

Review of the odd chrysidid genus *Loboscelidia* Westwood, 1874 (Hymenoptera, Chrysididae, Loboscelidiinae)

Lynn S. Kimsey^{1,†}

¹ *Bohart Museum of Entomology, Department of Entomology, University of California, Davis, California, 95616, USA*

[†] urn:lsid:zoobank.org:author:ADC91A84-7D87-41E4-A4B3-87BA1041D7DD

Corresponding author: *Lynn S. Kimsey* (lskimsey@ucdavis.edu)

Academic editor: *Michael Engel* | Received 22 February 2012 | Accepted 20 July 2012 | Published 1 August 2012

urn:lsid:zoobank.org:pub:5F46C718-ADCB-498A-9EB1-9FDF7C17F1C2

Citation: Kimsey LS (2012) Review of the odd chrysidid genus *Loboscelidia* Westwood, 1874 (Hymenoptera, Chrysididae, Loboscelidiinae). ZooKeys 213: 1–40. doi: 10.3897/zookeys.213.2985

Abstract

The chrysidid genus *Loboscelidia* is reviewed and 11 new species are described, including *L. cinnamonea* (Borneo), *L. fulgens* (Viet Nam), *L. fulva* (Thailand), *L. incompleta* (India), *L. kafae* (Borneo), *L. laminata* (Viet Nam), *L. meifungae* (Borneo), *L. nasiformis* (Thailand), *L. nitidula* (Thailand), *L. pecki* (Viet Nam), and *L. sisik* (Borneo). A key to males of the species of *Loboscelidia* is given.

Keywords

Viet Nam, Borneo, Thailand, India, Sri Lanka, Philippines, Australia

Introduction

Loboscelidiinae is one of the smaller subfamilies in the family Chrysididae. The subfamily contains two genera, *Loboscelidia* Westwood, 1874 and *Rhadinoscelidia* Kimsey, 1988. As of the publication of Kimsey and Bohart (1991), *Loboscelidia* contained 30 species and *Rhadinoscelidia* one species. Since then four *Loboscelidia* and two *Rhadinoscelidia* species have been added (Kojima and Ubaidillah 2003, Terayama et al. 1998,

Xu et al. 2006). An additional 11 new *Loboscelidia* species are described below. This study focuses on males and their characteristics as the systematics of the group is focused primarily on this sex due to the rareness of females in collections and the strong sexual dimorphism between males and females.

The subfamily is primarily south Asian with four northern Australian species. Every major south Asian island may have at least one endemic species of *Loboscelidia*, and every new intensive collecting effort using Malaise traps or flight-intercept traps turns up new species. Thus, the loboscelidiine fauna appears to be largely under-sampled.

Loboscelidiines are among the most aberrant-looking and highly modified chrysidids, and as a result their actual family and even superfamily placement has varied considerably over the years. These are small-bodied, non-metallic brown wasps, with a superficial resemblance to members of the family Diapriidae (see Fig. 1). In fact Westwood (1874) originally described *Loboscelidia* as a species of diapriid (Superfamily Proctotrupoidea). Ashmead (1902) then moved the genus to the family Figitidae (Superfamily Cynipoidea). Maa and Yoshimoto (1961) then moved the genus *Loboscelidia* into its own family, Loboscelidiidae (Superfamily Bethyloidea). Finally, after making a detailed analysis of the metasomal morphology Day (1978) concluded that the group actually belonged in the family Chrysididae (Superfamily Chryridoidea).

Loboscelidiines are characterized by a number of unusual features (Figs 1, 2). The antennae insert horizontally on a shelf-like extension in the middle of the face (the shelf-like extension is termed the frontal projection below); the vertex is prolonged posteriorly into a neck-like projection fringed with ribbon-like setae; the pronotum is not freely hinged to the scutum and has a short line of ribbon-like setae along the anterolateral corner; the tegula is very large, covering both wing bases, and is held in place by a ridge on the mesopleuron; the mesopleuron is smooth without sculpturing, except for a shallow, trough-like scrobal sulcus in some species, the propodeum lacks a dorsal surface and has an ear-like lateral projection over the spiracle, and the forewing lacks a stigma, costal and subcostal veins.

Distinctions between *Loboscelidia* and *Rhadinoscelidia* have been summarized in Kimsey and Bohart (1991). Briefly *Loboscelidia* can be distinguished from *Rhadinoscelidia* by the forewing venation extending into the basal one-third to one half of the wing (considerably less than one-fourth in *Rhadinoscelidia*), vertex convex or flat behind the ocelli, not sharply declivitous as in *Rhadinoscelidia*, and cervical expansion continuous with head, without discrete posterior expansion and with well-developed genal and cervical fringe. Cervical expansion basally constricted and shield-like posteriorly, with small discontinuous genal and cervical fringes in *Rhadinoscelidia*.

Members of the genus *Loboscelidia* are strongly sexually dimorphic, which has led to confusion over generic placement and sex associations. The genus *Scelidoloba* Maa & Yoshimoto, 1961 was erected for what turned out to be female *Loboscelidia* (Day 1978). Males have five external metasomal segments and a long slender flagellum. Females are heavier bodied than the males, with a shorter, broader flagellum and an externally four-segmented metasoma. It's not clear how many characteristics are shared between the two sexes as fewer than 15% of specimens in collections are female and more than one



Figure 1. Habitus photograph of male *Loboscelidia* sp. in Queensland, Australia. Photo courtesy of Alex Wild; myrmecos.net.

species may be present in a single locality. However, the sexes do seem to share some modifications of the wing venation (presence and shape, or absence of the medial vein), shape of the frontal projection, and presence or absence of the scrobal sulcus and notauli.

Little is known of the biology of the Loboscelidiinae. Specimens are rare in collections. However, this situation is probably more a reflection of collecting techniques used and sites visited than any indication of abundance. Malaise trapping in Thailand as part of the National Science Foundation funded TIGER project has yielded more than 100 *Loboscelidia* specimens, more than all other museum holdings. The small number of female *Loboscelidia* collected relative to males may be due to their differing habits. Males may be more frequently caught in traps because they tend to frequent low vegetation and the surface of leaf litter searching for females. Females may spend most of their time in cryptic situations, for example under bark or in the leaf litter, searching for hosts.

The morphology of the female ovipositor and mandibles closely resembles that of the Amiseginae, suggesting that loboscelidiines, like amisegines parasitize walking stick eggs. There is one report of an unidentified species of *Loboscelidia* reared from the eggs of the phasmatid *Acrophylla* sp. (Riek 1970). It is also possible, given the structural modifications of the group, including the leg and antennal flanges, the very large tegula and the tegular clip that *Loboscelidia* females at least may search for walking stick eggs in ant nests. Fouts (1922) suggested that the group is myrmecophilous based on the odd morphology. Walking stick eggs may be collected by ants because of the egg's strong resemblance to seeds.

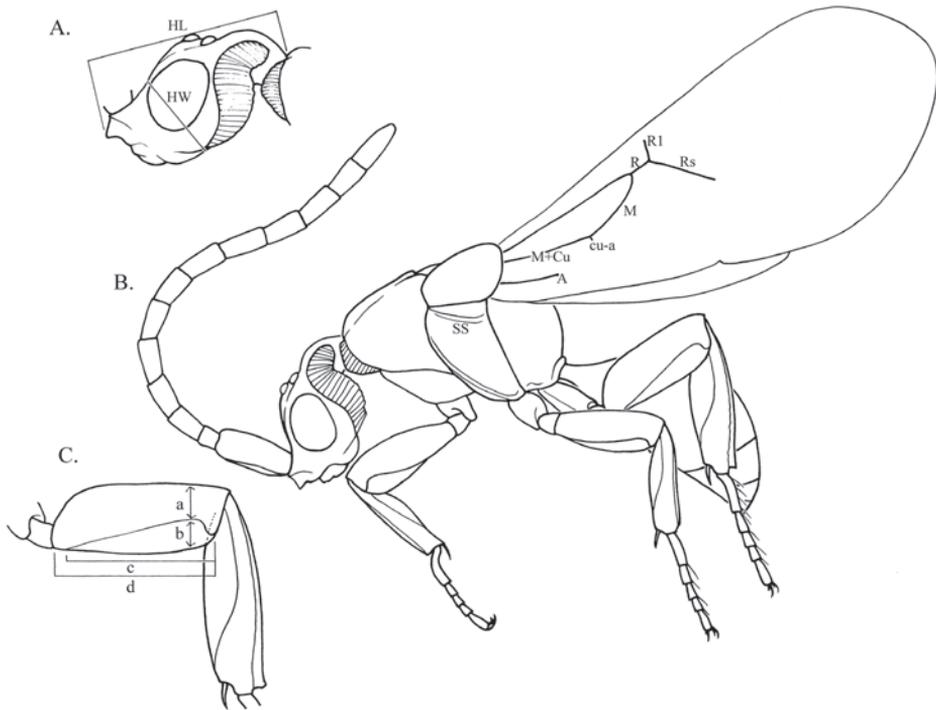


Figure 2. Diagram of lateral views of male *Loboscelidia pecki*. **A** Head, antenna removed. **B** Habitus of body. **C** Hindleg: (a) tubular part of femur width (b) femoral flange width (c) femoral flange length (d) femoral length. Abbreviations: **HL** = head length **HW** = head breadth **M+Cu** = media + cubital veins **M** = medial vein **cu-a** = cubital-anal cross vein **R** = radial vein **RI** = first radial branch **Rs** = radial sector **SS** = scrobal sulcus.

Materials and methods

Specimens were borrowed from the following museums, and type repositories are indicated by the acronyms: AEI – American Entomological Institute, Gainesville, Florida); ANIC – Australian National Insect Collection; BME – Bohart Museum of Entomology, University of California, Davis, USA; BMNH – The Natural History Museum, London, UK; BPBM – Bishop Museum, Honolulu, Hawaii, USA; CAS – California Academy of Sciences, San Francisco, USA; CNC – Canadian National Insect Collection, Ottawa, Ontario, Canada; CSIRO, Canberra, Australia, Australian National Insect Collection; MNHN – Museum National d’Histoire Naturelle, Paris; QSBG – Chiang Mai Royal Botanical Garden, Chiang Mai, Thailand; ROM – Royal Ontario Museum, Toronto, Canada; UCR – Entomological Research Museum, University of California, Riverside, USA, and USNM – U.S. National Museum, Washington, D.C., USA.

Additional type repositories include: CASB - Institute of Zoology, etc.; Institute of Zoology, Beijing, China; MZB – Museum Zoologicum Bogoriense Cibinong, Indonesia; NMNS – National Museum of Natural Science, Taichung, Taiwan; OUMNH – Oxford University Museum of Natural History, Oxford, UK; QDPI – CSIRO Long Pocket Laboratories, Indooroopilly, Queensland, Australia; SCAC – Hymenoptera Collection, South

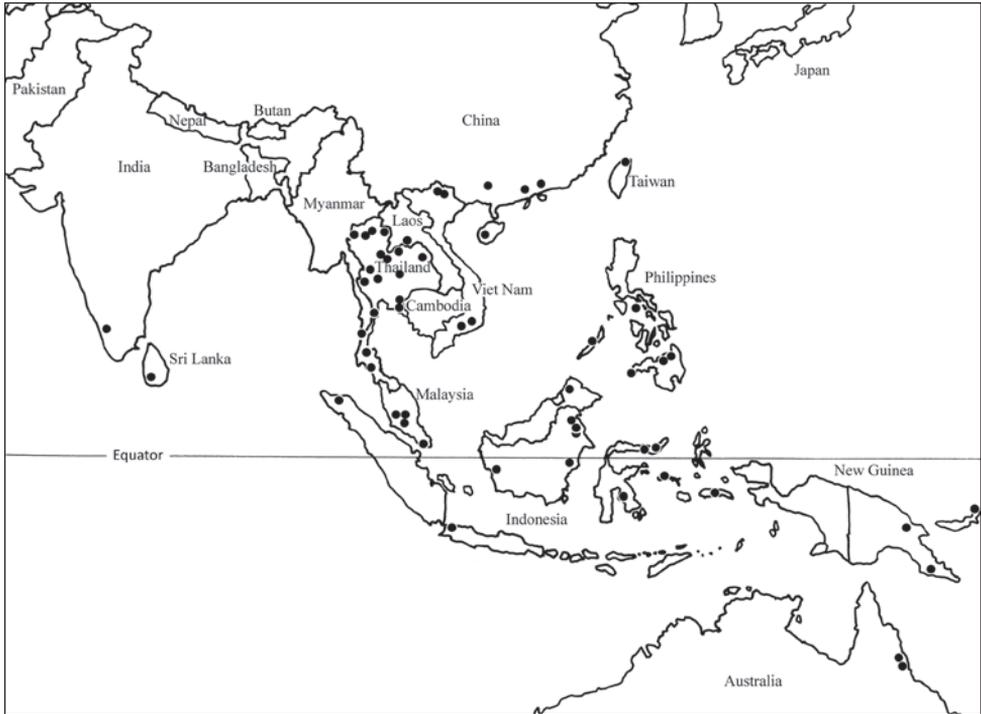


Figure 3. Distribution map of the genus *Loboscelidia* in south Asia and Australia.

China Agricultural University, Guangzhou, and ZFCL – Hymenoptera Collection, Zhejiang University, Hangzhou, China.

Morphological terminology follows that used by Kimsey and Bohart (1991) and is further described in Fig. 2. The hindwing lacks venation, so wing vein characters are only for the forewing. Wing veins are given in the text as abbreviations: Cu = cubital vein, cu-a = cubital-anal cross vein, M = medial vein, R = radial vein, Rs = radial sector, R1 = first radial branch. Scrobal sulcus refers to the transverse trough on the mesopleuron below the forewing ending in the scrobe adjacent to the metapleuron. The shape of the frontal projection is determined viewed in front view. It is considered triangular if the ventral angle of the projection ends in a point or the flat surface is less than one-tenth the length of the upper surface. The projection is considered rectangular if it is a true rectangle or rhomboid. Head length versus width is measured from the apex of the cervical extension to the furthestmost point of the frontal projection and across the widest part of the head in lateral view. Antennal articles are measured at the point of greatest breadth and compared with the total length of the article. Wing veins are compared relative to the length of R1. Pronotal dimensions are measured from the medial length of the pronotum in dorsal view to the distance between the apices of the posterolateral angles. The length of a leg flange is measured from the basal joint to the apex of the segment along the ventral margin. The relative width of leg flanges are measured across the broadest part of the flange relative to the tubular part of the segment at the same point.

Key to males of the species of *Loboscelidia*

- 1 M vein incomplete medially or absent (as in Figs 24, 26, 28, 35).....2
 – M vein complete.....6
- 2 M vein incomplete medially, Rs twice as long as R (Fig. 28); India.....
 ***incompleta* sp. n.**
- M vein absent, Rs less than twice as long (as in Fig. 26) or 2.5× as long as R ...3
- 3 Propodeum broadly angulate dorsomedially in posterior view; Borneo
 ***bakeri* Fouts**
- Propodeum flat to gently convex dorsally in posterior view.....4
- 4 Fore, mid and hindtibiae without measurable flanges (Fig. 46); Laos, Viet
 Nam; Thailand ***reducta* Maa & Yoshimoto**
- Fore, mid and hindtibiae with flanges 0.9× as long and 0.3–1.0× as wide as
 tubular part of respective tibia.....5
- 5 Rs less than 1.5× as long as R, A less than 0.5× as long as Cu+M (Fig. 27);
 Viet Nam..... ***fulgens* sp. n.**
- Rs more than twice as long as R, A 0.9–1.1× as long as Cu+M; China.....
 ***guangxiensis* Xu**
- 6 Gena and often legs with scattered scale-like setae (as in Fig. 16)7
 – Gena and legs without scale-like setae8
- 7 M straight medially (Fig. 36); scape less than 3× as long as broad; Borneo....
 ***sisik* Kimsey sp. n.**
- M curved submedially; scape more than 3× as long as broad; Viet Nam
 ***asiana* Kimsey**
- 8 Vertex extension flattened in lateral view, not depressed behind ocelli (as in Fig.
 11); foretibia without transparent flange, except in *nitidula* (as in Fig. 45).....9
 – Vertex extension convex in lateral view, depressed behind ocelli (as in Fig. 4);
 foretibial flange usually present12
- 9 Tibial flanges well-developed (as in Fig. 45); scrobal sulcus present10
 – Tibial flanges represented by posterior ridge or absent (as in Fig. 42); scrobal
 sulcus absent.....11
- 10 Rs 3.2–4.0× as long as R; R1 and cu-a shorter than R (Fig. 33); Thailand
 ***nitidula* sp. n.**
- Rs 2.5–3.0× as long as R or shorter; R1 and cu-a as long as R; Taiwan
 ***latigena* Lin**
- 11 Propodeum without transverse subapical carina; cu-a less than 0.3× as long as
 R; legs smooth, not striate; Borneo, Sumatra ***brunnea* Fouts**
- Propodeum with transverse subapical carina; cu-a more than 0.5× as long as
 R; legs extensively longitudinally striate (Fig. 42); Borneo, Malaysia, Singa-
 pore, Sumatra ***maculipennis* Fouts**
- 12 M straight medially (as in Fig. 27)13
 – M curved submedially.....18

- 13 Scutum without notauli (as in Fig. 22) **14**
 – Scutum with notauli (as in Figs 21, 23) **15**
 14 Hindfemoral flange 2.5× as wide as tubular part of femur; hindtibial flange
 twice as wide as tubular part of tibia; Australia..... *maculata* **Kimsey**
 – Hindfemoral flange twice as wide as tubular part of femur; hindtibial flange as
 wide as tubular part of tibia; Australia..... *ora* **Kimsey**
 15 Scrobal sulcus present at least as a series of pits or foveae (as in Fig. 2); scape 3.0×
 as long as broad or shorter; cu-a 0.3× as long or longer than R (as in Fig. 27) ... **16**
 – Scrobal sulcus absent; scape 3.5× as long or longer as broad; cu-a absent... **17**
 16 Face frontal projection rhomboid or rectangular in front view; Rs 3.0× as
 long as R (Fig. 27); midtibial flange more than half as long and wide as tubu-
 lar part of tibia (Fig. 39); Thailand, Sumatra..... *fulva* **sp. n.**
 – Face frontal projection triangular in front view; Rs 2.5× as long as broad or
 shorter (Fig. 31); midtibial flange absent or less than half as long and wide as
 tubular part of tibia (Fig. 43); Borneo..... *meifungae* **sp. n.**
 17 Rs more than twice as long as R, more than 0.8× as long as M+Cu; Java
 *halimunensis* **Kojima**
 – Rs less than twice as long as R, A 0.5–0.7× as long as M+Cu; Philippines.....
 *defecta* **Kieffer**
 18 Scutum without notauli or notauli about half as long as scutum (as in Figs 22,
 23)..... **19**
 – Scutum with notauli 0.7–1.0× scutal length **21**
 19 Scutum without notauli; face with frontal projection rhomboid in front
 view (as in Fig. 20); flagellomeres I-II each less than twice as long as broad;
 Australia..... *australis* **Kimsey**
 – Scutum with notauli about half as long as scutum; face with frontal projec-
 tion linear to broadly triangular or V-shaped in front view (as in Fig. 19);
 flagellomeres I-II each twice or more as long as broad..... **20**
 20 Foretibia without transparent flange; hindfemoral flange half as wide as femur;
 Rs more than 3× as long as R; New Britain..... *cervix* **Maa & Yoshimoto**
 – Foretibia with transparent flange; hindfemoral flange as wide as femur; Rs
 less than 3× as long as R; New Britain..... *parva* **Maa & Yoshimoto**
 21 Frontal projection nearly linear in front view (as in Fig. 18); cu-a as long
 as R..... **22**
 – Frontal projection rectangular, rhomboid (as in Fig. 20) (extremely elongate
 in *nasiformis*) or triangular (as in Fig. 19); cu-a shorter than R or absent.. **23**
 22 Foretibial flange half as wide as tubular part of tibia; midtibial flange half as long
 and half as wide as tubular part of tibia; New Guinea *novoguineana* **Kimsey**
 – Foretibial flange as wide as tubular part of tibia; midtibial flange 1.5× as long
 and as wide as tibia tubular part of; Australia *nigricephala* **Kimsey**
 23 Face with frontal projection elongate and nasiform; head nearly 3× as long as
 broad (Fig. 13); Thailand *nasiformis* **sp. n.**

– Face with frontal projection rectangular to triangular; head twice or less as long as broad 24

24 cu-a less than 0.2× as long as R or absent 25

– cu-a 0.2–0.4× as long as R 26

25 R1 as long as R, Rs 3× as long as R (Fig. 34); Viet Nam **pecki sp. n.**

– R1 absent or less than 0.4× as long as R, Rs less than 2.2× as long as R (Fig. 25); Thailand, Borneo, Singapore, Malaya **cinnamonea sp. n.**

26 Midfemoral flange 0.3× as long as femur; R1 less than 0.3× as long as R and A vein as long as Cu+M; China **sinensis Kimsey**

– Midfemoral flange 0.4–1.0× as long as femur; R1 0.4–1.0× as long as R and A vein shorter than Cu+M, except in *indica* 27

27 R1 reaching R at nearly right angle; pronotal length 0.4–0.6× width across posterolateral angles or shorter; China **levigata Yao, Liu & Xu**

– R1 reaching R at obtuse angle; pronotal length greater than 0.6× width across posterolateral angles 28

28 Scrobal sulcus absent 29

– Scrobal sulcus present (as in Fig. 2) 31

29 Propodeum with transverse subapical carina; metanotum less than 0.3× as long as scutellum; Borneo, Sula Is **nixonii Day**

– Propodeum without transverse subapical carina; metanotum more than 0.3× as long as scutellum 30

30 Scape more than 3.0× as long as broad; hindtibial flange wider than tubular part of tibia; Philippines **philippinensis Fouts**

– Scape less than 3.0× as long as broad; hindtibial flange narrower than tubular part of tibia; Borneo, Sula Is **rufescens Westwood**

31 Frontal projection triangular (as in Fig. 19) 32

– Frontal projection rhomboid or rectangular (as in Fig. 20) 37

32 Rs more than 3.0× as long as R; flagellomere I less than twice as long as broad; Laos, Sumatra **laotiana Kimsey**

– Rs 2.5–3.0× or less as long as R; flagellomere I twice or more as long as broad 33

33 Flagellomere XI more than 4.0× as long as broad 34

– Flagellomere XI 4.0× or less as long as broad 35

34 Scape less than 3× as long as broad; forefemoral flange half as wide as tubular part of femur; hindtibial flange as wide as tubular part of tibia or narrower; Philippines **nigra Fouts**

– Scape more than 3× as long as broad; forefemoral flange as wide as tubular part of femur; hindtibial flange twice as wide as tubular part of tibia; Sri Lanka **castanea Krombein**

35 Hindtibial flange less than 1.5× as wide as tubular part of tibia; flagellomere XI less than 3× as long as broad; Philippines **scutellata Fouts**

- Hindtibial flange more than 1.5× as long as wide as tubular part of tibia; flagellomere XI more than 3× as long as broad.....**36**
- 36 Hindtibial flange 2.0–2.5× as wide as tubular part of tibia (as in Fig. 41); Singapore..... *collaris* **Fouts**
- Hindtibial flange less than twice as wide as tubular part of tibia (as in Fig. 40); Borneo, Sulawesi..... *sarawakensis* **Kimsey**
- 37 Scape 3.9–4.1× as long as broad, flagellomere XI 3.9–4.1× as long as broad; Philippines..... *rufa* **Fouts**
- Scape less than 3.8× as long as broad; flagellomere XI less than 3.8× as long as broad **38**
- 38 Foretibial flange narrower than tubular part of tibia (as in Fig. 40)**39**
- Foretibial flange as wide or wider than tubular part of tibia (as in Fig. 41).....**40**
- 39 Rs twice as long as R; scape 3× as long as broad; flagellomere I twice as long as broad; Sri Lanka *atra* **Krombein**
- Rs 3× as long as R; scape less than 3× as long as broad; flagellomere I less than twice as long as broad; Viet Nam, Thailand *laminata* **sp. n.**
- 40 Fore and midtibial flanges as wide as or narrower than tubular part of respective tibiae; Thailand, Laos, Viet Nam, Malaya, Borneo *kafae* **sp. n.**
- Fore and midtibial flanges more than 1.2× as wide as tubular part of respective tibiae **41**
- 41 A longer than Cu-M; Rs less than 3.0× as long as R; pronotum rounded laterally; India..... *indica* **Kimsey**
- A shorter than Cu-M; Rs 3.4× as long as R; pronotum with carinate lateral edge; Borneo, Thailand *pasohana* **Kimsey**

Species treatments

Loboscelidia antennata Fouts

http://species-id.net/wiki/Loboscelidia_antennata

Loboscelidia antennata Fouts 1922: 622. Holotype female; Singapore (USNM).

Material studied. Singapore (USNM); Indonesia: West Kalimantan, Gunung Palung National Park (1 female, ROM); 2 female specimens were examined including the holotype.

Diagnosis. The male of this species is unknown, but *antennata* may very well prove to be the female of *brunnea* Fouts, based on the triangular frontal projection, flattened cervical expansion, curved medial vein and lack of a scrobal sulcus.

***Loboscelidia asiana* Kimsey**

http://species-id.net/wiki/Loboscelidia_asiana

Loboscelidia asiana Kimsey 1988: 68. Holotype male; Viet Nam: Dalat (BPBM).

Material studied. Only the holotype was seen.

Diagnosis. The most distinctive feature of *Loboscelidia asiana* is the presence of spatulate or leaf-like setae on the gena, a character shared only with *sisik* (as in fig. 16). However, *asiana* can be distinguished from *sisik* by the submedially curved medial vein (nearly flat in *sisik*), scape striate and more than 3.5× as long as broad (smooth and less than 3× as long as broad in *sisik*) and no scrobal sulcus (present in *sisik*).

***Loboscelidia atra* Krombein**

http://species-id.net/wiki/Loboscelidia_atra

Loboscelidia atra Krombein 1983: 52. Holotype male; Sri Lanka: Sabaragamuwa Prov., Ratnapura Dist., Sinharaja Jungle (USNM).

Material studied. Only the holotype was seen.

Diagnosis. This is one of several species with a well-developed, complete scrobal sulcus. A combination of features will separate *atra* from these other species, including the rectangular frontal projection (in lateral view), scape more than 3× as long as broad, cu-a vein less than half as long as R, Rs twice as long as R, and metanotum half as long as the scutellum.

***Loboscelidia australis* Kimsey**

http://species-id.net/wiki/Loboscelidia_australis

Figure 22

Loboscelidia australis Kimsey 1988: 69. Holotype male; Australia: NSW (AEI).

Material studied. Australia: New South Wales, Queensland; two specimens were seen including the holotype.

Diagnosis. This is one of three species (including *maculata* and *ora*), all Australian, that lack notauli (as in Fig. 22). *L. australis* can be distinguished from these by the submedially curved medial vein, rectangular frontal projection, pronotum with sharp lateral fold or ridge, flagellomere XI less than 3× as long as broad, and fore and midtibia flanges less than 0.5× as long as their respective tibial lengths.

***Loboscelidia bakeri* Fouts**

http://species-id.net/wiki/Loboscelidia_bakeri

Figure 24

Loboscelidia bakeri Fouts 1922: 620. Syntype males (not females) (3); Borneo: Sandakan (USNM).

Material studied. Malaysian Borneo, Sabah, Sandakan (2 males, USNM), Kinabalu National Park Poring Hot Springs (2 males including two syntypes, CNC, USNM).

Diagnosis. *Loboscelidia bakeri* can be immediately distinguished from all other *Loboscelidia* species by the distinctively dorsomedially up-domed propodeum. It is also one of four species, including *fulgens*, *reducta* and *ganxiensis* that lack a medial vein (as in Fig. 24).

***Loboscelidia brunnea* Fouts**

http://species-id.net/wiki/Loboscelidia_brunnea

Loboscelidia brunnea Fouts 1922: 626. Holotype male (not female); Borneo: Sandakan (USNM).

Material studied. Malaysian Borneo, Sabah; only the holotype was seen.

Diagnosis. Four *Loboscelidia* species, *brunnea*, *maai*, *nitidula* and *maculipennis*, have a strongly flattened cervical expansion. *L. brunnea* can be distinguished from these by the extreme reduction of cu-a, Rs vein less than 3.5× as long as R, the legs coarsely striate, and hindtibial posterior margin essentially ecarinate.

***Loboscelidia castanea* Krombein**

http://species-id.net/wiki/Loboscelidia_castanea

Loboscelidia castanea Krombein 1983: 54. Holotype male; Sri Lanka: Sabaragamuwa Prov., Ratnapura Dist., Sinharaja Jungle (USNM).

Material studied. Sri Lanka, Sabaragamuwa Prov.; only the holotype was seen.

Diagnosis. This is one of the species with a complete scrobal sulcus and triangular frontal projection. It shares a long scape (more than 3× as long as broad) with one of these, *laotiana*. *L. castanea* can be distinguished from these species and *laotiana* by a combination of characters, including cu-a less than 0.5× as long as R, A 0.6× as long as Cu+M, flagellomere I shorter than II, flagellomere XI more than 4× as long as broad, and the fore, mid and hindfemoral flanges as broad as the tubular part of the respective femora.

***Loboscelidia cervix* Maa & Yoshimoto**

http://species-id.net/wiki/Loboscelidia_cervix

Figure 23

Loboscelidia cervix Maa and Yoshimoto 1961: 546. Holotype male; New Britain: Vudal, near Keravat (BPBM).

Material studied. New Britain: near Keravat only the holotype was seen.

Diagnosis. This is one of two species, including *parva*, known from New Britain. Both have the notauli not reaching the posterior margin of the scutum (Fig. 23) and the frontal projection sublinear in front view. *L. cervix* can be distinguished from *parva* by the shorter scape (2.6–2.8× as long as broad in *cervix*, 3.0–3.1× in *parva*), Rs more than 3× as long as R (less than 3× in *parva*), cu-a longer than R (shorter in *parva*) and partial scrobal sulcus (absent in *parva*). The Australian species *ora* is the only other *Loboscelidia* with long cu-a longer than R.

***Loboscelidia cinnamonea* sp. n.**

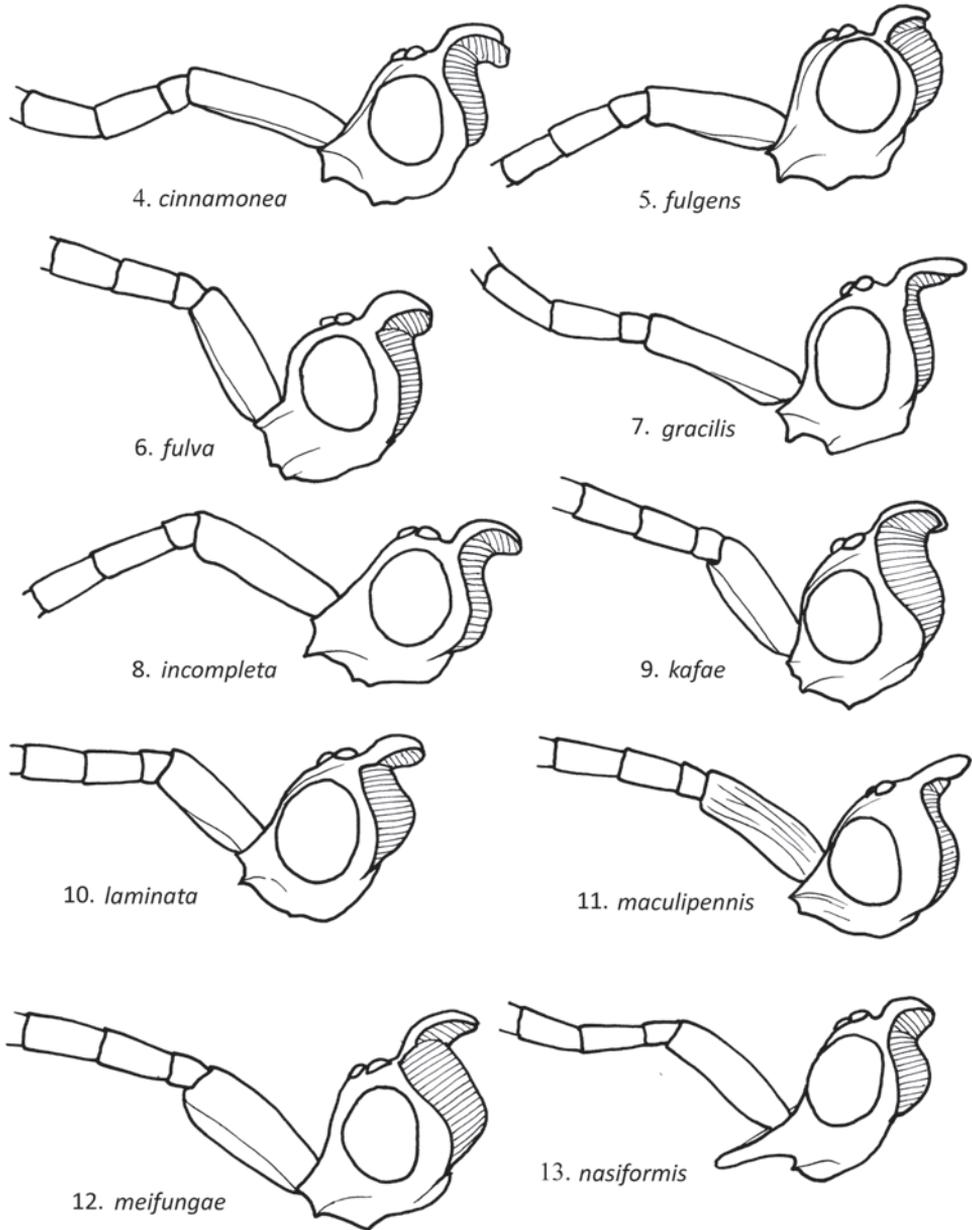
urn:lsid:zoobank.org:act:E5A2B8FA-4264-468B-B3A5-B52456903906

http://species-id.net/wiki/Loboscelidia_cinnamonea

Figures 4, 25, 37

Type material. Holotype male: Thailand: **Chiang Mai Pr.**, Doi Chiangdao NP, Pha Tang substation, 526 m, 19°24.978"N 98°54.886"E, Malaise trap, 3-9/v/2008, Jugsu & Watwanich, T5802 (QSBG).

Paratypes (25 males): 3 males, same data as type; 1 male: Doi Chiangdao NP, 491 m, 19°24.278'N 98°55.311'E, Malaise trap, 15–21/v/2008, Jugsu & Watwanich, T5815; 1 male: Doi Chiangdao NP, Pha Tang substation, 491 m, 19°24.278'N, 98°55.311'E, Malaise trap, 9–15/v/2008, Jugsu & Watwanich, T5812; 2 males: Doi Chiangdao NP, Huai Na Lao, 500m, 19°24.731'N, 98°55.315'E, YPT 5-6/v/2008, Jugsu & Watwanich, T5806; 1 male: Doi Chiangdao NP, Huai Na Lao, 500m, 19°24.731'N, 98°55.315'E, YPT 9-10/v/2008, Jugsu & Watwanich, T5811; 1 male: Doi Chiangdao NP, Huai Na Lao, 500m, 19°24.731'N, 98°55.315'E, YPT 4-5/v/2008, Jugsu & Watwanich, T5805; 2 males: **Lampang Pr.**, Chae Son NP, Doi Laan, 18°51.815'N, 99°22.122'E, 1413 m, Malaise trap, 9-15/v/2008, Kwannui & Sukpeng, T5292; 1 male: Chae Son NP, 18°49.894'N, 99°28.354'E, 467 m, Malaise trap, 23–30/v/2008, Kwannui & Sukpeng, T5305; 1 male: Chae Son NP, 18°50.012'N, 98°28.656'E, 419 m, pan trap, 7-8/v/2008, Kwannui & Sukpeng, T5304; 3 males: Chae Son NP, 18°49.894'N, 99°28.354'E, 467 m, Malaise trap, 1-7/v/2008, Kwannui & Sukpeng, T5309; 1 male: **Chanthaburi Pr.**, Khao Khitchakut NP, Khao Prabaht peak, 12°50.45'N, 102°09.81'E, 875 m, Malaise trap, 20–27/ii/2009, Suthida & Charoenchai, T4045; 1 male: Khao Khitchakut NP, Khao Prabaht peak, 12°50.45'N, 102°09.81'E, 875 m, Malaise trap, 6-13/ii/2009, Suthida



Figures 4–13. Lateral view of male *Loboscelidia* head, with basal antennal segments.

& Charoenchai, T4039; 1 male: **Trang Prov.**, Khaeochong Mt, 75 m, 7°33.038'N, 99°47.369'E, Malaise, 28/iv-2/c/2005; 2 males: near Nam Tock Ton Prov., Khoa Chong Mt., 140 m, 7°32.015'N, 99°47.036'E, iv/2005 and ii/2005; 1 male: **Phetchabun Pr.**, Nam Nao NP, 16°43.695'N, 101°33.797'E, 921 m, Malaise trap, 5-12/v/2007, L. Janteab, T2657; 1 male: **Kanchanaburi Pr.**, Khuean Srinagarindra NP,

14°38.136'N, 98°59.837'E, 210 m, pan trap, 21-22/viii/2008, Chatchawan, T3438; 1 male: **Sakon Pr.**, Nakhon Phu Phan NP, 17°03.543'N, 103°58.452'E, 8-14/vii/2006, MT, W. Kongnara, T197; 1 male: **Suphan Buri Pr.**, Khao Yai NP, Kong Geo waterfalls, 900 m, 30/vi/1990, J. Heraty, H90/108. Paratypes are deposited in QSBG and BME.

Additional non-type specimens (27) were seen from: Borneo: north, Tawa, Quoin Hill (1 male, BPB); Sabah: Kinabalu Nat. Park, Poring Hot Springs (4 males, CNC); Sarawak: sw Gunung Buda, 64 km s Limbang (BME); W. Kalimantan: Gunung Palung Nat. Pk. (3 males, ROM, BME); E. Kalimantan: Kac. Pujungan, Kayan-Mantarang Nat. Res. (1 male, ROM); West Java: Gede-Pangrango Nat. Park, Situ Gunung (2 males, ROM, BME); Sumatra: Aceh, Gunung Leuser Nat. Pk. (1 male, ROM); Malaysia: Selangor (1 male, UCR); Pahang: Kuala Tahan, Taman Negara Nat. Park (1 male, UCR); Malaya: 10 mi e Gombak (1 male, UCR); Thailand: Mae Hong Son, Namtok Mae Surin Nat. Pk (1 male, QSBG); Nakon Si Thammarat: Namtok Yong Nat. Pk. (1 male, QSBG); Phang Na: Khuraburi Dist. south end of Koh Res. (1 male, UCR); Trang: Forest Res. Sta. Khao Chong (1 male, UCR); Singapore (7 males, BPBM, UCR).

Diagnosis. *L. cinnamonea* is most similar to *nasiformis*, as both share an arched medial vein, rectangular frontal projection, complete notauli, without a scrobal sulcus and the cu-a vein reduced to a tiny stub or absent. It can be distinguished from *nasiformis* by the more typical frontal projection, fore and midtibiae without discrete, measureable flanges, R1 obsolescent and Rs 3× or more as long as R.

Male description. Body length 2.0–3.0 mm; forewing length 2.5–3.5 mm. Head (Fig. 4): length twice breadth in side view; eye asetose; frontal projection rectangular in front view; frons smooth, not microstriate; frons with low ridge extending from vertex along inner eye margin; vertex without transverse fovea, cervical expansion strongly curved in profile; gena without scale-like setae; scape smooth, length 3.9 breadth; flagellomere I length 2× breadth; flagellomere II length 2.3× breadth; flagellomere XI length 5× breadth. Mesosoma: pronotal length 0.9× breadth, without lateral carina, pronotum narrower than head width; scutum with notauli reaching posterior margin; scutellum with sublateral carina, without fine dense striae laterally; metanotum without medial ridge, impunctate laterally, 0.4× as long as scutellum; mesopleuron without scrobal sulcus; propodeum without transverse dorsal carina; legs (Fig. 37) smooth, polished; forefemoral flange 0.4 x femur length, flange maximum width equal to width of tubular part of femur; foretibial flange absent; midfemoral flange 0.6× femur length, flange maximum width 0.6× width of tubular part of femur; midtibial flange absent; hindfemoral flange 0.9× femur length, flange maximum width 0.7× width of tubular part of femur; hindtibial flange as long as tibia, flange maximum width 0.8× width of tubular part of tibia; hindtibia with two longitudinal carinae on posterior margin; hindcoxa without longitudinal carina on inner medial surface; forewing (Fig. 25) R1 length 0-0.2× R length; cu-a length 0.1× R length; Rs length twice R length; Cu+M length 0.4-0.6× A length; medial vein curved submedially. Color: body reddish brown to dark orange; wing membrane brown-tinted, with untinted areas adjacent to vein remnants; veins brown.

Female. Unknown.

Etymology. The species name is Latin for brown as in the spice, cinnamon.

***Loboscelidia collaris* Fouts**

http://species-id.net/wiki/Loboscelidia_collaris

Loboscelidia collaris Fouts 1922: 627. Holotype male (not female); Singapore (USNM).

Material studied. Indonesia: W. Kalimantan: Gunung Palung Nat. Pk (14 males, ROM); E. Kalimantan: Kac. Pujungan, Kayan-Matanrang Nat. Res. (3 males, ROM, BME); 38 km n alikpapan, Sambojal2 (1 male, ROM); Sumatra: Aceh, Gunung Leuser Nat. Park, Ketambe Res. Sta. (7 males, ROM, BME); Malaysia: Sabah, Mt. Kinabalu N.P., Poring Hot Spgs (2 males, CNC); Sarawak: Gunung Mulu National Park (4 males, BME, ROM); Selangor: 16 mi e Gombak, Univ. Malaya Forest (1 male, UCR); Singapore: (1 male, USNM), Timah Nat. Res. (1 male, CNC); Thailand: Chaiyaphum, Tat Tone NP (1 male, QSBG); Trang: Near Nam Tock Tjon Prov., Khoa Chong Mt. (3 males, CNC); Phattalung Nam Tok Phrai Wan (1 male, UCR); 40 specimens were examined including the holotype.

Diagnosis. This is another species with a complete scrobal sulcus and triangular frontal projection. Male *collaris* can be distinguished from species with these traits by the combination of the pronotum with a sharp crease or ridge dorsolaterally, scape less than 3× as long as broad, flagellomeres I and II more than twice as long as broad, flagellomere XI 3.5–4.0× as long as broad, and the fore, mid and hindfemoral flanges as long as the femora.

***Loboscelidia defecta* Kieffer**

http://species-id.net/wiki/Loboscelidia_defecta

Loboscelidia defecta Kieffer 1916b: 18. Syntype male, female; Philippines: Palawan (Insel Palawan), Puerto Princesa (MNHN, lost?).

Material studied. Viet Nam: Karyu Danar (1 male, BPBM), Thailand: Mae Hong Son Pr., Namtok Mae Surin NP (1 male, BME); Nakhon Si Pr., Thammarat Namtok Yong (1 male, QSBG); Surat Thani Pr., Khao Sok Np, Klong Morg unit (1 male, BME); Chiang Mai Pr., Doi Chiangdao NP (1 male, QSBG); Malaysia: Sarawak, Gunung Lulu National Park (1 male ROM); 6 specimens were seen that appear to fit the original description.

Diagnosis. The types of *defecta* are apparently lost. However, based on Kieffer's (1916a) illustration it is one of the species that lacks a cu-a vein. In the same paper Kieffer attributed *defecta* and *inermis* to a 1915 paper he gives in the 1916a paper as "Philippine J. Sci. v. 10 p?", but there was evidently no paper published by Kieffer in 1915 in volume 10 of this journal. Instead, *defecta* Kieffer and *inermis* Kieffer were

published as new species one month after the 1916a paper (1916b). The 1915 date may have been a mistake on his part caused by delays in publication of the description paper in the Philippine Journal of Science.

***Loboscelidia fulgens* sp. n.**

urn:lsid:zoobank.org:act:229B3296-7FD3-49E4-8626-590CD8CDC23E

http://species-id.net/wiki/Loboscelidia_fulgens

Figs 5, 26, 38

Type material. Holotype male: Viet Nam: Tuyen Quang Prov., 360 m, Na Hang Reserve, 16–20 May 1997, FIT, S. B. Peck, 97-10 (CNC). Paratypes: 3 males same data as holotype; 1 male: 20–24 May 1997, 97-13; 1 male: 300 m, 97-17; 1 male: Ha Tinh, Huong Son, 450 m, 18°22'N 105°13'E, 22 April-1 May 1998, L. Herman, LT (BME, CNC).

Diagnosis. This is one of four species, including *bakeri*, *guangxiensis* and *reducta* that completely lack a medial vein. *L. fulgens* can be separated from *guangxiensis* in males by the shorter Rs vein, 1.5× as long as R, versus twice as long in *guangxiensis*, and having well-developed tibial flanges, which are lacking in *reducta*. *L. fulgens* can be immediately distinguished from *bakeri* by lacking the uniquely up-domed propodeum characteristic of *bakeri*.

Male description. Body length 1.5–2.0 mm; forewing length 2.0–2.5 mm. Head (Fig. 5): length 1.8× height in side view; eye asetose; frontal projection rectangular in front view; frons smooth, not microstriate; frons with low ridge extending from vertex along inner eye margin; vertex with transverse fovea, posterior expansion strongly curved in profile; gena without scale-like setae; scape striate, length 2.9× breadth; flagellomere I length 2× breadth; flagellomere II length 1.8× breadth; flagellomere XI length 3× breadth. Mesosoma: pronotal length 0.8× breadth, without lateral carina, narrower than head in dorsal view; scutum with notauli reaching posterior margin; scutellum with fine dense striae laterally; metanotum with medial ridge, impunctate laterally, 0.4× as long as scutellum; mesopleuron without scrobal sulcus; propodeum without transverse dorsal carina; legs (Fig. 38) smooth, polished; forefemoral flange 0.5× femur length, flange maximum width 0.6× width of tubular part of femur; foretibial flange 0.5× tibial length, flange maximum width 0.4× width of tubular part of tibia; midfemoral flange absent; midtibial flange 0.6× femur length, flange maximum width 0.5× width of tubular part of tibia; hindfemoral flange 0.8× femur length, flange maximum width 0.6× width of tubular part of femur; hindtibial flange 0.8× femur length, flange maximum width 0.7× width of tubular part of tibia; hindtibia with two longitudinal carinae on posterior margin; hindcoxa without longitudinal ca-

rina on inner medial surface; forewing (Fig. 26) R1 length $0.4\times$ R length; cu-a absent; Rs length $1.4\times$ R length; Cu+M length $0.6\times$ A length; medial vein present, flat medially. Color: body brown to reddish brown; wing membrane brown-tinted, untinted along vein remnants; veins brown.

Etymology. The species name, *fulgens*, refers to the shining integument (Latin, adj).

***Loboscelidia fulva* sp. n.**

urn:lsid:zoobank.org:act:4719E8B5-6A56-4325-AEE0-4DD9DB50BC1D

http://species-id.net/wiki/Loboscelidia_fulva

Figs 6, 27, 39

Type material. Holotype male: Thailand: Nan Prov., Doi Phu Kha NP, $19^{\circ}12'418''$ N, $101^{\circ}4'809''$ E, 1326 m, MT, 15-22 Sept. 2007, Charoen & Nikom, T3217 (QSBG).

Diagnosis. *L. fulva* is one of five species with a straight medial vein, including *meifungae*, *maculata*, *ora* and *defecta*. It can be distinguished from *ora* and *maculata* by having notauli, from *defecta* by having the cu-a vein one-half or more as long as R and Cu+M as long as A, and from *meifungae* by the rectangular frontal projection, Rs about $3\times$ as long as R and the scutellum coarsely areolate (smooth to longitudinally striate in *meifungae*).

Male description. Body length 2.5 mm; forewing length 3.0 mm. Head (Fig. 6): length $1.6\times$ height in side view; eye asetose; frontal projection rectangular in front view; frons with lateral ridge adjacent to eye margin; vertex without transverse fovea, posterior expansion strongly curved in profile; frons without carina or ridge extending from vertex along inner eye margin; gena without scale-like setae; scape smooth, length $2.7\times$ breadth; flagellomere I length $1.6\times$ breadth; flagellomere II length $1.7\times$ breadth; flagellomere XI length $3.5\text{--}4.0\times$ breadth. Mesosoma: pronotal length $0.8\times$ breadth, with lateral carina, as wide as head in dorsal view; scutum with notauli reaching posterior margin; scutellum posteriorly coarsely rugose; metanotum with three medial ridges, impunctate laterally, $0.4\times$ as long as scutellum; mesopleuron with scrobal sulcus; propodeum without transverse dorsal carina; legs (Fig. 39) smooth, polished; forefemoral flange $0.5\times$ femur length, flange maximum width $0.5\times$ width of tubular part of femur; foretibial flange $0.6\times$ tibial length, flange maximum width $0.8\times$ width of tubular part of tibia; midfemoral flange $0.6\times$ femur length, flange maximum width $0.6\times$ of tubular part of femur; midtibial flange $0.8\times$ femur length, flange maximum width 0.7 of tubular part of tibia; hindfemoral flange $0.8\times$ femur length, flange maximum width $0.6\times$ of tubular part of femur; hindtibial flange as long as tibia, flange maximum width $1.2\times$ of

tubular part of tibia; hindtibia with two longitudinal carinae on posterior margin; hindcoxa with longitudinal carina on inner medial surface; forewing (Fig. 27) R1 length $0.6\times$ R length; cu-a length $0.6\times$ R length; Rs length $3.1\times$ R length; Cu+M as long as A ; medial vein flat. Color: body dark reddish brown; wing membrane brown-tinted, untinted along vein remnants.

Female. Unknown.

Etymology. The species name, *fulva*, refers to the brown body color (Latin, *f.*).

***Loboscelidia guangxiensis* Xu**

http://species-id.net/wiki/Loboscelidia_guangxiensis

Loboscelidia guangxiensis Xu et al. 2006: 208. Holotype male; China: Guangxi Prov., Jiuwandashan (ZFCL).

Material studied. None; published distribution: China: Guangxi, Guangdong.

Diagnosis. This is one of five species, including *incompleta*, *bakeri*, *reducta* and *fulgens*, which have the medial vein partial or absent and cu-a less than $0.2\times$ R or absent. It can be distinguished from these species by Rs more than twice as long as R and R1 more than $0.5\times$ as long as R, flagellomeres I and II twice as long as broad, flagellomere XI less than $3\times$ as long as broad and the hindtibial flange less than half as wide as the tubular part of the tibia.

***Loboscelidia halimunensis* Kojima**

http://species-id.net/wiki/Loboscelidia_halimunensis

Loboscelidia halimunensis Kojima (in Kojima and Ubaidillah), 2003: 203. Holotype male; Indonesia: West Java, Gunung Halimun National Park, Cikaniki (MZB, lost?).

Material studied. None

Diagnosis. This is another of the species with a flat medial vein. *Loboscelidia halimunensis* and *defecta* both lack a cu-a vein. The two species can be separated by the longer Rs vein in *halimunensis* (more than $2\times$ as long as R, versus less than $2\times$ in *defecta*) and pronotum as long as broad or broader (longer than broad in *defecta*). Despite contacting the authors the type could not be located.

***Loboscelidia incompleta* sp. n.**

urn:lsid:zoobank.org:act:0C00BA0E-657A-4E11-B707-BD33618B892B

http://species-id.net/wiki/Loboscelidia_incompleta

Figures 8, 28

Type material. Holotype male: India: Tamil Nadu, Nilgiri Hills, v/1961, P. S. Nathan (CNC).

Diagnosis. The most distinctive and unique feature of this species is the medially incomplete medial vein. Among the species that lack a medial vein entirely, including *bakeri*, *fulgens*, *reducta* and *guangxiensis*, *incompleta* can be distinguished by the Rs vein twice as long as R ($1.5\times$ or less in the other species). It does share the fore and midtibial flanges lacking as in *reducta*.

Male description. Body length 2.5 mm; forewing length 3 mm. Head (Fig. 8): length $2\times$ height in side view; eye asetose; frontal projection rectangular in front view; frons with lateral ridge adjacent to eye margin; vertex without transverse fovea, posterior expansion strongly curved in profile; frons without carina or ridge extending from vertex along inner eye margin; gena without scale-like setae; scape longitudinally striate, length $4\times$ breadth; flagellomere I length $2.4\times$ breadth; flagellomere II length $2.2\times$ breadth; flagellomere XI length $3.2\times$ breadth. Mesosoma: pronotal length $1.1\times$ breadth, with lateral carina, nearly as broad as head; scutum with notauli reaching posterior margin; scutellum and metanotum smooth, polished, impunctate; metanotum one-third as long as scutellum propodeum without transverse dorsal carina; mesopleuron without scrobal sulcus; legs polished; forefemoral flange $0.2\times$ femur length, flange maximum width $0.9\times$ width of tubular part of femur; foretibial flange $0.6\times$ femur length, flange maximum width $0.3\times$ width of tubular part of tibia; midfemur without flange; midtibial flange $0.7\times$ tibia length, flange maximum width $0.3\times$ width of tubular part of tibia; hindfemoral flange $0.3\times$ femur length, flange maximum width $0.7\times$ width of tubular part of femur; hindtibial flange $0.7\times$ as long as tibia, flange maximum width $0.5\times$ width of tubular part of tibia; hindtibia with two longitudinal carinae on posterior margin; hindcoxa with/without longitudinal carina on inner medial surface; forewing (Fig. 28) R1 length $0.3\times$ R length; cu-a length absent; Rs length $2.2\times$ R length; Cu+M $0.5\times$ as long as A; medial vein submedially curved, incomplete medially. Color: reddish brown; wing membrane brown-tinted, paler along vein remnants, veins brown.

Etymology. The name refers to the medially interrupted medial vein of the forewing (Latin)

Loboscelidia indica Kimsey

http://species-id.net/wiki/Loboscelidia_indica

Loboscelidia indica Kimsey 1988: 69. Holotype male; India: Nilgiri Hills (CNC).

Material studied. India: Nilgiri; only the holotype was seen.

Diagnosis. *L. indica* is one of two species described from India, including *incompleta*. It is also one of the dozen or so species with a scrobal sulcus and rectangular frontal projection. It can be distinguished from them by the combination of the Rs less than $3\times$ as long as R, A as long or longer than Cu+M, scape less than $3\times$ as long as broad, flagellomeres I and II twice or more as long as broad, and fore, mid and hindtibial flanges $1.5\times$ or more as wide as the tibiae.

***Loboscelidia inermis* Kieffer**

http://species-id.net/wiki/Loboscelidia_inermis

Loboscelidia inermis Kieffer 1916:15. Syntype females (males?); Philippines: Mindanao, Butuan (MNHN, lost?).

Material studied. No reliably identified specimens have been seen. However, according to Kieffer's (1916) illustration *inermis* has a well-developed cu-a vein, unlike *defecta*, which lacks cu-a, or cu-a is represented by a very short stub.

***Loboscelidia kafa* sp. n.**

urn:lsid:zoobank.org:act:09492B77-D0B2-401F-94AA-863039EF6EA8

http://species-id.net/wiki/Loboscelidia_kafa

Figures 9, 29, 40

Type material. Holotype male: Thailand: Chiang Mai Pr., Doi Phahompok NP, Mae Fang Hot spring, 569m, 19°57.961'N 99°09.355'E, Malaise trap, 7–14/iv/2008, K. Seesom, T6085 (QSBG).

Paratypes (52 males): 2 males: same data as holotype; 1 male: 14–21/ix.2007, P. Wongchai, T6168; 2 males: 7–14/viii/2007, P. Wongchai, T6144, 6111; 1 male: Doi Phaluang, 1449 m, 20°1'06"N, 99°09.581'E, 21–28/ix/2007, P. Wongchai, T6165; 1 male: 28/iv-7/v/2008, K. Seesom, T6084; 1 male: Doi Chiangdao NP, 19°24.278'N, 98°55.311'E, 491 m, 18–25/ix/2007, Jugsu & Watwanich, T5696; 1 male: Doi Chiangdao NP, 19°24.419'N, 98°55.237'E, 549 m, MT, 21–28/viii/2007, Jugsu & Watwanich, T5676; 1 male: Doi Chiangdao NP, Pha Tang, 19°24.978'N, 98°54.886'E, 526 m, Malaise trap, 4–11/ix/2007, Jugsu & Watwanich, T5682; 1 male: Doi Chiangdao NP, 549 m, 19°42.419'N 98°55.237'E, Malaise trap, 10–17/xii/2007, Jugsu & Watwanich, T5723; 1 male: Hui Na Lao, 500 m, 19°24.731'N, 98°55.315'E, Malaise trap, 15–21/v/2008, Jugsu & Watwanich, T5817; 1 male: Huai Nam Dang NP, 19°18.803'N, 98°36.396'E, Malaise trap, 21–28/ix/2007, Anuchart & Thawatchai, T5507; 1 male: Thung Buatong viewpoint, 19°17.6'N, 93°36.0'E Malaise trap, Anuchart & Thawatchai, 14–21/viii/2007, T5472; 1 male: **Chiang Pr.**, Huai Nam Dang NP, Thung Buatong, 19°17.056'N, 98°36.029'E, Malaise trap, 21–28/viii/2007, Anuchart & Thawatchai, T5471; 1 male: Doi Chiangdao NP, 19°24.419'N, 98°55.237'E, 549 m, malaise trap, 14–21/viii/2007, Jugsu & Watwanich, T5673; 1 male: **Kamphaeng Pr.**, Phet Mae Wong NP, 306 m, 16°02.233'N, 99°13.096'E, pan trap, 9–10/viii/2007, Srilopien & Phumirate, T3769; 1 male: **Lampang Pr.**, Chae Son NP, 18°49.894'N, 99°28.354'E, 467 m, Malaise trap, 1–7/v/2008, Kwannui & Sukpeng, T5309; 1 male: 21–30/v/2008, T5305; 1 male: Chae Son NP, Doi Laan, 18°51.815'N, 99°22.122'E, 1413 m, Malaise trap, 9–15/v/2008, Kwannui & Sukpeng, T5292; 1 male: **Kanchanaburi Pr.**, Khuean Srinagarinda NP, 14°38.123'N, 98°59.657'E, Malaise trap, Somboon & Daorueng, T3462; 1 male: 7–14/v/2009, T4747; 1 male: 201 m, 23–30/iv/2009, T4744; 1 male: 13–20/xi/2008,

Somboon & Daorueng, T4423; 1 male: 6–13/xi/2008, Somboon & Daorueng, T4420; 1 male: 14°38.312'N, 98°59.643'E, 210 m, Malaise trap, Somboon & Daorueng, T3465; 1 male: Huay Mae Kamint, 14°38.441'N, 98°58.889'E, 240 m, Malaise trap, 7–14/v/2009, Somboon & Daorueng, T4740; 1 male: **Nakhon Si Thammarat Pr.**, Namtok Yong NP, 8°10.434'N, 99°44.508'E, Malaise trap, 8–15/vii/2008, 80 m, U. prai, KT3083; .1 male: 8°14.262'N, 99°48.289'E, Malaise trap, 21–28/vii/2008, 966m, Palboon, T3108; 1 male: 8°16.959'N, 99°39.149'E, Malaise trap, 22–29/vii/2008; 1 male: road to Khao Mhen, 150 m from Nern466, 8°16.959'N, 99°39.149'E, 499 m, Malaise trap, 8–15/vi/2008, S. Samnaokan, T3095; 1 male: **Chaiyaphum Pr.**, Tat Tone NP, 16°0.792'N, 101°58.472'E, Malaise trap, 19–26/v/2007, Jaruphan & Budsawong, 648 m, 2575; 2 males: **Petchaburi Pr.**, Kaeng Krachan NP, 12°47.831'N, 99°27.369'E, Malaise trap, 970 m, 8–15/viii/2008, Sirichai & Chusak, T4346; 1 male: 12°47.963'N, 99°27.188'E, Malaise trap, 5–12/ix/2008, Sirichai & Prasit, T4375; 1 male: 12°50.177'N, 99°28.098'E, Malaise trap, 735 m, 18–25/i/2009, Sirichai, T4406; 1 male: 12°48.107'N, 99°26.669'E, Malaise trap, 3–10/iv/2009, Sirichai, T4687; 1 male: 12°49.302'N, 99°22.263'E, Malaise trap, 254/iii-3/iv/2009, Sirichai, T4739; 1 male: 12°50.177'N, 99°20.688'E, Malaise trap, 735 m, 25/v-1/vi/2009, Sirichai, T5259; 2 males: Pa La-U waterfall, 12°32.154'N, 99°28.098'E, Malaise trap, 26/ix-3/x/2008, Akaradate & Thongbai, T4518; 1 male: 12°32.154'N, 99°28.098'E, Malaise trap, 4–11/xii/2008, Thongbai, T4553; 1 male: Pa La-U/Huai Palao Forest Unit 3, 12°32.149'N, 99°28.265'E, Malaise trap, 18–25/i/2009, Thongbai, T4566; 1 male: 12°32.149'N, 99°28.265'E, Malaise trap, 4–11/i/2009, Thongbai, T4562; 2 males: **Phetchabun Pr.**, Nam Nao NP, 16°43.695'N, 101°33.797'E, 921 m, Malaise trap, 5–12/v/2007, L. Janteab, T2657; 2 males: 16°43.687'N, 101°33.797'E, 754 m, Malaise trap, 19–26/v/2007, N. Hongyothi, T2662; 1 male: **Mae Hong Son Pr.**, Namtok Mae Surin NP, 228 m, 19°21.593'N, 97°59.254'E, Malaise trap, 11–18/xi/2007, M. Namadkum, T5930; 1 male: 19°20.616'N, 97°59.003'E, Malaise trap, 11–18/xi/2007, 334 m, A. Kamkhun, T5934; 1 male: **Sakon Nakhon Pr.**, Phu Phan NP, 17°03.488'N, 103°58.497'E, Malaise trap, 8–14/vii/2006, S. Tongboonchai, T199; 1 male: **Prachuab Khiri Khan Pr.**, Khao Sam Roi Yot NP, 12°13.417'N, 99°56.153'E, Malaise trap, 31/viii-7/ix/2008, Sorat, Yai & Amnad, T4078; 1 male: Bar Hua Tan Thaeo, 12°13.059'N, 99°58.384'E, Malaise trap, 2–9/xi/2008, Yai & Amnad, T4128; 1 male: **Phitsanulok Pr.**, Thung Salaeng Luang NP, 16°52.046'N, 100°49.067'E, Malaise trap, 501 m, 16–23/iv/2007, Pongpitak, T5207 (BME, QSBG).

Additional non-type specimens were seen from Laos (Phongsaly Prov., Ban Sano Mai) (22 males, CNC, BME); Vientiane Prov., Ban Van Eue (1 male, BPBM); Malaysia: Malaya, 13 mi e Gombak (1 male, UCR); Sarawak: Gunung Mulu NP (1 male, ROM) and Borneo: West Kalimantan Gunung Palung Nat Pk. (14 males, BME, ROM) E. Kalimantan: Kac. Plujungan, Kayan Metarang Nat. Res. (1 male, ROM); Viet Nam: Tuyen Quang Prov., Na Hang Res. (2 males, CNC); Thailand: Phitsanulok Pr., Thyng Salaeng Luang (1 males, BME, QSBG); Kanchanaburi: Khuean Srinarinda NP (1 male, QSBG); Suphanburi Pro., Pu Toei NP (1 male, QSBG).

Diagnosis. *L. kafae* is one of the many species that have a submedially curved medial vein. Males have a short flagellomere I (less than twice as long as broad), which is

also found in *pasohana* and *laminata*. It can be distinguished from these two species by flagellomere XI $4\times$ as long as broad (shorter in the other species), the fore and midtibial flanges as broad as the tibiae and the hindtibial flange twice as broad (narrower in various combinations in the other species).

Male description. Body length 2.0–2.5 mm; forewing length 2.5–3.0 mm. Head (Fig. 9): length $1.9\times$ height in side view; eye asetose; frontal projection rectangular in front view; frons smooth; vertex without transverse fovea, posterior expansion convex in profile; frons with low ridge extending from vertex along inner eye margin; gena without scale-like setae; scape smooth, length $3\times$ breadth; flagellomere I length $1.6\times$ breadth; flagellomere II length $2\times$ breadth; flagellomere XI length $4.5\times$ breadth. Mesosoma: pronotal length $0.8\times$ breadth, with sharp lateral fold; scutum with notauli reaching posterior margin; scutellum with fine dense striae sublaterally; metanotum with medial ridge, densely, finely striate on either side, one-third as long as scutellum; mesopleuron with scrobal sulcus; propodeum without transverse dorsal carina; legs (Fig. 40) smooth, polished; forefemoral flange $0.7\times$ femur length, flange maximum width $0.9\times$ width of tubular part of femur; foretibial flange $0.7\times$ femur length, flange maximum width $1.2\times$ width of tubular part of tibia; midfemoral flange $0.8\times$ femur length, flange as wide as tubular part of femur; midtibial flange $0.7\times$ tibial length, flange as wide as tubular part of tibia; hindfemoral flange $0.9\times$ femur length, flange maximum width as wide as tubular part of femur; hindtibial flange as long as femur, flange maximum width $2\times$ width of tubular part of tibia; hindtibia with two longitudinal carinae on posterior margin; hindcoxa without longitudinal carina on inner medial surface; forewing (Fig. 29) R1 length $0.5\times$ R length; cu-a $0.5\times$ R length; Rs length $2.6\times$ R length; Cu+M length $0.5\times$ A length; medial vein submedially curved. Color: body brown; wing membrane lightly brown-tinted along veins and vein remnants, veins brown.

Female. Unknown.

Etymology. The species name refers to the coffee brown coloration (Thai for coffee, noun).

***Loboscelidia laminata* sp. n.**

urn:lsid:zoobank.org:act:30E0EEB4-A91F-49CE-9CEA-E86A911F785A

http://species-id.net/wiki/Loboscelidia_laminata

Figures 10, 30, 41

Type material. Holotype male: Viet Nam: Tuyen Quang Prov., 360 m, Na Hang Reserve, 16–20 May 1997, FIT, S. B. Peck, 97-10 (CNC). Paratypes (17 males): 6 males, same data as holotype; 6 males, 20-24 May 1997, rainforest, FIT 97-13; 5 males, 97-12 (BME, CNC).

Diagnosis. *L. laminata* most closely resembles *kafae* as discussed under that species. However, *laminata* can be distinguished by flagellomere II less than twice as long as broad, flagellomere XI less than $3.5\times$ as long as broad, and the fore and midtibial flanges narrower than the respective tibiae.

Male description. Body length 2.0–2.5 mm; forewing length 2.5–3.0 mm. Head (Fig. 10): length 1.8× height in side view; eye asetose; frontal projection rectangular in front view; frons with lateral ridge adjacent to eye margin; vertex without transverse fovea, posterior expansion shallowly curved in profile; frons with low ridge extending from vertex along inner eye margin; gena without scale-like setae; scape smooth, length 2.6× breadth; flagellomere I length 1.7× breadth; flagellomere II length 1.8× breadth; flagellomere XI length 4× breadth. Mesosoma: pronotal length 0.8× breadth, with/out lateral carina, nearly as wide as head in dorsal view; scutum with notauli reaching posterior margin; scutellum with fine dense striae; metanotum with three medial ridges, impunctate laterally; mesopleuron with scrobal sulcus; propodeum without transverse dorsal carina; legs (Fig. 41) coarsely/smooth, polished; forefemoral flange 0.6× femur length, flange maximum width 0.8× width of tubular part of femur; foretibial flange 0.6× femur length, flange maximum width 0.7× width of tubular part of tibia; midfemoral flange 0.6× femur length, flange maximum width 0.8× width of tubular part of femur; midtibial flange 0.8× femur length, flange maximum width 0.4× width of tubular part of tibia; hindfemoral flange 0.8× femur length, flange maximum width 0.9× width of tubular part of femur; hindtibial flange 0.9× as long as tibia, flange maximum width 1.1× width of tubular part of tibia; hindtibia with two longitudinal carinae on posterior margin; hindcoxa with longitudinal carina on inner medial surface; forewing (Fig. 30) R1 length 0.8× R length; cu-a length 0.5× R length; Rs length 3.2× R length; Cu+M 0.5× as long as A ; medial vein submedially curved. Color: dark brown to yellowish brown; wing membrane brown-tinted, untinted along vein remnants; veins brown.

Etymology. The name refers to the large lamellae or flanges on the legs (Latin).

Loboscelidia laotiana Kimsey

http://species-id.net/wiki/Loboscelidia_laotiana

Figure 19

Loboscelidia laotiana Kimsey 1988: 71. Holotype male; Laos: Vientiane Prov., Ban Van Eue (BPBM).

Material studied. Laos: Vientiane Prov, Ban Van Eue (2 males, BPBM, BME); Viet Nam: Fyan (1 male, BME); Malaysia: Sabah: Kinabalu Nat. Pk. (3 males, USNM); Indonesia: Sumatra, Aceh: Mt. Leuser Nat. Pk., Ketambe Res. Sta (1 male, ROM); 7 specimens were seen including the holotype.

Diagnosis. *L. laotiana* is one of the species with a scrobal sulcus and a triangular frontal projection (Fig. 19). It can be distinguished from the others by the combination of the Rs 3× or more as long as R, scape striate and more than 3× as long as broad, flagellomeres I and II less than twice as long as broad, flagellomere XI less than 3× as long as broad, fore and midfemoral flanges as wide as the tubular part of the respective femora and the hindtibial flange twice as wide as the tubular part of the tibia.

***Loboscelidia levigata* Yao, Liu & Xu**

http://species-id.net/wiki/Loboscelidia_levigata

Loboscelidia levigata Yao et al. 2010: 528. Holotype male; China: Guangdong Prov., Chebaling National Nature Reserve (SCAC).

Material studied. None.

Diagnosis. *L. levigata* is one of three species described from southeastern China, including *sinensis* and *striolata*. It can be distinguished from these by the rectangular frontal projection, and in males R1 as long as R (shorter in *sinensis* and *striolata*) and Rs 3× as long as R, as opposed to 2.5× or shorter in *sinensis* and *striolata*. It can be distinguished from other *Loboscelidia* species by R1 reaching R at a right angle.

***Loboscelidia maai* (Lin)**

http://species-id.net/wiki/Loboscelidia_maai

Scelidoloba maai Lin 1964: 238. Holotype female (not male); Taiwan: Paomingszu, 2 km s Keelung City (NMNS).

Loboscelidia artigena Lin 1964: 243. Holotype male; Taiwan: Paomingzu, 2 km s Keelung City (NMNS). Possible synonymy with *maai* suggested by Day (1979). New synonymy herein.

Loboscelidia latigena Lin 1964: 241. Holotype male; Taiwan: Tsaoshan, 20 km nw Taipei city (NMNS). Synonymized by Kimsey and Bohart 1991.

Material studied. None.

Diagnosis. This is one of four species, including *brunnea*, *maculipennis* and *nitidula*, with the cervical expansion of the vertex flat in profile. *L. maai* males can be distinguished from these species by having the scape less than 2.5× as long as broad, the presence of a scrobal sulcus, and the tibial flanges wider than the tubular part of the respective tibiae.

***Loboscelidia maculata* Kimsey**

http://species-id.net/wiki/Loboscelidia_maculata

Loboscelidia maculata Kimsey 1988: 72. Holotype male; Australia: Queensland, 7 km sw Bellenden (ANIC).

Material studied. Australia: Queensland: 7 km sw Bellenden (1 male, ANIC); Mossman Gorge (2 males, CNC); 3 specimens were seen including the holotype.

Diagnosis. This is one of the five species with a medially flat medial vein as discussed under *defecta*. Of these, only *defecta* and *ora* have been described from Australia.

L. maculata can be distinguished from *defecta* by the lack of notauli (shared with *ora*), and the fore and hindtibial flanges twice as wide as the tubular part of the respective tibiae (narrower in *defecta* and *ora*).

***Loboscelidia maculipennis* Fouts**

http://species-id.net/wiki/Loboscelidia_maculipennis

Figures 11, 17, 20, 41

Loboscelidia maculipennis Fouts 1922: 625. Holotype male (not female); Borneo: Sandakan (USNM).

Loboscelidia carinata Fouts 1922: 626. Holotype male (not female); Singapore (USNM). Synonymized by Day (1979).

Material studied. Singapore: coll. Baker (1 male, BME), Sungei Buloh (1 male, BME); Indonesia: W. Kalimantan: Gunung Palung Nat. Pk. (6 males, ROM, BME); E. Kalimantan: Kac. Pujungan, Kayen-Mentarang Nat. Res (1 male, ROM), Sumatra: Aceh, Mt. Leuser (1 male, ROM); 12 males were seen including the holotypes of *maculipennis* and *carinata*.

Diagnosis. This is one of four species with a strongly flattened cervical expansion (Fig. 11) as discussed under *brunnea*. *L. maculipennis* males can be distinguished from the other three by cu-a as long as R, Rs vein 4× or longer than R, leg integument smooth (Fig. 41), and hindtibial posterior margin with 2 parallel carinae.

***Loboscelidia meifungae* sp. n.**

<urn:lsid:zoobank.org:act:D05A300F-E49B-476E-98D4-970C53404F6B>

http://species-id.net/wiki/Loboscelidia_meifungae

Figures 12, 30, 42

Type material. Holotype male: Borneo: Sarawak, sw Gunung Buda, 64 km s Linbang, 4°13'N, 114°56'E, 8–15 Nov. 1996, MT, Heydon & Fung (BME). Paratypes (44): 10 males, same data as holotype; 10 males: 16–28 Nov. 1996; 11 males: 22–28 Nov. 1996, MT, Heydon & Fung; 1 male: November 1996, Heydon & Fung; 1 male: 18 Nov. 1996, Heydon & Fung; 1 male: 23 Nov. 1996; Heydon & Fung; 1 male: Buda Camp, sw Gunung Buda, 64 km s Linbang, 4°11'N, 114°56'E, 4 Nov. 1996, MT, Heydon & Fung; 4 males: Malaysia: Sabah, Kinabalu NP, 800m, Poring Hot Springs Langanan Creek, 22/viii/1988, A. Smetana, B-138; 1 male: Poring Hot Springs, 520 m, 9/v/1987, A. Smetana; 1 male: 480–510 m, 30.viii/1988, A. Smetana, B163; 1 male: 510 m, 13/v/1987; 1 male: Kipungit Creek, 550 m, 26/viii/1988, A. Smetana; 1 male: Liwagu River Trail, 1550 m, 12/viii/1988, A. Smetana, B107 (BME, CNC).

Diagnosis. This species belongs in the group of species having a flat medial vein and notauli, including *defecta* and *fulva*. It can be distinguished from other members

of the group by the triangular frontal projection, presence of a scrobal sulcus, cu-a present (shared with *fulva*) and midtibial flange absent.

Male description. Body length 2.0–4.0 mm; forewing length 2.5–4.5 mm. Head (Fig. 12): length 1.8–2.0× height in side view; eye asetose; frontal projection triangular in front view; frons smooth to microstriate; vertex without transverse fovea, posterior expansion strongly curved in profile; frons without discrete carina or ridge extending from vertex along inner eye margin; gena without scale-like setae; scape with some striae, length 2.1–2.5× breadth; flagellomeres I and II length twice breadth; flagellomere XI length 4× breadth. Mesosoma: pronotal length 0.7–0.8× breadth, with lateral carina; scutum with notauli reaching posterior margin; scutellum with sublateral carina, with fine dense striae laterally; scrobal sulcus represented by series of pits; metanotum with medial ridge, impunctate laterally; propodeum without transverse dorsal carina; legs (Fig. 42) smooth, polished; forefemoral flange 0.5–0.7× femur length, flange maximum width 0.8–1.0× width of tubular part of femur; foretibial flange 0.6–0.9× femur length, flange maximum width 1.0–1.5× width of tubular part of tibia; midfemoral flange 0.7–0.9× femur length, flange maximum width as wide as tubular part of femur; midtibial flange 0.7× femur length, flange maximum width 1.2× width of tubular part of tibia; hindfemoral flange 0.9× femur length, flange maximum width as wide as tubular part of femur; hindtibial flange 0.9× femur length, flange maximum width 1.7× width of tubular part of tibia; hindtibia with two longitudinal carinae on posterior margin; hindcoxa without longitudinal carina on inner medial surface; forewing (Fig. 30) R1 length 0.5–0.7× R length; cu-a length 0.4–0.5× R length; Rs length 2.5–3.0× R length; Cu+M length 0.7–0.9× A length; medial vein submedially curved. Color: body brown to reddish brown; wing membrane brown-tinted, paler along vein remnants.

Female. Unknown.

Etymology. This species is named after Mei Lin “Stella” Fung one of the collectors.

***Loboscelidia nasiformis* sp. n.**

urn:lsid:zoobank.org:act:BD5AC828-B80E-45BB-8835-1D6EAFCFDAA4

http://species-id.net/wiki/Loboscelidia_nasiformis

Figures 13, 31, 43

Type material. Holotype male: Thailand: Petchaburi Prov., Kaeng Krachan NP, Pa La-U/Huai Palao Forest Unit 3, 12°32'149"N, 99°28'265"E, Malaise trap, 4-11/ i2009, Thongbai, T4562 (QSBG).

Diagnosis. The most distinctive and unusual feature of this species is the greatly elongate and nose-like frontal projection, which makes the head nearly 3× as long as broad in lateral view. Otherwise, *nasiformis* is closest to *cinnamonea*, with an arched medial vein, rectangular frontal projection (albeit greatly elongate in *nasiformis*), complete notauli, cu-a reduced to a tiny stub or absent, and no scrobal sulcus. Other than the elongate frontal projection, *nasiformis* can be separated from *cinnamonea* by the presence of fore and midtibial flanges (absent in *cinnamonea*).

Male description. Body length 2 mm; forewing length 2.5 mm. Head (Fig. 13): length $2.9\times$ height in side view; eye asetose; frontal projection nasiform; frons smooth; vertex without transverse fovea, posterior expansion strongly curved in profile; frons without carina or ridge extending from vertex along inner eye margin; gena without scale-like setae; scape smooth, without striae, length $3.7\times$ breadth; flagellomeres I and II length $2.2\times$ breadth; flagellomere XI length $3.6\times$ breadth. Mesosoma: pronotal length $0.9\times$ breadth, without lateral carina; scutum with notauli reaching posterior margin; scutellum without sublateral carina, smooth laterally; metanotum without medial ridge, impunctate laterally; propodeum without transverse dorsal carina; legs (Fig. 43) smooth, polished; forefemoral flange $0.5\times$ femur length, flange as wide as tubular part of femur; foretibial flange $0.6\times$ femur length, flange maximum width $0.4\times$ width of tubular part of tibia; midfemoral flange $0.5\times$ femur length, flange maximum width $0.4\times$ width of tubular part of femur; midtibial flange $0.6\times$ femur length, flange maximum width $0.6\times$ width of tubular part of tibia; hindfemoral flange $0.8\times$ femur length, flange maximum width $0.5\times$ width of tubular part of femur; hindtibial flange $0.8\times$ femur length, flange maximum width $0.6\times$ width of tubular part of tibia; hindtibia with two longitudinal carinae on posterior margin; hindcoxa without longitudinal carina on inner medial surface; forewing (Fig. 31) R1 length $0.3\times$ R length; cu-a absent; Rs length $2.6\times$ R length; Cu+M length $0.5\times$ A length; medial vein submedially curved. Color: body brown to reddish brown; wing membrane brown-tinted, paler along vein remnants.

Etymology. The species is named for the long, nose-like frontal projection (Latin)

Loboscelidia nigra Fouts

http://species-id.net/wiki/Loboscelidia_nigra

Loboscelidia nigra Fouts 1922: 621. Syntype males (not female); Philippines: Mindanao, Dapitan, Basilan (USNM).

Material studied. Philippines: Mindanao; only the two syntypes were seen.

Diagnosis. As discussed under *castanea* and *collaris*, *nigra* is one of seven species with a triangular frontal projection, complete scrobal sulcus and complete notauli. Dimensions of the antennal articles will separate *nigra* from these species; the scape is less than $3\times$ as long as broad, flagellomeres I and II are $2.5\times$ as long as broad or longer and flagellomere XI is $4.5\times$ as long as broad.

Loboscelidia nigricephala Kimsey

http://species-id.net/wiki/Loboscelidia_nigricephala

Loboscelidia nigricephala Kimsey 1988: 72. Holotype male; Australia: Queensland, 21 km s Atherton (QDPI).

Material studied. Australia: Queensland: Mt. Lewis (1 male, CNC); 21 km s Atherton (1 male, QDPI); Hugh Nelson Range, s Atherton (1 male, BME); 3 males were seen, including the holotype.

Diagnosis. This is one of five species, including *cervix*, *novoguineana*, *ora* and *parva*, where the frontal projection is broadly flattened and nearly linear in front view. It can be distinguished from these species by the arched medial vein, cu-a as long as or longer than R, foretibial flange as wide as tubular part of tibia, and the mid and hindtibial flanges 1.5× as wide as tubular part of the tibiae or wider.

***Loboscelidia nigricornis* Fouts**

http://species-id.net/wiki/Loboscelidia_nigricornis

Loboscelidia nigricornis Fouts 1925: 517. Holotype male; Philippines: Mindanao, Surigao (USNM).

Material studied. Philippines: Mindanao I., Agusan, Esperanza Bagugan, Matibog Creek (1 male, BPBM); 6 specimens were seen including the otype series.

Diagnosis. This is one of several species with a flat medial vein and rectangular frontal projection. In males, the absence of cu-a and the scape more than 3.3× as long as broad are characteristics *nigricornis* shares with *halimunensis*. *L. defecta* can be distinguished from *halimunensis* by Rs less than twice as long as broad (longer in *halimunensis*) and longer pronotum (1.2× as long as broad, versus as long as broad or broader in *halimunensis*).

***Loboscelidia nitidula* sp. n.**

urn:lsid:zoobank.org:act:B9D54654-B75A-4659-A223-901AFCCDB5BD

http://species-id.net/wiki/Loboscelidia_nitidula

Figures 32, 44

Type material. Holotype male: Thailand, Petchaburi Prov., Nam Nao NP, 16°43'687"N, 101°33'754"E, 924 m, MT, 5-12/v/2007, N. Hongyothi, T2656 (QSBG). Paratypes (21 males): 1 male: Kaeng Krachan NP, 16/road/stream, 12°48'189"N, 99°26'62"E, MT, 11-18/iii/2009, Sirichai & Prasit, T4685; 1 male: 12°50'177"N, 99°20'688"E, MT, 735 m, 27/xi-4/xii/2008, Sirichai, T4395; 2 males: Chang Mai Prov., Doi Inthanon NP, 7-12/v/1990, E. Fuller, MT; 1 male: Chiangdao NP, Huai Na Lao, 19°24'731"N, 98°55'315"E, 500 m, YPT, 6-7/v/2008, Jugsu & Watwanich, T5808; 1 male: Sakon Nakhon Prov., Phu Phan NP, 14/vii/2006, 17°03'543"N, 103°58'452"E, MT 8-W, Kongnara, T197; 2 males: 17°03'543"N, 103°58'452"E, MT, 15-21/vii/2006, MT, S. Tongboonchai, T200; 3 males: 17°03'488"N 103°58'497"E, MT, 15-21/vii/2006, MT, S. Tongboonchai,

T205; 1 male: Nong Bua Prov., Lam Poo Phu Kao Phu, Phan Kham Nat. Pk., 16°49'N, 102°37'E, 208 m, 27/vii-2/viii/2006, MT, R. Singhatip, T85; 1 male: Nakhon Si Prov., Thammarat, Namtok Yong NP, 17°10'434"N, 99°44'508"E, 80 m, MT, 16–23/viii/2008, K. Uprai, T3548; 2 males: Kanchanaburi Prov., Khuean Srinagarindra NP, Huay Mae Kamint, 14°38'312"N, 98°5'643"E, 210 m, MT, 13–20/xi/2008, Somboon & Daorueng, T4424/4423; 1 male: Erawan NP, 100 m, 5/viii/1990, J. Heraty, 90/115; 1 male: Loei Prov., Phu Kradeung NP, 16°49'01"N, 101°47'62"E, 276 m, MT, 14–21/v/2008, T. Phatai, T5011; 1 male: Trang Prov., Nayong, 7 m, 20/ii/2005, 7°33'04"N, 99°49'37"E, MT, D. Lohman; 1 male: Khao Chong Mt. 75 m, 28/iv-2/v/2005, 7°33'38"N, 99°47'369"E, MT; 1 male: Khao Chong Mt. 75 m, x/2005, 7°33'38"N, 99°47'369"E, MT; 1 male: near Nam Tock Ton Prov., Khoa Chong Mt., 140 m, ii/2005, 7°32'15"N, 99°47'36"E, MT, D. Lohman (QSBG, BME, CNC).

Diagnosis. Four *Loboscelidia* species have a flattened cervical extension, including *brunnea*, *maculipennis* and *nitidula*. Of these four *L. nitidula* can be distinguished by presence of a scrobal sulcus, a medial metanotal ridge and a large foretibial flange (flange absent in the other species).

Male description. Body length 2.0-2.5 mm; forewing length 2.5-3.0 mm. Head: length 1.6× height in side view; eye asetose; frontal projection rectangular in front view; frons smooth, not microstriate; vertex without transverse fovea, posterior expansion convex in profile; frons with ridge extending from vertex along inner eye margin; gena without scale-like setae; scape striate, length 2.7 breadth; flagellomere I length 1.7× breadth; flagellomere II length 1.8× breadth; flagellomere XI length 5× breadth. Mesosoma: pronotal length 0.8× breadth, with fold between dorsal and lateral surfaces, as wide as head width in dorsal view; scutum with notauli reaching posterior margin; scutellum with fine dense striae laterally; metanotum with medial longitudinal striae, impunctate laterally, 0.5× as long as scutellum; mesopleuron with scrobal sulcus; propodeum without transverse dorsal carina; legs (Fig.44) smooth polished; forefemoral flange 0.7× femur length, flange maximum width 0.8× width of tubular part of femur; foretibial flange 0.9× femur length, flange maximum width as wide as tubular part of tibia; midfemoral flange 0.7× femur length, flange maximum width 0.7× width of tubular part of femur; midtibial flange 0.8× femur length, flange maximum width 1.2× width of tubular part of tibia; hindfemoral flange as long as femur, flange maximum width 1.2× width of tubular part of femur; hindtibial flange as long as femur, flange maximum width 1.6× width of tubular part of tibia; hindtibia with two longitudinal carinae on posterior margin; hindcoxa without longitudinal carina on inner medial surface; forewing (Fig. 32) R1 length 0.7× R length; cu-a length 0.6× R length; Rs length 2.9× R length; Cu+M length 0.6× A length; medial vein submedially curved. Color: body brown to reddish brown; wing membrane brown-tinted, darkest medially, lightest along vein remnants.

Etymology. The species name, *nitidula*, is Latin for shiny/polished (f.).

***Loboscelidia nixoni* Day**

http://species-id.net/wiki/Loboscelidia_nixoni

Lacconerista rufescens Cameron 1910a: 23. Holotype male; Borneo: Kuching (BMNH).
Nec Westwood 1874.

Loboscelidia nixoni Day 1978: 29. Replacement name for *Loboscelidia rufescens* (Cameron 1910).

Material studied. Borneo; only the holotype of *rufescens* (Cameron) was seen.

Diagnosis. *L. nixoni* is another of the species characterized by having a curved medial vein, rectangular frontal projection, and no scrobal sulcus, as discussed under *philippinensis*. In this group *nixoni* differs from *nasiformis* and *cinnamonea* in having cu-a well-developed and half as long as R. It can be separated from *philippinensis*, and *levigata* by the combination of the scape and flagellomere XI less than twice as long as broad, flagellomeres I and II less than 1.7× as long as broad and hindtibial flange less than 0.7× as wide as tubular part of tibia.

***Loboscelidia novoguineana* Kimsey**

http://species-id.net/wiki/Loboscelidia_novoguineana

Loboscelidia novoguineana Kimsey 1988: 74. Holotype male; Papua New Guinea, East Highlands, Aiyura (BPBM).

Material studied. Papua New Guinea: Mt. Suckling (1 male, CNC); Ivimka Res. Station, Lakekamu Basin (3 males, BME); 5 males were seen, including the holotype.

Diagnosis. As discussed under *nigricephala*, *novoguineana* is one of five species with a wide flattened frontal projection. It can be distinguished from these species by the partial notauli, scrobal sulcus indicated by a scrobal pit or several pits, and the fore, mid and hindtibial flanges present and narrower than the respective tibiae. This is the only *Loboscelidia* species described from New Guinea but there surely must be more.

***Loboscelidia ora* Kimsey**

http://species-id.net/wiki/Loboscelidia_ora

Figure 18

Loboscelidia ora Kimsey 1988: 73. Holotype male; Australia: Queensland, Bingil Bay (ANIC).

Material studied. Australia: Queensland: Cape Tribulation (1 male, CNC); Paluma (2 males, CNC, BME); Lacey's Creek, Mission Beach (1 male, CNC); 5 males were examined, including the holotype.

Diagnosis. *L. ora* can be distinguished from the other *Loboscelidia* species with an apically broad, flattened frontal projection (Fig. 18) by the nearly straight medial vein, cu-a longer than R, Rs more than twice as long as R, A as long or longer than Cu+M, and no notauli.

***Loboscelidia parva* Maa & Yoshimoto**

http://species-id.net/wiki/Loboscelidia_parva

Loboscelidia parva Maa and Yoshimoto 1961: 545. Holotype male; New Britain: Vunabakan, 10 km e Keravat (BPBM).

Material studied. New Britain; only the holotype was seen.

Diagnosis. As discussed under *cervix* and *ora*, *parva* is another of the species with a wide, broadly flattened frontal projection. *L. parva* can be distinguished from these species by the arched medial vein, scape 3× as long as broad, partial notauli, pronotum broader than long, and foretibia without a flange.

***Loboscelidia pasohana* Kimsey**

http://species-id.net/wiki/Loboscelidia_pasohana

Loboscelidia pasohana Kimsey 1988: 75. Holotype male; Malaysia: Negri Sembilan, Pasoh Forest Reserve (AEI).

Material studied. Malaysia: Negri Sembilan, Pasho Forest Reserve (1 male, AEI); Sarawak: Gunung Mulu NP (4 males, ROM, BME); Sabah: Mt. Kinabalu (2 males, BMNH); NP, Liwagu Rv. Tr. (1 male, CNC); Thailand: Petchaburi, Kaeng Krachan NP (4 males, QSBC); Chiang Mai: Doi Phahompok NP, Mae Fang Hotspring (1 male, QSBC); 12 specimens were seen including the type series.

Diagnosis. This a member of the large group of species with a rectangular frontal projection, submedially curved medial vein, complete scrobal sulcus and complete notauli. *L. pasohana* can be distinguished from the rest by the following combination of features: Rs nearly as long as R, cu-a half as long as R, flagellomeres I and II less than twice as long as broad, and fore, mid and hindtibial flanges 1.3–1.7× as wide as tubular part of respective tibiae.

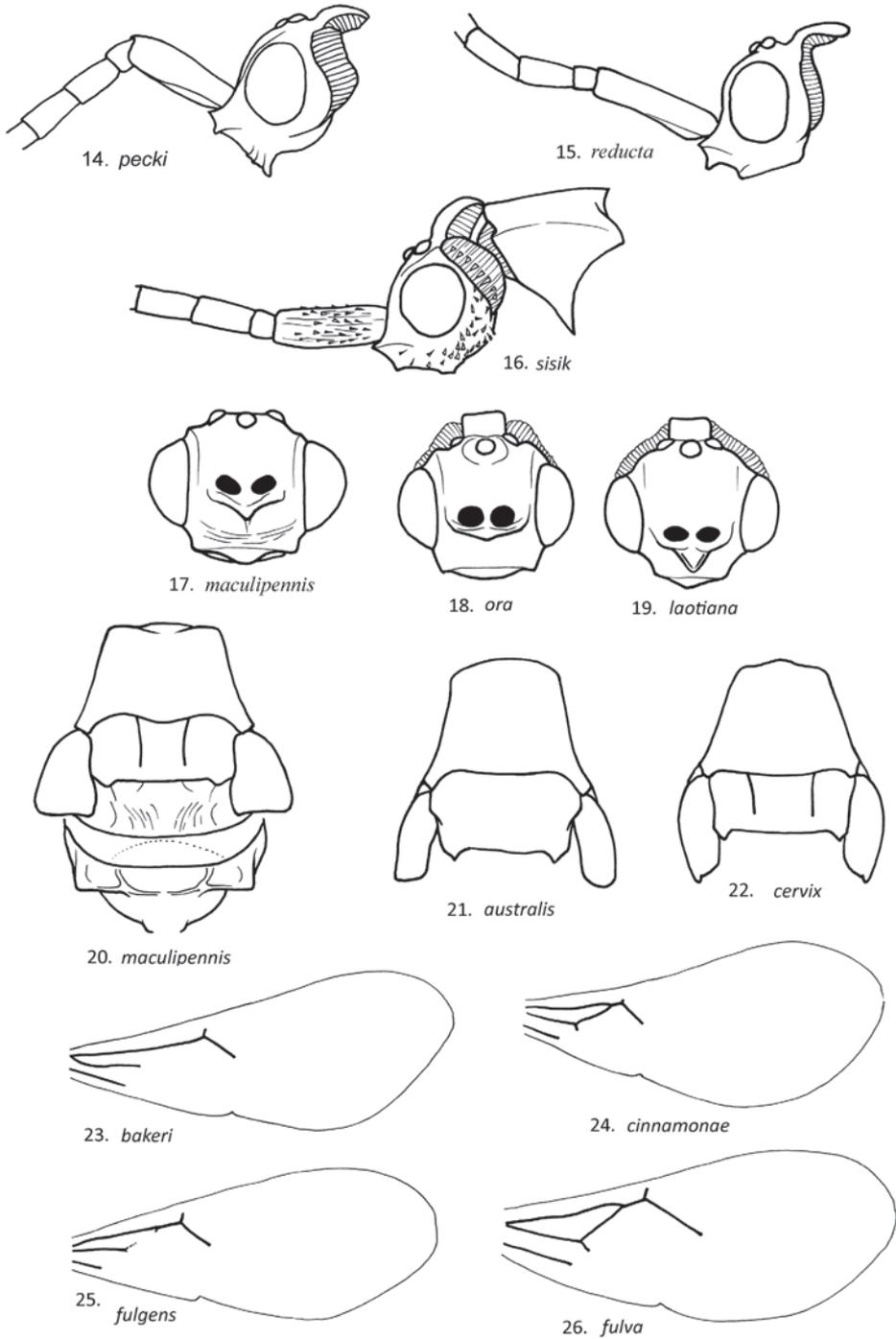
***Loboscelidia pecki* sp. n.**

urn:lsid:zoobank.org:act:1E7C3500-EE85-481C-AFA6-1DCB27E97A33

http://species-id.net/wiki/Loboscelidia_pecki

Figures 2, 14, 33

Type material. Holotype male: Viet Nam: Tuyen Quang Prov., 360 m, Na Hang Reserve, 16–20 May 1997, FIT, S. B. Peck, 97-10 (CNC).



Figures 14–26. Lateral view of male *Loboscelidia* head, with basal antennal segments. **17–19.** Front view of face with antennae removed **20** Dorsal view of thorax, with wings removed **21, 22** Dorsal view of pronotum scutum and tegulae **23–26** Forewings.

Diagnosis. This species is characterized by the absence of the cu-a vein and having a submedially curved medial vein, characters shared with *cinnamonea*. It can be distinguished from *cinnamonea* by Rs 3× as long or longer than R, scape 3× or shorter as long as broad, scrobal sulcus present and the fore and midtibiae without flanges.

Male description. Body (Fig. 2) length 2 mm; forewing length 2.5 mm. Head: length 2× height in side view (Fig. 14); eye asetose; frontal projection rectangular in front view; frons smooth, not microstriate; vertex without transverse fovea, posterior expansion strongly curved in profile; frons with ridge extending from vertex along inner eye margin; gena without scale-like setae; scape striate, length 2.9× breadth; flagellomere I length 2.2× breadth; flagellomere II length 2× breadth; flagellomere XI length 4× breadth. Mesosoma: pronotal length 0.9× breadth, with lateral fold separating dorsal from lateral surface, about as wide as head in dorsal view; scutum with notauli reaching posterior margin; scutellum with fine dense striae laterally; metanotum with three medial ridges enclosing roughened medial area, smooth laterally, 0.4–0.5× as long as scutellum; mesopleuron with scrobal sulcus; propodeum without transverse dorsal carina; legs (Fig. 2) smooth, polished; forefemoral flange 0.6 × femur length, flange maximum width 0.8× width of tubular part of femur; foretibial flange 0.8× tibia length, flange maximum width 0.7 × width of tubular part of tibia; midfemoral flange 0.7× femur length, flange maximum width 0.7× width of tubular part of femur; midtibial flange 0.9× femur length, flange maximum width 0.7× width of tubular part of tibia; hindfemoral flange 0.8× femur length, flange maximum width 0.7× width of tubular part of femur; hindtibial flange equal to femur length, flange maximum width 1.3× width of tubular part of tibia; hindtibia with two longitudinal carinae on posterior margin; hindcoxa without longitudinal carina on inner medial surface; forewing (Fig. 33) R1 length as long as R; cu-a length absent; Rs length 3.2× R length; Cu+M length 0.8× A length; medial vein present, submedially curved. Color: Body dark brown; wing membrane brown-tinted, paler along vein remnants, veins brown.

Etymology. The species is named after the collector, Stuart Peck.

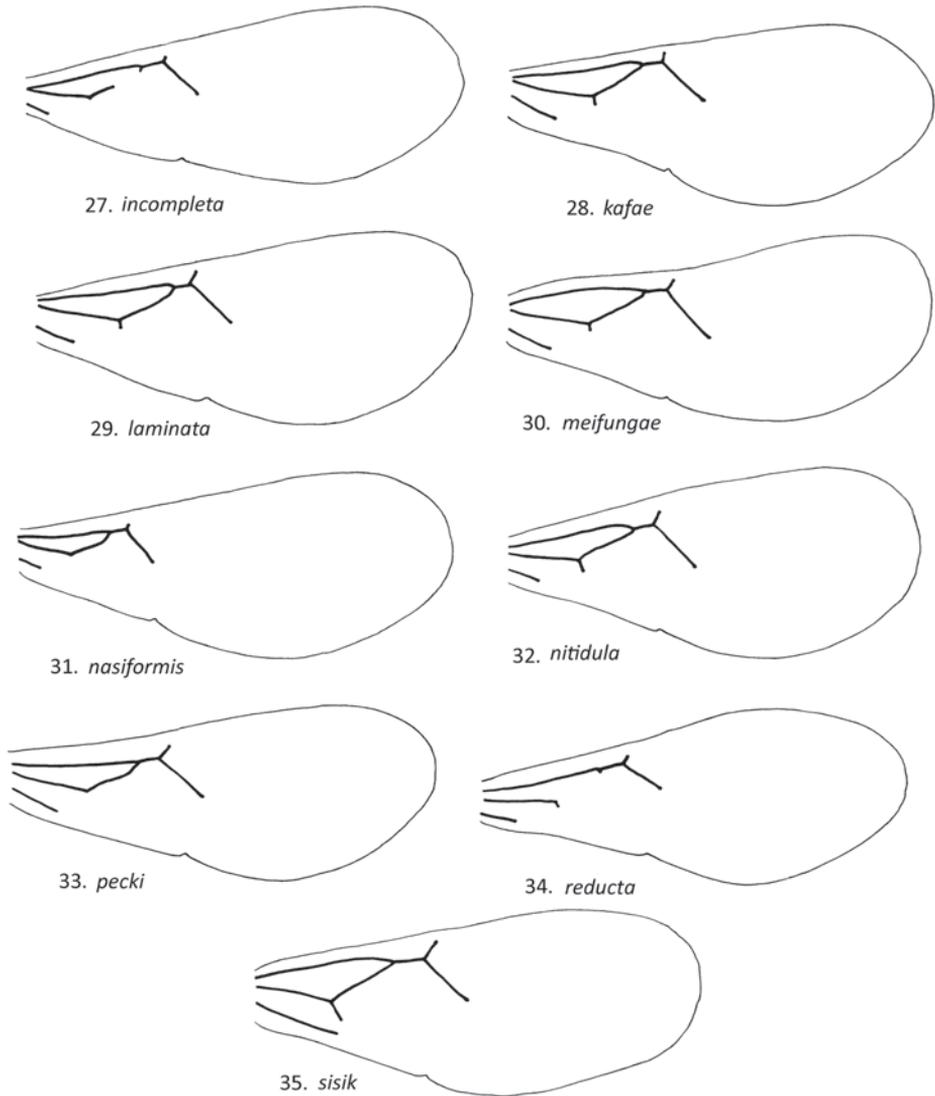
Loboscelidia philippinensis Fouts

http://species-id.net/wiki/Loboscelidia_philippinensis

Loboscelidia philippinensis Fouts, 1922: 623. Syntype males (not females); Philippines: Mindanao, Iligan (USNM).

Material studied. Philippines: Mindanao (3 males, USNM, BME); the 2 syntypes were also seen.

Diagnosis. *L. philippinensis* is one of the group of species characterized by having a submedially curved medial vein, rectangular frontal projection, no scrobal sulcus, and cu-a vein present. It can be distinguished from the rest of the group by the short, broad head in side view (1.2–1.4× as long as high), flagellomere I is more than twice as long as broad and longer than flagellomere II, partial notauli, metanotum half as long or longer than scutellum, A shorter than Cu+M, and hindtibial flange as long as tibia and twice as wide as tubular part of tibia.



Figures 27–35. Male *Loboscelidia* forewings.

***Loboscelidia reducta* Maa & Yoshimoto**

http://species-id.net/wiki/Loboscelidia_reducta

Figures 15, 34, 45

Loboscelidia reducta Maa and Yoshimoto 1961: 537. Holotype male; Viet Nam: Dai Lanh, n Nha Trang (BPBM).

Material studied. Dai Lanh, Nha Trang (1 male, BPBM); Thailand: Loei: Phu Kra-dueng NP (3 males, QSBC, BME); Phetchabun: Nam Nao NP (4 males, QSBC,

BME); Prachuab Khiri Khan: Khao Sam Roi Yot NP, Laem Sala Beach (2 males, QSBC); Khonkaen: Nam Pong NP (1 male, QSBC); Sakon Nakon, Phu Phan NP (2 males, QSBC, BME), Mae Hong Son: Namtok Mae Surin NP (3 males, QSBC, BME); Chiang Mai: Huai Nam Dang NP (1 male, BME); Kanchanaburi: Khuean Srinagarindra NP, Tha Thung-na/Chong Kraborg (1 male, QSBC); 22 specimens were seen including the holotype.

Diagnosis. *Loboscelidia reducta* is one of the species, including *incompleta*, *bakeri*, *fulgens* and *ganxiensis*, that have a rectangular frontal projection (Fig. 15), complete notauli, greatly reduced or absent cu-a vein and no medial vein (Fig. 34). It can be distinguished from them by the absence of fore, mid and hindtibial flanges (Fig. 45). This species bears a superficial resemblance to species of *Rhadinoscelidia*.

***Loboscelidia rufa* Fouts**

http://species-id.net/wiki/Loboscelidia_rufa

Loboscelidia rufa Fouts 1925: 517. Syntype males; Philippines: Sibuyan (USNM).

Material studied. Philippines: Misamis Or., Mt. Empagatao (1 male, BPBM); Sibuyan (2 males, USNM); Three specimens were seen including the syntypes.

Diagnosis. This is another species in the group with complete notauli, scrobal sulcus and rectangular frontal projection. *L. rufa* can be separated from other members of the group by the combination of the hindtibial flange nearly twice as wide as the tubular part of the respective tibiae (shared with *kafae*), flagellomeres I and II twice as long as broad or longer, and midtibial flange as long and as wide as the tubular part of the tibia.

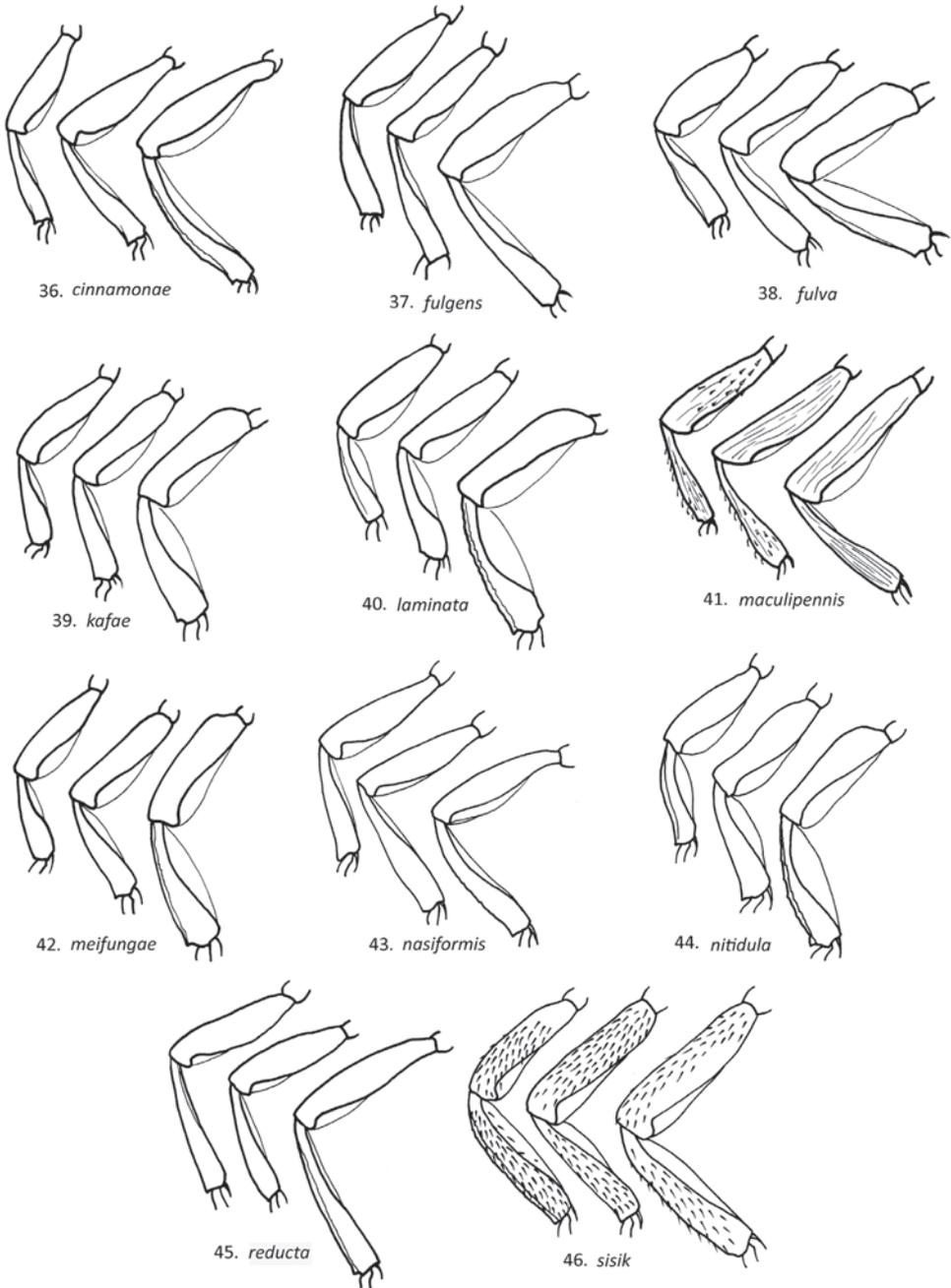
***Loboscelidia rufescens* Westwood**

http://species-id.net/wiki/Loboscelidia_rufescens

Loboscelidia rufescens Westwood 1874: 172. Syntype males (not females); "Sul" (Sula) Isl. (OUMNH).

Material studied. Indonesia: Sula Island, Malaysia: Sarawak; only the 2 syntype of *rufescens* Westwood were seen.

Diagnosis. *L. rufescens* is another of the species characterized by having a curved medial vein, rectangular frontal projection and no scrobal sulcus, as discussed under *philippinensis*. In this group *rufescens* differs from *nasiformis* and *cinnamonea* in having cu-a well-developed and half as long as R. It can be separated from *philippinensis*, and *levigata* by the combination of the scape and flagellomere XI less than twice as long as broad, flagellomeres I and II less than 1.7× as long as broad and hindtibial flange less than 0.7× as wide as tubular part of tibia.



Figures 36–46. Lateral view of male *Loboscelidia* fore (a), mid (b) and hind (c) legs.

***Loboscelidia sarawakensis* Kimsey**

http://species-id.net/wiki/Loboscelidia_sarawakensis

Loboscelidia sarawakensis Kimsey 1988: 75. Holotype male; Sarawak, 4th div., Gn. Lulu (BMNH).

Material studied. Malaysia: Sarawak: Gunung Mulu NP (3 males, ROM, BME); Mentawai Range (1 male, ROM); 4th div., Gunung Lulu (1 male, BMNH); 5 males were seen including the holotype.

Diagnosis. As discussed under *castanea* and *collaris*, *sarawakensis* is one of seven species with a triangular frontal projection, complete scrobal sulcus and complete notauli. *Loboscelidia sarawakensis* can be separated from other members of the group by the combination of scape less than 2.5× as long as broad, flagellomeres I and II twice as long as broad, flagellomere XI 3.3× as long as broad, metanotum 0.3× as long as scutellum, and fore, mid and hindtibial flanges as long as and at least as wide as tubular part of respective tibiae.

***Loboscelidia scutellata* Fouts**

http://species-id.net/wiki/Loboscelidia_scutellata

Loboscelidia scutellata Fouts 1922: 628. Syntype males (not females); Philippines: Mindanao, Basilan, Surigao (USNM).

Material studied. Only the 2 syntypes were seen.

Diagnosis. *L. scutellata* is another of the species with a complete scrobal sulcus and notauli, and a triangular frontal projection. Characteristics that separate this species from the rest include the scape striate and 2.5–2.7× as long as broad, flagellomeres I and II twice as long as broad, flagellomere XI 2.4× as long as broad, fore and midfemoral flanges less than half as long as femora, hindtibial flange as long as tibia and 0.6× as wide as tubular part of tibia.

***Loboscelidia sinensis* Kimsey**

http://species-id.net/wiki/Loboscelidia_sinensis

Loboscelidia sinensis Kimsey 1988: 76. Holotype male; China: Hainan Island, Tien Fong Mts. (ZFCL).

Material studied. Only the holotype was seen.

Diagnosis. This is the last of the species group discussed under *scutellata*. *Loboscelidia sinensis* can be distinguished from the rest by the short R1 vein (0.2× as long as R), A as long as Cu+M, scape twice as long as broad, flagellomeres I and II 2.5× as long as broad, and metanotum 0.3× as long as scutellum.

***Loboscelidia sisik* sp. n.**

urn:lsid:zoobank.org:act:10FCFF3D-8DE8-4511-8671-85B5934C1A1D

http://species-id.net/wiki/Loboscelidia_sisik

Figures 16, 35, 46

Type material. Holotype male: Borneo, W. Kalimantan, Gunung Palung Nat. Pk., 15 June–15 Aug. 1991, Darling, Ubaidillah (Rosichon), Sutrisno, 11S 910131 (MBBJ).

Paratype: 1 male, same data as holotype, 11S 910125 (BME).

Diagnosis. This species has a number of distinctive features that in combination will distinguish it from other *Loboscelidia*, including the scale-like setae on the head and legs and the scrobal sulcus reduced to a series of foveae.

Male description. Body length 3–4 mm; forewing length 3.5–4.5 mm. Head (Fig. 16): length 1.7× height in side view; eye asetose; frontal projection triangular in front view; frons smooth, not microstriate; vertex without transverse fovea, posterior expansion strongly convex in profile; frons with ridge extending from vertex along inner eye margin; gena without scale-like setae; scape smooth, not striate, length 1.8 breadth; flagellomere I length 1.8× breadth; flagellomere II length 2.8× breadth; flagellomere XI length 3.5× breadth. Mesosoma: pronotal length 0.8× breadth, with lateral carina, as wide as head in dorsal view; scutum with notauli reaching posterior margin; scutellum with scattered large punctures and fine dense striae posteriorly; metanotum medially finely, densely striate/punctate impunctate laterally. 0.3× as long as scutellum; mesopleuron with scrobal sulcus consisting of 3–4 large pits or foveae; propodeum without transverse dorsal carina; legs (Fig. 46) smooth, polished; forefemoral flange 0.7 × femur length, flange maximum width 0.6× width of tubular part of femur; foretibial flange 0.4× tibial length, flange maximum width 0.4 × width of tubular part of tibia; midfemoral flange 0.5× femur length, flange maximum width as wide as tubular part of femur; midtibial flange absent; hindfemoral flange 0.9× femur length, flange maximum width as wide as tubular part of femur; hindtibial flange 0.9× tibial length, flange maximum width 0.6× width of tubular part of tibia; hindtibia with two longitudinal carinae on posterior margin; hindcoxa with longitudinal carina on inner medial surface; forewing (Fig. 35) R1 length 0.5× R length; cu-a length 0.7× R length; Rs length 2.3× R length; Cu+M as long as A; medial vein submedially curved. Color: body dark brown; wing membrane brown-tinted, darker along vein remnants.

Female. Unknown.

Etymology. The species name is Indonesian for scale, referring to the scale-like setae on the head and legs (noun).

***Loboscelidia striolata* Yao, Liu & Xu**http://species-id.net/wiki/Loboscelidia_striolata

Loboscelidia striolata Yao, Liu & Xu, 2010: 528. Holotype male; China: Guangdong Prov., Nanking National Nature Reserve (SCAC).

Material studied. None.

Diagnosis. *L. striolata* may very well be part of the species group discussed under *castanea* and *collaris*, characterized by a triangular frontal projection, complete scrobal sulcus and complete notauli. However, the published description and images do not show the mesopleuron clearly enough to determine whether the scrobal sulcus is present or not. If it does have a scrobal sulcus then *striolata* may be synonymous with *sinensis*. Both *striolata* and *sinensis* share similar head, wing vein, flagellar and leg flange dimensions. They appear to differ in the dimensions of the scape, which 3× as long as broad in *striolata* and twice as long as broad in *sinensis* and possibly in the presence of the scrobal sulcus in *sinensis*.

Female. Unknown.

Acknowledgements

This study was made possible by the U.S. National Science Foundation TIGER project headed by Mike Sharkey, and the assistance of Andy Bennett, Chris Darling, Brian Harris, John Heraty, Steve Heydon, Suzanne Lewis, Norm Penny, and Doug Yanega, and other individuals who collected these odd wasps. Many thanks to Alex Wild for giving permission to use his photograph of a male *Loboscelidia* taken in Queensland, Australia.

References

- Ashmead AM (1902) Classification of the fossorial, predaceous and parasitic wasps, or the superfamily Vespoidea. *Canadian Entomologist* 34(8): 219–227. doi: 10.4039/Ent34219-9
- Cameron P (1910) Description of a new genus and species of *Oxyura* (Hymenoptera) from Kuching, Borneo. *Entomologist* 43: 21–23.
- Day MC (1978) The affinities of *Loboscelidia* Westwood. *Systematic Entomology* 4: 21–30. doi: 10.1111/j.1365-3113.1979.tb00608.x
- Evans HE (1964) A synopsis of the American Bethylidae (Hymenoptera: Aculeata). *Bulletin of the Museum of Comparative Zoology, Harvard University* 132: 1–222.
- Fouts RM (1922) New parasitic Hymenoptera from the Oriental islands. *The Philippine Journal of Science* 20: 619–637.
- Fouts RM (1925) Descriptions of three new Hymenoptera from the Philippine Islands. *The Philippine Journal of Science* 26: 515–519.
- Kieffer JJ (1914) Énumération des serphides (proctotrupides) des îles Philippines avec description de genres nouveaux et d'espèces nouvelles. *Philippine Journal of Science* 9: 285–311.
- Kieffer JJ (1916a) (October) Diapriidae. *Das Tierreich* 44: 1–627.
- Kieffer JJ (1916b) (November) Beiträge zur Kenntnis der Gattung *Loboscelidia* Westwood (Hymenoptera). *Philippine Journal of Science* 11: 399–401.
- Kimsey LS (1988) *Loboscelidiinae*, new species and a new genus from Malaysia (Hymenoptera: Chrysididae). *Psyche* 95(1/2): 67–79.
- Kimsey LS, Bohart RM (1991 (1990)) *The Chrysidid Wasps of the World*. Oxford University Press, 652 pp.

- Kojima JI, Ubaidillah R (2003) Two new species of the cryptic chrysidid parasitoid subfamily Loboscelidiinae: the second species in *Rhadinoscelidia* and the first *Loboscelidia* for the Indonesian fauna. *Entomological Science* 6: 199–207. doi: 10.1046/j.1343-8786.2003.00023.x
- Krombein KV (1983) Biosystematic studies of Ceylonese wasps: A monograph of the Amiseginae and Loboscelidiinae (Hymenoptera: Chrysididae). *Smithsonian Contributions to Zoology* 376: 1–79. doi: 10.5479/si.00810282.376
- Lin KS (1964) The Taiwanese Loboscelididae (Hymenoptera: Bethyloidea). *Quarterly Journal of the Taiwan Museum* 17(3/4): 237–245.
- Maa TC, Yoshimoto CM (1961) Loboscelididae, a new family of Hymenoptera. *Pacific Insects* 3: 523–548.
- Riek EF (1970) *The insects of Australia. Hymenoptera*. Melbourne University Press, Melbourne, 867–959.
- Terayama M, Muroi T, Yamagishi K (1998) A new record of the subfamily Loboscelidiinae (Hymenoptera, Chrysididae) from Japan. *The Japanese Journal of Systematic Entomology* 4(1): 31–32.
- Westwood JO (1874) *Thesaurus Entomologicus Oxoniensis*. Clarendon Press, Oxford, 205 pp.
- Xu ZF, Weng LQ, He JH (2006) A new species of the genus *Loboscelidia* (Insecta, Hymenoptera) from China. *Acta Zootaxonomia Sinica* 31(1): 208–210.
- Yao J, Jingxian L, Xu Z (2010) Two new species in the genus *Loboscelidia* from China. *Florida Entomologist* 93(4): 526–534. doi: 10.1653/024.093.0409