion of tergite 3, anterior 2/3 of tergite 4 and entire tergite 5; tergite 3 with 1 pair of strong median marginal setae; tergite 5 without discal setae. Other characters almost same as in male.

**Type material examined.** Holotype male of *Calotheresia major* Malloch, MALAYSIA, N. Borneo, Bettotan, nr. Sandakan, 6.viii.1927. Paratypes. MALAYSIA. 3 males, 4 females, same locality as holotype, 7–15.viii.1927 (BMNH).

**Distribution.** Malaysia (Sabah).

**Remarks.** The species is similar to *D. extendens*, but is distinguished from it in having pale white hairs on thoracic pleura and basal abdomen ventrally, lower calypter with short fringe on outer margin, and abdominal tergite 3 without median marginal setae.

### *Dexia maritima* Kolomiets, 1970

*Dexia maritima* Kolomiets, 1970: 70. — Mesnil 1980: 45 (redescription). — Herting 1984: 143 (catalog). — Herting & Dely-Draskovits 1993: 366 (catalog). — Richter 2004: 355 (key). — Chao *et al.* 2009: 576 (fauna).

**Diagnosis.** Female. Frons more than 1/3 head width; gena about 3/4 as wide as eye height; antenna yellow, 1st flagellomere about twice as long as pedicel; thoracic dorsum with 4 very narrow dark longitudinal vittae; 2 presutural and 2 postsutural acrostichal setae; 2–3 presutural and 3 postsutural dorsocentral setae; 2 intra-alar setae; 2 katepisternal setae; tegula and basicosta yellowish brown; lower calypters with long fringe; legs reddish yellow. Body length of female: 9 mm.

**Type material.** Holotype female of *Dexia (Dexillia) maritima* Kolomiets, Goligin, Primorskyi, Far East Russia, 4.viii.1965, N.G. Kolomiets (ZIN) (not examined).

**Distribution.** ?China (Beijing, Hebei, Gansu, Inner Mongolia, Qinghai, Sichuan, Xizang, Yunnan), Russia (Far East).

**Remarks.** Kolomiets (1970) described this species based on a female from Far East Russia and Mesnil (1980) redescribed it in detail. We were unable to look at the type or other specimens of this species. According to the original description and Mesnil (1980), this species has very narrow longitudinal vittae on the scutum and the lower calypter has a long fringe. In these characters this species appears to be similar to European species *D. vacua*. The male of this species is unknown. Chao *et al.* (2009: 576) recorded this species from many localities in China, but their redescription of it does not fit well with that by Mesnil (1980) and their identification needs confirmation.

***Dexia montana* (Baranov, 1932)**

Figs. 65–68

*Sumatrodexia montana* Baranov, 1932: 215. — Sabrosky & Crosskey 1969: 52 (lectotype designation).*Dexia montana*: Crosskey 1976: 179 (catalog). — Crosskey 1977: 603 (catalog).

**Diagnosis.** Thoracic scutum with 2 wide longitudinal black vittae; tergites 4 and 5 wholly with grayish white pruinosity; legs reddish yellow; lower calypter with short fringe; surstylus bluntly rounded at apex.

**Description.** Body length. 11.3–13.0 mm.

**Male. Head** with dense pale yellowish pruinosity; antenna reddish yellow, with arista reddish brown; palpus reddish yellow. Frons 0.2–0.22 times as wide as head width; frontal vitta subequal in width to fronto-orbital plate at middle; parafacial nearly parallel-sided, about twice as wide as 1st flagellomere at middle; face well concave, lower margin weakly warped forward; facial carina long, ridge pointed, apically widened; gena about 0.5 times as wide as eye height. Inner vertical seta about 1/2 as long as eye height, slightly shorter than ocellar seta; outer vertical seta hair-like; 7–8 frontal setae, lowest seta nearly level with base of antenna; fronto-orbital plate with a row of fine short hairs on median portion; gena with a few fine short hairs on lower portion; vibrissa inserted slightly above level of lower margin of face. Antenna falling short of lower margin of face by about 1/2 length of 1st flagellomere; 1st flagellomere about 5 times as long as pedicel; total width of arista including plumosity about 2.5 times as wide as 1st flagellomere. Prementum about 1/2 as long as eye height; palpus slightly shorter than 1st flagellomere.

**Thorax** black in ground color, postpronotal lobe and apical portion of scutellum reddish, with dense grayish white pruinosity; with 2 broad longitudinal black vittae on dorsum, brownish pruinosity on median longitudinal portion between vittae and postero-median portion of postsutural scutum; anterior 2/3–3/4 of scutellum brownish black. Prosternum about twice as long as wide. Hairs black; proepisternum sometimes with fine black hairs; 3 postpronotal setae standing in a straight line; 1 presutural and 1–2 postsutural acrostichal setae; 2 presutural and 3 postsutural dorsocentral setae; 1–2 postsutural intra-alar setae; 1–2 supra-alar setae; 2 katepisternal setae, katepisternum with 1–2 rows of sparse hairs in front of mid coxae. **Wing** hyaline, evenly tinged with pale brown; tegula black, basicosta reddish brown; lower calypter pale yellowish white. Costal spine absent; relative lengths of 2nd, 3rd and 4th costal sectors approximately 2:4:2.5; vein M from dm-cu crossvein to its bend about 2.3 times distance between the bend and wing margin. Lower calypter with short fringe on outer margin. **Legs** reddish yellow, distal portion of hind femur and basal and apical portions of mid and hind tibiae slightly darkened; tarsi and claws black; pulvilli pale brownish. Hind leg longest, hind tibia sinuate near middle. Mid tibia with 2 posterodorsal setae; hind tibia with 1 anterodorsal, 1 posterodorsal and 1 ventral setae. Claw and pulvillus slightly shorter than tarsomere 5.

**Abdomen** reddish yellow in ground color, black on rather broad mid dorsal longitudinal portion of syntergite 1+2 to tergite 4, darkened on posterior 1/4 of tergites 3 and 4 and entire tergite 5; scutum with very thin whitish pruinosity on anteromedian margin of tergite 3 and entire tergite 4, and rather dense pruinosity on tergite 5, the pruinosity shifting in appearance with direction of light. Hairs fine short rather dense recumbent and black, erect and long on tergite 5; syntergite 1+2 with a lateral marginal seta, without median marginal setae; tergite 3 with 1 pair of fine median discal, 1 pair of strong median marginal and 1 lateral marginal setae; tergite 4 with 1 pair of strong median discal and a row of strong marginal setae; tergite 5 with a row of strong median discal and marginal setae, both rows very close to each other. **Male terminalia.** Cerci slender, pointed apically; surstylus long, wide and blunt at apex; pregonite short, with a protruding at middle; basiphallus about as long as postgonite.

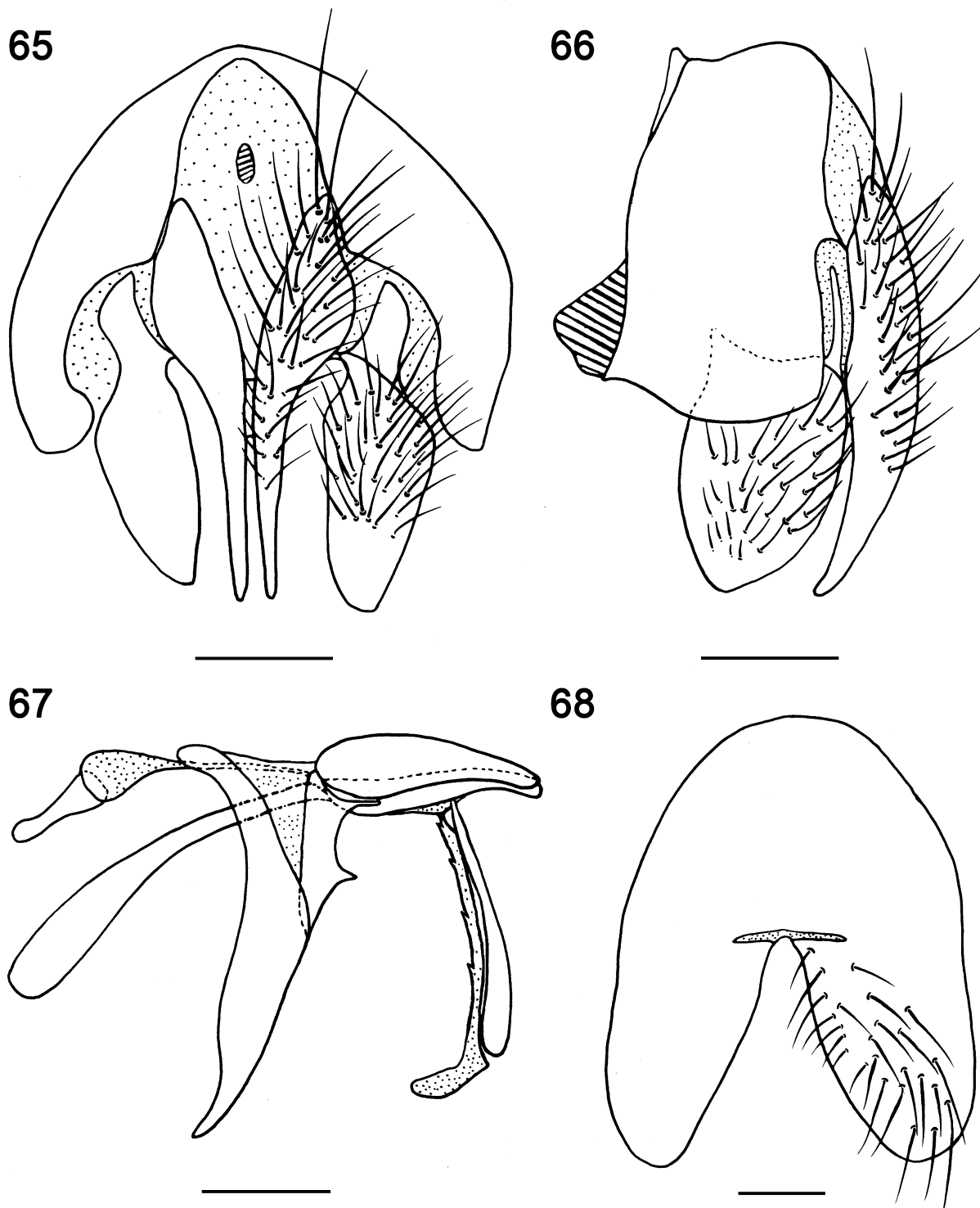
**Type material examined.** Lectotype male of *Sumatrodexia montana* Baranov (by designation of Sabrosky & Crosskey 1969: 52), **INDONESIA**, Tjibodas [= Cibodas], 1400 m, xii.1927. Paralectotype male, same data as lectotype (USNM).

**Additional material examined.** **INDONESIA.** 1 male, Tasari, Java, 6–8.iii.1915, Terry. 1 male, Java, Tjibodas [= Cibodas], 500 ft, xi.1905 (BPBM). 1 male, G. Gedeh, Java, ii.1913, Drescher (ZMUA).

**Distribution.** Indonesia (Java).

**Remarks.** This species resembles *D. caldwelli*, but differs from it in having 3 postpronotal setae, 2 katepisternal setae, and short fringe on outer margin of lower calypter.





**FIGURES 65–68.** *Dexia montana* (Baranov). **65–66.** Epandrium, cerci and surstyli in dorsal and lateral views. **67.** Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **68.** Sternite 5. Scale bars = 0.25 mm.

***Dexia monticola* (Malloch, 1935)**

*Eomyocera monticola* Malloch, 1935: 587.

*Dexilla monticola*: Crosskey 1967: 106.

*Dexia monticola*: Crosskey 1976: 179. — Crosskey 1977: 603 (catalog).

**Diagnosis.** Thorax wholly black in ground color including postpronotal lobe and scutellum; tegula dark; legs reddish yellow; tibiae of male darkened basally and apically; abdomen with a wide longitudinal black median vitta.

**Description.** Body length. 13.1–13.9 mm.

**Male. Head** with yellowish white pruinosity, posterior half of gena, parafacial and lower occiput whitish; antenna and palpus reddish yellow. Frons 0.15–0.16 times as wide as head width; frontal vitta 1.5–2 times as wide as fronto-orbital plate at middle; parafacial 1.5–2.0 times as wide as 1st flagellomere at middle height; face well concave, lower margin weakly produced forward, facial carina high, pointed on ridge; gena about 0.4 times as wide as eye height. Inner vertical seta fine, slightly longer than 1/3 eye height; outer vertical seta fine hair-like; ocellar seta strong, 2 additional strong hairs present behind posterior ocelli; 10–14 frontal setae, lowest seta nearly level with base of antenna; fronto-orbital plate with several fine hairs in row of frontal setae; gena with fine hairs on lower portion; vibrissa nearly level with lower margin of face. Antenna falling short of lower margin of face by about twice length of pedicel, pedicel with a long seta which about 3 times as long as its own length; 1st flagellomere 3–4 times as long as pedicel. Total width of arista including plumosity about 4 times as wide as 1st flagellomere. Prementum about 3 times as long as wide; palpus about as long as antenna.

**Thorax** black in ground color, with rather dense grayish pruinosity on scutum, grayish white pruinosity on pleura; with 2 pairs of longitudinal black vittae on dorsum, outer vitta about twice as wide as inner one, inner vitta about 1/2 as wide as pruinose portion between inner and outer vittae; brownish pruinosity visible between inner and outer vittae; scutellum with gray pruinosity except dark base. All thoracic hairs black; postpronotal lobe with 2–3 setae standing in a straight line; 1 presutural and 2 postsutural acrostichal setae; 2 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 3 supra-alar setae, anterior one fine or posterior one slender; 2 katapisternal setae, katapisternum with dense long hairs. **Wing** hyaline, evenly tinged with pale brown; tegula and basicosta black; lower calypter pale brown. Costal spine 1.2–1.5 times as long as r-m crossvein; relative lengths of 2nd, 3rd and 4th costal sectors approximately 1:2:1; vein M from dm-cu crossvein to its bend about 4 times distance between the bend and wing margin, appendix about 1/2 as long as r-m crossvein. Lower calypter with long fringe on outer margin. **Legs** long, reddish yellow, tibiae darkened basally and distally; tarsi and claws black; pulvilli pale brown. Mid tibia with 2–3 posterodorsal setae; hind tibia with 2 anterodorsal, 2–3 posterodorsal and 2–3 ventral setae.

**Abdomen** broadly translucent yellow, black on mid dorsal longitudinal portion of syntergite 1+2 to tergite 5, anterior and posterior margins of syntergite 1+2, posterior 1/5–2/5 of tergites 3 and 4 and posterior 1/2 of tergite 5; rather dense whitish pruinosity on anterior 1/6 of tergites 3 and 4, and anterior 1/2 of tergite 5. Hairs on tergites dense, short, erect and black; syntergite 1+2 with 1–2 lateral marginal setae, without median marginal setae; tergite 3 with 2 pairs of strong median discal, 1 pair of strong median marginal and 2–3 lateral marginal setae; tergites 4 and 5 each with 2 pairs of strong median discal and a row of strong marginal setae, marginal setae on tergite 5 set forward on median portion.

**Female.** Frons narrowed posteriorly, about 1/3 head width; gena about 0.4 times as wide as eye height. Ocellar seta and inner vertical seta as strong as upper frontal setae and 2–3 times as long as outer vertical seta; 7 inclinate frontal setae; 2 proclinate orbital and 1 outclinate prevertical setae. Abdomen ovate, translucent yellow, black on middorsal depression and posterior margin of syntergite 1+2, posterior margin of tergite 3, posterior 3/4 of tergites 4 and 5; grayish white pruinosity on anterior margin of tergite 3, anterior 1/4 of tergites 4 and 5; tergites 3 to 5 without discal setae. Other characters almost same as in male.

**Type material examined.** Holotype male of *Eomyocera monticola* Malloch, MALAYSIA. N. Borneo [= Sabah], Mt. Kinabalu, Lumu, 5500 ft, 7.iv.1929, H.M. Pendlebury (BMNH).

**Additional material examined.** CHINA. Guangdong: 1 female, Mt. Nanling, 700–1400 m, Ruyuan, 11–16.v.2005, C.-T. Zhang (SNU). INDONESIA. 1 female, Mt. Tjemere, 400–1400 m, Cirebon, Java, 19–25.xi.1973, Kano. MALAYSIA. 1 female, Mt. Beremban, 1100–1700 m, West Malaysia, 26.x.1975, H. Shima. 1 female, Mt. Brincuang, West Malaysia, 2300 m, 25.x.1975, H. Shima. 1 male, 3 females, Mt. Kinabalu, 1300–1800 m, Sabah, Boreno, 9–11.xi.1975, H. Shima and S. Shinonaga. 2 females, P. Head Q., 1600 m, Mt. Kinabalu, Sabah, 1–2.v.1979, H. Kurahashi. 1 female, Cameron Highlands, Mt. Jasar, West

Malaysia, 2100 m, 26.x.1991, R. Kano, K. Inder Singh (BLKU). 2 females, Sabah: Kinabalu National Park, Headquarters area, 1560 m, 6.16.ix.1983, G.F. Hevel & W.E. Steiner (USNM).

**Distribution.** China\*, Indonesia (Java)\*, Malaysia (Pen. Malaysia, Sabah).

**Remarks.** This species is similar to *D. longipennis*, but differs from it in having long fringe on the lower calypter, mid and hind tibiae brown or dark yellow, postpronotal lobe and scutellum dark brown, thoracic scutum and pleura with grayish white pruinosity, and abdominal tergites 3 and 4 each with 2 pairs of median discal setae.

### *Dexia rustica* (Fabricius, 1775)

Figs. 69–72

*Musca rustica* Fabricius, 1775: 777.

*Dexia rustica*: Robineau-Desvoidy 1830: 311. — Macquart 1834: 190, 1835: 211. — Zetterstedt 1844: 1264, 1859: 6172. — Schiner 1861: 560 (key). — Rondani 1862: 75. — Robineau-Desvoidy 1863b: 389. — Brauer & Bergengstamm 1893: 174 (key). — Pandellé 1896: 160 (key). — Bezzi & Stein 1907: 445 (catalog). — Stein 1924: 238. — Lundbeck 1927: 269. — Emden 1954: 30 (key). — Sabrosky & Arnaud 1965: 982 (catalog). — Kolomiets 1970: 59, 64 (key and redescription). — Crosskey 1976: 45, 177. — Crosskey 1977: 601 (catalog). — Dear & Crosskey 1982: 831 (catalog). — Mesnil 1980: 41 (redescription). — Richter & Farinets 1983: 818 (1st instar larva). — Herting 1984: 143 (catalog). — Crosskey *et al.* 1986: 282 (proposed type species designation). — ICZN 1988 (type species). — Herting & Dely-Draskovits 1993: 366 (catalog). — Tschorsnig & Herting 1994: 80, 156. — Ziegler 1998: 29, 101, 164–165, 185 (larvae and puparia). — O'Hara *et al.* 2009: 29 (catalog).

*Musca provenio* Harris, 1780: 142. — Herting 1984: 143 (as junior syn. of *D. rustica*).

*Dexia flavicornis* Meigen, 1826: 42. — Herting 1972: 7 (as junior syn. of *D. rustica*).

*Dinera fulvipes* Robineau-Desvoidy, 1830: 308. — Herting 1974: 39 (as syn. of *D. rustica*).

*Dexia grisea* Robineau-Desvoidy, 1830: 314. — Macquart 1834: 191, 1835: 212. — Rondani 1862: 75. — Robineau-Desvoidy 1863b: 389 (as syn. of *rustica*). — Bezzi & Stein 1907: 445 (as syn. of *D. rustica*). — Herting 1974: 40 (as syn. of *D. rustica*).

*Dexia testacea* Macquart, 1834: 191 — Macquart 1835: 212. — Herting 1976: 9 (as syn. of *D. rustica*).

*Ida petiolata* Robineau-Desvoidy, 1863b: 389. — Bezzi & Stein 1907: 445 (catalog, as syn. of *D. rustica*). — Herting 1974: 40 (as syn. of *D. rustica*).

*Dinera grisesescens* Robineau-Desvoidy, 1863b: 356. — Herting 1974: 39 (as syn. of *D. rustica*). — Mesnil 1980: 41.

**Diagnosis.** Thoracic dorsum with 4 longitudinal vittae; lower calypter with short fringe; thorax and abdomen wholly covered with yellowish pruinosity; 3–4 katepisternal setae; tegula reddish yellow; legs reddish yellow.

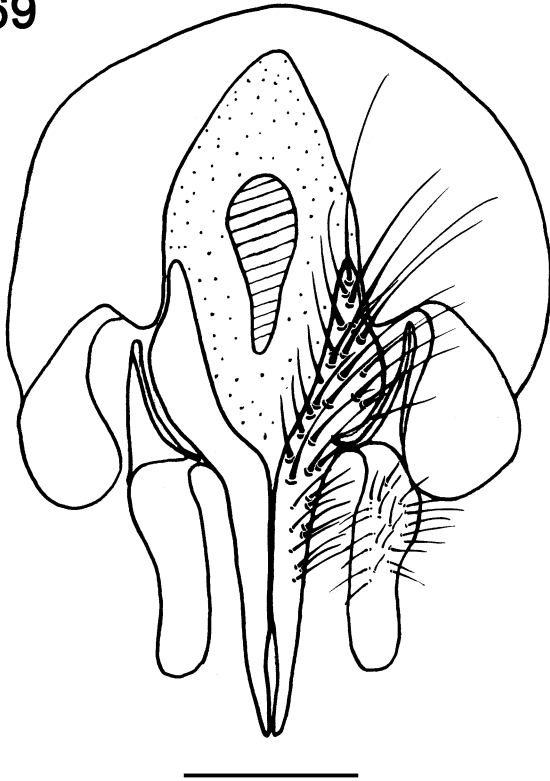
**Description.** Mesnil (1980) redescribed this species in detail. Here we give additional measurements and some diagnostic characters.

Body length. Male & female: 8.4–12.7 mm.

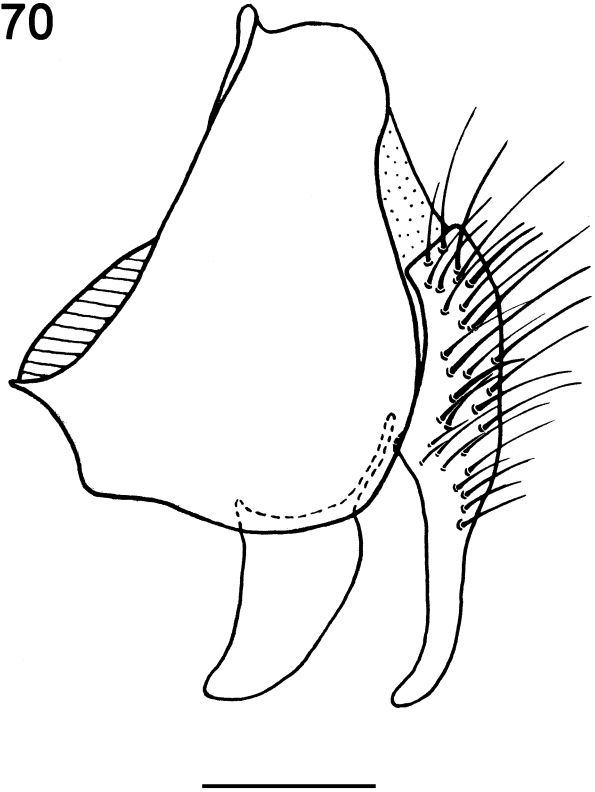
**Male. Head.** Fronto-orbital plate and parafacial with grayish white pruinosity; antennae and palpus reddish yellow. Frons 1/6–1/7 times as wide as head width; facial carina developed, ridge pointed; parafacial 2–3 times as wide as 1st flagellomere; gena about 3/7 times as wide as eye height; 10–12 inclinate frontal setae; inner vertical seta about 1/2 eye height, twice as long as hair-like outer vertical seta. 1st flagellomere about twice as long as pedicel; total width of arista including plumosity 2–3 times as wide as 1st flagellomere; prementum 2.5–3 times as long as wide; palpus about as long as prementum or 1st flagellomere. **Thorax** black, with grayish yellow pruinosity, with 4 longitudinal black vittae on dorsum, inner vitta about 1/6 as wide as pruinose portion between inner and outer vittae and 1/3–1/4 as wide as outer vitta on presutural scutum. 2 presutural and 2 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 3 postsutural intra-alar setae; 3 supra-alar setae, anterior one fine, 1/2–1/3 as long as posterior two; 4 postpronotal setae, inner 2 weak; prosternum about 3 times as long as wide; proepisternum bare; 3–4 katepisternal setae. **Wing** hyaline; tegula reddish yellow; basicosta dark brown; costal spine about as long as crossvein r-m; relative lengths of 2nd, 3rd and 4th sectors of costa about 9:16:9; vein M from dm-cu crossvein to its bend about 2.5 times distance between the bend and wing margin. Lower calypter with short fringe on outer margins. **Legs** reddish yellow; fore tarsi reddish to brown, mid and hind tarsi dark; mid tibia with 2 posterodorsal setae; hind tibia with 2–3 anterodorsal, 2 posterodorsal and 2–3 ventral setae. **Abdomen** yellow, weakly dark brown on

mid-dorsal longitudinal portion of tergites, with whitish yellow, somewhat grayish, pruinosity on tergites; syntergite 1+2 with 2 lateral marginal setae, without median marginal setae; tergite 3 with a pair of median discal, 1 pair of median marginal and 1 lateral marginal setae; tergite 4 with 2 pairs of discal and a row of marginal setae; tergite 5 with some irregular discal and a row of marginal setae. **Male terminalia.** V-shaped median cleft of sternite 5 deep, posterior lobe blunt apically; cerci long and pointed at apex; surstylus narrow, apex bluntly rounded; distiphallus long, apical membranous portion about 1/4 as long as basal sclerotized portion; postgonite shorter than basiphallus.

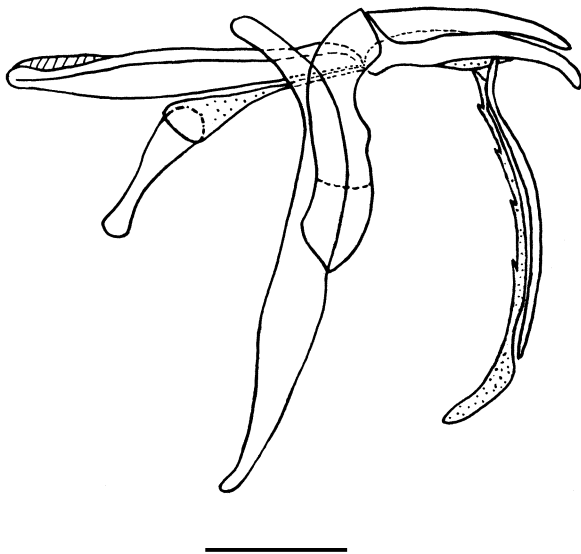
69



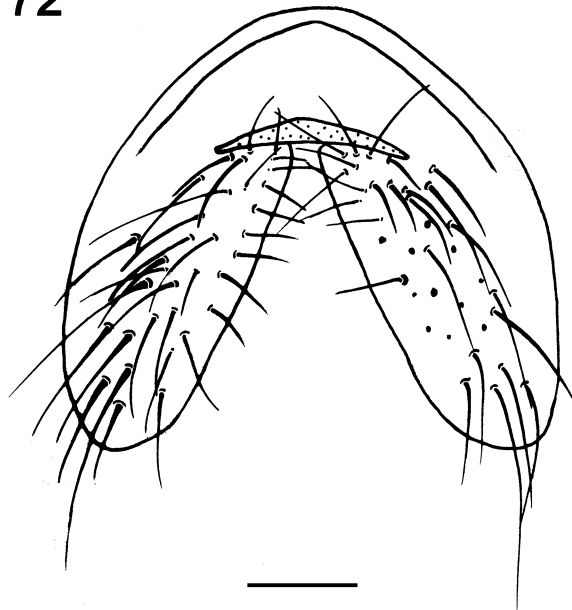
70



71



72



**FIGURES 69–72.** *Dexia rustica* (Fabricius). 69–70. Epandrium, cerci and surstyli in dorsal and lateral views. 71. Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. 72. Sternite 5. Scale bars = 0.25 mm.

**Female.** Frons about 2/5 as wide as head width; parafacial about 3 times as wide as 1st flagellomere at middle height; gena 2/3–3/4 eye height. 7–8 inclinate frontal setae; 2 proclinate orbital setae; 1 outwardly directed prevertical seta; strong inner vertical seta 3 times as long as outer vertical seta. Claw and pulvillus shorter than tarsomere 5. Vein M from dm-cu crossvein to its bend 1.7–2 times distance between the bend and wing margin. Abdomen ovate, without discal setae. Other characters as in male.

**Type material.** *Musca rustica* Fabricius was described from Copenhagen, Denmark, from an unknown number of specimens of unspecified sex (1 specimen in ZMUC, only thorax remaining) (O'Hara *et al.*, 2009: 29) (not examined).

**Additional material examined.** **FRANCE.** 1 male, Chavena S. & O., 10.viii.1961, J. U. McGuire, det. Woodley, 1996 (USNM). **SWEDEN.** 1 male, 1 female, no record, det. C. Bergström, 2001. 2 males, Dornbach, 4.viii.1905 and 21.viii.1909 (SMNH). **POLAND.** 2 males, Tykocin, Lipnicka, Kepa, UTM: FD29, 19.vii.2001. 2 females, Tykocin, Broniszewo, UTM: FD19, 14.vii.2001, collected and determined by C. Bystrowski (SNU).

**Distribution.** China (Sichuan, Xizang); Europe (northwards to England, Sweden); Russia (North European territory, West Siberia).

**Remarks.** This species is similar to *D. vacua*, but is distinguished from it in having shorter antenna and prementum, thorax and abdomen densely covered with yellowish pruinosity, and 3 katepisternal setae. There are some varied shape between cerci from Kolomiets (1970: 60) and our cerci here. It has been recorded from Xizang and Sichuan (O'Hara *et al.* 2009: 29), but it may have been misidentified from China and its occurrence there needs to be confirmed.

**Host.** Scarabaeidae: *Amphimallon solstitialis* L., *Melolontha* spp., *Phyllopertha borticola* L., *Rhizotrogus aequinoctialis* Herbst and *R. marginipes* Muls (Tschorsnig & Herting 1994: 156).

### *Dexia seticineta* Mesnil, 1980

*Dexia (Eomyocera) seticineta* Mesnil, 1980: 46. — Herting 1984: 144 (catalog). — Shima 1989: 869 (list). — Herting & Dely-Draskovits 1993: 366 (catalog).

**Diagnosis.** Thorax with 4 narrow longitudinal vittae on dorsum; 3 presutural and 4 postsutural dorsocentral setae; lower calypter with long fringe; legs reddish yellow; abdominal tergite 3 with a complete row of marginal setae.

**Description.** Mesnil (1980) described this species in detail. Here are added some diagnostic characters.

Body length. Male: 9.0 mm.

**Male. Head.** Frons about 0.15 times as wide as head width; parafacial about twice as wide as 1st flagellomere at middle height; gena about 0.47 times as wide as eye height. Inner vertical seta about 3/8 as long as eye height; ocellar seta more than 1/2 eye height. 1st flagellomere about 5 times as long as pedicel; palpus slightly longer than 1st flagellomere. **Thorax** black in ground color, with 4 longitudinal black vittae, inner vitta about 1/5 as wide as pruinose portion between inner and outer vittae on presutural scutum. Proepisternum bare; 3 postpronotal setae; 2 presutural and 1 postsutural acrostichal setae; 3 presutural and 4 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 2 supra-alar setae; 2 katepisternal setae; scutellum with 4 pairs of marginal setae. **Wing** hyaline; tegula and basicosta pale reddish brown. Costal spine about as long as r-m crossvein; relative lengths of 2nd, 3rd and 4th costal sectors approximately 2:4.5:2.5; vein M from dm-cu crossvein to its bend about twice distance between the bend and wing margin. Lower calypter with long fringe on outer margin. **Legs** reddish yellow. Mid tibia with 2 posterodorsal setae; hind tibia with 3 anterodorsal, 2 posterodorsal and 1 ventral setae. **Abdomen** broadly reddish yellow on sides of tergites 2 to 4, narrowly reddish brown on sides of tergite 5, broadly blackish on median longitudinal portion of tergites 2 to 4 and posterior 1/2 of tergite 4 and entire tergite 5; anterior 1/3 of tergite 3 and anterior 1/2 of tergites 4 and 5 with rather dense white pruinosity. Syntergite 1+2 with several lateral discal and 2–3 lateral marginal setae, without median marginal setae; tergite 3 with 2 pairs of median discal, 1–2 lateral discal and a

row of marginal setae; tergite 4 with 2 anterior and an irregular row of 6 posterior discal setae and a row of marginal setae; tergite 5 with an irregular row of discal setae and a row of strong marginal setae.

**Type material examined.** Holotype male of *Dexia seticineta* Mesnil, JAPAN, Tokyo, Tanashinojo, 20.v.1951, I. Hattori (CNC).

**Distribution.** Japan (Honshu).

**Remarks.** This species is similar to *D. ventralis*, but is distinguished from it in having 3 presutural and 4 postsutural dorsocentral setae, and abdominal tergite 3 with a complete row of marginal setae.

### *Dexia subnuda* (Malloch, 1935)

Figs. 73–76

*Eomyocera subnuda* Malloch, 1935: 586.

*Dexilla subnuda*: Crosskey 1967: 106.

*Dexia subnuda*: Crosskey 1976: 179. — Crosskey 1977: 603 (catalog).

**Diagnosis.** Thorax with 2 broad longitudinal black vittae; tegula black; costal spine subequal in length to r-m crossvein; abdomen with a triangular brownish black marking on each tergite in male; tergite 3 with discal setae in female.

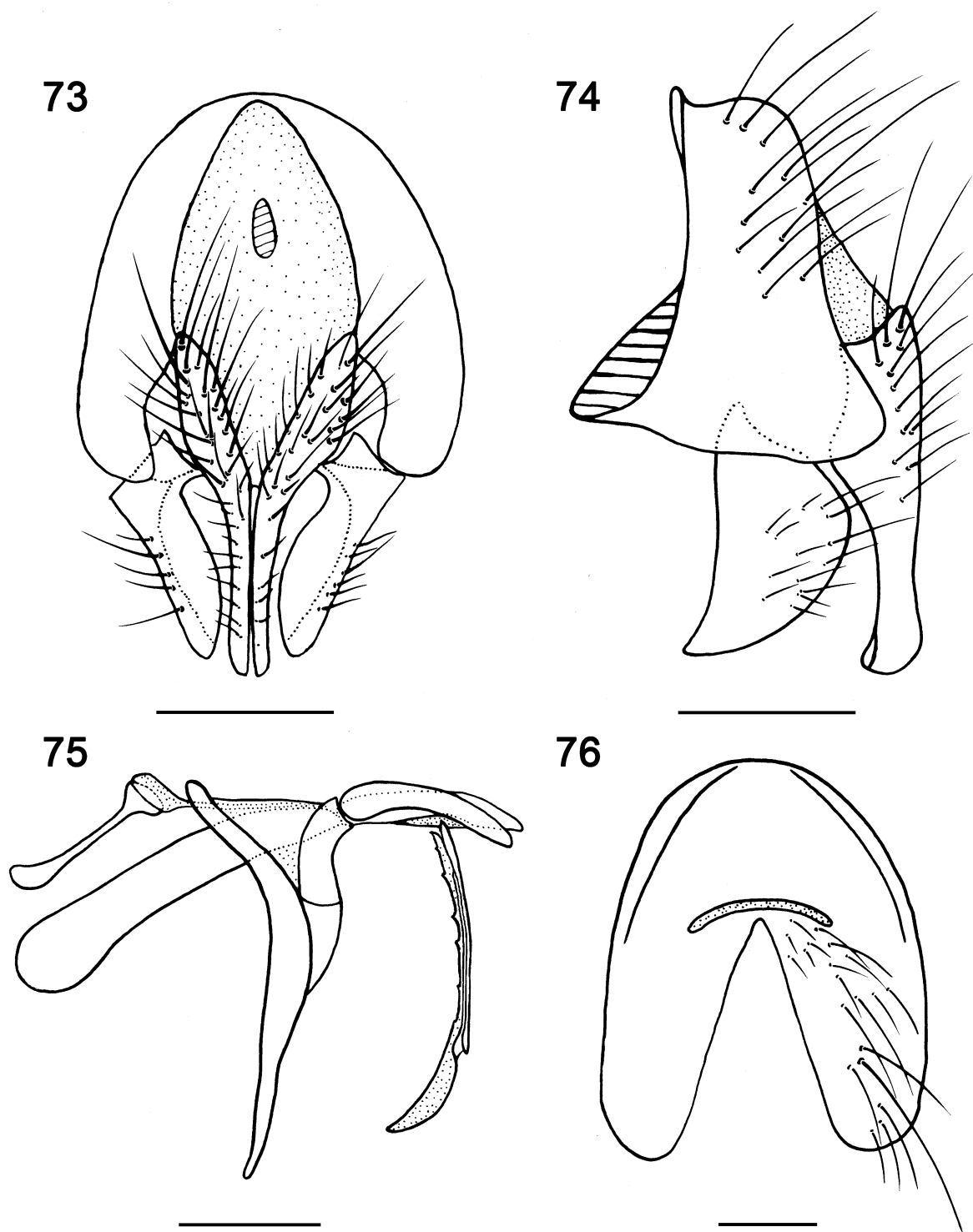
**Description.** Body length. 8.0–13.2 mm.

**Male. Head** with yellowish white pruinosity; antenna yellow, arista pale brown; palpus yellow. Frons about 0.16 times as wide as head width; parafacial nearly parallel-sided, about twice as wide as 1st flagellomere; face well concave, lower margin slightly produced forward, facial carina developed, rather sharply ridged on upper 1/2; gena about 0.4 times as wide as eye height. Inner vertical seta fine, about 2/5 eye height; outer vertical seta fine, about 2/3 as long as inner seta; ocellar seta strong; fronto-orbital plate almost bare; 10 inclinate frontal setae, lowest seta nearly level with base of antenna; parafacial almost bare, with several very minute hairs on upper 1/2 which are not visible at low magnification; vibrissa inserted at level of lower margin of face; gena with several rather long hairs on lower portion. Antenna falling short of lower margin of face by about 2/3 length of 1st flagellomere; 1st flagellomere about 3.8 times as long as pedicel; total width of arista including plumosity about 3 times as wide as 1st flagellomere. Prementum about 2/5 times as long as eye height; palpus slightly shorter than pedicel and 1st flagellomere combined.

**Thorax** black in ground color, postpronotal lobe sometimes weakly reddish; scutum with dense pale yellowish gray-white pruinosity and 2 broad longitudinal black vittae; pleura with thin grayish white pruinosity. 2 postpronotal setae; 1 presutural and 1 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 2 supra-alar setae; 2 katapisternal setae, katapisternum with 2 rows of sparse long hairs; discal scutellar seta subequal in length to scutellum. **Wing** hyaline, evenly tinged with pale brown; tegula and basicosta black; lower calypter pale brown. Costal spine subequal in length to r-m crossvein; relative lengths of 2nd, 3rd and 4th costal sectors approximately 1:2:1; vein M from dm-cu crossvein about 2.5 times distance between the bend and wing margin, appendix about 2/3 as long as r-m crossvein. Lower calypter with long fringe on outer margin. **Legs** reddish yellow, tibiae brown; tarsi and claws black; pulvilli brownish. Mid tibia with 1 posterodorsal seta; hind tibia with 2 anterodorsal, 1 posterodorsal and 1 ventral setae. Claws and pulvilli about as long as tarsomere 5.

**Abdomen** broadly translucent reddish yellow, brown-black on mid-dorsal longitudinal area of syntergite 1+2 to tergite 5, anterior and posterior margin of syntergite 1+2, posterior 1/5–1/6 of tergites 3 and 4 and posterior 1/2 or more of tergite 5; thin whitish pruinosity on anterior margin of tergites 3 and 4, and 1/3 of tergite 5; with 2 triangular brown-black lateral markings on each tergite. Hairs rather fine, sparse, recumbent and black, erect on tergite 5; syntergite 1+2 with 1 lateral marginal seta, without median marginal setae; tergite 3 with 2–4 median discal, 1 pair of median marginal and 1 lateral marginal setae; tergites 4 and 5 each with 2 pairs of median discal, 1 lateral discal and a row of marginal setae; median setae of marginal setae on tergite 5 slightly shifted forward; discal setae on tergites 3 and 4 sometimes irregularly set or absent. **Male**

**terminalia.** Posterior lobe of sternite 5 rounded on posterior margin; cerci long and narrow, pointed apically; surstylus long and wide, and apex slightly bluntly rounded; postgonite about as long as basiphallus.



**FIGURES 73–76.** *Dexia subnuda* (Malloch). **73–74.** Epandrium, cerci and surstyli in dorsal and lateral views. **75.** Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **76.** Sternite 5. Scale bars = 0.25 mm.

**Female.** Frons about 0.32 times as wide as head width; frontal vitta  $2/3$  as wide as fronto-orbital plate at middle; head setae strong; inner vertical seta more than  $3/5$  eye height; ocellar seta shorter than inner vertical seta; 1 prevertical and 2 strong proclinate orbital setae; 4 frontal setae. Antenna falling short of lower margin

of face by about length of 1st flagellomere, 1st flagellomere about 5.5 times as long as pedicel. Costal spine strong, slightly longer than r-m crossvein. Claws and pulvilli slightly shorter than tarsomere 5. Abdomen sometimes more broadly blackish; abdominal tergite 3 with 2 median discal setae; tergites 4 and 5 without median discal and lateral discal setae. Other characters as in male.

**Type material examined.** Holotype male of *Eomyocera subnuda* Malloch, MALAYSIA, N. Borneo [= Sabah], Bettotan, Near Sandakan, 18.viii.1927 (BMNH). Paratypes. 3 males, 4 females, same locality as holotype, 13–18.viii.1927 (males), 8–21.viii.1927 (females) (BMNH).

**Additional material examined.** MALAYSIA. 1 male, N. Borneo [= Sabah], Tenompok, 1460 m, Jesselton, 30 km E., 17–21.x. 1958, L.W. Quate. 2 females, North Borneo (SK), Forest, Camp, 19 km N. of Kalabakan, 15.x.1962, 30.x.1962, K.J. Kunehertha (BPBM).

**Distribution.** Malaysia (Sabah).

**Remarks.** This species resembles *D. divergens*, but differs from it in male having 2 broad longitudinal black vittae on thoracic dorsum, brown tibiae, dark brown tergite 5, and female without discal seta on tergite 4.

### *Dexia sumatrensis* (Townsend, 1926), status nov.

Figs. 77–80

*Eomyoceropsis sumatrensis* Townsend, 1926a: 29. — Crosskey 1969: 94 (type material). — Crosskey 1976: 179 (as syn. of *D. fulvifera*, misidentification). — Crosskey 1977: 602 (catalog, as syn of *D. fulvifera*).

*Dexilla sumatrensis*: Crosskey 1967: 106.

**Diagnosis.** Frons 0.17–0.22 times as wide as head width; prementum 7–8 times as long as wide; thoracic dorsum with 4 longitudinal vittae; 2 katapisternal setae; costal spine short, at most 1/2 as long as crossvein r-m; lower calypter with short fringe; legs black.

**Description.** Body length. Male: 14.0–17.5 mm, female: 12.3–13.7 mm.

**Male. Head** with dense yellowish white pruinosity; lunule brown; antenna reddish yellow, pedicel reddish brown, arista brown; palpus reddish yellow, darkened basally. Frons 0.17–0.22 times as wide as head width; frontal vitta slightly less than twice width of fronto-orbital plate at middle; parafacial nearly parallel-sided, 3–4 times as wide as 1st flagellomere; gena 0.46–0.49 times as wide as eye height; facial carina developed, ridge high and flattened; lower margin of face protruded forward. Inner vertical seta 0.3–0.4 times as long as eye height or as long as ocellar seta; outer vertical seta fine, 1/2–3/4 as long as inner seta; fronto-orbital plate with some fine short hairs inside; 11–12 inclinate frontal setae, lowest seta nearly level with upper edge of lunule; gena with several fine short hairs on anterior and lower portions; vibrissa inserted above level of lower margin of face. Antenna falling short of lower margin of face by about 2/3 length of 1st flagellomere, latter 4–5 times as long as pedicel; pedicel with a long seta about 2.5 times as long as pedicel; total width of arista including plumosity about 4 times as wide as 1st flagellomere. Prementum 7–8 times as long as wide; palpus longer than antenna.

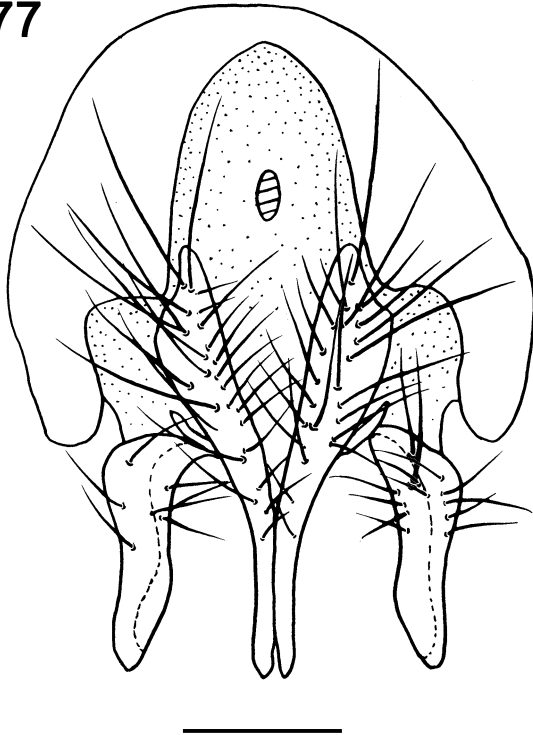
**Thorax** black in ground color, with yellowish gray pruinosity; scutum with 4 longitudinal dark vittae on presutural area, an inner vitta 0.5–0.6 as wide as pruinose portion between inner and outer vittae on presutural scutum; scutellum reddish brown apically. All thoracic hairs black; 3 postpronotal setae nearly in a straight line, anterior one weak; 0–1 presutural and 1–2 postsutural acrostichal setae; 2 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 3 supra-alar setae, anterior one shifted outwards, about 2/5 as long as second; 2 katapisternal setae, katapisternum with 3–4 rows of rather dense fine hairs. **Wing** distinctly brownish on anterior portion along veins; basicosta and tegula black; lower calypter pale yellowish. Costal spine fine, at most 1/2 as long as r-m crossvein; relative lengths of 2nd, 3rd and 4th costal sectors approximately 3:8:3; vein M from dm-cu crossvein to its bend about 3.5 times distance between the bend and wing margin, appendix rather short. Lower calypter with short fringe on outer margin. **Legs** black; pulvilli pale brownish. Mid tibia with 2 posterodorsal setae; hind tibia with 5–6 anterodorsal, 2–3 posterodorsal and 2 ventral setae; fore claws and pulvilli longer than tarsomere 5.



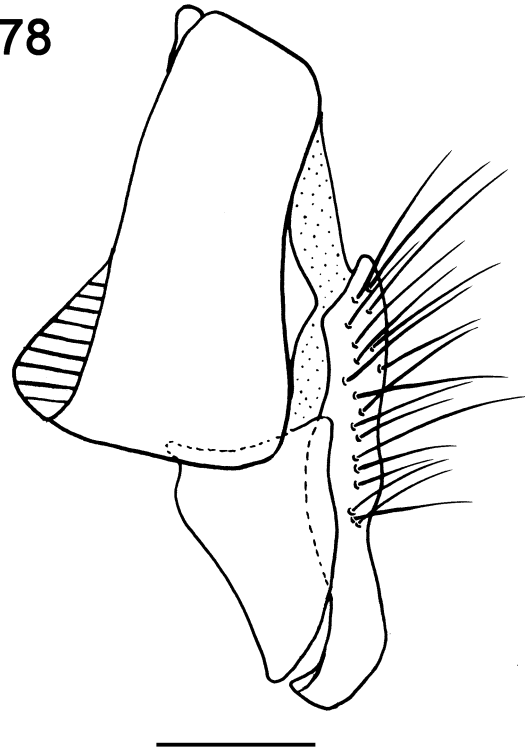
Abdomen translucent yellow, black on mid dorsal longitudinal portion, posterior 1/8–1/4 of tergite 3, 1/3–1/5 of tergite 4 and 1/2 of tergite 5; thin whitish pruinosity on anterior margin of tergites 3 and 4 and entire tergite 5. Abdominal syntergite 1+2 with 2 median marginal and 1 lateral marginal setae; tergite 3 with 2 median discal, 2 median marginal and 1–2 lateral marginal setae; tergite 4 with 1–2 pairs of median discal and a row of marginal setae; tergite 5 with some discal and a row of marginal setae. Male terminalia. Posterior lobe of sternite 5 about 2/3 length of the sternite and blunt apically, with some long setae; apical half of cerci slender, pointed at apex; surstylus narrow, slightly pointed apically; postgonite about as long as basiphallus.

Female. Frons about 1/3 as wide as head width, widened anteriorly; outer vertical seta distinct; 5–7 frontal setae; 2 proclinate orbital setae; claws and pulvilli shorter than tarsomere 5; abdomen wide ovate, without discal setae on tergites. Other characters almost as in male.

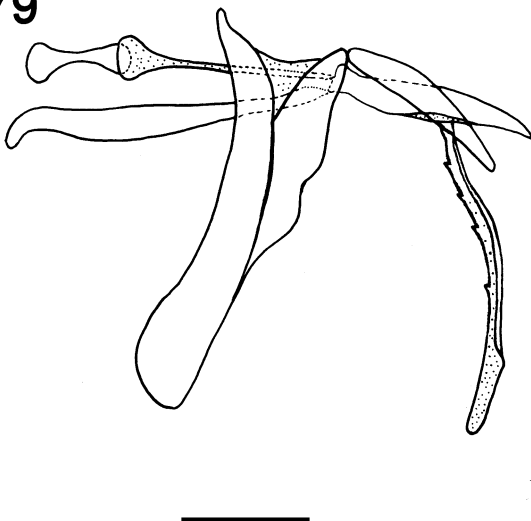
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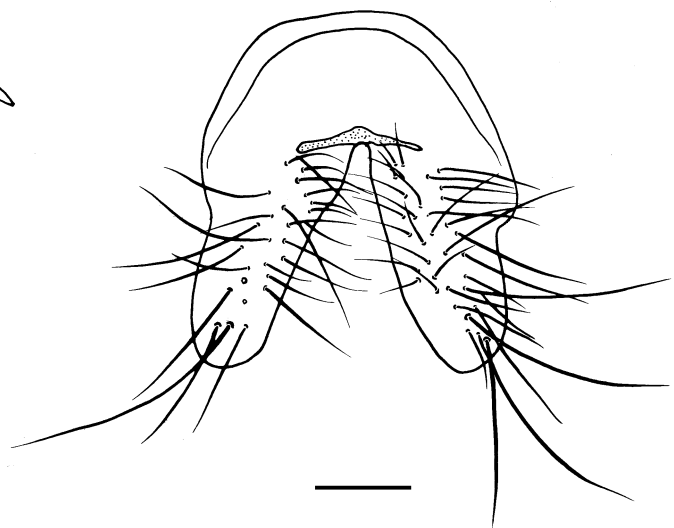
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**FIGURES 77–80.** *Dexia sumatrensis* (Townsend), **status nov.** 77–78. Epandrium, cerci and surstyli in dorsal and lateral views. 79. Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. 80. Sternite 5. Scale bars = 0.25 mm.

**Type material examined.** Holotype male of *Eumyoceropsis sumatrensis* Townsend, INDONESIA, Fort de Kock [= Bukittinggi], Sumatra, x.1913, E. Jacobson (ZMUA).

**Additional material examined.** INDONESIA. 5 males, 3 females, 50 km S. of Menado, 1200 m, Noongan, Sulawesi, 2–10.xii.1973, H. Kurahashi (BLKU).

**Distribution.** Indonesia (Sulawesi, Sumatra).

**Remarks.** This species was regarded as a junior synonym of *D. fulvifera* Röder by Crosskey (1976), but is here treated as a distinct species. It is similar to *D. fulvifera*, but differs from it in wider frons, longer prementum, shorter costal spine, and no black band on posterior margin of postsutural scutum.

*Dexia tenuiforceps* Zhang et Shima, sp. nov.

Figs. 81–84

**Diagnosis.** Prementum 5–6 times as long as wide; 3 katapisternal setae; tegula mostly black except reddish brown base; legs reddish yellow; abdominal syntergite 1+2 with 1 pair of median marginal setae; and surstylus narrow and bent.

**Description.** Body length. 10.0–15.0 mm.

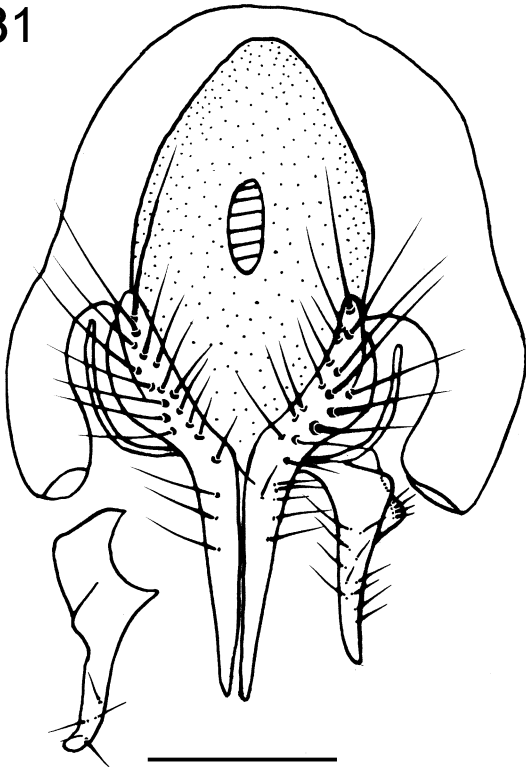
**Male. Head** with yellowish gray pruinosity, frontal vitta brownish black, lunule brown; antennae and palpi reddish yellow. Frons 1/6–1/7 as wide as head width; fronto-orbital plate slightly wider than or subequal in width to frontal vitta at middle; parafacial 2.5–3 times as wide as 1st flagellomere; facial carina developed, ridge arched in lateral view, widened below; lower margin of face protruding forward; gena about 3/7 as wide as eye height. Inner vertical seta 0.27–0.4 times as long as eye height, about twice as long as fine, hair-like, outer vertical seta; ocellar seta as strong as upper frontal setae; 12–13 inclinate frontal setae; vibrissa inserted above lower margin of face. Antenna falling short of lower margin of face by 0.6–0.7 times length of 1st flagellomere, latter about 4 times as long as pedicel; total width of arista including plumosity about 4 times as wide as 1st flagellomere. Prementum 5–6 times as long as wide; palpus slightly longer than antenna.

**Thorax** black in ground color, with grayish yellow pruinosity, 4 longitudinal black vittae on presutural area of scutum and 5 on postsutural scutum, an inner vitta 0.4–0.5 times as wide as pruinose portion between inner and outer vittae on presutural area. All thoracic hairs black; prosternum bare, twice as long as wide; proepisternum bare; 1–2 presutural and 2 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 3 supra-alar setae, anterior seta about 1/2 as long as posterior two; 3 katapisternal setae. Wing brownish hyaline; basicosta black; tegula mostly black except reddish brown base; lower calypter yellowish, with short fringe on outer margin. Costal spine distinct, about as long as r-m crossvein; relative lengths of 2nd, 3rd and 4th costal sectors approximately 1:2:1; vein M from dm-cu crossvein to its bend 2.5–3.3 times distance between the bend and wing margin, appendix very short. Legs reddish yellow except for dark brown tarsi and brown ventrodorsal portions of femora. Mid tibia with 2 posterodorsal setae; hind tibia with 1–3 anterodorsal, 2–3 posterodorsal and 2 ventral setae. Fore claw and pulvillus slightly longer than, or subequal in length to, tarsomere 5.

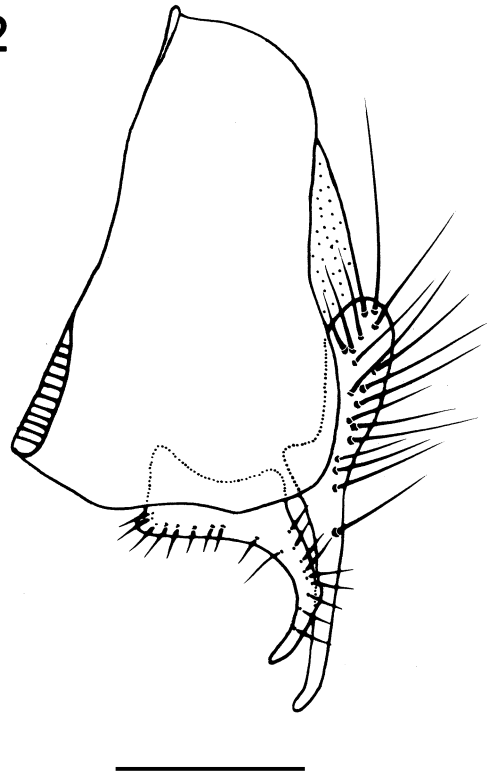
**Abdomen** long ovate, translucent yellow, black on mid-dorsal longitudinal areas and on posterior 1/4–1/5 of tergites 4 and 5, black marking on bases of lateral marginal setae of each tergites; grayish white pruinosity on narrow anterior margin of tergites 3, anterior 1/4–4/5 of tergite 4 and entire tergite 5. Syntergite 1+2 with 2 median marginal and 1 lateral marginal setae; tergite 3 with 1–2 pairs of median discal, 1 pair of median marginal and 1 lateral marginal setae; tergite 4 with 1–2 pairs of discal and a row of marginal setae; tergite 5 with a row of discal and marginal setae. **Male terminalia.** Sternite 5 subsquare, V-shaped median cleft about 3/5 length of the sternite, posterior lobe wide and blunt apically; cerci slender on apical half and pointed apically; surstylus narrow and slender, pointed apically; postgonite shorter than basiphallus.

**Female.** Frons 0.28–0.33 times as wide as head width; frontal vitta slightly narrower than fronto-orbital plate at middle; 1st flagellomere about 5 times as long as pedicel. Tegula and basicosta brown to dark brown. Legs wholly yellow; claws and pulvilli short. Abdomen ovate; reddish yellow; tergites 4 and anterior half of tergite 5 black, with gray pruinosity; abdominal syntergite 1+2 without median marginal setae, tergites 3 and 4 without discal setae. Other characters almost same as in male.

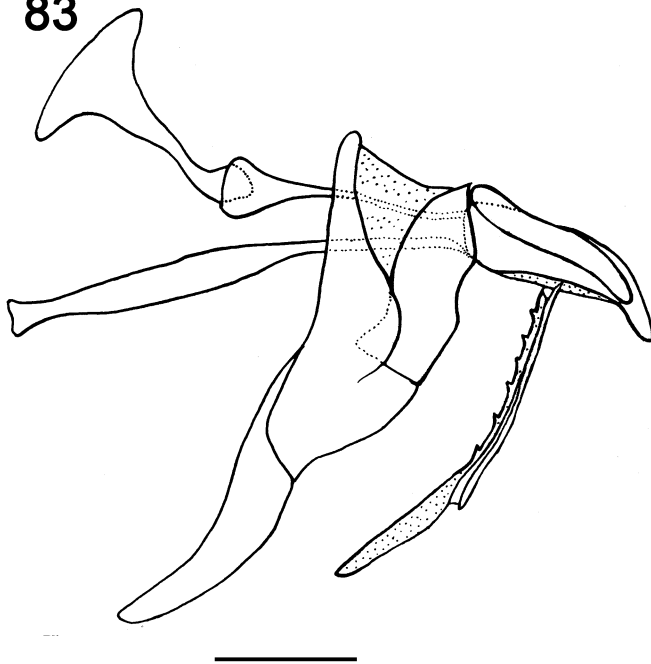
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**FIGURES 81–84.** *Dexia tenuiforceps* sp. nov. **81–82.** Epandrium, cerci and surstyli in dorsal and lateral views. **83.** Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **84.** Sternite 5. Scale bars = 0.25 mm.

**Type material.** Holotype male, **CHINA.** Yongsheng, Liude, 2300 m, Yunnan, 10.vii.1984, R. Wang (IZCAS). Paratypes. **CHINA.** Fujian (= Fukien): 1 male, Shaowu, Taohulan, 1000 m, 14–18.vii.1946, T. Maa. 2 males, Chungan, Kuantun, 22–25.viii.1945, T.C. Maa (BPBM). Sichuan (= Szechuen): 1 male, Emei Shan, Xixiangchi, 1800–2100 m, 28.viii.1957, K.-R. Huang. 1 male, 1 female, Moxi, 1500–2400 m, Luding, 15–18.ix.1982, X.-Z. Zhang (IZCAS). 1 male, 1 female, Mt. Omei [= Emei Shan], 4000–7000 ft,

16–22.viii.1934, D.C. Graham (USNM). 4 males, Hongkou, Dujiangyan, Chengdu, 12–13.viii.2009, C.-T. Zhang, C. Fu, Z. Zhao (SNU). Yunnan: 1 male, Xishan, 2100 m, Kunming, 17.viii.1996, H. Shima. 1 female, Dagaoping, 1900–2400 m, Baoshan, 7–9.ix.1996, H. Shima. 2 females, Laowo, 2000–2400 m, Nujiang, 4–5.iv.1996, H. Shima (BLKU). 28 males, 1 female, Wuliang Shan, 2800 m, Jingdong, Simao, 8–9.vi.2010, C. FU & Y.-Y. Zhou. 7 males, 1 female, Cang Shan, 2700 m, Dali, 11.vi.2010, C. FU & Y.-Y. Zhou. 1 male, Gaoligong Shan, 2400 m, Pianma, Lushui, 22.vi.2010, Y.-Y. Zhou. 2 females, Xi Shan, 1950–2350 m, Kunming, 27.vii.2010, C.-T. Zhang, Q. Wang. 1 female, Gaoligong Shan, 2400 m, Xujiaping, Lushui, 14.viii.2010, Q. Wang (SNU). Xizang: 1 male, Médog, 17.viii.1977, G.-T. Jin. Zhejiang: 7 males, Baishanzu, 1080–1200 m, Qingyuan, 23–26.vii.1963, G.-T. Jin (SEMC). Taiwan: 1 male, Taihezan, 1960, Baranov (USNM). **NEPAL**. 6 males, 2 females, Basantapur, 2300 m, E. Nepal, 25–26.vii.1972, H. Shima. 1 male, Ramaechap Dist. Jiri, 1950 m, 24.vii.1992, H. Kurahashi. 1 female, Solukhumbu, Bandar-Sete, 2150–2575 m, 26.vii.1992, H. Shima (BLKU). 1 male, Ktm. [= Kathmandu], Pulchauki, 6600 ft, viii.1967, Malaise trap (CNC).

**Etymology.** The specific epithet is taken from a diagnostic character of this species, the narrow surstylus.

**Distribution.** China (Fujian, Sichuan, Taiwan, Yunnan, Zhejiang), Nepal.

**Remarks.** This species is similar to *D. fraseri*, but differs from it by 1st flagellomere and prementum longer, basicosta dark, and wing brownish hyaline, not strongly tinged brown along veins and anterior portion.

### *Dexia vacua* (Fallén, 1817)

Figs. 85–88

*Musca vacua* Fallén, 1817: 240.

*Dexia cincta* Robineau-Desvoidy, 1830: 312. — Herting 1974: 40 (as syn. of *D. vacua*).

*Dexia gracilis* Robineau-Desvoidy, 1830: 313. — Robineau-Desvoidy 1863b: 389. — Herting 1974: 40 (as syn. of *D. vacua*).

*Dexia aurinia* Walker, 1849: 847. — Austen 1907: 343 (as syn. of *D. vacua*). — Crosskey 1974: 292, 305 (type material, junior syn. of *D. vacua*).

*Dexia vacua*: Macquart, 1835: 212. — Zetterstedt 1844: 1265, 1859: 6173. — Rondani 1862: 76. — Robineau-Desvoidy 1863b: 388. — Pandellé 1896: 160. — Bezzi & Stein 1907: 446. — Stein 1924: 238. — Lundbeck 1927: 270. — Emden 1954: 30. — Sabrosky & Arnaud 1965: 982 (catalog). — Kolomiets 1970: 61, 67 (key and redescription). — Mesnil 1980: 47 (redescription) — Herting 1984: 144 (catalog). — Richter & Farinets 1983: 816 (1st instar larva). — Chao & Liang 1992: 806 (key), misidentification. — Herting & Dely-Draskovits 1993: 366 (catalog). — Tschorsnig & Herting 1994: 81, 157. — Chao *et al.* 1998: 2154, misidentification. — Richter 2004: 355 (key). — Shi 2004: 90 (misidentification). — Chao *et al.* 2009: 576 (fauna), misidentification.

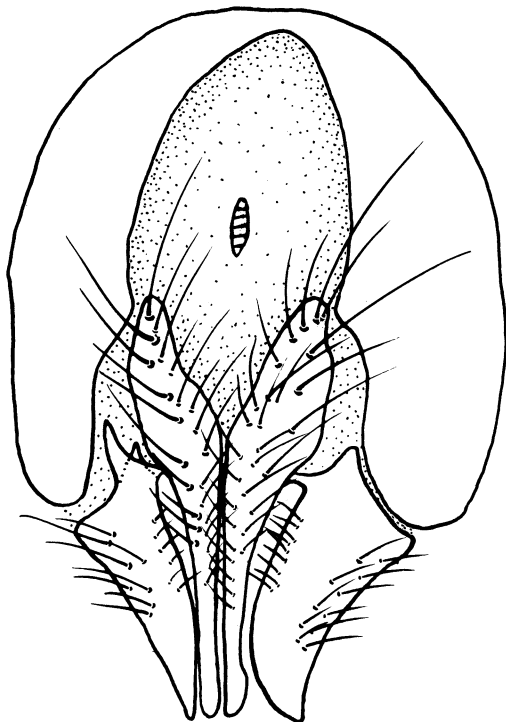
**Diagnosis.** Prementum 2.5–3 times as long as wide; 3 presutural and 3 postsutural dorsocentral setae; 2 katepisternal setae; tegula and legs reddish yellow; abdomen reddish yellow, entirely with grayish white pruinosity; syntergite 1+2 without median marginal setae.

**Description.** Mesnil (1980) redescribed this species in detail. Here we give some additional measurements and diagnostic characters.

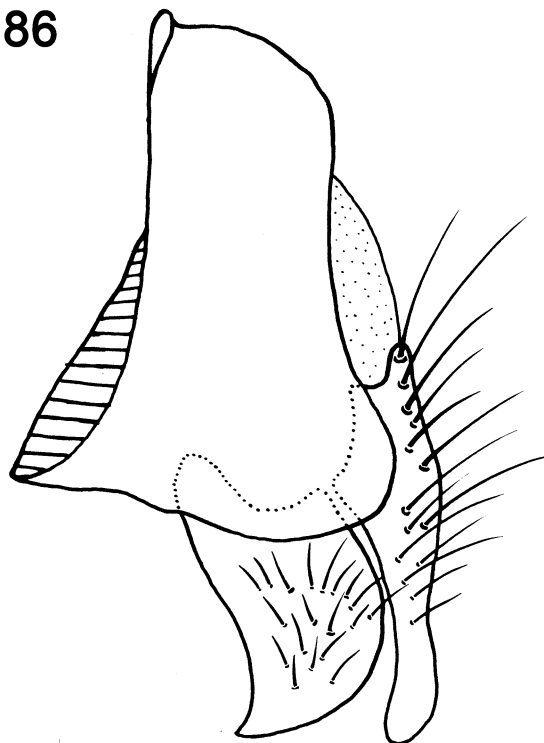
Body length. 7.5–9.8 mm.

Male. Head with grayish white pruinosity. Frons about 0.14 times as wide as head width; parafacial about twice as wide as 1st flagellomere; facial carina weakly developed, low and pointed on ridge; gena about 0.4 times as wide as eye height; ocellar seta as strong as upper frontal setae; fine inner vertical seta 0.25–0.36 times as long as eye height, slightly shorter than ocellar seta; 1st flagellomere 2–3.5 times as long as pedicel; total width of arista including plumosity 2–4 times as wide as 1st flagellomere; prementum 2.5–3 times as long as wide; palpus about as long as 1st flagellomere. Thorax with 4 narrow longitudinal dark brown vittae, an inner vitta about 1/5 and outer one about 1/3 as wide as pruinose portion between inner and outer vittae on presutural scutum; scutellum reddish yellow at apex. Proepisternum bare; 1 presutural and 1–2 postsutural

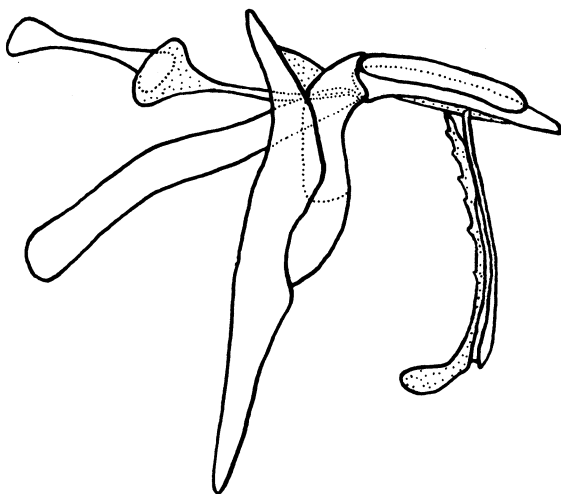
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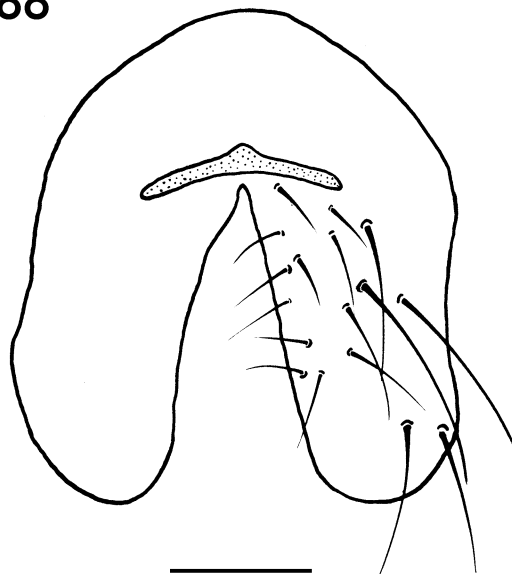
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**FIGURES 85–88.** *Dexia vacua* (Fallén). **85–86.** Epandrium, cerci and surstyli in dorsal and lateral views. **87.** Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **88.** Sternite 5. Scale bars = 0.25 mm.

acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 1–2 postsutural intra-alar setae; 2–3 supra-alar setae; 2 katepisternal setae. Wing brownish, tegula reddish yellow, basicosta brown to dark; costal spine about 1.5 times as long as crossvein r-m. Lower calypter with long fringe on outer margins. Legs reddish yellow, claws and pulvilli about as long as tarsomere 5; mid tibia with 2–3 posterodorsal setae; hind tibia with 2–3 anterodorsal, 2 posterior and 2–3 ventral setae. Abdomen reddish yellow in ground color, widely black on mid-dorsal longitudinal portion, and black on posterior margin of tergites 3 to 5; dorsum entirely covered with

grayish white pruinosity, sometimes broadly bare on posterior sides of tergite 3. Syntergite 1+2 with a lateral marginal seta, without median marginal setae; tergite 3 with 2 pairs of median discal, 1 pair of median marginal and 2 lateral marginal setae; tergite 4 with 2 pairs of median discal and a row of marginal setae; tergite 5 with some discal and a row of marginal setae. Male terminalia. Posterior lobe of sternite 5 rounded apically; apical half of cerci slender, pointed at apex; surstylus long and wide, pointed apically; postgonite distinctly shorter than basiphallus.

**Female.** Frons about 0.38 times as wide as head width; gena 0.6–0.7 times as wide as eye height; 7–8 inclinate frontal setae; 2 strong proclinate orbital setae; 1 upwardly directed prevertical seta; inner vertical seta longer than ocellar seta and as long as upper frontal setae. Thorax with gray pruinosity. Abdomen entirely covered with grayish white pruinosity; tergites 3 with 1 pair of median discal setae, tergite 4 with or without discal setae; tergite 5 without discal setae, some median setae of marginal setae shifted forward. Other characters almost same as in male.

**Type material.** Syntypes of *Musca vacua* Fallén, Sweden (SMNH) (not examined).

**Material examined.** FRANCE. 1 male, 1 female, St. Germain, 11–21.vii.–viii.1951, H.L. Parker, B. Herting det. (CNC). SWEDEN. 1 male, Grisslehamn, 2.viii.1925, Hedqren; 1 male, Ustharnmea, 31.vii.1935, Hedqren, Bergström det. (SMNH).

**Distribution.** ?China; Europe (northwards to Sweden); Russia (North European territory).

**Remarks.** This species has long been known from Europe and recently found in East Asia. It is similar to *D. ventralis*, but differs from it in having an undeveloped facial carina and almost entirely grayish white pruinosity on abdominal tergites in male. Chao *et al.* (1998: 2154), Shi (2004: 90) and Chao *et al.* (2009: 576) probably misidentified Chinese specimens of *D. ventralis* as *D. vacua*.

**Host.** Scarabaeidae: *Serica brunnea* L. (Tschorsnig & Herting 1994: 157).

### *Dexia velutina* (Mesnil, 1953)

Figs. 89–92

*Calotheresia velutina* Mesnil, 1953: 174.

*Dexia velutina*: Crosskey 1976: 179. — Crosskey 1977: 603 (catalog). — Dear & Crosskey 1982: 115 (key).

**Diagnosis.** Black thoracic vittae merged to form 2 wide vittae on postsutural scutum; scutellum with silvery white pruinosity; wing dark brown on anterior and median portion along veins; alula and calypter white; and legs black.

**Description.** Body length. 13.0–16.1 mm.

**Male. Head** with dense whitish pruinosity on lower half of fronto-orbital plate, parafacial and gena, upper 1/2 of fronto-orbital plate with yellowish pollinosity; frontal vitta brownish black; antenna with 1st flagellomere reddish yellow, pedicel and arista brown; palpus reddish yellow except for brown basal half. Frons 0.17–0.2 times as wide as head width; frontal vitta about as wide as fronto-orbital plate or slightly wider at middle; parafacial 3–3.5 times as wide as 1st flagellomere at middle height; gena about 0.5 times as wide as eye height; facial carina pointed on ridge; lower margin of face protruded forward. Inner vertical seta 1/2–1/3 eye height, about twice as long as hair-like outer vertical seta; ocellar seta longer than inner vertical seta, about as long as upper frontal seta; 11–12 inclinate frontal setae, lowest seta nearly level with base of antenna; fronto-orbital plate with a few fine short hairs; parafacial virtually bare, with several very minute black hairs on upper portion, which are not visible at low magnification; gena only with a few fine long hairs on lower portion; vibrissa inserted slightly above level of lower margin of face. Antenna falling short of lower margin of face by about 1/2 length of 1st flagellomere; 1st flagellomere 4–5 times as long as pedicel; total width of arista including plumosity 3–4 times as wide as 1st flagellomere. Prementum about 3/4 of eye height, 5–6 times as long as wide; palpus about as long as antenna.

**Thorax** black in ground color, scutum with dense yellowish pruinosity, scutellum with dense silver white pruinosity; 2 broad outer and 2 narrow inner longitudinal black vittae on presutural scutum, an inner vitta about 1/3–1/4 as wide as outer vitta and as wide as pruinose portion between inner and outer vittae, inner and

outer vittae merged to form a broad vitta on postsutural scutum; broadly brown-black on supra-alar area, postalar callus, posterior portion of postsutural scutum and base of scutellum; pleura with silvery white pruinosity on anterior 2/3 of proepisternum, 2/3 of anepisternum, 2/3 of katepisternum, anterior and posterior 1/3 of meron and anatergite, other portion with brownish black pruinosity. Thoracic hairs black; proepisternum bare; postpronotal lobe with 2–3 setae, anterior one weak; 1–2 postsutural acrostichal setae; 2 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 3 supra-alar setae, anterior one shifted outwards, about 1/3 as long as posterior setae; 2 katepisternal setae. **Wing** tinged with pale brown on cell h and basal area from base to level of dm-cu crossvein, bronwish on apical area, especially dark brown on area between costa and vein  $R_{4+5}$ , alula white; tegula and basicosta black; lower calypter white, with short fringe on outer margin. Costal spine subequal in length to r-m crossvein; relative lengths of 2nd, 3rd and 4th costal sectors approximately 4.5:9:4; vein M from dm-cu crossvein to its bend about 3.5 times distance between the bend and wing margin, appendix short. **Legs** brownish black, with grayish white pruinosity on fore and mid coxae; claws brownish black, pulvilli yellow. Mid leg longest; hind tibia straight. Mid tibia with 3 posterodorsal setae; hind tibia with 3–6 anterodorsal, 1–2 posterodorsal and 1–2 ventral setae. Fore claws and pulvilli about as long as tarsomere 5.

**Abdomen** reddish yellow, dark brown on median excavation and anterior and posterior margin of syntergite 1+2, mid dorsal triangular portion and posterior 1/3–1/4 of tergite 3, posterior 1/2–2/5 of tergite 4 and posterior 2/3 of tergite 5; thin grayish white pruinosity on anterior 1/5–1/4 of tergite 3, 1/3 of tergite 4 and 2/3 of tergite 5. Syntergite 1+2 with 2 strong median marginal and 1 lateral marginal setae; tergite 3 with 2 pairs of short median discal, 1 pair of median marginal and 1 lateral marginal setae; tergite 4 with 2–3 pairs of irregular median discal and a row of strong marginal setae; tergite 5 with 2 median discal and a row of marginal setae. **Male terminalia.** Posterior lobe of sternite 5 blunt apically; cerci long, slender and pointed at apex; surstylus strongly narrowed and pointed apically; postgonite shorter than basiphallus.

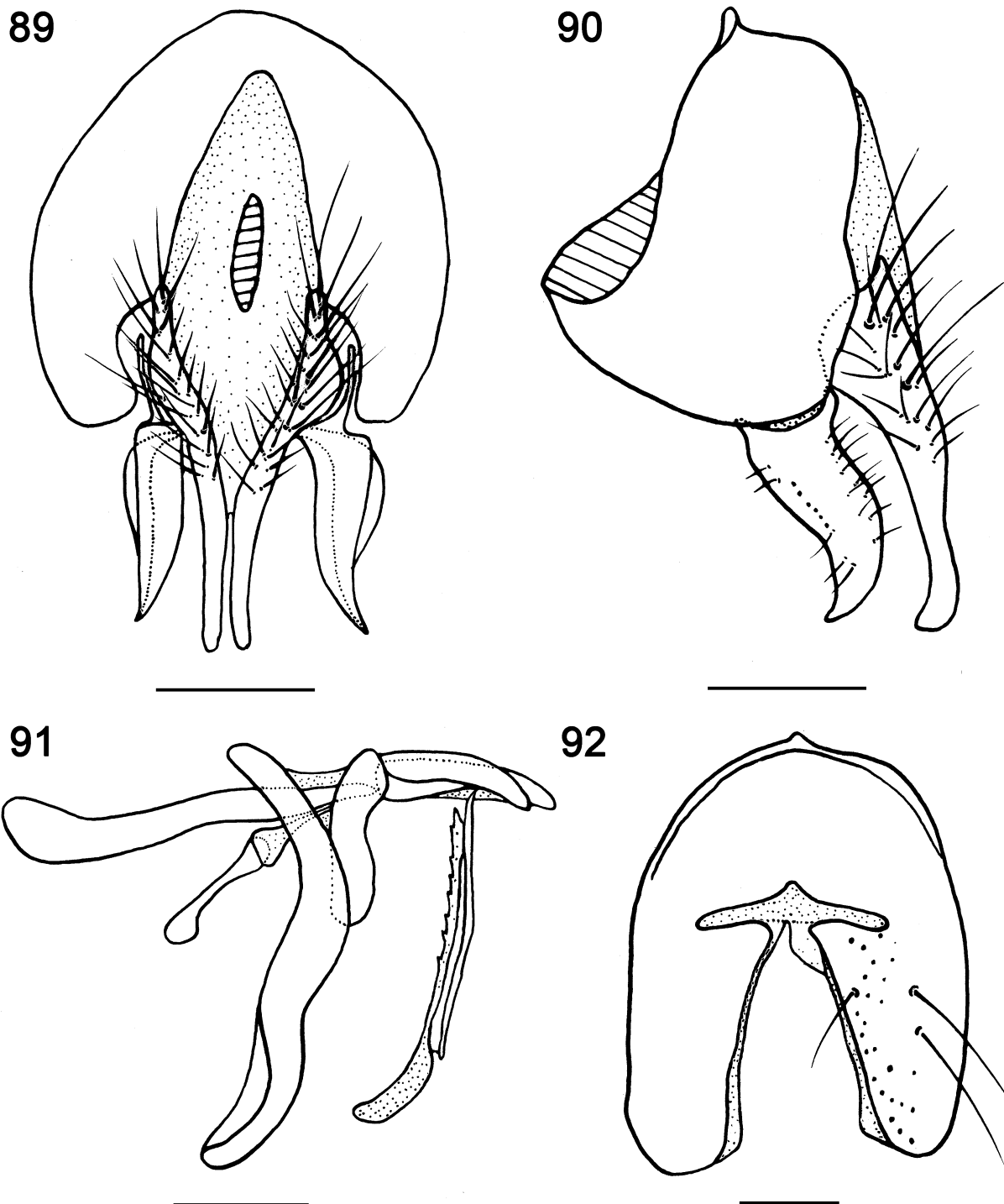
**Female.** Frons 0.28–0.32 times as wide as head width, widened anteriorly; frontal vitta 1.2–1.3 times as wide as fronto-orbital plate at middle; gena 0.45–0.52 times as wide as eye height. Inner vertical seta slightly more than 1/2 eye height; outer vertical seta about 3/5 as long as inner seta; ocellar seta about as long as inner vertical seta; 1 outwardly directed prevertical seta, nearly as long as inner vertical seta; 2 proclinate orbital setae, anterior seta stronger and longer than inner vertical seta; 6–8 inclinate frontal setae; 1st flagellomere about 3.9 times as long as pedicel. Costal spine about 1.5 times as long as r-m crossvein; relative lengths of 2nd, 3rd and 4th costal sectors approximately 3.5:8.5:3; vein M from dm-cu crossvein to its bend about 2.5 times distance between the bend and wing margin. Mid tibia with 2 posterodorsal setae; hind tibia with 3–4 anterodorsal setae. Abdomen reddish yellow on anterior 1/2–2/5 of each tergite, black on posterior portion, rather thin whitish pruinosity on anterior 1/2 of tergite 5 and anterior 1/3–2/5 of venter of tergites 3 to 5; tergites without median discal setae. Other characters almost same as in male.

**Type material examined.** Holotype female of *Calotheresia velutina* Mesnil, **PHILIPPINES**, Luzon, Banahao, vi.1914 (ZMU).

**Additional material examined.** **INDIA.** 2 females, Maharashtra St. Ambavahe, 15 km, S. Lonavala, 4–6.vi.1989, H. Kurahashi (BLKU). **PHILIPPINES.** 1 male and 1 female (identified by Mesnil as *Dexia* (*Barydexia*) *bivittata* T.T. in 1951). 1 male, Callao cave, Baggaba, Penabianca Cagayan, Luzon Is., 22.viii.1982, N. Kashiwai leg (BLKU). 1 male, 1 female, Luzon Is., Mt. Prov. Ifugao, Mayoyao, 1000–1500 m, 4–6.vii.1966, H. M. Torrevillas (BPBM). **SRI LANKA.** 1 female, Kan Dist., Udawattakele, Sanct, 1800', 1–3.ix.1980, K.V. Krombein, P.B. Karunaratne, T. Wijesinhe, L. Jayawickrema, V. Gunawardane. 1 female, Kandy, Rose Nith Est., 31.x.1966, J.F.G. Clarke, Thelma M. Clarke. 1 female, Noori Estate Noori, 3500', C.R., 6.viii.1966, P.P. Karunarada (USNM).

**Distribution.** India\*, Philippines (Luzon), Sri Lanka\*.

**Remarks.** This species is similar to *D. atripes*, but is distinguished from it in having silvery white scutellum, 1 postsutural acrostichal seta, alula and calypter white, and anterior part and area along wing veins dark brown.



**FIGURES 89–92.** *Dexia velutina* (Mesnil). **89–90.** Epandrium, cerci and surstyli in dorsal and lateral views. **91.** Aedeagal apodeme, ejaculatory apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **92.** Sternite 5. Scale bars = 0.25 mm.

***Dexia ventralis* Aldrich, 1925**

Figs. 93–96

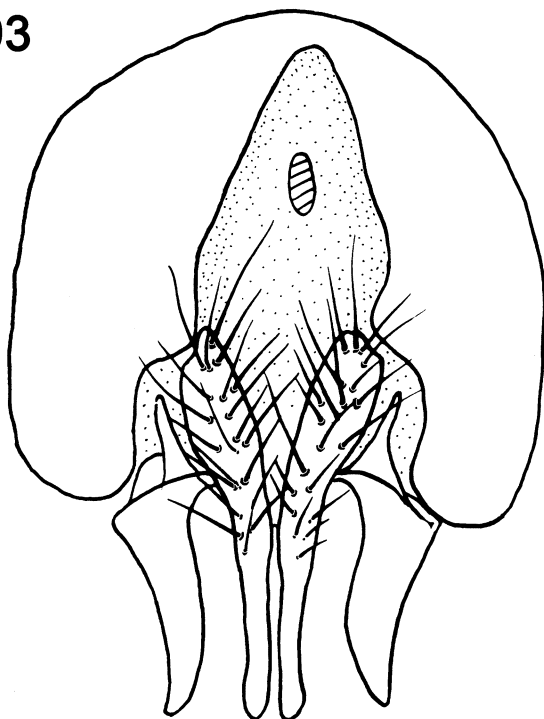
*Dexia ventralis* Aldrich, 1925: 33. — Sabrosky & Arnaud 1965: 982 (catalog). — Kolomiets 1970: 61, 68 (key and redescription). — Mesnil 1980: 48. — Herting 1984: 144 (catalog). — Herting & Dely-Draskovits 1993: 366 (cata-



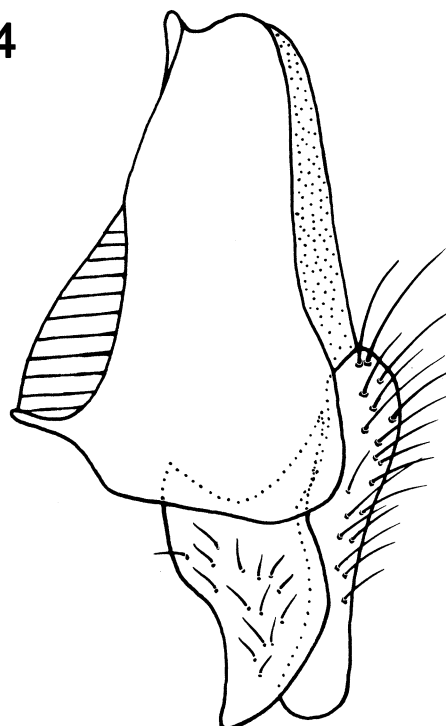
log). — Ziegler 1998: 164, 185 (larvae and puparia). — O'Hara & Wood 2004: 25 (catalog). — Richter 2004: 355 (key). — Zhang & Shima 2004: 55. — Zhang *et al.* 2004: 128. — Hao *et al.* 2008: 99. — O'Hara *et al.* 2009: 29 (catalog). — Chao *et al.* 2009: 577.

*Dexia vacua* of Chao, 1998: 2154, not Fallén, 1817, misidentification.

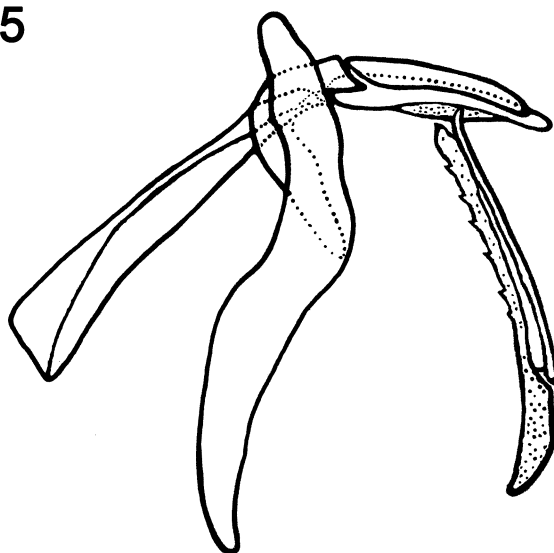
93



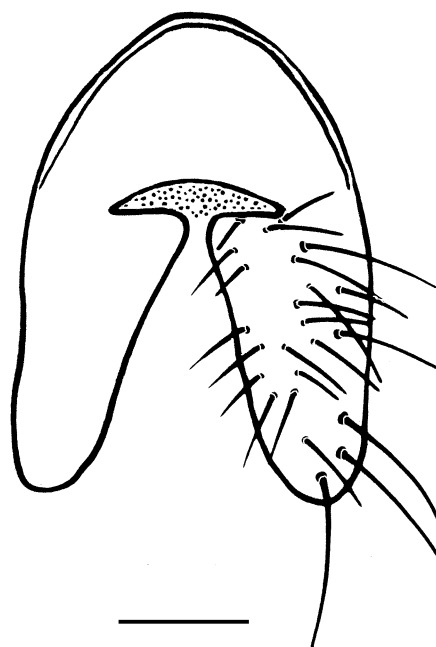
94



95



96



**FIGURES 93–96.** *Dexia ventralis* Aldrich. **93–94.** Epandrium, cerci and surstyli in dorsal and lateral views. **95.** Aedeagal apodeme, hypandrium, pregonite, postgonite, basiphallus, and distiphallus in lateral view. **96.** Sternite 5. Scale bars = 0.25 mm.

**Diagnosis.** Facial carina developed; thoracic dorsum with 4 longitudinal vittae; 3 presutural and 3 postsutural dorsocentral setae; 2 katapisternal setae; tegula reddish yellow to dark brown; lower calypter with long fringe; legs reddish yellow; and abdominal tergites with whitish pruinosity on anterior 1/3 to 2/3.

**Description.** Mesnil (1980) redescribed this species in detail. Here we give some additional measurements and some other characters.

Body length. 8.8–10.0 mm.

**Male. Head.** Frons 0.13–0.18 times as wide as head width; parafacial 2.5–3.0 times as wide as 1st flagellomere at middle height; gena 0.42–0.55 times as wide as eye height. 1st flagellomere 3–4 times as long as pedicel; prementum 2.5–3 times as long as wide. **Thorax** black in ground color, with yellowish or brownish pruinosity; with 4 longitudinal black vittae on dorsum, an inner vitta on presutural scutum about 1/5 as wide as pruinose portion between inner and outer vittae and 1/3 as wide as outer vitta; scutellum dark on basal half and reddish yellow on apical half, covered with grayish white pruinosity. Proepisternum bare; 2–3 postpronotal setae; 1–2 presutural and 1–3 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 2 postsutural intra-alar setae; 2–3 supra-alar setae; 2 katapisternal setae. **Wing** hyaline; tegula reddish yellow to dark brown; basicosta dark brown; costal spine about as long as r-m crossvein; relative lengths of 2nd, 3rd and 4th costal sectors approximately 2:5:3; vein M from dm-cu crossvein to its bend 2–3 times distance between the bend and wing margin; lower calypter with dense long fringe on outer margin. **Legs** reddish yellow; mid tibia with 2 fine posterodorsal setae; hind tibia with 2–3 anterodorsal, 2–3 posterodorsal and 2 ventral setae. **Abdomen** translucent yellowish on tergites 2 to 4 and reddish brown on tergite 5, brown to dark brown on mid dorsal longitudinal portion of tergites 2 to 4, narrow posterior margin of tergite 4 and sometimes posterior 1/2 of tergite 5; rather dense whitish pruinosity on anterior 1/3–1/4 of tergite 3, anterior 1/3–1/2 of tergite 4 and 1/2–3/4 of tergite 5, the pruinosity extending to posterior 1/2 on tergites 3 and 4 along mid dorsal longitudinal vitta. Syntergite 1+2 with several rather fine lateral discal and 1–2 lateral marginal setae, without median marginal setae; tergite 3 with 2–4 median discal, 0–1 lateral discal, 2 median marginal and 2 lateral marginal setae; tergite 4 with 1–2 pairs of median discal, 0–2 pairs of lateral discal setae and a row of marginal setae; tergite 5 with regular rows of discal and marginal setae. **Male terminalia.** V-shaped median cleft of sternite 5 about 2/3 length of the sternite, posterior lobe wide and blunt apically; cerci slender on apical half; surstylus narrowed and apex slightly pointed; postgonite shorter than basiphallus.

**Female.** Frons about 5/12 head width; fronto-orbital plate wider than frontal vitta; parafacial about 3 times as wide as 1st flagellomere; gena about 0.5 times as wide as eye height; 5 frontal setae; 2 proclinate orbital setae; 1 reclinate prevertical setae. Abdomen ovate; reddish yellow, dark brown on syntergite 1+2; posterior 3/4 of tergite 3, 3/5–1/2 of tergite 4 and 3/5–1/2 of tergite 5; grayish white pruinosity on anterior 1/4–1/3 of tergites 3 and 2/5–1/2 of tergites 4 and 5; tergites 3 and 4 each with a pair of discal setae. Other characters almost same as in male.

**Type material examined.** Holotype male of *Dexia ventralis* Aldrich, Suigen [= Suwon, **SOUTH KOREA**, 23.v.1922. Paratypes. **SOUTH KOREA**. 1 male, 1 female, Suigen, 23.v.1922, ex. Japanese beetle, Parasite Exp (USNM).

**Additional material examined. CHINA.** Beijing: 1 female, Miyun, Shicheng, 3.viii.1982, F.-S. Li. 1 female, Beianhe, 3.ix.2003, Y.-P. Zhou. 5 males, 1 female, Changping, Heishanzhai, 5.ix.2006, S.-S. Zhang, P.-M. Dong, Q. Li. 1 male, ix.2005, Xiangshan, L.Q. Wu. 1 male, Science and Technology Park of CAU, R.-G. Li. 1 male, Mt. Baiwang, 24.viii.2005, X. Feng. 1 male, Fenghuangling, 17.viii.2007, M. Chen (CAU). 10 males, 8 females, Shangfangshan, 15.vii–2.viii.1980, E.-Y. Liang (IZCAS). Hebei: 1 male, 3 females, Xinglong, Mt. Wuling, 21–28.viii.1973, J.-K. Yang, H.-M. Chen (CAU). 2 females, Qinhuangdao, Yansai Lake, viii.1980. 20 males, 23 females, Mts. Xiaowutai, 29.vi.2009, C. Fu and Y.-Y. Zhou (SNU). Heilongjiang: 1 male, Shangganling, 25.xii.1990 (artificial incubation). Jilin: 2 males, 2 females, Changbai Shan, 3.viii.1981, X.-W. Liu (SEMC). Liaoning: 1 male, Sitaizi, Fengcheng, 29.vi.1962, Y.-S. Shi. 1 male, 1 female, Changan, Donggou, Dandong, 17.vi.1972 and 1.ix.1972, W.-Q. Xue. 1 male, Mt. Tiecha, 900 m, Benxi, 15.ix.2006, J.-Y. Liu. 1 female, Daiyoujiang, Huanren, 25.ix.1974, W.-Q. Xue. 1 female, Shenyang, vi.2000 (SNU). Inner Mongolia: 6 males, 2 females, Zhongqi, Xingan Prefecture, 22–31.vii.1983, G.-S. Mu. 1 male, Yongshou, 21.viii.1991, J.-L. Nian. 1 male, Guodong vil., Qianqi, 29.viii.1986, D. Guo (IZCAS). 1

female, Dongsheng, 14.viii.2006. Ningxia: 2 males, 1 female, Lüyuan Forestry Center, 2100 m, Jingyuan, 30.vi.2008, J.-Y. Liu. 1 male, Tawan Villege, 1700–1800 m, 2.vii.2008, J.-Y. Liu. 1 male, 1 female, Longtan Forestry Center, 2100 m, 10.vii.2008, J.-Y. Liu. 1 male, 1 female, Xixia Forestry Center, 2000 m, 11.vii.2008, Z.-Y. Yao. 4 males, 2 females, Hongxia Forestry Center, 2100 m, Jingyuan, 14.vii.2008, J.-Y. Liu, Z.-Y. Yao (SNU). 1 male, Jingyuan, Liangdianxia, 2000 m, 17.vii.2007, Q.-B. Dong (CAU). Qinghai: 1 male, Guide, 2340–2640 m, 29.vi.1957, Y.-R. Zhang. 1 male, Cuogesongduo, 3750 m, Yushu, 4.vii.1964, S.-Y. Wang (IZCAS). 1 male, Yushu, 7.vii.1975, Q.-S. Fan, J.-S. He (SEMC). Shaanxi: 1 male, Taibai Shan, 12.vi.1989, M.-F. Wang (SNU). Shandong: 1 male, Yahou, Mt. Yashan, 18.vi.1964, S. Song (IZCAS). 1 male, Shidao, 11.ix.1962, G.-T. Jin (SEMC). Shanxi: 2 males, Shuangfeng, Mengshe, 16.vi.1999. 1 female, S. Yulin, Suoxian, 20.ix.1979. 1 male, Fanjiazhai, Youyu, 18.vi.1982. 1 female, Shangbaiyang, Guangling, 9.viii.1985. 1 female, Matian, Zhuoquan, 12.vi.1999. 1 male, 4 females, Mt. Lishan, Hengqu, 30.v–1.vi.2000, All from Shanxi collected by M.-F. Wang (SNU). Yunnan: 1 female, Shangri-la, Geze, 3200 m, 18.viii.2010, C.-T. Zhang. 3 males, 7 females, Shigu Town, 1800 m, Lijiang, 20.viii.2010, Q. Wang (SNU).

**Distribution.** China (Beijing, Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Inner Mongolia, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xizang, Yunnan), Mongolia, Russia (Far East, E. Siberia), South Korea; North America (introduced into New Jersey).

**Remarks.** This species is similar to *D. flavipes* of Japan, but differs from it in having longer 1st flagellomere, black posterior margin on tergite 3, wider surstylus and shorter postgonite in male, and abdominal tergites with median discal setae in female. The apical half of cerci from Kolomiets (1970: 60) was wider than our cerci here. Chao *et al.* (1992: 806; 1998: 2154; 2009: 577) and Shi (2004: 90) misidentified this species as *D. vacua* (Fällen).

**Host.** An unidentified species of Rutelinae (Coleoptera: Scarabaeidae) is recorded as a new host of *D. ventralis* collected in Shangganling, Yichun, Heilongjiang Province, China, and 1 male of *D. ventralis* was artificially incubated from the beetle in Shenyang on Oct. 25, 2009.

### *Dexia vicina* (Mesnil, 1953)

*Calotheresia vicina* Mesnil, 1953: 173.

*Dexia vicina*: Crosskey 1976: 179. — Crosskey 1977: 604 (catalog).

**Diagnosis.** Thoracic dorsum with 2 broad and 2 narrow longitudinal vittae; 1 postsutural acrostichal seta; proepisternum hairy; 3 supra-alar setae; lower calypter with short fringe; legs dark brown.

**Description.** Body length. Female: 11–13 mm.

**Female. Head** with dense yellowish pruinosity; antenna reddish yellow; palpus reddish yellow; frons about 0.3 times as wide as head width; gena about 0.52 times as wide as eye height; outer vertical seta fine, as long as postvertical seta; 1st flagellomere about 5 times as long as pedicel. **Thorax** covered with yellowish white pruinosity, scutum with 2 rather broad outer and 2 narrow inner vittae, outer vitta about twice as wide as inner one; scutellum black on basal 1/3, reddish apically. Proepisternum haired; 1 postsutural acrostichal seta; 2 presutural and 3 postsutural dorsocentral setae; 2–3 postsutural intra-alar setae; 3 supra-alar setae; 2 katepisternal setae. **Wing** pale yellowish on costal cell and basal area to level of dm-cu crossvein, brown between costa and vein  $R_{4+5}$  and along veins M and  $CuA_1$ , the tinge diffusing marginally; relative lengths of 2nd, 3rd and 4th costal sectors approximately 3.5:8.5:3.5; vein M from dm-cu crossvein to its bend about 2.3 times distance between the bend and wing margin. Lower calypter with short fringe on outer margin. **Abdomen** broadly black in ground color, narrowly reddish on anterolateral portion of tergites 3 and 4; scutum pale yellowish white pruinosity on narrow anterior margin of tergite 3, anterior 3/5 of tergite 4 and 1/2 of tergite 5.

**Type material examined.** Holotype female of *Calotheresia vicina* Mesnil, N.E. MYANMAR, Kachin, Kambaiti, 2000 m, 14.v.1934, Malaise (ZMU).

**Additional material examined. THAILAND.** 1 female, Trang, Prov., Khacphappa Khaochang, 200 m, 1–3.i.1963, G.A. Samuelson (BPBM).

**Distribution.** Myanmar, Thailand\*.

**Remarks.** This species is very similar to *D. fulvifera*, but differs from it in having hairy proepisternum. The male of this species is unknown.

### *Dexia vittata* (Baranov, 1932)

*Sumatrodexia vittata* Baranov, 1932: 215. — Sabrosky & Crosskey 1969: 53.

*Dexia vittata*: Crosskey 1976: 179. — Crosskey 1977: 604 (catalog).

**Diagnosis.** Thorax with 2 broad longitudinal black vittae; proepisternum with a few fine black hairs; 1 supra-alar seta; lower calypter with short fringe; legs reddish yellow; abdomen with a dark brown triangular marking on each tergites.

**Description.** Body length. Male: 15.5 mm.

**Male. Head** with pale yellowish gray-white pruinosity; antenna reddish yellow; palpus yellow. Frons about 1/5 head width; frontal vitta slightly wider than fronto-orbital plate; parafacial nearly parallel-sided, about twice as wide as 1st flagellomere; facial carina developed, blunt on ridge, lower margin of face not produced forward; gena wide, about 0.53 times as wide as eye height. Inner vertical setae developed; outer vertical seta very fine; ocellar seta about 1/2 eye height; 8–10 frontal setae, lowest seta nearly level with base of antenna; fronto-orbital plate with only several fine hairs; gena with rather sparse hairs on posterior portion; vibrissa inserted slightly above level of lower margin of face. Antenna falling short of lower margin of face by about 3 times as long as pedicel; 1st flagellomere about 4.5 times as long as pedicel. Palpus subequal in length to 1st flagellomere.

**Thorax** black in ground color, postpronotal lobe, notopleural area and posterior margin of scutellum reddish, scutellum broadly brown-black; scutum covered with dense pale yellowish gray-white pruinosity, 2 broad longitudinal black vittae, posterior 1/2 of postsutural scutum with brownish pruinosity between vittae; pleura with rather thin grayish white pruinosity. Proepisternum with 1–2 fine black hairs; 2–3 postpronotal setae; 1 presutural and 2 postsutural acrostichal setae; 2 presutural and 3 postsutural dorsocentral setae; 1–2 postsutural intra-alar setae; 1 supra-alar seta; 2 katepisternal setae, katepisternum with rather dense hairs; discal scutellar seta very fine, about 2/3 as long as scutellum. **Wing** hyaline, tinged with pale brown on anterior and basal portion and along veins; tegula black, basicosta brown; lower calypter pale brown. Costal spine absent, relative lengths of 2nd, 3rd and 4th costal sectors approximately 2:4:2.5, vein M from dm-cu crossvein to its bend about 1.5 times distance between the bend and wing margin, appendix absent. Lower calypter with short fringe on outer margin. **Legs** reddish yellow, tibiae slightly darkened, tarsi and claws brown-black; pulvilli pale yellowish. Hind leg longest, hind femur and tibia long and the latter weakly sinuate beyond middle. Mid tibia with 2 posterodorsal setae; hind tibia with 4 anterodorsal setae, upper 3 fine, 1 posterodorsal and 1 ventral setae. Claw and pulvillus as long as tarsomere 5.

**Abdomen** reddish yellow, with broad black mid-dorsal longitudinal vitta from syntergite 1+2 to tergite 5; posterolateral portion of tergites 2 to 4 weakly darkened; very thin and silvery white pruinosity visible on dorsum of tergites 4 and 5, the pruinosity dense on side of tergite 5. Hairs black, rather sparse, long and recumbent, but erect and fine on tergite 5; syntergite 1+2 with 1 lateral discal and 1 lateral marginal setae, without median marginal setae; tergite 3 with 2 pairs of median discal, 1 pair of median marginal, 0–1 lateral discal, and 1 lateral marginal setae; tergites 4 and 5 each with 2–3 pairs of median discal and a row of marginal setae.

**Female.** Unknown.

**Type material examined.** Holotype male of *Sumatrodexia vittata* Baranov, **INDONESIA**, Java, Surabaya (USNM). Paratype 1 male, Java, Surabaya (SMT).

**Additional material examined.** **INDONESIA.** 1 male, Tasari, 6000–8000 ft, Java, Terry (BPBM).

**Distribution.** Indonesia (Java).

**Remarks.** This species is similar to *D. montana* in general appearance and is possibly conspecific. We retain it as a distinct species because of lack of information about the male terminalia.

***Dexia violovitshi* Kolomiets, 1970**

*Dexia (Dexillina) violovitshi* Kolomiets, 1970: 71. — Mesnil 1980: 50 (redescription). — Herting 1984: 144 (catalog).  
— Herting & Dely-Draskovits 1993: 367 (catalog).

**Diagnosis.** Body length. 8.5–10.5 mm. Frons 1/3 eye width in male, as wide as in female; gena about 1/2 of eye height; antenna yellow, 1st flagellomere 2–2.5 times as long as pedicel; thorax with grayish yellow pruinosity, 4 longitudinal black vittae, inner vittae narrow; 1–2 presutural and 1–2 postsutural acrostichal setae; prosternum narrow, 3–4 times as long as wide; proepisternum bare; 3 presutural and 3 postsutural dorsocentral setae; 2 katepisternal setae; costal spine developed; lower calypter with short fringe; legs reddish yellow; abdomen broadly yellowish, mid dorsal longitudinal area rather narrowly black on syntergite 1+2 to tergite 4, and on median and apical transverse areas of tergite 5; abdominal tergite 3 with 1 pair of median marginal setae, tergites 3 and 4 each with 1–2 pairs of median discal setae.

**Type material.** Holotype male of *Dexia violovitshi* Kolomiets, Tuva, south of Saján Mountains, Tshadan, Mongolia, 9.vii.1950 (ZIN) (not examined).

**Distribution.** Mongolia, Russia (West Siberia).

**Remarks.** Kolomiets (1970) described this species from Mongolia and later Mesnil (1980) redescribed it in detail. As we were unable to see this species, the characters mentioned above were taken from Kolomiets (1970) and Mesnil (1980). The date of collection of the holotype is different in the Russian description and English summary; we cited the former one here.

This species appears to resemble *D. flavipes*, but may be distinguished from it in having very narrow prosternum, and 1st flagellomere as long as palpus and 2.0–2.5 times as long as pedicel.

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Notes below citations are largely from O'Hara *et al.* (2009) References that were not seen by us are marked with an asterisk (\*).

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