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A Review of the Australian Species of *Thevenetimyia* Bigot, 1875 (Bombyliidae, Bombyliinae, Eclimini), with Description of Four New Species and the Pupal Case of *T. longipalpis* (Hardy)

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Cover image—Comparison is an essential aspect of discovery in the natural sciences. The wings of four species of *bee fly* show the distinctive venation that helps identify these insects as belonging to the interesting group of flies—the family Bombyliidae. Slight differences in these four wings can be detected that further help to identify the species within the family. Ultimately though, discovery of new species among such flies is most readily achieved by comparing a suite of characters that include detailed comparative analysis of the form of the head, thorax, legs, abdomen and external reproductive organs.

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A Review of the Australian Species of *Thevenetimyia* Bigot, 1875 (Bombyliidae, Bombyliinae, Eclimini), with Description of Four New Species and the Pupal Case of *T. longipalpis* (Hardy)

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Abstract. All six known Australian species of the bee fly genus *Thevenetimyia* Bigot are reviewed, and the following four new species are described as new: *T. fergusoni* Li and Rodrigues, sp. nov., *T. infuscata* Li and Yeates, sp. nov., *T. major* Li and Yeates, sp. nov., and *T. nuri* Rodrigues and Lamas, sp. nov. The female of *T. australiensis*, the male of *T. tenta* and the pupal case of *T. longipalpis* are described and photographed for the first time. The pupal case of the North American species *T. lanigera* (Cresson) is redescribed and photographed herein. A key to the 10 Australian species of the genus is provided. Specimens of two species have been reared from decaying *Acacia* trunks, and one was associated with numerous Bostrychidae (Coleoptera), Buprestidae and Cerambycidae. It is likely that one of these families is the host. Based on these records, and those of Hull (1973), the genus parasitises beetle larvae feeding on dead or decaying wood in both Australia and the USA. Scanning electron micrographs (SEM) of the wing costa and scutum of *T. australiensis* shows the short, stout spines in rows on the male costa, which are very similar to the spines found in *Comptosia* species (Dodson & Yeates, 1990) as well as in species of *Lepidophora* and *Cyrtomyia* (Lamas & Rodrigues, 2013; Rodrigues & Lamas, 2013). Males of *Comptosia* and *Thevenetimyia* can be collected hilltopping, and it may be that *Thevenetimyia* males use the spines during aerial combat over territories as *Comptosia* males do.

Keywords. *Thevenetimyia*; new species; pupal case; Bombyliidae; Diptera; Australia

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Thevenetimyia are slender bee flies, belonging to the tribe Eclimini of the subfamily Bombyliinae (Diptera) (Yeates, 1994). The genus is characterized by a swollen clypeus, a vestigial and narrow alula, a narrowly open cell *cup* and the absence of transverse abdominal depressions (Hall, 1969). *Thevenetimyia* is the single most species-rich and widely distributed genus in the tribe, and is the only non-endemic Australian Bombyliinae genus. Hitherto, 45 species of *Thevenetimyia* have been described, including 26 species distributed exclusively in the Nearctic Region, two distributed in the Nearctic and Neotropical Regions, four exclusively in the Palaearctic Region, one exclusively in the Afrotropical Region, one distributed in both the Palaearctic and Afrotropical Regions and 10 exclusively from the Australian Region (including four new species), besides a species with unknown locality (Hasbenli, 2005; Dils, 2009; Evenhuis & Greathead, 2015; Maass *et al*., 2016; Evenhuis & Ichige, 2017).

The phylogenetic placement of the genus *Thevenetimyia* and the tribe Eclimini has a long and convoluted history and remains unresolved. *Thevenetimyia* was first erected by Jacques Bigot in 1875, and it was later placed in the Systropinae together with *Eclimus* and *Marmasoma* based on wing venation characters and the elongate, cylindrical abdomen (Hardy, 1921). Roberts (1929) placed the Australian *Thevenetimyia* (as *Eclimus*) and *Marmasoma* into Phthiriinae, according to Bezzi's key to the subfamilies (Bezzi, 1924). Hall (1969) first proposed the subfamily Ecliminae, including *Thevenetimyia*, *Eclimus* and *Marmasoma*. This arrangement was partly accepted by Hull (1973), he established a broad subfamily Bombyliinae, included Ecliminae as a tribe Eclimini, added the monotypic New Zealand genus *Tillyardomyia* but removed the monotypic Australian genus *Marmasoma* to the tribe Lepidophrini of the subfamily Toxophorinae. The subfamily status of Ecliminae was reinstated by Bowden (1985), and five genera were added by Evenhuis (1991) as follows: *Cyrtomyia*, *Lepidophora*, *Marmasoma*, *Palintonus* and *Arthroneura*. According to the morphological analysis by Yeates (1994), Eclimini is a tribe within Bombyliinae. However, this arragement was not followed by Evenhuis & Greathead (1999) who ranked the groups as a subfamily, but with similar scope to Evenhuis (1991). The most recent phylogenetic analysis of Bombyliidae (Trautwein *et al*., 2011) failed to support the monophyly of Eclimini *sensu* Evenhuis (1991). Thus, more studies are needed to establish the relationships of these genera. Here we follow Yeates (1994), and treat Eclimini as a tribe.

In contrast to the complicated history above, studies on the Australian members of this genus are limited and straightforward. The first Australian *Thevenetimyia* described was *Thevenetimyia longipalpis* (Hardy, 1921), in *Eclimus*. Later, Roberts (1929) described two new species under *Eclimus* in his revision of Australian Bombyliidae. In the world revision of the genus *Thevenetimyia*, Hall (1969) moved the three Australian *Eclimus* into *Thevenetimyia*, clarified the difference between the two genera, and described three new species from Australia.

Here we revised the Australian species of *Thevenetimyia*, with the descriptions of four new species, as well as the pupal case of *T. longipalpis* (Hardy) of this genus. A key to Australian species of *Thevenetimyia* is provided. We also identify generic characteristics of the pupae, and redescribed the pupal case of the North American species *T. lanigera* (Cresson). We draw attention to a morphological similarity between *Thevenetimyia* and *Comptosia* (Lomatiinae) that may provide evidence of male territorial behaviour.

Material and methods

Morphological terminology of adults follows Yeates (1994) and Cumming & Wood (2009), morphological terminology of the pupal case follows Dennis & Barnes (2013) and Dennis *et al*. (2008). The specimens were studied and illustrated using a Leica M80 microscope at CSIRO National Research Collections Australia and with a Zeiss DV8 stereomicroscope at Museu de Zoologia da Universidade de São Paulo. Genital preparations were made by putting the apical portion of the abdomen in KOH at 20°C for 12–24 hours, and then washing in distilled water. After examination in glycerin, the dissections were transferred to a 70% glycerine and 30% ethanol mixture and stored in microvials pinned below the specimen. Photographs were taken using a Leica M205A microscope at CSIRO National Research Collections Australia, except the female of *T. furvicostata* (Roberts, 1929) and the allotype of *T. nigrapicalis* (Roberts, 1929), which were photographed with a Zeiss DV20 stereomicroscope at Museu de Zoologia da Universidade de São Paulo. The photographs are stacked using Helicon Focus 5.3 (Kozub *et al*., 2000). Scanning electron micrographs (SEM) are taken using a TM3030Plus Tabletop Microscope (Hitachi High-Technologies Corporation, Japan).

A list of abbreviations is as follows:

AM	Australian Museum, Sydney, Australia
ANIC	Australian National Insect Collection, CSIRO National Research Collections Australia, Canberra, Australia
BPBM	Bernice Pauahi Bishop Museum, Honolulu, USA
CAS	California Academy of Sciences, San Francisco, USA
NMV	National Museum Victoria, Melbourne, Australia
NHMUK	The Natural History Museum, London, UK
QM	Queensland Museum, Brisbane, Australia

ACT	Australian Capital Territory
C.Qld	central Queensland
emg	emerged
NP	National Park
NSW	New South Wales
NT	Northern Territory
QLD	Queensland
SA	South Australia
SCQ	South Central Queensland
SEQ	southeast Queensland
VIC	Victoria
WA	Western Australia

Taxonomy

Family Bombyliidae

Subfamily Bombyliinae

Tribe Eclimini

Genus *Thevenetimyia* Bigot

Thevenemyia Bigot, 1875a: 196 [1875b: clxxiv]. Type species: *Thevenetimyia californica* Bigot, 1875, by monotypy. [Unavailable name; incorrect original spelling.]

Thevenetimyia Bigot, 1875a: 196 [1875b: clxxiv] (justified emendation of *Thevenetimyia* [by Bigot, 1892: 339]). Type species: *Thevenetimyia californica* Bigot, 1875, automatic.

Epibates Osten Sacken, 1877: 268. Type species: *Epibates funestus* Osten Sacken, 1877, by subsequent designation (Coquillett, 1910b: 538).

Diagnosis. Hall (1969) summarized as "Quite similar to *Eclimus* Loew. The chief differences lie in the slightly swollen occiput, the smooth integument, partial development of the alula, the narrowly open anal cell and the absence of transverse abdominal depressions in *Thevene[ti]myia*." Based on the Australian species, we further diagnose this genus as follows:

Mostly medium-sized, slender Bombyliinae. Male eyes mostly connected or narrowly separated (Figs 1e, 4e, 7e, 10e, 13e, 16e, 18e, 20d, 23e, 27e). Female frons about 2.5× as wide as ocellar tubercle (Figs 2d, 8c, 14c, 21c, 24c, 26e). Clypeus swollen. Flagellum one-segmented with apical style. Palp thin and long, extending beyond oral cavity, black with blackish brown hairs, two-segmented, with palpal pit. Mouthparts slender, labella thin and filiform (Figs 1f, 2e, 4f, 7f, 8d, 10f, 13f, 14d, 16f, 18f, 20e, 21d, 23f, 24d, 27f). Scutum and scutellum with admixed hairs and scales. Three to four notopleural setae present, postalar seta normally absent. Scutum sometimes with small short spines (Fig. 31d). Anepisternum, katepisternum, metepisternum, and mediotergite with hairs and/or setae, anepimeron, meron and laterotergite bare. Hind femora sometimes with short ventral bristles. Wing membrane various, from hyaline to mostly infuscated to having distinct dark marking on otherwise transparent wings. Female wing colour lighter in some species. Cell r_5 widely open; cell *br* much longer than cell *bm*; crossvein *m-m* long; cell *cup* narrowly open (Figs 1d, 2c, 4d, 7d, 8e, 10d, 13d, 16d, 18d, 19c, 21e, 23d, 26d, 27d). Male costa often with two rows of small spines (Fig. 31b), absent in females (Fig. 31a). Abdomen slender, tergites often with pale scales on posterior margin, apex tergites sometimes with dense long lateral hairs. Male epandrium wide and short, posterior margin slightly convex (Figs 3d, 5d, 9d, 11d, 15d, 17d, 22d, 25d, 28d). Hypandrium normally present. Gonocoxal apex slightly narrower than the base in dorsal view; gonocoxal apodeme strong and incurved; inner apex of gonocoxite rounded, elongate and broad; outer apex of gonocoxite normal length, rounded; gonostylus slender and pointed dorsally (Figs 3a,b; 5a,b; 9a,b; 11a,b; 15a,b; 17a,b; 22a,b; 25a,b; 28a,b). Female posterior margin of tergite 7 with slender dorsal median apodeme. Tergite 7 with ventral spines. Tergite 8 with a row of sparse hairs, acanthophorite spines present, lateral spines long, spines in middle short, apex of spines expanded. Furca connected at apex. Sperm pump strong and nearly as long as furca, not clothed in longitudinal muscle; distal spermathecal duct short but strong; spermatheca elongate, cylindrical (Figs 3g, 9g, 15g, 25g, 28g).

Distribution. Nearctic (Canada, Mexico, USA), Palaearctic (Algeria, Greece, Iran, Japan, Tunisia, Turkey), Afrotropical (Mauritania, Madagascar), Neotropical (Mexico [Oaxaca]) and Australian (all Australian states and territories except TAS).

Australian species. *Thevenetimyia australiensis* Hall, 1969; *Thevenetimyia fergusoni* Li and Rodrigues, sp. nov.; *Thevenetimyia furvicostata* (Roberts, 1929); *Thevenetimyia infuscata* Li and Yeates, sp. nov.; *Thevenetimyia longipalpis* (Hardy, 1921); *Thevenetimyia major* Li and Yeates, sp. nov.; *Thevenetimyia mimula* Hall, 1969; *Thevenetimyia nigrapicalis* (Roberts, 1929); *Thevenetimyia nuri* Rodrigues and Lamas, sp. nov.; *Thevenetimyia tenta* Hall, 1969.

Key to Australian species of *Thevenetimyia*

1 Wing hyaline, without clear wing marking (Figs 4d, 18d, 21e, 23d) 2

—— Wing with brown marking and/or fully infuscated (Figs 1d, 2c, 7d, 8e, 10d, 13d, 16d, 19c, 26d, 27d) 5

2 Body covered with dense long white hairs (Figs 4ab, 23ab) 3

—— Body with admixed white and black hairs (Figs 18ab, 21ab) 4

3 Male eye dichoptic (Fig. 4e); wing costa (Fig. 4d) and scutum without small spines; outer apex of gonocoxite rounded (Fig. 5b); epandrium short anteroventrally (Fig. 5e) .... *T. fergusoni* Li and Rodrigues, sp. nov.

—— Male eye near holoptic (Fig. 23e); wing costa (Fig. 23d) and scutum with small spines; outer apex of gonocoxite relatively sharp (Fig. 25b); epandrium slender anteroventrally (Fig. 25e) ..... *T. nuri* Rodrigues and Lamas, sp. nov.

4 Scutum with admixed white and black hairs; abdominal tergite 8 with dense long white hairs on lateral margin (Fig. 18b) ..... *T. mimula* Hall, 1969

—— Scutum without white hairs; abdominal tergite 8 with only black hairs (Fig. 21b) ..... *T. nigrapicalis* (Roberts, 1929) ♀

5 Wing membrane with large brown mark in centre and apical half, the mark extending from anterior margin to posterior margin, but wing apex hyaline (Figs 16d, 26d, 27d); scutum and scutellum with golden hairs 6

—— Wing membrane without brown mark on posterior half, at most infuscated (Figs 1d, 2c, 7d, 8e, 10d, 13d, 19c); scutum and scutellum mostly without golden hairs, if scutum and scutellum with golden hairs, then wing mark separated 7

6 Large-sized (body length over 16.0 mm); wing with large brown mark on middle area, cell *dm* fully dark brown, except apical half with hyaline area; vein R_4 arising far from base, 0.8 from crossvein *r-m* (Fig. 16d); hind femur with a row of short black bristles ..... *T. major* Li and Yeates, sp. nov.

—— Medium to small-sized (body length less than 15.0 mm); wing with large brown mark on apical half, cell *dm* dark brown on apex ⅓; vein R_4 arising near base, about 0.6 from crossvein *r-m* (Figs 26d, 27d); hind femur without bristles ..... *T. tenta* Hall, 1969

7 Wing mark along costa, anterior margin of wing all dark brown (Figs 7d, 8e, 10d) 8

—— Wing mark on apical half of costa, basal half clear (Figs 1d, 2c, 13d, 19c) 9

8 Wing membrane anterior ⅓ dark brown, and reminder hyaline, with distinct margin; male costa with two rows of small spines (Fig. 7d); scutum with two rows of distinct short, thick spines and some adjacent, separate spines; ejaculatory apodeme relatively small (Figs 9a, b) ..... *T. furvicostata* (Roberts, 1929)

—— Wing membrane mostly infuscated, anterior darker than posterior, without distinct margin; male costa without small spines (Fig. 10d); scutum with two rows of small short spines and few adjacent, separate spines; ejaculatory apodeme large (Figs 11a, b) ..... *T. infuscata* Li and Yeates, sp. nov.

9 Two separate wing marks present; base of cell r_1, apical half of cell *dm* and apex of cell r_{2+3} dark brown (Fig. 13d); scutum and scutellum with golden hairs ..... *T. longipalpis* (Hardy, 1921)

—— Only one wing mark present; base of cell r_1, apical half of cell *dm* and apex of cell r_{2+3} at most infuscated, without dark mark (Figs 1d, 2c, 19c); scutum and scutellum without golden hairs 10

10 Apex of cell r_1 dark brown (Figs 1d, 2c); scutum with two rows of small short spines on anterior half; abdominal 6 to 8 without dense long hairs (Figs 1b, 2b); dorsal bridge with long lateral hollow (Fig. 3c) ..... *T. australiensis* Hall, 1969

—— Apex of cell r_1 hyaline (Fig. 19c); scutum with two rows of distinct short, thick spines on pruinescence stripes, three uneven rows and some adjacent, separate spines; abdominal tergites 6 and 7 with lateral dense long black hairs, tergite 8 with lateral dense long white hairs (Figs 20a, b); dorsal bridge without lateral hollow (Fig. 22c) ..... *T. nigrapicalis* (Roberts, 1929) ♂

Thevenetimyia australiensis Hall, 1969

Figs 1–3, 31

Thevenetimyia australiensis Hall, 1969: 25. Type-locality: New South Wales, Australia; holotype, ANIC.

Types and other specimens examined. Holotype ♂, Australia, NSW, Hanging Rock, 20 Dec 1959, E. F. Riek, ANIC 29-009849 (Fig. 1). **NSW**, 1♀, Mt Kaputar NP, 1370 m, 11 Jan 1978, G. Daniels, AM K.308712; 1♀, Mt Kaputar NP, 1370 m, 12 Jan 1978, G. Daniels, AM K.308713. **QLD**, 1♂ 1♀, Brisbane, Mount Coot-tha, 27°29'S 152°57'E, 20 Sep 1997, C. Lambkin, ANIC 29-038898, 29-038899; 1♂, Brisbane, Mount Coot-tha, 27°29'S 152°57'E, 8 Sep 1997, C. Lambkin, ANIC 29-038900; 2♂♂ 1♀, Brisbane, Mt Coot-tha, hill-topping, 27°29'S 152°57'E, 170 m, 8 Sep 1997, J. & A. Skevington, ANIC 29-038901; 1♂, Glass House Mts, 26°54'S 152°57'E, 6 Oct 1991, G. R. Clemson, AM K.364585. **VIC**, 1♂, 9 km N Bruthen, 37°38'S 147°53'E, 8 Feb 1992 G. Daniels & C. J. Burwell, AM K.364584.

Diagnosis. Medium-sized *Thevenetimyia*, wing membrane mostly infuscated except basal area hyaline, the area around crossvein *r-m* area and the anterior-distal area dark brown; costa with two rows of small spines; scutum with two rows of small short spines on anterior half; posterior margin of abdominal tergites 1 to 4 and posterior half of abdominal tergite 5 with long white scales.

Redescription. **Male**. Body length 9.1–14.0 mm, wing length 7.4–11.9 mm.

Head. Head about 1.6× wider than long, mostly blackish with thick pale pruinescence and covered in admixed white to blackish brown hairs. Eye narrowly separated, by 0.1× width of ocellus. Frons slender and long, upper triangular section small, lower triangular section pale, middle narrow part about 0.6× length of frons. Ocellar tubercle slightly raised, black to dark brown with grey pruinescence, with blackish brown hairs. Face with thick pale pruinescence and with few black hairs on laterodorsal area, parafacial area dark yellow and bare. Gena with thick pale pruinescence and long white hairs. Clypeus swollen, with thin pale pruinescence and long white hairs. Occiput with long white hairs except dorsal margin admixed with brown to black hairs. Posterior eye margin slightly sinuous. Antennae blackish brown; scape and pedicel with thin pale pruinescence and brown hairs, ventral hairs of scape longer, hairs on pedicel short. Scape 2.7× as long as wide, and 2.4× as long as pedicel, uniform from base to apex. Pedicel 1.1× as long as wide. Flagellum 5.3× as long as wide, 1.3× as long as scape+pedicel (1.8× as long as scape), conical and slightly laterally compressed, one-segmented with apical style (Fig. 1c). Palp thin and long, extending beyond oral cavity, black with blackish brown hairs, two-segmented, with palpal pit. Mouthparts slender, 2.6× as long as eye length (1.6× as long as head length), labella thin and filiform (Fig. 1f).

Thorax. Integumental colour of scutum and scutellum mostly black with sparse grey pruinescence, pruinescence more dense around margins. Scutum and scutellum with admixed white scales and pale yellow and brown hairs. Four notopleural setae present. Postalar callus and posterior margin of scutellum with strong hairs. Notopleural setae and strong hairs on postalar callus and scutellum pale yellow. Scutum with two rows of small short spines on anterior half. Pleura and coxae black with thick grey pruinescence, anepisternum with admixed white and pale yellow hairs, katepisternum with few long white scales on dorsal and posteroventral area, metepisternum with dense long white scales, and mediotergite with dense white hairs and setae, anepimeron, meron and laterotergite bare.

Legs. Legs mostly dark yellow, except femora with black apex, tarsi blackish brown. Femora and tibiae mostly covered with brownish-yellow scales. Posterior face of fore and mid femora covered with white scales, and with fine yellow hairs on ventral and posterior face. Hind femora covered with few admixed white and black scales. Other hairs and bristles on legs short and blackish brown to black. Fore tibia 2.0× longer than fore basitarsus, mid tibia 2.0× longer than mid basitarsus, hind tibia 1.8× longer than hind basitarsus.

Wings. Wing membrane mostly infuscated except base area hyaline, the area around crossvein *r-m* and anterior-distal area dark brown. Cell r_5 widely open; cell *br* much longer than cell *bm*, crossvein *r-m* arising a little over half way from the base of cell *dm*; crossvein *m-m* long, and 2.0× as long as crossvein *r-m*; cell *cup* open (Fig. 1d). Costa with two rows of short, thick spines. Haltere stem yellow, knob blackish brown.

Abdomen. Integumental colour of tergites black with thin pale pruinescence. Tergites covered with admixed white hairs and long black scales, posterior margin of tergites 1 to 4 and posterior half of tergite 5 with long white scales. Sternites with dark brown integumental colour except posterior margins yellow, with thick grey pruinescence and white hairs. Genitalia. Epandrium wide and short, posterior margin slightly convex (Fig. 3d). Hypandrium present. Gonocoxal apex slightly narrower than the base in dorsal view, ejaculatory apodeme relatively small (Figs 3a, b); gonocoxal apodeme strong and incurved; lateral ejaculatory process strong, 1.7× longer than wide, apex expanded; inner apex of gonocoxite rounded, elongate and broad; outer apex of gonocoxite rounded; dorsal bridge with long lateral hollow (Fig. 3c); gonostylus slender and pointed dorsally, 3.7× longer than wide.

Female. Body length 9.9–10.0 mm, wing length 8.3–9.1 mm. Very similar to male, except frons black with thick pale pruinescence, 2.5× as wide as ocellar tubercle, frons with short black hairs on dorsal half (Fig. 2d). Wing membrane infuscated lighter than male, the crossvein *r-m* area and anterior margin slightly darker. Costa without small spines (Fig. 2c, 31a). Posterior margin of tergite 7 with slender dorsal median apodeme. Tergite 7 with ventral spines. Tergite 8 with a row of sparse hairs, 9 acanthophorite spines present, lateral spines long, spines in middle short, apex of spines expanded. Furca broad and connected at apex. Sperm pump strong and nearly as long as furca, not clothed in longitudinal muscle or lateral papillae; distal spermathecal duct short but strong; spermatheca elongate, cylindrical, base slightly swollen (Fig. 3g).

Remarks. *Thevenetimyia australiensis* Hall, 1969 is redescribed, the female described for the first time, and images of external and internal characters provided.

Distribution. NSW, QLD, VIC.

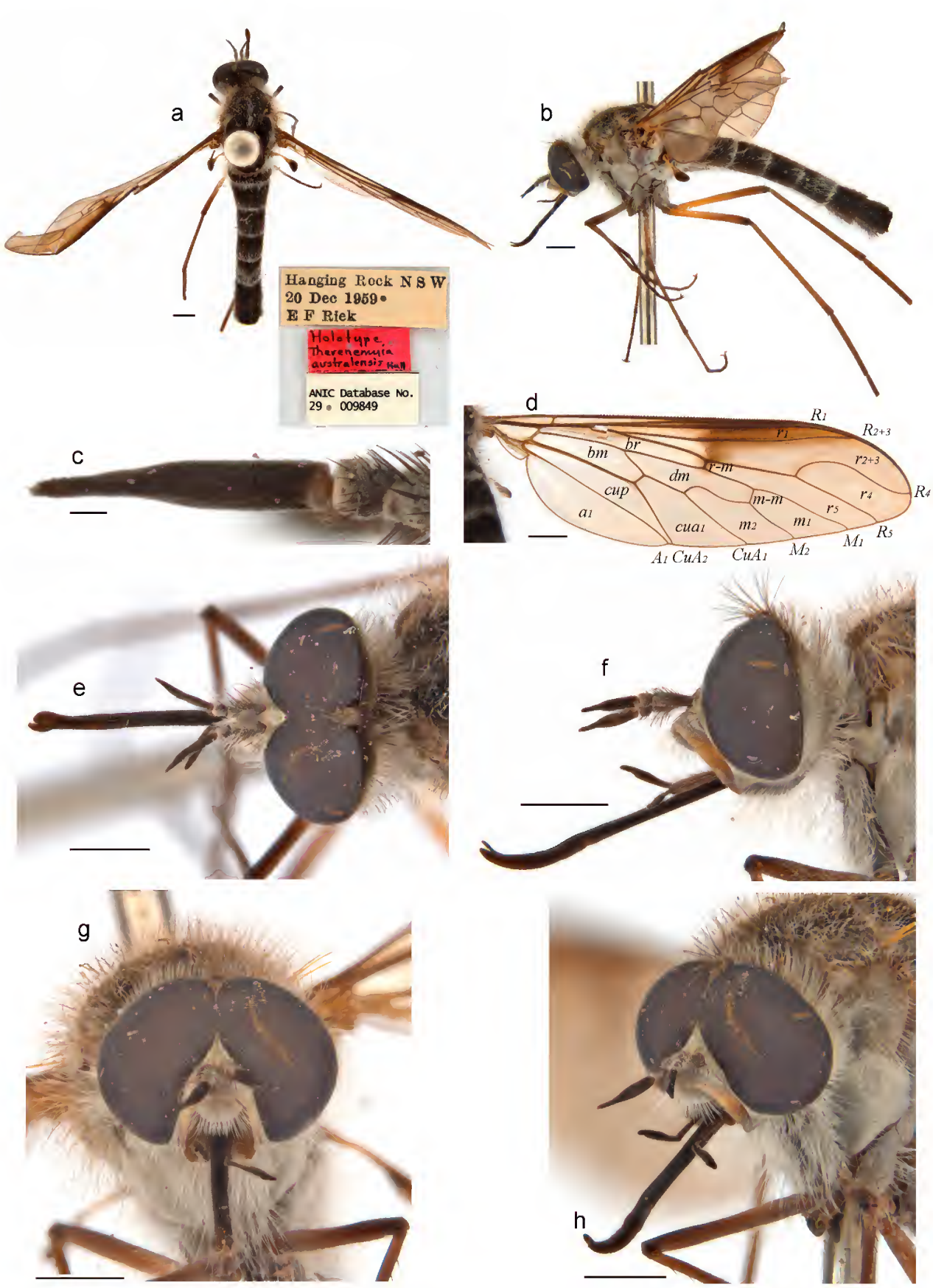

Figure 1. *Thevenetimyia australiensis* Hall, 1969 ♂ (holotype): *(a)* dorsal; *(b)* lateral; *(c)* flagellum; *(d)* wing; *(e)* head, dorsal; *(f)* head, lateral; *(g)* head, frontal; *(h)* head, profile. Scale bars = 1 mm (a, b, d–h); = 0.1 mm (c).

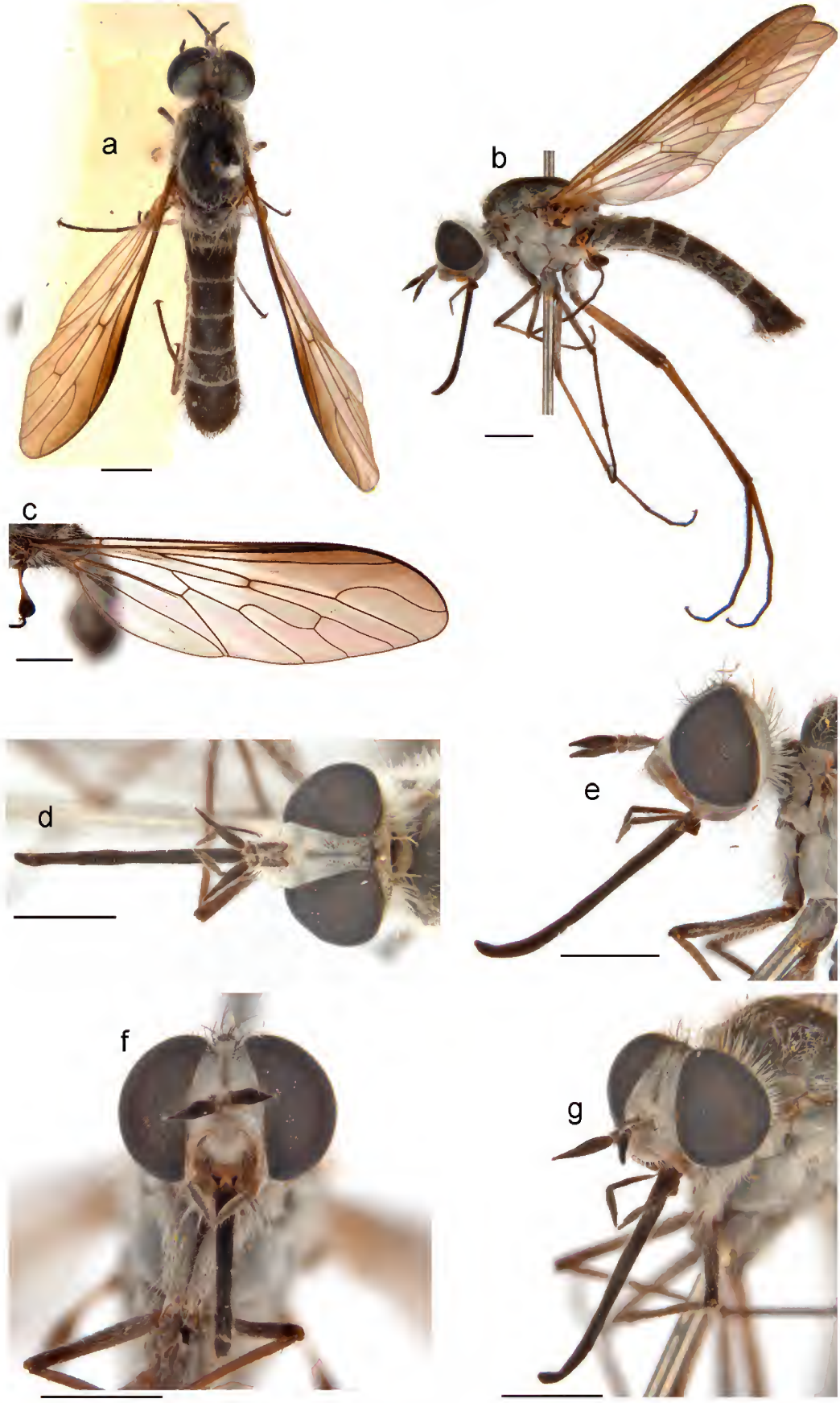

Figure 2. *Thevenetimyia australiensis* Hall, 1969 ♀: *(a)* dorsal; *(b)* lateral; *(c)* wing; *(d)* head, dorsal; *(e)* head, lateral; *(f)* head, frontal; *(g)* head, profile. Scale bars = 1 mm.

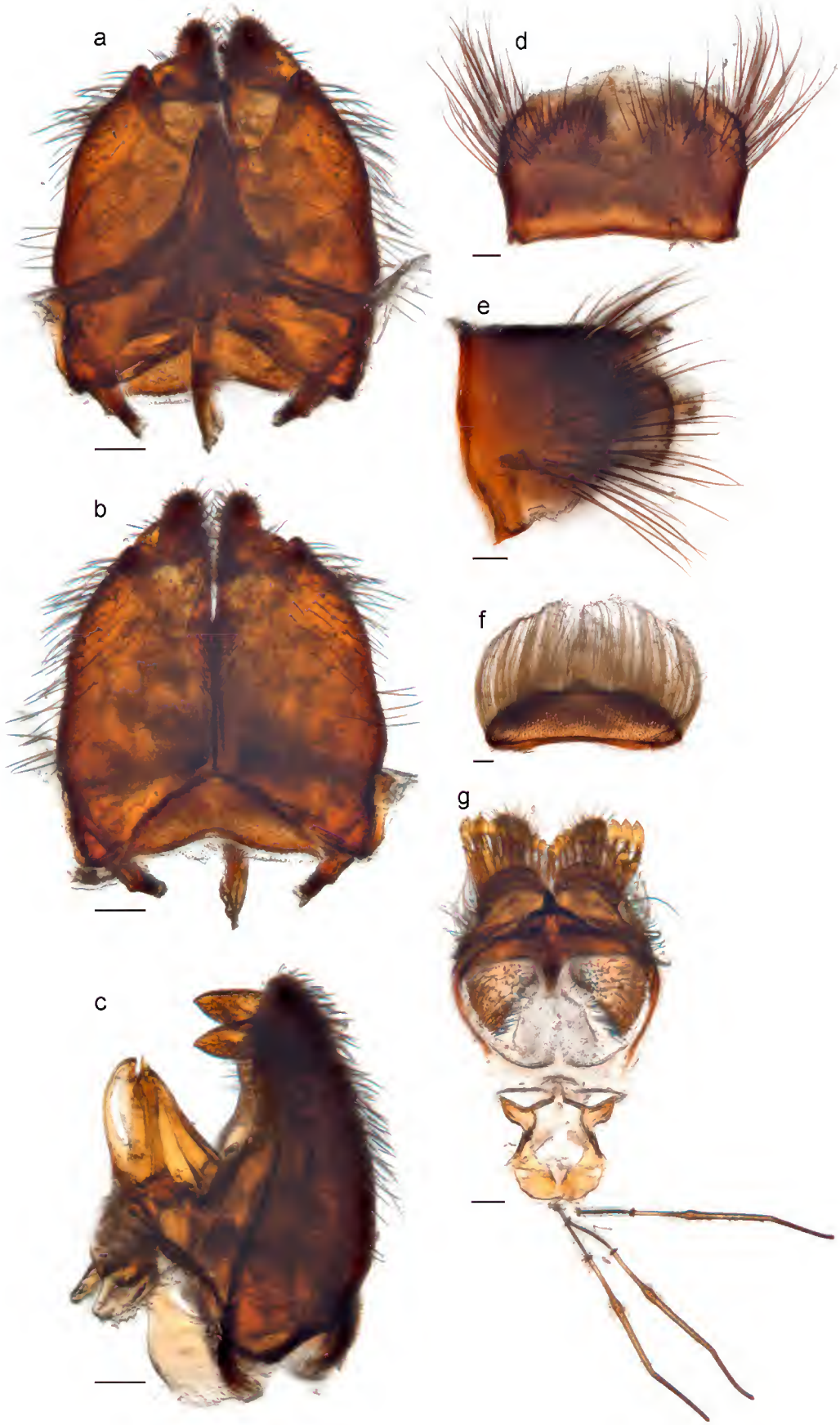

Figure 3. *Thevenetimyia australiensis* Hall, 1969 Genitalia (a–e (♂); f, g (♀)): *(a)* genital capsule, dorsal; *(b)* genital capsule, ventral; *(c)* genital capsule, lateral; *(d)* epandrium, dorsal; *(e)* epandrium, lateral; *(f)* sternite 8, ventral; *(g)* genitalia and spermathecae. Scale bars = 0.1 mm.

Thevenetimyia fergusoni Li and Rodrigues, sp. nov.

Figs 4–5

Holotype ♂, Australia, QLD, Mt Marlay summit, Stanthorpe, 28°39'S 151°57'E, 22 Oct 2005, D. K. Yeates, ANIC 29-038902. **Paratypes** 2♂♂, same data as holotype, ANIC 29-038903–904; 9♂♂ ACT, Mt Ainslie summit, 6 Dec 2005, D. J. Ferguson, ANIC 29-038905–29-038913; 1♂, ACT, Mt Ainslie summit, 14 Dec 2005, D. J. Ferguson, ANIC 29-038914; 1♂, ACT, Mt Ainslie, 35°16'S 149°10'E, 1 Jan 1994, D. K. Yeates, QM T244601; 1♂, ACT, Mt Ainslie, 35°16'S 149°10'E, 28 Nov 1996, C. J. Burwell, QM T244602; 1♂, Mt Tinbeerwah nr Cooroy, 2 Oct 1982, R. Eastwood, AM K.308698; 1♂, Mt Tinbeerwah nr Cooroy, 28 Nov 1984, R. Eastwood, AM K.308699; 2♂♂, Pomona, 14 Oct 1978, R. Eastwood, AM K.308700, K.308701; 1♂, QLD, Flinders Peak, via Peak Crossing, SEQ, 27°49'S 152°49'E, 13 Sep 1995, C. J. Burwell, D. K. Yeates, QM T244603.

Other specimens examined. Australia, **NSW**, 4♂♂, Goondera Ridge, Royal NP, 18 Nov 1978, G. and A. Daniels, AM K.308714–K.308717; 1♂, 24 km W of South Grafton, 29°37'S 152°44'E, 26 Sep 1986, R. Eastwood, AM K.308702. **ACT**, 2♂♂, Mt Ainslie, 35°16'S 149°10'E, 1 Jan 1994, D. K. Yeates, QM; 2♂♂, Mt Ainslie, 35°16'S 149°10'E, 28 Nov 1996, C. J. Burwell, QM. **QLD**, 2♂♂, Flinders Peak, via Peak Crossing, SEQ, 27°49'S 152°49'E, 13 Sep 1995, C. J. Burwell, D. K. Yeates, QM.

Diagnosis. Medium-sized *Thevenetimyia*, body covered with dense long white hairs; male eye dichoptic; wing membrane hyaline, only slightly infuscated around crossvein *r-m*; costa without small spines; abdominal tergites 6 to 8 admixed with dense long black hairs ventrally.

Description. **Male**. Body length 8.9–12.2 mm, wing length 7.4–10.1 mm.

Head. Head about 1.5× wider than long, mostly blackish with thick pale pruinescence and covered in white and black hairs. Eye widely separated, by 0.3× width of ocellar tubercle. Frons relatively wide and short, 2.5× length of ocellar tubercle, upper half with thin pruinescence, lower triangular section with thick pale pruinescence. Ocellar tubercle slightly raised, black with grey pruinescence, with black hairs. Face with thick pale pruinescence, with white hairs on laterodorsal area. Gena with thick pale pruinescence and long white hairs. Clypeus swollen, with thick pale pruinescence and long white hairs. Occiput with long white hairs except dorsal margin admixed with black hairs. Posterior eye margin slightly sinuous. Antennae blackish brown; scape and pedicel with thick pale pruinescence and black hairs, except ventral half of scape with long white hairs. Scape 3.7× as long as wide, and 3.1× as long as pedicel, uniform from base to apex. Pedicel 1.2× as long as wide. Flagellum 5.5× as long as wide, 1.1× as long as scape+pedicel (1.4× as long as scape), conical and slightly laterally compressed, one-segmented with apical style (Fig. 4c). Palp thin and long, extending beyond oral cavity, black with blackish brown hairs, two-segmented, with palpal pit. Mouthparts slender, 3.7× as long as eye length (2.2× as long as head length), labella thin and filiform (Fig. 4f).

Thorax. Integumental colour of scutum and scutellum mostly black with thick pale pruinescence, pruinescence more dense around margins. Scutum and scutellum covered with long white hairs. Three dark brown notopleural setae present, postalar setae absent. Pleura and coxae black with thick pale pruinescence, anepisternum, katepisternum, katepimeron, metepisternum and mediotergite with dense long white hairs, anepimeron, meron and laterotergite bare.

Legs. Legs mostly blackish brown. Femora covered with white scales and long white hairs on ventral half, tibia most with blackish brown scales but admixed white scales on posterior face. Hind femur with a row of short ventral bristles. Other hairs and bristles on legs short and blackish brown to black. Fore tibia 2.1× longer than fore basitarsus, mid tibia 2.1× longer than mid basitarsus; hind tibia 2.0× longer than hind basitarsus.

Wings. Wing membrane hyaline, only slightly infuscated on area around crossvein *r-m*. Cell r_5 widely open; cell *br* much longer than cell *bm*, crossvein *r-m* arising a little over half way from the base of cell *dm*; crossvein *m-m* long, and 1.0× as long as crossvein *r-m*; cell *cup* open (Fig. 4d). Costa without small spines. Haltere stem brown, knob blackish brown.

Abdomen. Integumental colour of tergites black with thick pale pruinescence, laterally covered with long white hairs and medial area with white scales. Tergites 2 to 4 white scales admixed with black scales on middle area and more on anterior than posterior regions of each tergite; tergites 5 to 8 white scales admixed with black hairs on middle area; tergites 6 to 8 white scales admixed with dense long black hairs lateroventrally. Sternites with dark brown integumental colour except posterior margins yellow, with thick grey pruinescence and white hairs.

Genitalia. Epandrium wide and short, posterior margin slightly convex (Fig. 5d). Hypandrium present. Gonocoxal apex slightly narrower than the base in dorsal view, ejaculatory apodeme relatively small (Figs 5a, b); gonocoxal apodeme strong and incurved; lateral ejaculatory process strong, 2.3× longer than wide, apex expanded; inner apex of gonocoxite rounded, elongate and broad; outer apex of gonocoxite rounded; dorsal bridge without lateral hollow (Fig. 5c); gonostylus slender and pointed dorsally, 4.0× longer than wide.

Female. Unknown.

Remarks. *Thevenetimyia fergusoni* Li and Rodrigues, sp. nov. is similar to *Thevenetimyia mimula* Hall, 1969, but differs as follows: body covered with dense long white hairs; male eye dichoptic; wing slightly infuscated around crossvein *r-m*; costa and scutum without small spines; postalar seta absent.

Distribution. ACT, NSW, QLD.

Etymology. This species is named in honor of David Ferguson for his important contributions to Australian dipterology.

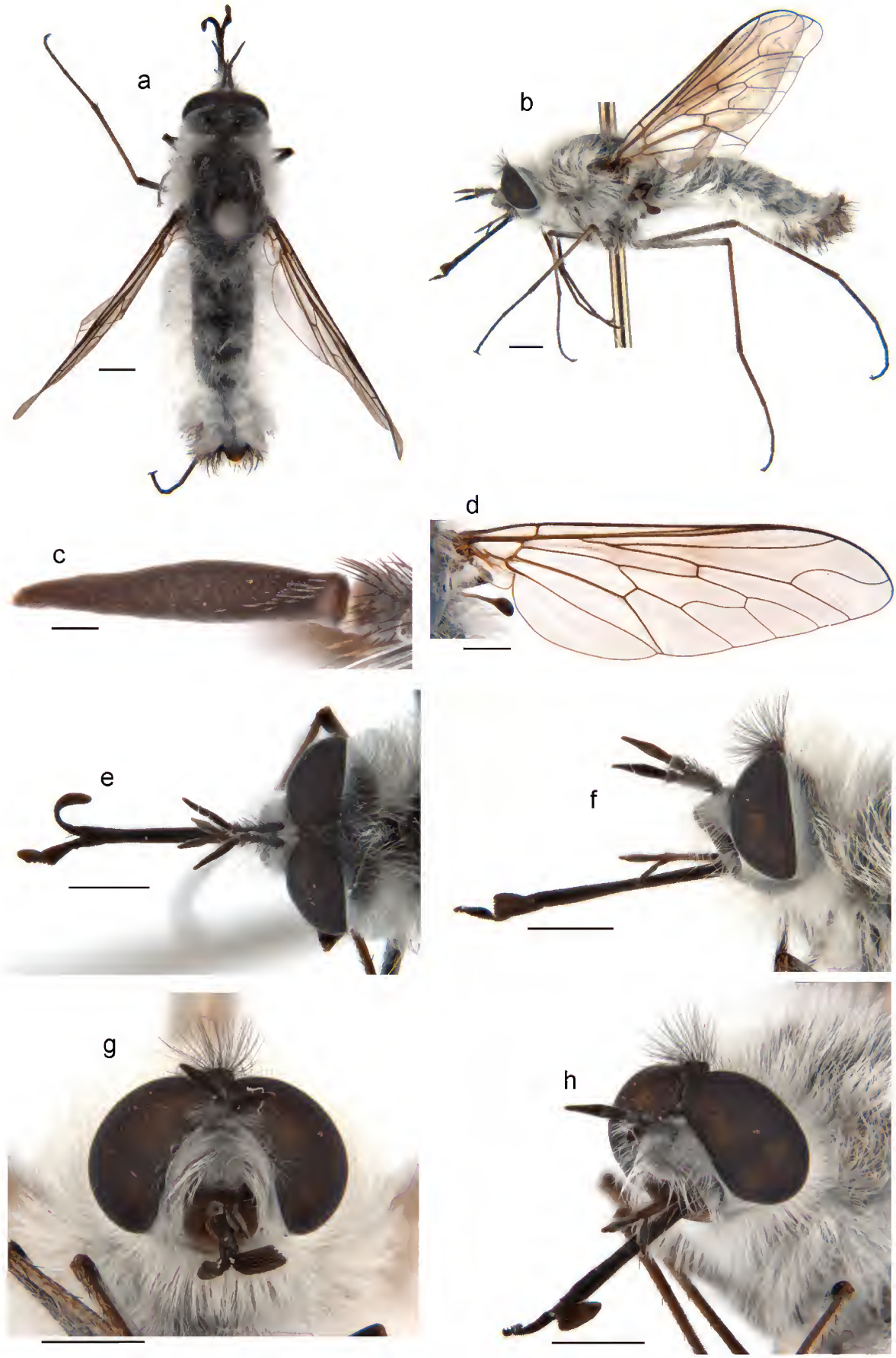

Figure 4. *Thevenetimyia fergusoni* Li and Rodrigues, sp. nov. ♂: *(a)* dorsal; *(b)* lateral; *(c)* flagellum; *(d)* wing; *(e)* head, dorsal; *(f)* head, lateral; *(g)* head, frontal; *(h)* head, profile. Scale bars = 1 mm (a, b, d–h); = 0.1 mm (c).

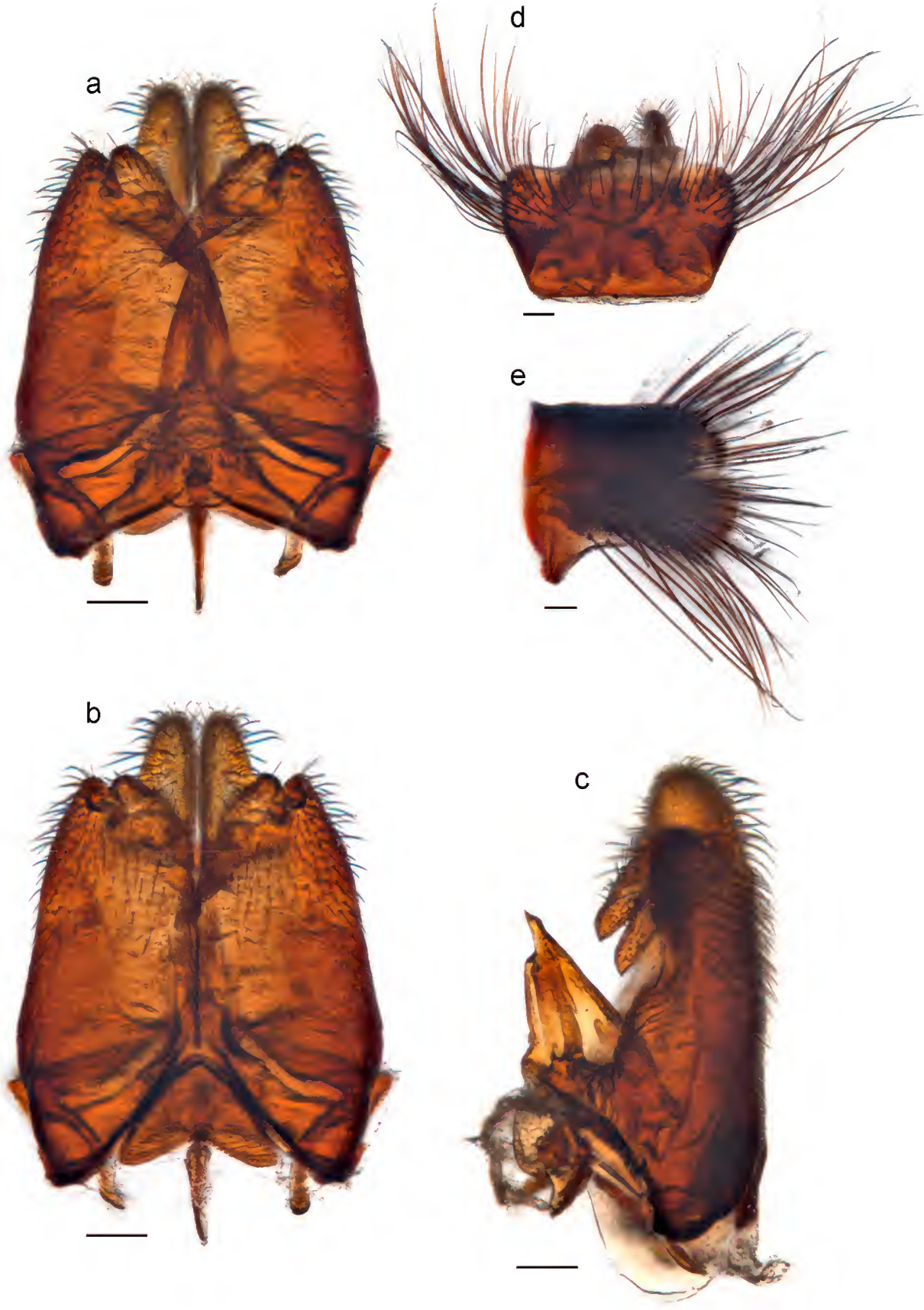

Figure 5. *Thevenetimyia fergusoni* Li and Rodrigues, sp. nov. ♂ Genitalia: *(a)* genital capsule, dorsal; *(b)* genital capsule, ventral; *(c)* genital capsule, lateral; *(d)* epandrium, dorsal; *(e)* epandrium, lateral. Scale bars = 0.1 mm.

Figure 6. *Thevenetimyia furvicostata* (Roberts, 1929) ♂ (holotype): *(a)* dorsal; *(b)* lateral. Scale bars = 1 mm.

Thevenetimyia furvicostata (Roberts, 1929)

Figs 6–9

Eclimus furvicostatus Roberts, 1929: 578. Type-locality: Australia (QLD); holotype, QM.
Thevenetimyia furvicostata (Roberts, 1929).–Hall, 1969: 36.

Types and other specimens examined. Holotype ♂, Australia, QLD, Westwood, Nov 1927, A. P. Dodd, QM D3526 (Fig. 6), and 1♂ paratype, QLD, Stanthorpe, 27 Jan 1927, [*Eclimus furvicostatus* Rob. R. W. Crosskey det. 1962/ 7279/ Press by Com Inst Ent BM 1962-1], NHMUK. **QLD**, 1♂, Carnarvon NP, Top Moffatt Camp, 25°04'08"S 148°03'03"E, 28 Nov 1997, J. Skevington, C. Lambkin, S. Evans, MV Light, ANIC 29-038915; 1♂, Davies Ck NP nr Mareeba, 16°56'S 145°32'E, 6 Jan 1992, AM K.364583; 5♂♂, 16 km N Boonah, SEQ 27°54'S 152°41'E, 19 Dec 1996, C. J. Burwell, S. Evans, QM; 1♂, Mt Moffatt NP, 3 km SE Park Headquarters, 740 m, 25°04'39"S 148°00'30"E, 20 Nov 1995, SCQ, C. J. Burwell, QM; 1♀, Chimneys, Mt Moffatt NP, C.Qld 25°06'S 147°52'E, 1 Dec 1997, C. Lambkin, S. Evans, J. Skevington, QM.

Diagnosis. Medium-sized *Thevenetimyia*, wing membrane dark brown anterior ⅓, and posterior hyaline, with distinct margin; costa with two rows of small spines; scutum with two rows of distinctly short, thick spines and some adjacent, separate spines; ejaculatory apodeme relatively small.

Redescription. **Male**. Body length 10.6–12.0 mm, wing length 8.4–9.8 mm.

Head. Head about 1.4× wider than long, mostly blackish with thick pale pruinescence and covered in admixed white to blackish brown hairs. Eye narrowly separated, by 0.1× width of ocellus. Frons slender and long, upper triangular section small, lower triangular section black, middle narrow part about 0.6× length of frons. Ocellar tubercle slightly raised, black to dark brown with grey pruinescence, with blackish brown hairs. Face with thick pale pruinescence and with few brown hairs on laterodorsal area, parafacial area brown and bare. Gena with thick pale pruinescence and long white hairs. Clypeus swollen, with thick pale pruinescence and long white hairs. Occiput with long white hairs except dorsal margin admixed with brown to black hairs. Posterior eye margin slightly sinuous. Antennae blackish brown; scape and pedicel with thin pale pruinescence and black hairs, ventral hairs of scape slightly longer, hairs on pedicel short. Scape 3.5× as long as wide, and 3.0× as long as pedicel, uniform from base to apex. Pedicel 1.1× as long as wide. Flagellum 4.6× as long as wide, 1.1× as long as scape+pedicel (1.5× as long as scape), conical and slightly laterally compressed, one-segmented with apical style (Fig. 7c). Palp thin and long, extending beyond oral cavity, black with blackish brown hairs, two-segmented, with palpal pit. Mouthparts slender, 3.0× as long as eye length (2.0× as long as head length), labella thin and filiform (Fig. 7f).

Thorax. Integumental colour of scutum and scutellum mostly black with sparse grey pruinescence, pruinescence more dense around margins. Scutum and scutellum with admixed long white scales and white and blackish brown hairs. Three notopleural setae present. Postalar callus and posterior margin of scutellum with strong hairs. Notopleural setae and strong hairs on postalar callus and scutellum pale yellow. Scutum with two rows of distinct short, thick spines and some adjacent, separate spines. Pleura and coxae black with thick grey pruinescence, anepisternum and dorsal half of katepisternum with long white hairs, metepisternum with dense long white scales, and mediotergite with dense white hairs and setae, anepimeron, meron and laterotergite bare.

Legs. Legs mostly dark brown, except hind femur basal half and fore and mid tibiae yellow. Femora and tibiae mostly covered with brownish-yellow scales, except femora and posterior face of fore and mid tibiae admixed with white scales. Other hairs and bristles on legs short and blackish

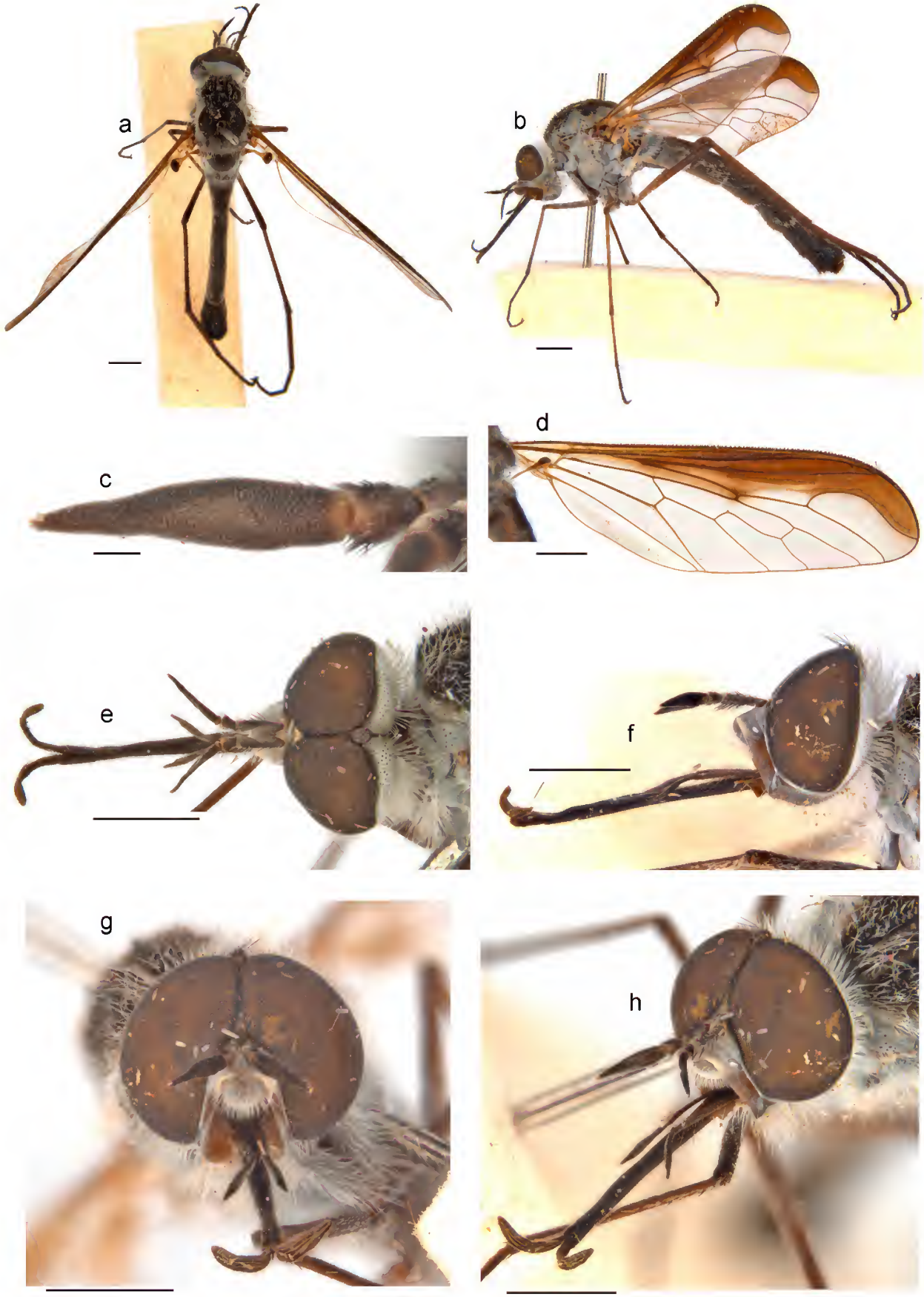

Figure 7. *Thevenetimyia furvicostata* (Roberts, 1929) ♂: *(a)* dorsal; *(b)* lateral; *(c)* flagellum; *(d)* wing; *(e)* head, dorsal; *(f)* head, lateral; *(g)* head, frontal; *(h)* head, profile. Scale bars = 1 mm (a, b, d–h); = 0.1 mm (c).

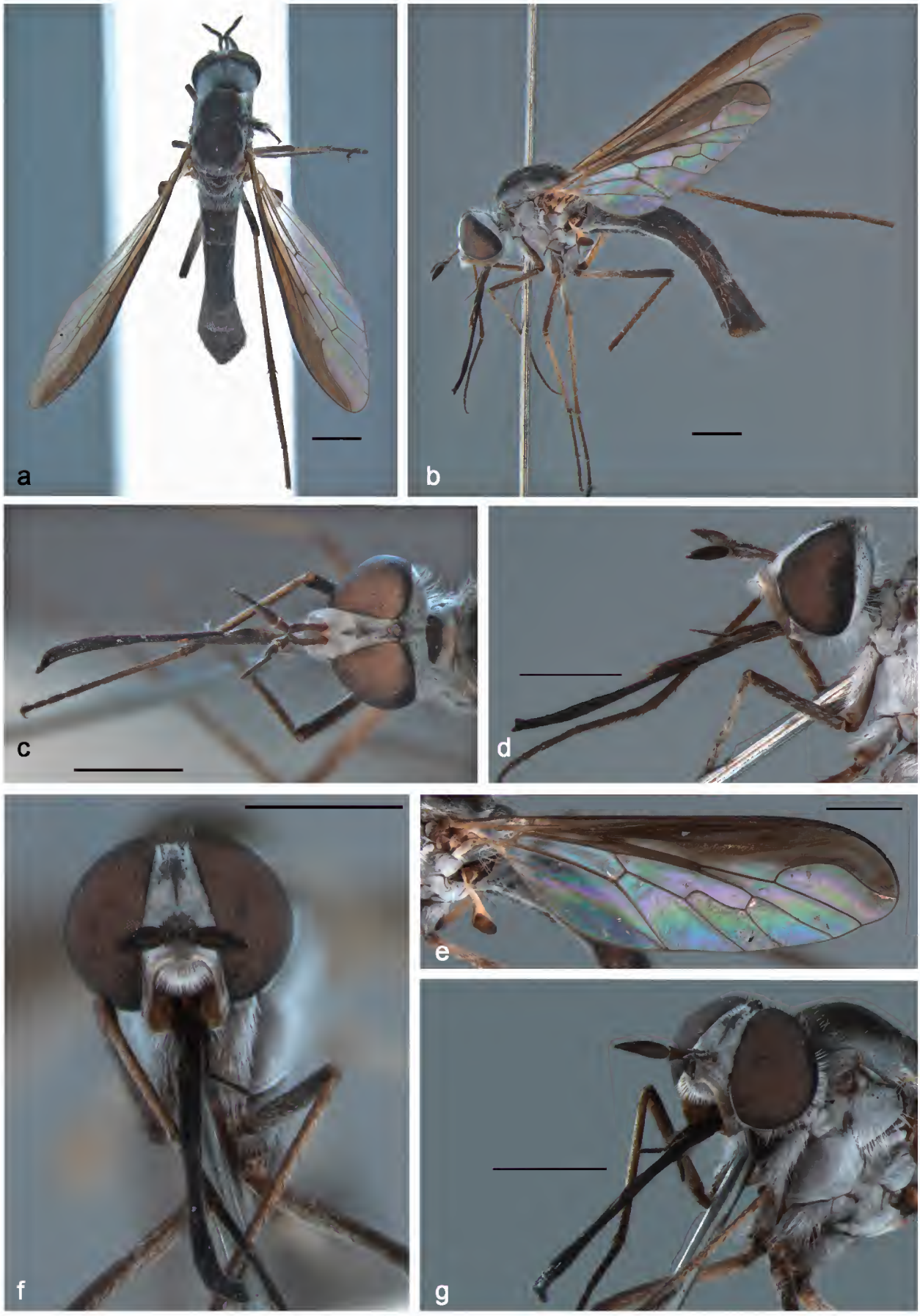

Figure 8. *Thevenetimyia furvicostata* (Roberts, 1929) ♀: *(a)* dorsal; *(b)* lateral; *(c)* head, dorsal; *(d)* head, lateral; *(e)* wing; *(f)* head, frontal; *(g)* head, profile. Scale bars = 1 mm.

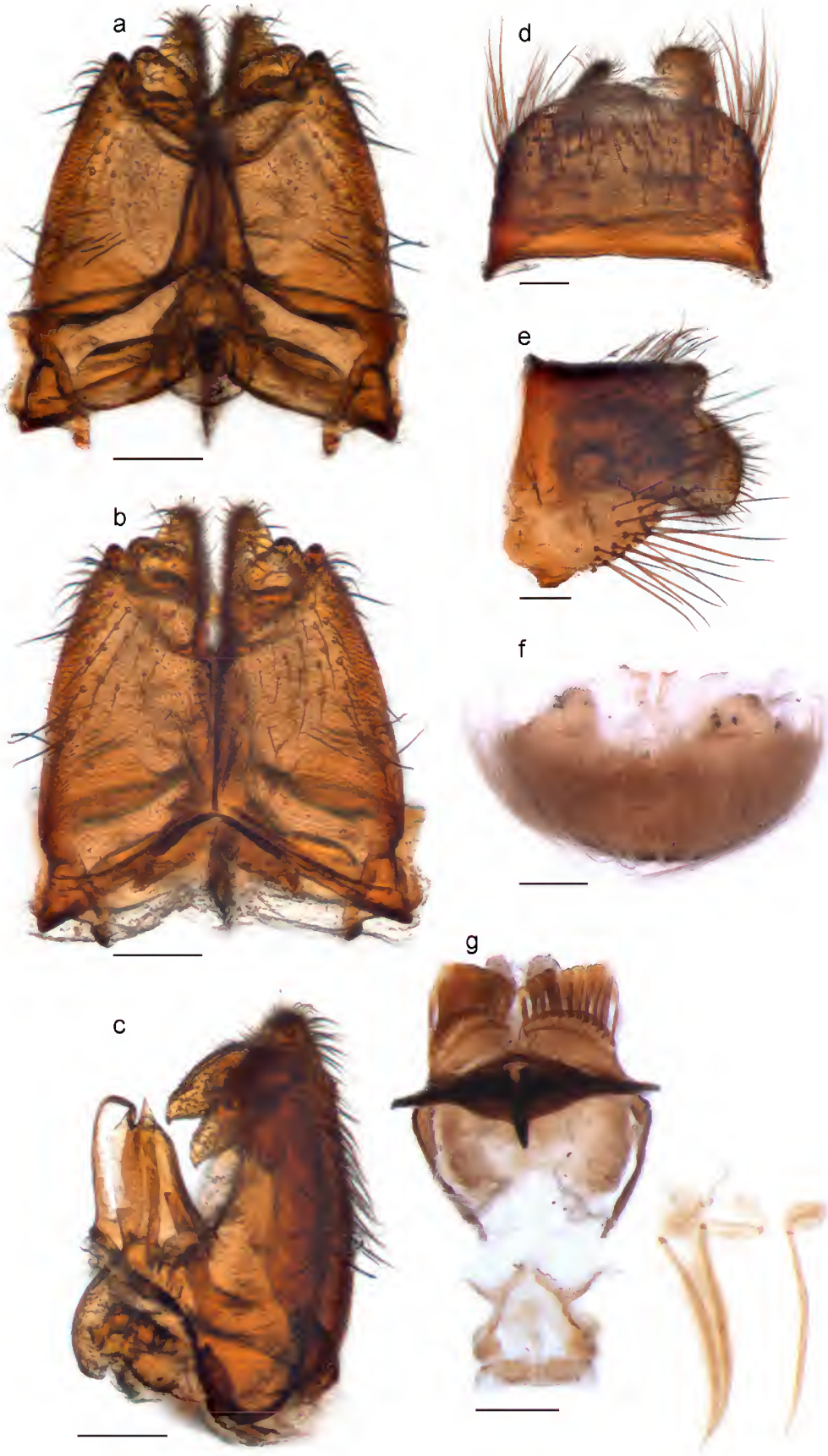

Figure 9. *Thevenetimyia furvicostata* (Roberts, 1929) Genitalia (a–e (♂); f, g (♀)): *(a)* genital capsule, dorsal; *(b)* genital capsule, ventral; *(c)* genital capsule, lateral; *(d)* epandrium, dorsal; *(e)* epandrium, lateral; *(f)* sternite 8, ventral; *(g)* genitalia and spermathecae. Scale bars = 0.1 mm.

brown to black. Fore tibia 2.2× longer than fore basitarsus, mid tibia 2.0× longer than mid basitarsus, hind tibia 1.9× longer than hind basitarsus.

Wings. Wing membrane dark brown anterior 1/3, and posterior hyaline. Cell *br* with base 0.4 slightly infuscated, dark area along vein *M*, and covered crossvein *r-m*, a small hyaline area in posterior margin of cell r_{2+3} between crossvein *r-m* and vein R_{4+5} branching. Cell r_5 widely open; cell *br* much longer than cell *bm*, crossvein *r-m* arising a little over half way from the base of cell *dm*; crossvein *m-m* long, and 2.0× as long as crossvein *r-m*; cell *cup* open (Fig. 7d). Costa with two rows of short, thick spines. Haltere stem yellow, knob blackish brown.

Abdomen. Integumental colour of tergites black with thin pale pruinescence, except lateral margin dark yellow. Tergites mostly covered with black scales and short black hairs. Tergite 1 covered with long white scales and hairs. Tergites 2 to 5 admixed with white scales laterally, and black scales on dorsal area. Sternites with dark brown integumental colour except posterior margins yellow, with thick grey pruinescence and white hairs. Genitalia. Epandrium wide and short, posterior margin slightly convex (Fig. 9d). Hypandrium present, constricted in the middle. Gonocoxal apex slightly narrower than the base in dorsal view, ejaculatory apodeme relatively small (Figs 9a, b); gonocoxal apodeme strong and incurved; lateral ejaculatory process strong, 2.0× longer than wide, apex not expanded; inner apex of gonocoxite rounded, elongate and broad; outer apex of gonocoxite rounded; dorsal bridge with long lateral hollow (Fig. 9c); gonostylus slender and pointed dorsally, 3.0× longer than wide.

Female. Body length 8.0–12.0 mm, wing length 7.0–9.5 mm, from Roberts (1929). Very similar to male, except frons 2.5× as wide as ocellar tubercle, with short black hairs on dorsal half (Fig. 8c). Costa without small spines (Fig. 8e). Posterior margin of tergite 7 with slender dorsal median apodeme. Tergite 7 with ventral spines. Tergite 8 with a row of sparse hairs, 12 acanthophorite spines present, lateral spines long, spines in middle short, apex of spines expanded. Furca broad and connected at apex. Sperm pump strong and nearly as long as furca, not clothed in longitudinal muscle or lateral papillae; distal spermathecal duct short but strong; spermatheca elongate, cylindrical (Fig. 9g).

Remarks. *Thevenetimyia furvicostata* (Roberts, 1929) is redescribed and the images of external and internal characters are provided for the male. The allotype of *Thevenetimyia furvicostata* labelled: "♀, QLD, Stanthorpe, Queensland, 27th January 1927." (Roberts, 1929), is not in QM and is probably lost. Although Robert (1929) did not indicate where he deposit the paratype, PFMR found a specimen in NHMUK with the same label data. Despite this specimen has not a paratype label, it is probably the paratype originally designated by Roberts (1929).

Distribution. QLD.

Thevenetimyia infuscata Li and Yeates, sp. nov.

Figs 10–11

Holotype ♂, Australia, ACT, nr Bendora Hut, Brindabella Ra., 35°25'S 148°48'E [original label has 35.25ºS 14.48ºE, an apparent lapsus] 20 Jan 1997, M. G. Jefferies, ANIC 29-038916. **Paratypes**: 1♂, same data as holotype, ANIC 29-038917; 1♂, ACT, Gibraltar Falls, 5 Jan 1985, M. G. Jefferies, ANIC 29-038918.

Diagnosis. Medium-sized *Thevenetimyia*, wing membrane mostly infuscated, anterior part darker than posterior, without distinct margin; costa without small spines; scutum with two rows of small short spines and few separate spines around; ejaculatory apodeme large.

Description. **Male**. Body length 11.3–12.0 mm, wing length 10.5–11.1 mm.

Head. Head about 1.7× wider than long, mostly blackish with thick pale pruinescence and covered in admixed white to blackish brown hairs. Eye narrowly separated, by 0.2× width of ocellus. Frons slender and long, upper triangular section small, lower triangular section pale, middle narrow part about 0.7× length of frons. Ocellar tubercle slightly raised, black to dark brown with grey pruinescence, with blackish brown hairs. Face with thick pale pruinescence and with few brown hairs on laterodorsal area, parafacial area dark brown and bare. Gena with thick pale pruinescence and long white hairs. Clypeus swollen, with thick pale pruinescence and long white hairs. Occiput with long white hairs except dorsal margin admixed with brown to black hairs. Posterior eye margin slightly sinuous. Antennae blackish brown; scape and pedicel with thin pale pruinescence and black hairs, hairs on ventral face of scape longer, hairs on pedicel short. Scape 2.8× as long as wide, and 2.9× as long as pedicel, uniform from base to apex. Pedicel 1.0× as long as wide. Flagellum 5.6× as long as wide, 1.2× as long as scape+pedicel (1.7× as long as scape), conical and slightly laterally compressed, one-segmented with apical style (Fig. 10c). Palp thin and long, extending beyond oral cavity, black with blackish brown hairs, two-segmented, with palpal pit. Mouthparts slender, 2.7× as long as eye length (1.6× as long as head length), labella thin and filiform (Fig. 10f).

Thorax. Integumental colour of scutum and scutellum mostly black with sparse grey pruinescence, pruinescence more dense around margins. Scutum and scutellum with admixed long white scales, and dark yellow and black hairs. Three pale yellow notopleural setae present, postalar setae absent. Scutum with two rows of small short spines and few separate spines on anterior half. Pleura and coxae black with thick pale pruinescence, anepisternum, dorsal half of katepisternum and metepisternum with long white scales, and mediotergite with dense white hairs and setae, anepimeron, meron and laterotergite bare.

Legs. Legs brownish yellow, mostly covered with blackish brown scales, except base half of femora admixed with white scales, posterior face of fore and mid femora with admixed white and brown hairs. Other hairs and bristles on legs short and blackish brown to black. Fore tibia 2.6× longer than fore basitarsus, mid tibia 2.0× longer than mid basitarsus, hind tibia 1.9× longer than hind basitarsus.

Wings. Wing membrane mostly infuscated, anterior darker than posterior, the area around crossvein *r-m*, and vein R_4 darker. Cell r_5 widely open; cell *br* much longer than cell *bm*, crossvein *r-m* arising a little over half way from the base of cell *dm*; crossvein *m-m* long, and 2.0× as long as crossvein *r-m*; cell *cup* open (Fig. 10d). Costa without small spines. Haltere stem dark yellow, knob blackish brown.

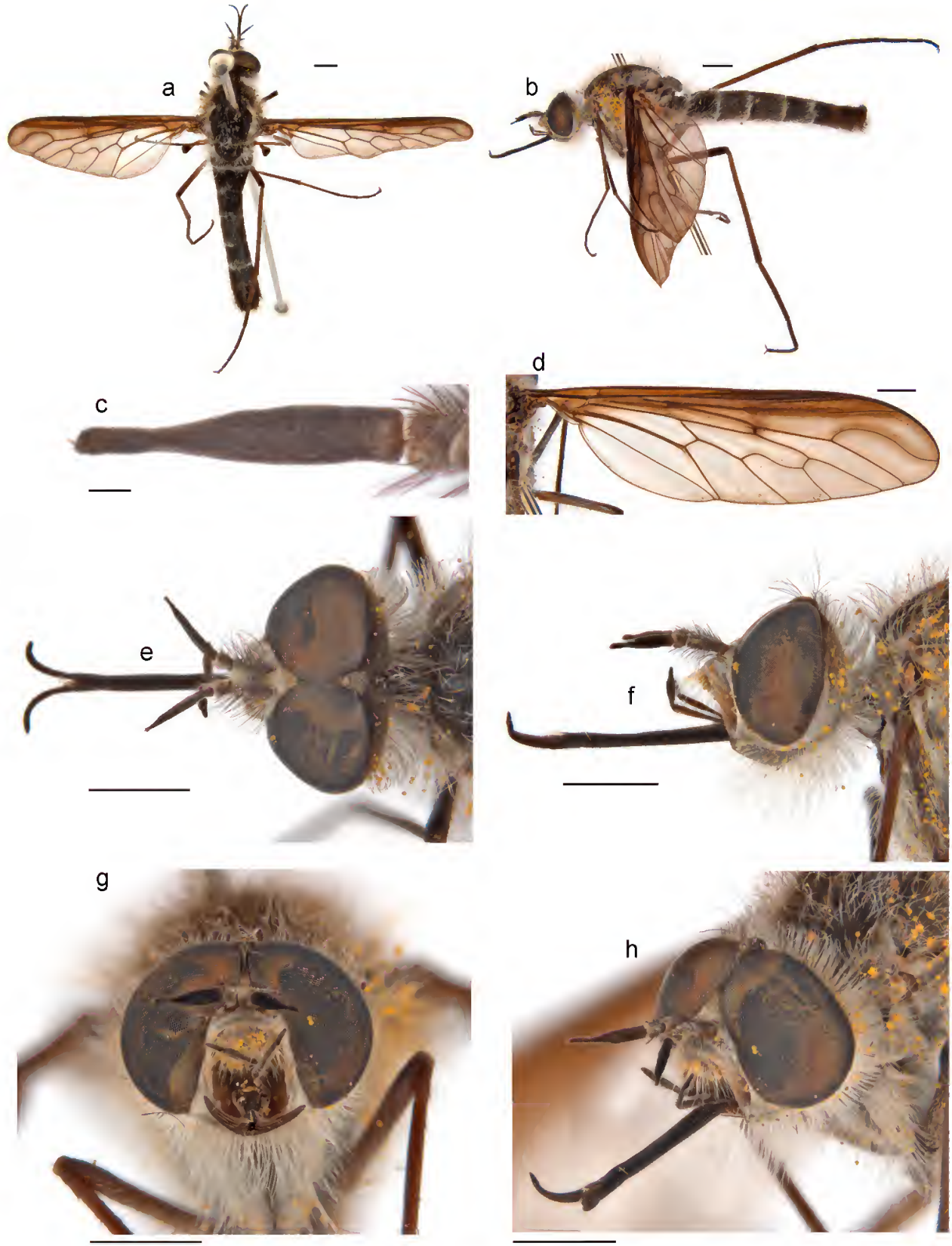

Figure 10. *Thevenetimyia infuscata* Li and Yeates, sp. nov. ♂: *(a)* dorsal; *(b)* lateral; *(c)* flagellum; *(d)* wing; *(e)* head, dorsal; *(f)* head, lateral; *(g)* head, frontal; *(h)* head, profile. Scale bars = 1 mm (a, b, d–h); = 0.1 mm (c).

Abdomen. Integumental colour of tergites black with thin pale pruinescence, except lateral margin dark yellow with thick pale pruinescence. Tergites mostly covered with black scales, short black hairs and white hairs. Tergite 1 covered with long white scales and hairs, admixed with some black hairs. Tergites 2 to 5 with dense white scales on posterior and lateral margins, tergites 6 to 8 with brownish yellow scales on lateral margin and tergite 6 admixed with more brownish

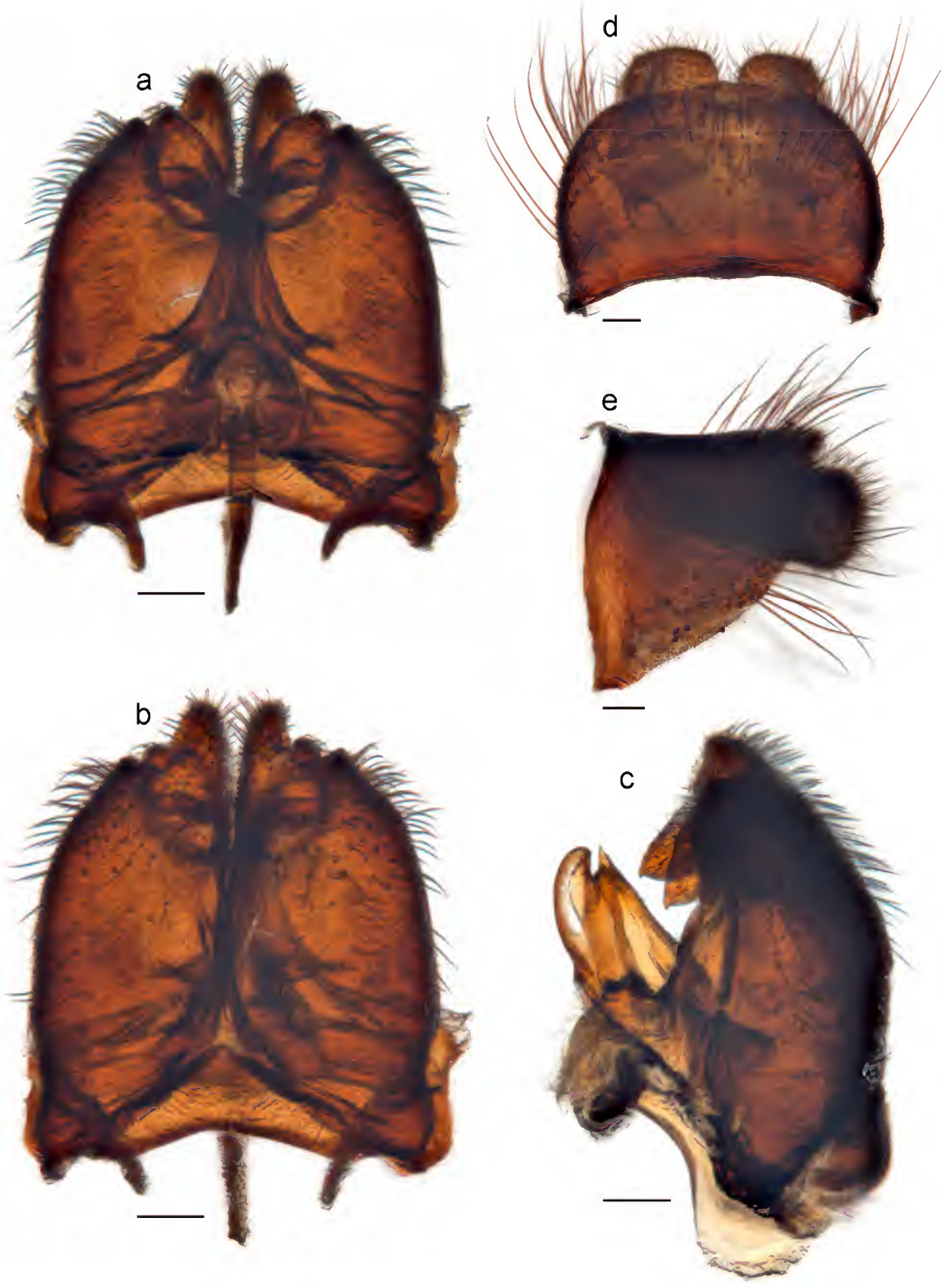

Figure 11. *Thevenetimyia infuscata* Li and Yeates, sp. nov. ♂ genitalia: *(a)* genital capsule, dorsal; *(b)* genital capsule, ventral; *(c)* genital capsule, lateral; *(d)* epandrium, dorsal; *(e)* epandrium, lateral. Scale bars = 0.1 mm.

yellow scales on posterior half. Sternites with dark brown integumental colour except posterior margins yellow, with thick grey pruinescence and white hairs. Genitalia. Epandrium wide and short, posterior margin slightly convex (Fig. 11d). Hypandrium present, constricted in the middle. Gonocoxal apex slightly narrower than the base in dorsal view, ejaculatory apodeme large (Figs 11a, b); gonocoxal apodeme strong and incurved; lateral ejaculatory process strong, 2.0× longer than wide, apex not expanded; inner apex of gonocoxite rounded, elongate and broad; outer apex of gonocoxite rounded; dorsal bridge with long lateral hollow (Fig. 11c); gonostylus slender and pointed dorsally, 3.0× longer than wide.

Female. Unknown.

Remarks. *Thevenetimyia infuscata* Li and Yeates, sp. nov. is similar to *Thevenetimyia furvicostata* (Roberts, 1929), but differs in having the mostly infuscated wing, the costa without small spines, the scutum with two rows of small short spines, and the ejaculatory apodeme is large.

Distribution. ACT.

Etymology. This specific name refers to the infuscated wing of the species.

Thevenetimyia longipalpis (Hardy, 1921)

Figs 12–15

Eclimus longipalpis Hardy, 1921: 63. Type-locality: Australia (NSW); holotype, AM.
Thevenetimyia longipalpis (Hardy, 1921).–Hall, 1969: 43.

Types and other specimens examined. Holotype ♂, Australia, NSW, Sydney, 8 Dec 1918, G. H. Hardy, AM K.44412 (Fig. 12); allotype ♀, QLD, Chinchilla, Nov 1927, A. P. Dodd, AM K.60172. **ACT**, 2♂♂, Mt Clear, emg Jan 1981, K. R. Pullen, from *Acacia dealbata* infested with Bostrychidae + wasp parasite, ANIC 29-041284–85; 1♂, Black Mtn, Jan 1988, M. E. Irwin, Malaise trap, ANIC 29-041286; 3♂♂, Mt Ainslie, 35°16'14.56"S 149°09'28.91"E, 8 Feb 2016, X. Li & A. Landford, ANIC 29-038969, 29-038920–21. **NSW**, 2♂♂ 2♀♀, Doughboy, 12 Oct 1956, E. F. Riek, ANIC 29-041287, 29-041290; 1♂, Forbes Creek, 1 km East, on flowering *Calytrix*, 880 m, 35°25'48.32"S 149°30'12.26"E, 9 Nov 2014, D. J. Ferguson, ANIC 29-041291; 2♂♂, 24 km W Grafton, Hilltop, 8 Sep 1983, D. Yeates, QM; 1♂, 24 km W Grafton, 19–20 Sep 1981, C. Hagan, QM. **QLD**, 3♂♂, Carnarvon National Park, Mt Moffat Sect., Mt Moffat summit, 1097 m, 25°03'35"S 148°02'38"E, 27 Nov 1997, J. Skevington, C. Lambkin, S. Evans, ANIC 29-041292–94; 2♂♂, 6 km N Taroom, 25°36'S 149°46'E, 200 m, 2 Oct 1992, G. Daniels, AM K.308709–10; 1♂, Carnarvon Nat. Park, Ald Mt Moffat Section, 1097 m summit of Mt Moffatt, 25°04'S 148°03'E, 23 Nov 1995, D. K. Yeates, C. J. Burwell, QM; 3♂♂, Carnarvon Nat. Park, Ald Mt Moffat Section, 1097 m summit of Mt Moffatt, 25°04'S 148°03'E, 25 Nov 1995, D. K. Yeates, C. J. Burwell, QM; 10♂♂, Mt Moffat NP, SQC, Mt Moffatt summit, 1097 m, 25°04'S 148°03'E, 25 Nov 1997, C. J. Burwell, QM; 1♂, 9 km SW Stanthorpe, 5 Nov 1981, E. Exley, J. King, QM; 1♂, Severnlea via Stanthorpe, on *Eucaliptus sp.*, 10 Dec 1980, E. R. Exley, J. King, QM; 1♀, Chinchilla, Nov 1927, A. P. Dodd [7273, Press by Com Inst Ent B M 1962-1, *Eclimus longipalpis* Hardy R. W. Crosskey det. 1962], NHMUK. **SA**, 1♂, Flinders Ranges NP, Heysen Hill, Brachina Gorge, 31°20'02"S 138°33'10"E, 9 Oct 1997, J. & A. Skevington, C. Lambkin, ANIC 29-041295. **VIC**, 1♂ 1♀, Brisbane Ranges, F. E. Wilson, Dec 1929, NMV; 1♂, Melton, F. E. Wilson, NMV. **WA**, 2♂♂, Borden, 20 Nov 1958, E. F. Riek, ANIC 29-041296–97.

Diagnosis. Small-sized *Thevenetimyia*, wing membrane mostly hyaline, with a dark brown spot around base of cell r_1, and a large dark mark on anterior-apical of wing; costa with two rows of small spines; scutum and scutellum with golden hairs; ejaculatory apodeme and lateral ejaculatory process small, vestigial.

Redescription. **Male**. Body length 9.1–14.0 mm, wing length 8.6–11.9 mm.

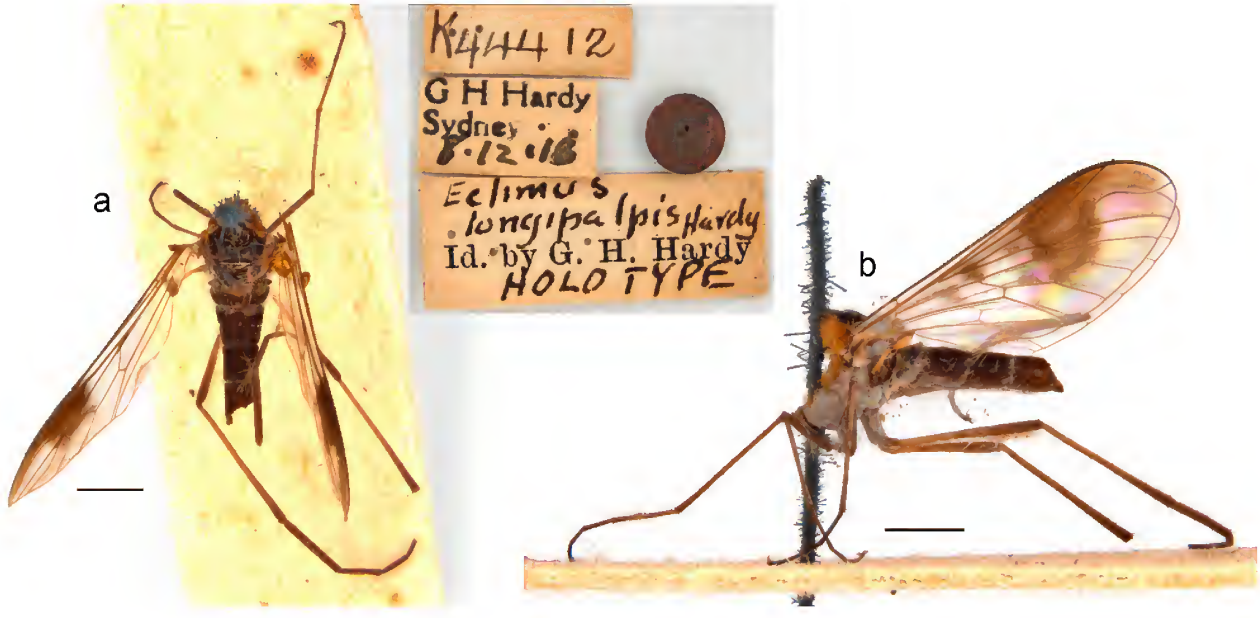

Figure 12. *Thevenetimyia longipalpis* (Hardy, 1921) ♂ holotype: *(a)* dorsal; *(b)* lateral. Scale bars = 1 mm.

Figure 13. *Thevenetimyia longipalpis* (Hardy, 1921) ♂: *(a)* dorsal; *(b)* lateral; *(c)* flagellum; *(d)* wing; *(e)* head, dorsal; *(f)* head, lateral; *(g)* head, frontal; *(h)* head, profile. Scale bars = 1 mm (a, b, d–h); = 0.1 mm (c).

Figure 14. *Thevenetimyia longipalpis* (Hardy, 1921) ♀: *(a)* dorsal; *(b)* lateral; *(c)* head, dorsal; *(d)* head, lateral; *(e)* head, frontal; *(f)* head, profile. Scale bars = 1 mm.

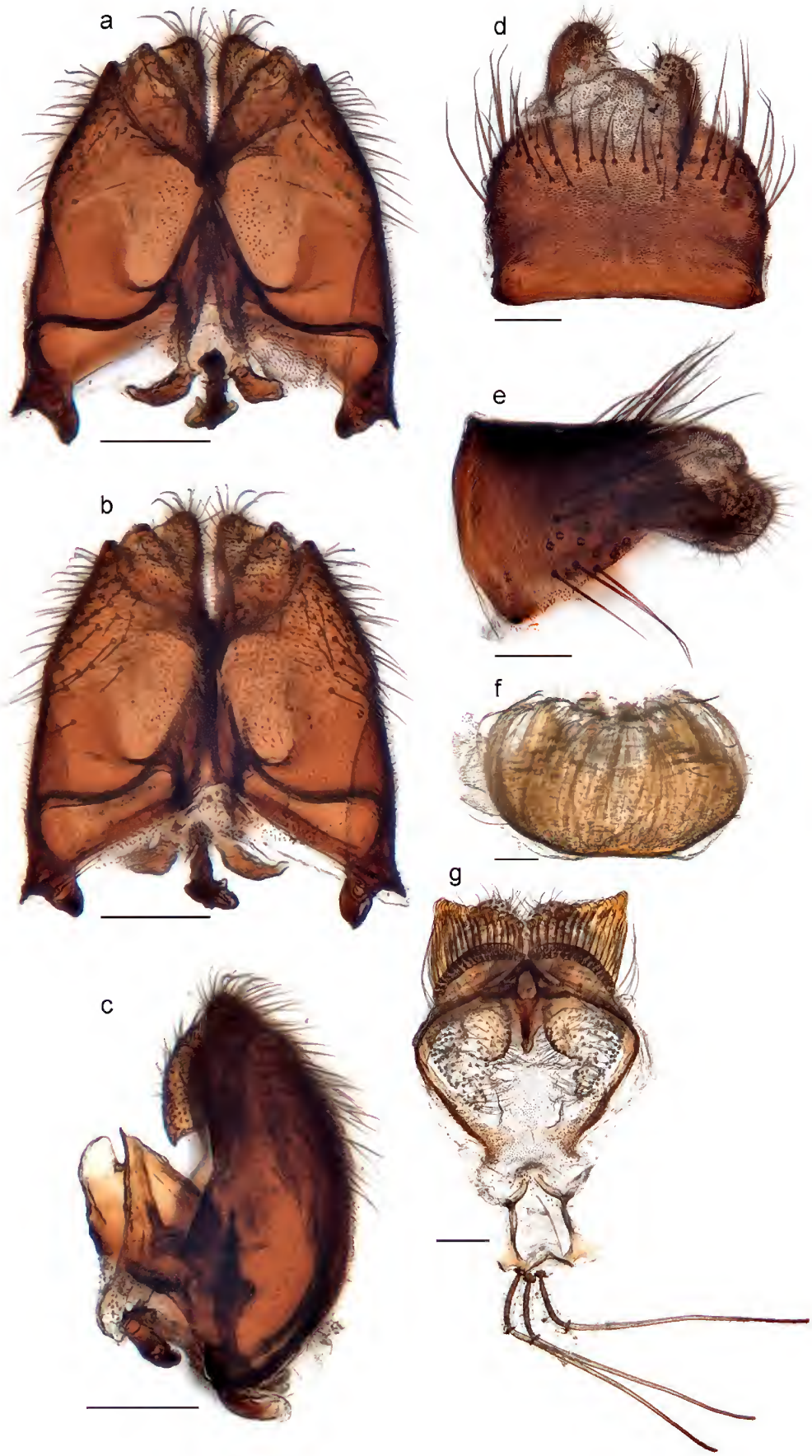

Figure 15. *Thevenetimyia longipalpis* (Hardy, 1921) genitalia (a–e ♂; f, g ♀): *(a)* genital capsule, dorsal; *(b)* genital capsule, ventral; *(c)* genital capsule, lateral; *(d)* epandrium, dorsal; *(e)* epandrium, lateral; *(f)* sternite 8, ventral; *(g)* genitalia and spermathecae. Scale bars = 0.1 mm.

Head. Head about 1.4× wider than long, mostly blackish with thick pale pruinescence and covered in admixed white to blackish brown hairs. Eye widely connected, by 1.5× length of ocellar tubercle. Frons slender and long, upper triangular section small, lower triangular section black with thin pale pruinescence, middle narrow part about 0.7× length of frons. Ocellar tubercle slightly raised, brown to blackish brown with grey pruinescence, with blackish brown hairs. Face with thick pale pruinescence and with brown hairs on laterodorsal area, parafacial area dark brown and bare. Gena with thick pale pruinescence and long white hairs. Clypeus swollen, with thick pale pruinescence and long blackish brown hairs. Occiput with long white hairs except dorsal margin admixed with brown to black hairs. Posterior eye margin slightly sinuous. Antennae blackish brown; scape and pedicel with thin pale pruinescence and black hairs, ventral hairs of scape longer, hairs on pedicel short. Scape 3.3× as long as wide, and 3.0× as long as pedicel, uniform from base to apex. Pedicel 1.0× as long as wide. Flagellum 3.7× as long as wide, 1.1× as long as scape+pedicel (1.5× as long as scape), conical and slightly laterally compressed, one-segmented with apical style (Fig. 13c). Palp thin and long, extending beyond oral cavity, black with blackish brown hairs, two-segmented, with palpal pit. Mouthparts slender, 2.7× as long as eye length (1.8× as long as head length), labella thin and filiform (Fig. 13f).

Thorax. Integumental colour of scutum and scutellum mostly black with sparse grey pruinescence, pruinescence more dense around margins. Scutum and scutellum with admixed white and golden hairs and long pale yellow scales. Three notopleural setae present. Postalar callus and posterior margin of scutellum with strong hairs. Notopleural setae and strong hairs on postalar callus and scutellum pale yellow. Pleura and coxae black with thick grey pruinescence, anepisternum and dorsal half of katepisternum with long white to pale yellow hairs, metepisternum with moderate long white scales, and mediotergite with dense white hairs and setae, anepimeron, meron and laterotergite bare.

Legs. Legs mostly blackish brown. Femora mostly covered with pale yellow scales, except posterior face with white scales, fore, mid and base of hind femora with long white hairs. Apical half of hind femur with few short bristles. Tibiae covered with admixed pale yellow, brown and black scales. Other hairs and bristles on legs short and blackish brown to black. Fore tibia 2.0× longer than fore basitarsus, mid tibia 2.1× longer than mid basitarsus, hind tibia 2.1× longer than hind basitarsus.

Wings. Wing membrane mostly hyaline, area around base of cell r_1, cell r_{2+3} and middle of cell *br* with a dark brown spot, and a large dark area bounded by apical half of costa, vein R_4, and crossvein *dm-cu*, the dark area extend to base of cell m_1, cell m_2 and cell r_4, apical half of cell dm and apex of cell *br*. Cell r_5 widely open; cell *br* much longer than cell *bm*, crossvein *r-m* arising a little over half way from the base of cell *dm*; crossvein *m-m* long, and 2.0× as long as crossvein *r-m*; cell *cup* open (Fig. 13d). Costa with two rows of short, thick spines. Haltere stem pale yellow, knob brownish yellow.

Abdomen. Integumental colour of tergites black with thin pale pruinescence, except lateral margin with thick pruinescence. Tergites mostly covered with black scales and short black hairs. Tergite 1 covered with long white scales and hairs, tergite 2 admixed with white hairs. Tergites 2 to 6 with white scales on posterior margin. Sternites with dark brown integumental colour except posterior margins yellow, with thick grey pruinescence and white hairs. Genitalia. Epandrium wide and short, posterior margin slightly convex (Fig. 15d). Hypandrium absent. Gonocoxal apex slightly narrower than the base in dorsal view, ejaculatory apodeme small (Figs 15a, b); gonocoxal apodeme strong and incurved; lateral ejaculatory process small, vestigial; inner apex of gonocoxite rounded, elongate and broad; outer apex of gonocoxite rounded; dorsal bridge without lateral hollow (Fig. 15c); gonostylus slender and pointed dorsally, 3.0× longer than wide.

Female. Body length 9.9 mm, wing length 9.1 mm. Very similar to male, except frons black with thick pale pruinescence except middle area of dorsal half, 2.3× as wide as ocellar tubercle, frons with blackish brown hairs (Fig. 14c). Costa of wing without small spines. Posterior margin of tergite 7 with slender dorsal median apodeme. Tergite 7 with ventral spines. Tergite 8 with a row of sparse hairs, 16 acanthophorite spines present, lateral spines long, spines in middle short, apex of spines expanded. Furca straight and connected at apex. Sperm pump strong and nearly as long as furca, not clothed in longitudinal muscle, with few lateral papillae; distal spermathecal duct short but strong; spermatheca elongate, cylindrical (Fig. 15g).

Remarks. *Thevenetimyia longipalpis* (Hardy, 1921) is so far the most widely distributed Australian *Thevenetimyia* species, it occurs in all the states except the Northern Territory and Tasmania.

Distribution. ACT, NSW, QLD, SA, VIC, WA.

Thevenetimyia major Li and Yeates, sp. nov.

Figs 16–17

Holotype ♂, Australia, QLD, 30 km W of Alpha, T. M. S. Hanlon, ex dead standing *Acacia*, collected 30 Aug 1998, emerged 16 Nov 1999, AM K.364586. **Paratype** 1♂, NT, Koongarra, 15 km E of Mt Cahill, 12°52'S 132°50'E, 6 Oct 1975, A. Allwood & T. Angeles, ANIC 29-041486.

Diagnosis. Large-sized *Thevenetimyia*, wing membrane with large brown mark on middle area, but remaining wing apex hyaline, base mostly infuscated; vein R_4 arising far from base, 0.8 from crossvein *r-m*; costa without small spines; hind femur with a row of short black bristles; abdominal tergites 5 to 8 with dense lateral long black hairs.

Description. **Male**. Body length 14.6–16.7 mm, wing length 12.7–c.12.9 mm.

Head. Head about 1.7× wider than long, mostly blackish with thin pale pruinescence and covered in admixed white, pale yellow and black hairs. Eye narrowly separated, by 0.2× width of ocellus. Frons slender and long, upper triangular section small, lower triangular section black, middle narrow part about 0.7× length of frons. Ocellar tubercle slightly raised, black with grey pruinescence, with black hairs. Face with thin pale pruinescence, lateral area of antenna with some black hairs, parafacial area black and bare. Gena with thick pale pruinescence and long white hairs. Clypeus swollen, with thin pale pruinescence and blackish brown hairs. Occiput mostly with pale yellow hairs, except ventral area

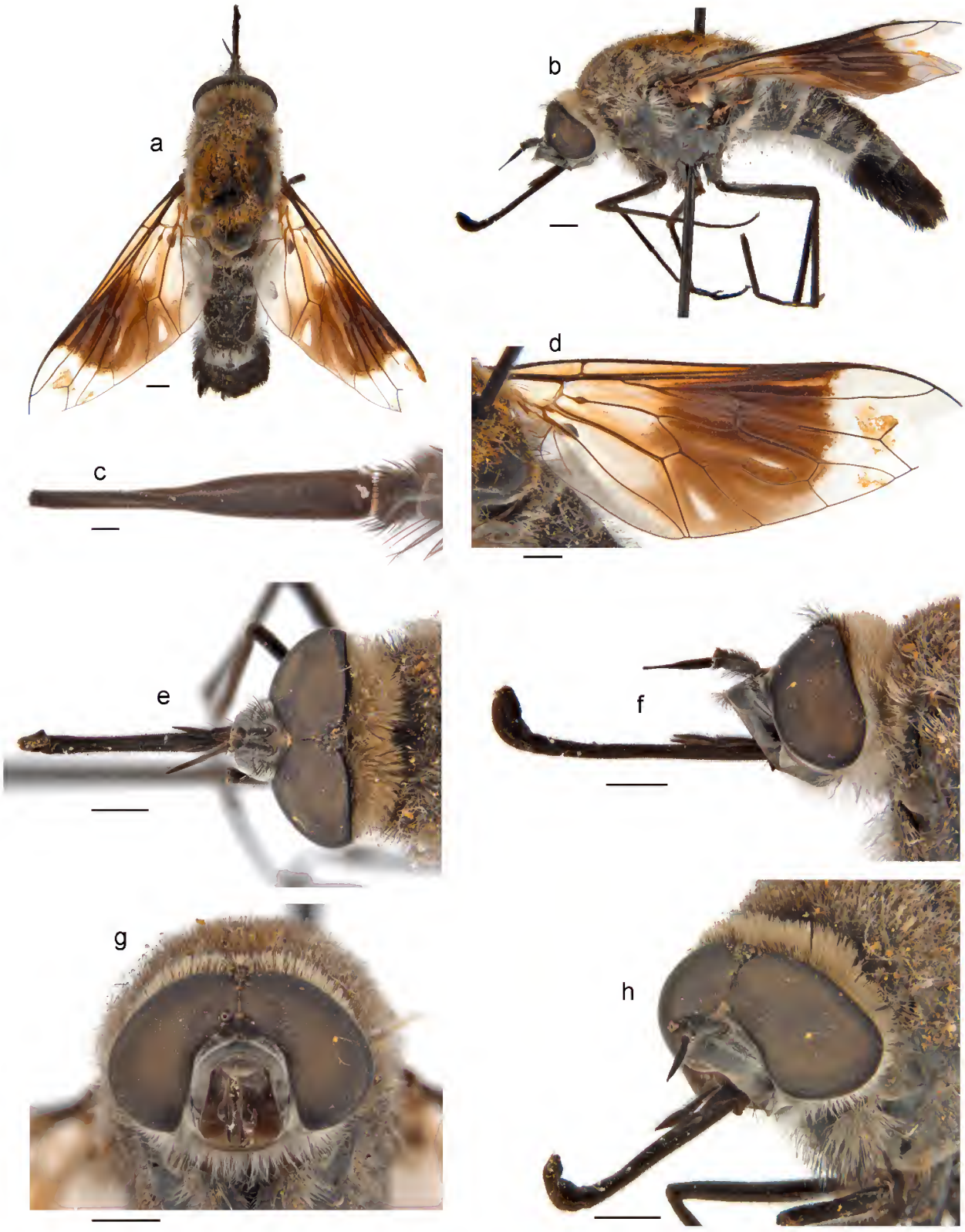

Figure 16. *Thevenetimyia major* Li and Yeates, sp. nov. ♂: *(a)* dorsal; *(b)* lateral; *(c)* flagellum; *(d)* wing; *(e)* head, dorsal; *(f)* head, lateral; *(g)* head, frontal; *(h)* head, profile. Scale bars = 1 mm (a, b, d–h); = 0.1 mm (c).

with white hairs and dorsal margin with black hairs. Posterior eye margin slightly sinuous. Antennae blackish brown; scape and pedicel with thin pale pruinescence and black hairs, ventral face of scape admixed with white hairs. Scape 3.2× as long as wide, and 3.4× as long as pedicel, uniform from base to apex. Pedicel 1.1× as long as wide. Flagellum 8.3× as long as wide, 1.4× as long as scape+pedicel (1.8× as long as scape), conical and slightly laterally compressed, one-segmented with apical style (Fig. 16c). Palp thin and long, extending beyond oral cavity, black with blackish brown

Figure 17. *Thevenetimyia major* Li and Yeates, sp. nov. ♂ genitalia: *(a)* genital capsule, dorsal; *(b)* genital capsule, ventral; *(c)* genital capsule, lateral; *(d)* epandrium, dorsal; *(e)* epandrium, lateral. Scale bars = 0.1 mm.

hairs, two-segmented, with palpal pit. Mouthparts slender, 3.5× as long as eye length (2.0× as long as head length), labella thin and filiform (Fig. 16f).

Thorax. Integumental colour of scutum and scutellum mostly black with sparse grey pruinescence, pruinescence more dense around margins. Scutum with short black

hairs, anterior half and lateral margins admixed with dense long white scales, posterior half with long golden scales. Scutellum covered with admixed white and yellow scales and black hairs, posterior margin with black setae. Three pale yellow notopleural setae, and six pale yellow postalar setae present. Pleura and coxae black with thin pale pruinescence, anepisternum and katepisternum with admixed white and black hairs, dorsal half of metepisternum with long white scales, mediotergite with dense white hairs and setae, anepimeron, meron and laterotergite bare.

Legs. Legs black, mostly covered with black scales, except basal half of hind femur and posterior face of mid femur and tibia admixed with white scales, ventral face of fore and mid femora with short black hairs, hind femur with a row of short black bristles. Other hairs and bristles on legs short and blackish brown to black. Fore tibia 1.6× longer than fore basitarsus, mid tibia 1.7× longer than mid basitarsus, hind tibia 1.9× longer than hind basitarsus.

Wings. Wing membrane with large brown mark in median area, but wing apex hyaline, base mostly infuscated. Cell r_1, base 0.7 of cell r_{2+3}, base 0.55 of cell r_5, base 0.1 of cell m_1, base 0.9 of cell m_2, cell cua_1 and cell *dm*, apex 0.3 of cell *cup*, apex 0.4 of cell *br* and apex 0.2 of cell *bm* all covered with brown infuscation, except cell cua_1 and cell *dm* with small middle clear area. Cell r_5 widely open; cell *br* much longer than cell *bm*, crossvein *r-m* arising half way from the base of cell *dm*; crossvein *m-m* long, and 2.0× as long as crossvein *r-m*; cell *cup* open (Fig. 16d). Vein R_4 arising 0.8 from crossvein *r-m*. [Wing apex broken]. Costa without small spines. Haltere stem dark yellow, knob blackish brown.

Abdomen. Integumental colour of tergites dark brown with thin pale pruinescence, except lateral margin with thick pruinescence. Tergite 1 with dense long white hairs. Tergites 2 to 8 mostly covered with black scales and short black hairs, tergite 2 admixed with long white hairs and posterior margin with white scales, tergites 3 to 4 with long white hairs laterally, posterolateral with dense white scales, tergites 5 to 8 with dense long black hairs laterally, tergite 5 with dense white scales on dorsal area. Sternites with black integumental colour except posterior margins yellow, mostly with thick grey pruinescence and white hairs, except sternites 5 to 8 covered with black hairs. Genitalia. Epandrium wide and short, posterior margin slightly convex (Fig. 17d). Hypandrium present. Gonocoxal apex slightly narrower than the base in dorsal view, ejaculatory apodeme large (Figs 17a, b); gonocoxal apodeme strong and incurved; lateral ejaculatory process strong, 3.7× longer than wide, apex expanded; inner apex of gonocoxite rounded, elongate and broad; outer apex of gonocoxite rounded; dorsal bridge with long lateral hollow (Fig. 17c); gonostylus slender and pointed dorsally, 3.0× longer than wide.

Female. Unknown.

Remarks. *Thevenetimyia major* Li and Yeates, sp. nov. differs markedly from congeners by having a large body size, a large brown mark on middle area of wing, and a vein R_4 arising far from base, 0.8 from crossvein *r-m*.

The paratype is without clear area in the middle of brown infuscation.

Distribution. QLD, NT.

Etymology. This specific name refers to the large body size of the species.

Thevenetimyia mimula Hall, 1969

Fig. 18

Thevenetimyia mimula Hall, 1969: 61. Type-locality: not given [= Australia]; holotype, ANIC.

Types and other specimens examined. Holotype ♂, Australia, Macl[eay] M[useum], now in ANIC 29-009851 (Fig. 18). **QLD**, 1♂, Rockhampton, Macl[eay] M[useum] [hind leg and abdomen missing], now in ANIC 29-038919.

Diagnosis. Medium-sized *Thevenetimyia*, wing membrane hyaline, without infuscated marks; costa with two rows of small spines; scutum with two rows of short, thick spines and some adjacent, separate spines; three postalar setae present; abdominal tergites 5 to 7 with lateral dense long black hairs.

Redescription. **Male**. Body length 12.5 mm, wing length 10.7–11.8 mm.

Head. Head about 1.5× wider than long, mostly blackish with thick pale pruinescence and covered in admixed white to blackish brown hairs. Eye widely connected, by 1.0× length of ocellar tubercle. Frons slender and long, upper triangular section small, lower triangular section black with thin pale pruinescence, middle narrow part about 0.7× length of frons. Ocellar tubercle slightly raised, brown to blackish brown with grey pruinescence, with blackish brown hairs. Face with thick pale pruinescence and with brown hairs, parafacial area blackish brown and bare. Gena with thick pale pruinescence and long white hairs. Clypeus swollen, with thick pale pruinescence and long blackish brown hairs. Occiput with long white hairs except dorsal margin admixed with brown to black hairs. Posterior eye margin slightly sinuous. Antennae blackish brown; scape and pedicel with thin pale pruinescence and black hairs, ventral hairs of scape longer, hairs on pedicel short. Scape 3.5× as long as wide, and 4.0× as long as pedicel, uniform from base to apex. Pedicel 0.9× as long as wide. Flagellum 6.0× as long as wide, 1.2× as long as scape+pedicel (1.5× as long as scape), conical and slightly laterally compressed, one-segmented with apical style (Fig. 18c). Palp thin and long, extending beyond oral cavity, black with blackish brown hairs, two-segmented, with palpal pit. Mouthparts slender, 4.3× as long as eye length (2.6× as long as head length), labella thin and filiform (Fig. 18f).

Thorax. Integumental colour of scutum and scutellum mostly black with sparse grey pruinescence, pruinescence more dense around margins. Scutum and scutellum with admixed white and black hairs and white long scales. Three notopleural setae present, 3 postalar setae present. Posterior margin of scutellum with strong hairs. Pre- and postalar setae and strong hairs on postalar callus and scutellum pale yellow. Scutum with two rows of short, thick spines and some adjacent, separate spines. Pleura and coxae black with thick grey pruinescence, anepisternum with admixed long white hairs and scales, katepisternum and metepisternum with moderate long white scales, and mediotergite with dense white to pale yellow hairs and setae, anepimeron, meron and laterotergite bare.

Legs. Legs mostly black. Femora mostly covered with white scales except on apex, ventral face of basal half with long white hairs; fore and mid femora covered with brownish yellow scales. Hind femur with a row of short ventral bristles. Other hairs and bristles on legs short and blackish

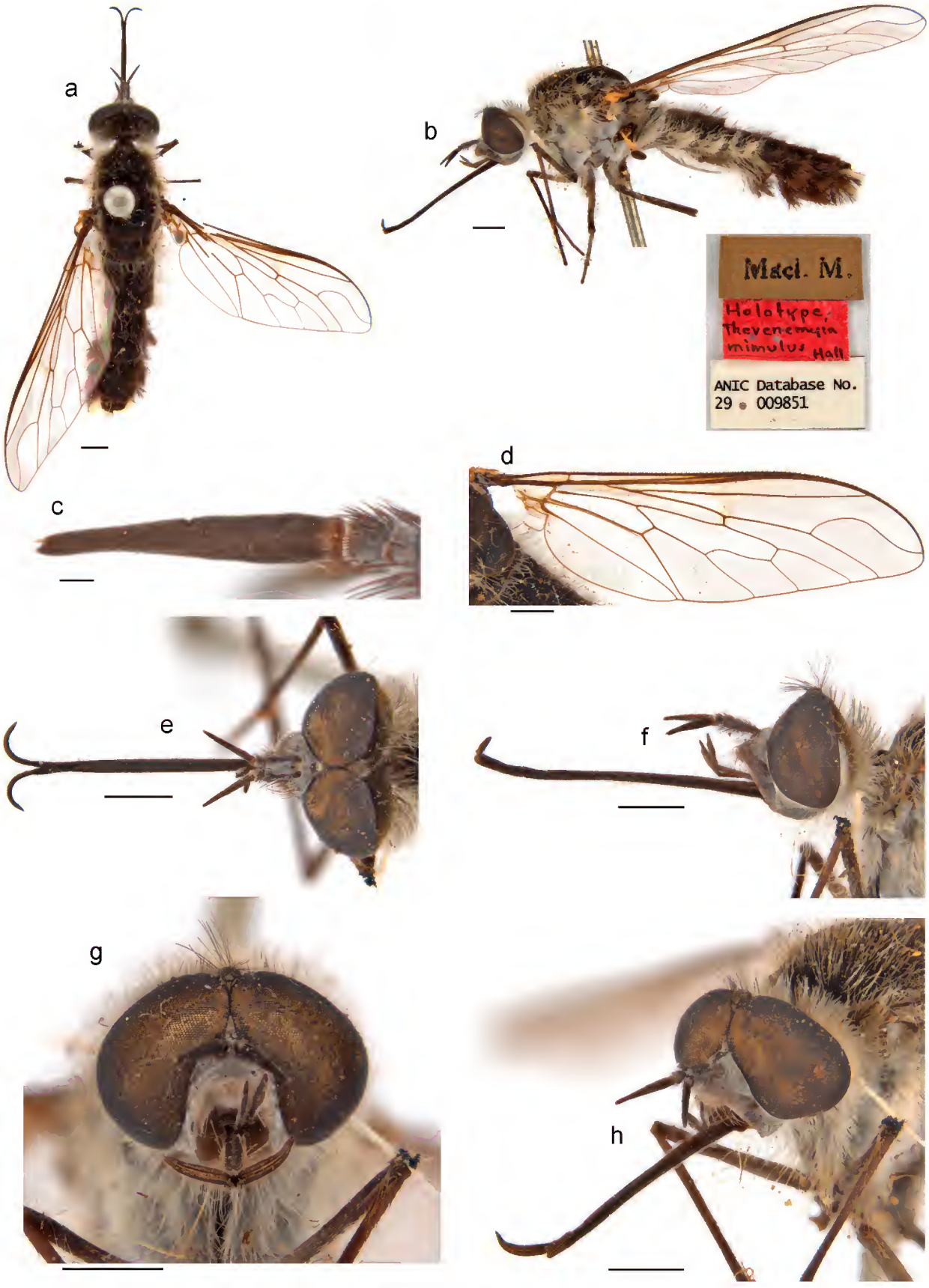

Figure 18. *Thevenetimyia mimula* Hall, 1969 ♂ holotype: *(a)* dorsal; *(b)* lateral; *(c)* flagellum; *(d)* wing; *(e)* head, dorsal; *(f)* head, lateral; *(g)* head, frontal; *(h)* head, profile. Scale bars = 1 mm (a, b, d–h); = 0.1 mm (c).

brown to black. Fore tibia 2.1× longer than fore basitarsus, mid tibia 2.1× longer than mid basitarsus. [Hind tibia and tarsus broken].

Wings. Wing membrane hyaline, without infuscated marks. Cell r_5 widely open; cell *br* much longer than cell *bm*, crossvein *r-m* arising a little over half way from the base of cell *dm*; crossvein *m-m* long, and 2.0× as long as crossvein *r-m*; cell *cup* open (Fig. 18d). Costa with two rows of short, thick spines. Haltere stem pale yellow, knob black.

Abdomen. Integumental colour of tergites black with thin pale pruinescence, except tergite 1 and lateral margin of tergites 2 and 3 with thick pruinescence. Tergites mostly covered with admixed white and black hairs. Tergites 1 to 4 and 8 with dense long white hairs on lateral margin, tergites 5 to 7 with dense long black hairs on lateral margin. Genitalia. Genitalia have been dissected and are poorly preserved. See description in Hall (1969: p61; p84, figure 48).

Female. Unknown.

Remarks. *Thevenetimyia mimula* Hall, 1969 could be separated easily from other Australian *Thevenetimyia* by having a hyaline wing membrane, three postalar setae present, and abdominal tergites with dense long white and black hairs laterally. However, it is considered to be rare (only two specimens been documented so far) and mysterious (type-locality unknown for 49 years).

We found a second specimen identified as *Thevenetimyia mimula* in ANIC. This specimen also with the label "Macl[eay]. M[useum].", with another label "Rockhampton Queensland". Therefore, we are able to confirm the distribution of this species. Unfortunately, this specimen's abdomen is missing, and the male genitalia of the holotype has been dissected but poorly preserved, so, we are unable to redescribe and photograph it. The female of this species is still unknown.

Distribution. QLD.

Thevenetimyia nigrapicalis (Roberts, 1929)

Figs 19–22

Eclimus nigrapicalis Roberts, 1929: 576. Type-locality: Australia (QLD); holotype, QM (Fig. 19).
Thevenetimyia nigrapicalis (Roberts, 1929).–Hall, 1969: 65.

Types and other specimens examined. Holotype ♂, Australia, **QLD**, Goondiwindi, 29 Dec 1927, F. Roberts, QM D3525. Paratypes: allotype ♀, same data as holotype, QM T6499; 1♀, QLD, Goondiwindi, 20 Dec 1927, GB, QM T183310/D.520; 3♂♂, QLD, Goondiwindi, Jan 1928, G. R. Bass, QM T183307/D.523, QM T183308/D.524, QM T183309/D.525; 2♂♂, QLD, Goondiwindi, Dec 1927, G. R. Bass, QM T183305/D.522, QM T183306/D.521; 1♂, Eidsvold, Dec 29–Apr 30, T. L. Bancroft, ANIC 29-041298. **NSW**, 1♂, Mt Boppy, nr Cobar, 25 Nov 1949, S. J. Paramonov, ANIC 29-008908; 1♂, NSW, Mt Boppy, nr Cobar, 25 Nov 1949, S. J. Paramonov, ANIC 29-008908; 1♂, Carnarvon Nat. Park, Mt Moffatt Section, summit of Mt Moffatt, 1097 m, 25°04'S 148°03'E, 25 Nov 1995, D. K. Yeates, C. J. Burwell, QM; 1♂, Mt Moffat NP, Mt Moffat summit, 15 Dec 1987, D. K. Yeates, QM; 1♀, Basalt Ck, 4 km E Mitchell, 23 Nov 1979, K. L. Walker, on *Eucalyptus populnea* F. Muell., QM; 1♀, Westwood, 20 Oct 1927, A. P. Dodd, NHMUK; 1♂, Goondiwindi, 29 Dec 1927, FH Roberts, NHMUK. **NT**, 1♂, Border Waterhole, 15 km W Musselbrook Resource Centre, Lawn Hill NP, 200 m, NT

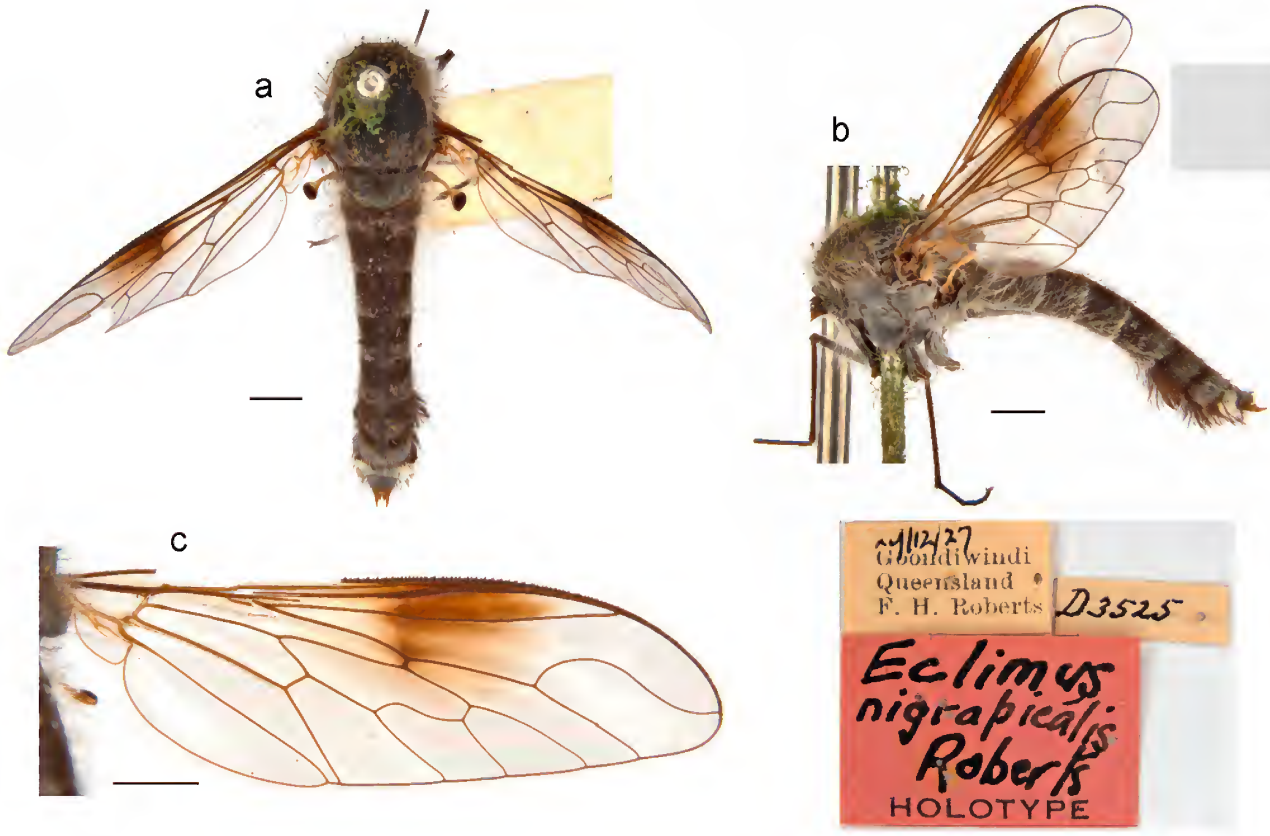

Figure 19. *Thevenetimyia nigrapicalis* (Roberts, 1929) ♂ holotype: *(a)* dorsal; *(b)* lateral; *(c)* wing. Scale bars = 1 mm.

Figure 20. *Thevenetimyia nigrapicalis* (Roberts, 1929) ♂: *(a)* dorsal; *(b)* lateral; *(c)* flagellum; *(d)* head, dorsal; *(e)* head, lateral; *(f)* head, frontal; *(g)* head, profile. Scale bars = 1 mm (a, b, d–h); = 0.1 mm (c).

Figure 21. *Thevenetimyia nigrapicalis* (Roberts, 1929) ♀ allotype: *(a)* dorsal; *(b)* lateral; *(c)* head, dorsal; *(d)* head, lateral; *(e)* wing; *(f)* head, frontal; *(g)* head, profile. Scale bars = 1 mm.

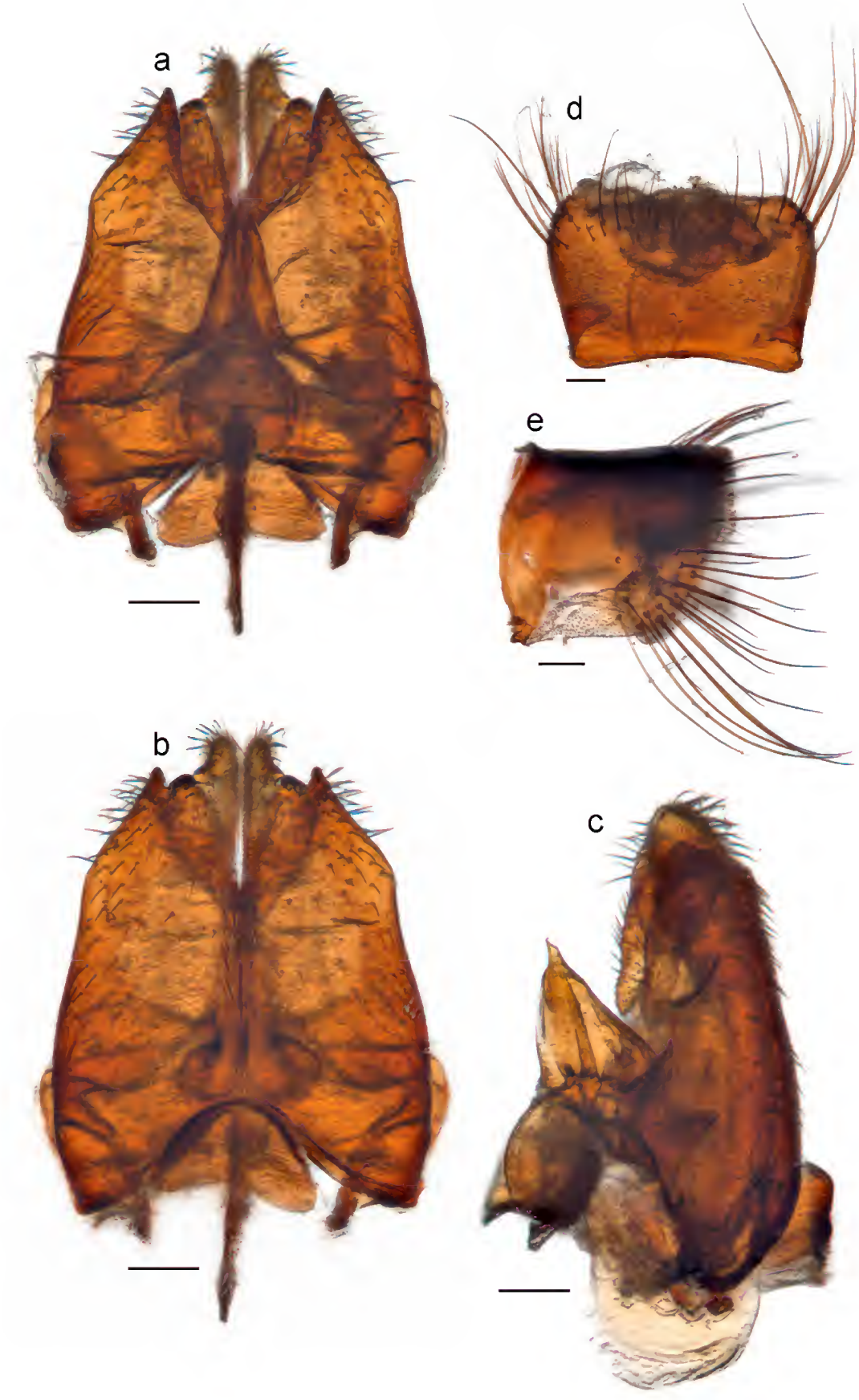

Figure 22. *Thevenetimyia nigrapicalis* (Roberts, 1929) ♂ genitalia: *(a)* genital capsule, dorsal; *(b)* genital capsule, ventral; *(c)* genital capsule, lateral; *(d)* epandrium, dorsal; *(e)* epandrium, lateral. Scale bars = 0.1 mm.

18°36'44"S 137°59'30"E, 19 Apr 1995, G. Daniels, M. A. Schneider, QM.

Diagnosis. Medium-sized *Thevenetimyia*, wing membrane mostly hyaline, dark infuscation present on middle part of anterior half; costa with two rows of small spines; scutum with two rows of distinct short, thick spines on pruinescence stripes, three uneven rows and some adjacent, separate spines; lateral areas of abdominal tergites 6 and 7 with dense long black hairs, lateral areas of tergite 8 dense long white hairs; outer apex of gonocoxite relatively narrow.

Redescription. **Male**. Body length 9.5–10.3 mm, wing length 8.1–8.7 mm.

Head. Head about 1.6× wider than long, mostly blackish with thick pale pruinescence and covered in admixed white to blackish brown hairs. Eye narrowly connected, by 0.5× length of ocellar tubercle. Frons slender and long, upper triangular section small, lower triangular section black with thick pale pruinescence, middle narrow part about 0.6× length of frons. Ocellar tubercle slightly raised, brown to blackish brown with grey pruinescence, with blackish brown hairs. Face with thick pale pruinescence and admixed dark yellow and white hairs, parafacial area dark brown and bare. Gena with thick pale pruinescence and long white hairs. Clypeus swollen, with thick pale pruinescence and white and admixed some dark yellow hairs. Occiput with long white hairs except dorsal margin admixed with brown to black hairs. Posterior eye margin slightly sinuous. Antennae blackish brown; scape and pedicel with thin pale pruinescence and black hairs, ventral face of scape admixed with white hairs. Scape 3.1× as long as wide, and 2.9× as long as pedicel, uniform from base to apex. Pedicel 1.2× as long as wide. Flagellum 5.8× as long as wide, 1.3× as long as scape+pedicel (1.8× as long as scape), conical and slightly laterally compressed, one-segmented with apical style (Fig. 20c). Palp thin and long, extending beyond oral cavity, black with blackish brown hairs, two-segmented, with palpal pit. Mouthparts slender, 4.0× as long as eye length (2.4× as long as head length), labella thin and filiform (Fig. 20e).

Thorax. Integumental colour of scutum and scutellum mostly black with sparse grey pruinescence, scutum with two pruinescence stripes, and pruinescence more dense around margins. Scutum and scutellum with admixed white and pale yellow hairs and long pale yellow scales. Three notopleural setae present. Postalar callus and posterior margin of scutellum with strong hairs. Notopleural setae and strong hairs on postalar callus pale yellow, setae on posterior margin of scutellum pale yellow to black. Scutum with two rows of distinct short, thick spines on pruinescence stripes, three uneven rows and some adjacent, separate spines. Pleura and coxae black with thick grey pruinescence, anepisternum, katepisternum and metepisternum with long white hairs, mediotergite with dense white hairs and setae, anepimeron, meron and laterotergite bare.

Legs. Legs blackish brown, mostly covered with white scales, except hind tibia with blackish brown scales. Fore and mid femora with long white hairs on ventral face, hind femur with a row of short ventral bristles. Other hairs and bristles on legs short and blackish brown to black. Fore tibia 2.2× longer than fore basitarsus, mid tibia 2.0× longer than mid basitarsus, hind tibia 1.9× longer than hind basitarsus.

Wings. Wing membrane mostly hyaline, dark infuscation present on middle part of anterior half, proximal side covering crossvein *r-m*, distal side reaching to apex of vein R_1, without a distinct margin. Cell r_5 widely open; cell *br* much longer than cell *bm*, crossvein *r-m* arising a little over half way from the base of cell *dm*; crossvein *m-m* long, and 2.0× as long as crossvein *r-m*; cell *cup* open (Fig. 19c). Costa with two rows of short, thick spines. Haltere stem pale yellow, knob black.

Abdomen. Integumental colour of tergites black with thin pale pruinescence, except lateral margin, posterior half of tergite 7 and tergites 8 and 9 with thick pruinescence. Tergites mostly covered with black scales and short black hairs. Tergite 1 covered with long white hairs. Tergites 2 to 5 with long white hairs admixed with black scales, posterior and lateral margins with white scales. Tergites 6 and 7 with white scales on posterior half, and lateral margins with dense long black hairs. Tergite 8 with dense long white hairs laterally. Genitalia. Epandrium wide and short, posterior margin slightly convex (Fig. 22d). Hypandrium present. Gonocoxal apex slightly narrower than the base in dorsal view, ejaculatory apodeme large (Figs 22a, b); gonocoxal apodeme strong and incurved; lateral ejaculatory process large, 2.5× longer than wide, apex not expanded; inner apex of gonocoxite rounded, elongate and broad; outer apex of gonocoxite relatively narrow; dorsal bridge without lateral hollow (Fig. 22c); gonostylus slender and pointed dorsally, 3.4× longer than wide.

Female. Body length 10.0 mm, wing length 7.5 mm. Very similar to male, except frons 2.5× as wide as ocellar tubercle, with short black hairs on dorsal half (Fig. 21c). Wing completely hyaline, costa without small spines (Fig. 21e). Abdominal tergite 8 devoid silver hairs.

Remarks. *Thevenetimyia nigrapicalis* (Roberts, 1929) is redescribed and images of external and internal characters are provided.

Distribution. NSW, QLD.

Thevenetimyia nuri
Rodrigues and Lamas, sp. nov.

Figs 23–25

Holotype ♂, Australia, QLD, Carnarvon NP, Mt Moffat Sect, Mt Moffat summit, 1097 m, 25°04'08"S 148°03'03"E, 29 Nov 1997, J. Skevington, C. Lambkin, S. Evans, ANIC 29-041497. **Paratypes**: 1♀, QLD, 6 km, N Taroom, 25°36'S 149°46'E, 27 Nov 1992, 200 m, G. Daniels, AM K.308711; 3♂♂, QLD, Carnarvon Nat. Park, Mt Moffatt Section, 1097 m, summit of Mt Moffatt, 25°04'S 148°03'E, 23 Nov 1995 D. K. Yeates & C. J. Burwell, QM T244604–06; 1♂, QLD, Mt Moffatt NP, SCQ, Mt Moffatt summit, 1097 m, 25°04'S 148°03'E, 23 Nov 1995, C. J. Burwell, QM T244607; 1♀, QLD, Mt Pollux, SW base, site 1, 22°28.7'S 147°52.3'E, 400 m, Malaise, brigalow, 12 Jan–05 Mar 2006, C. Burwell, QM T244608.

Other specimens examined. Australia, **QLD**: 1♀, 55 km NW Lockhart River, 12°45'S 143°05'E, 10 Nov 1988, K. Walker, NMV; 8♂♂, QLD, Carnarvon Nat. Park, Mt Moffatt Section, 1097 m, Summit of Mt Moffatt, 25°04'S 148°03'E, 25 Nov 1995, D. K. Yeates & C. J. Burwell, QM; 3♂♂, Mt

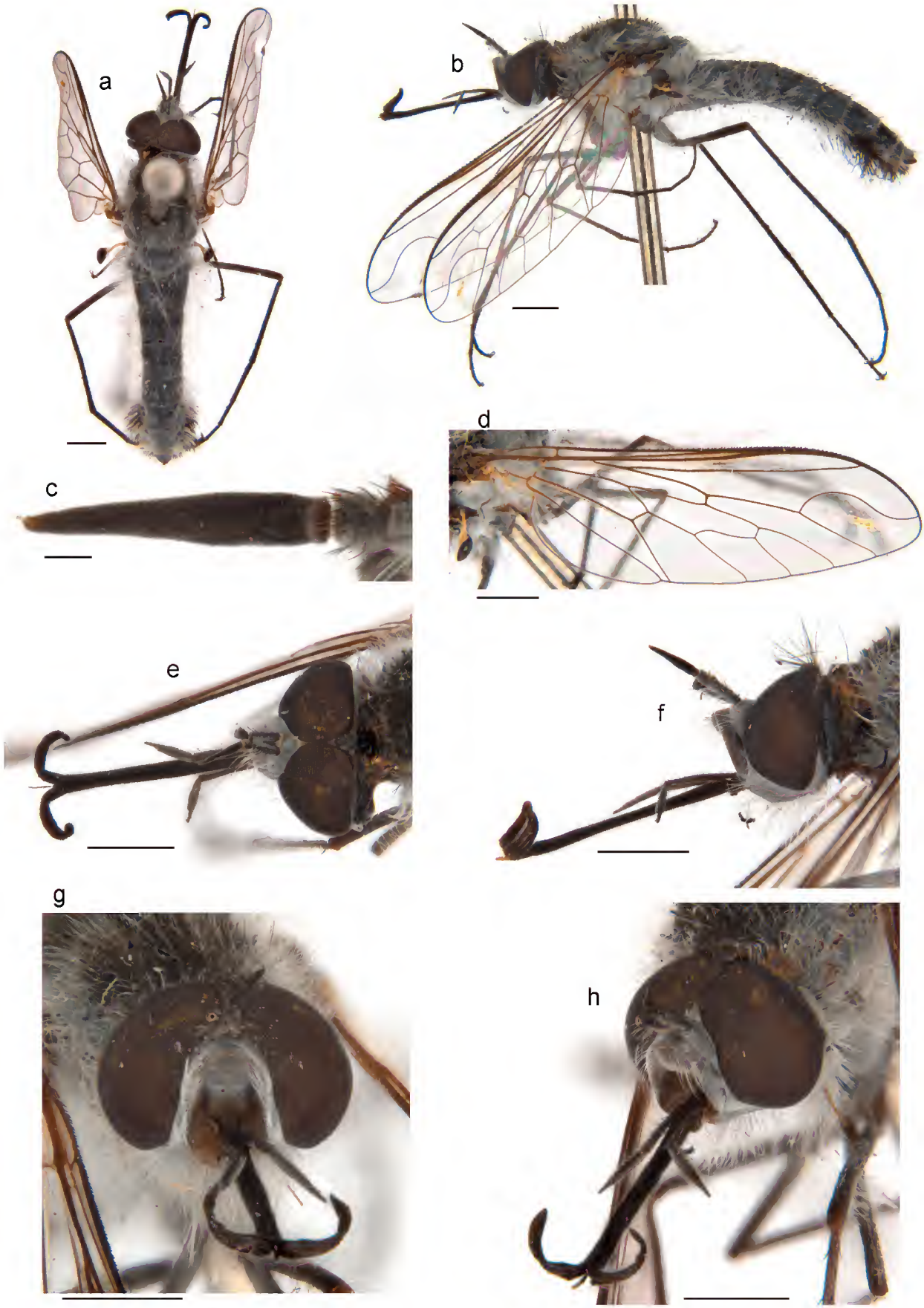

Figure 23. *Thevenetimyia nuri* Rodrigues and Lamas, sp. nov. ♂ holotype: *(a)* dorsal; *(b)* lateral; *(c)* flagellum; *(d)* wing; *(e)* head, dorsal; *(f)* head, lateral; *(g)* head, frontal; *(h)* head, profile. Scale bars = 1 mm (a, b, d–h); = 0.1 mm (c).

Figure 24. *Thevenetimyia nuri* Rodrigues and Lamas, sp. nov. ♀: *(a)* dorsal; *(b)* lateral; *(c)* head, dorsal; *(d)* head, lateral; *(e)* head, frontal; *(f)* head, profile. Scale bars = 1 mm.

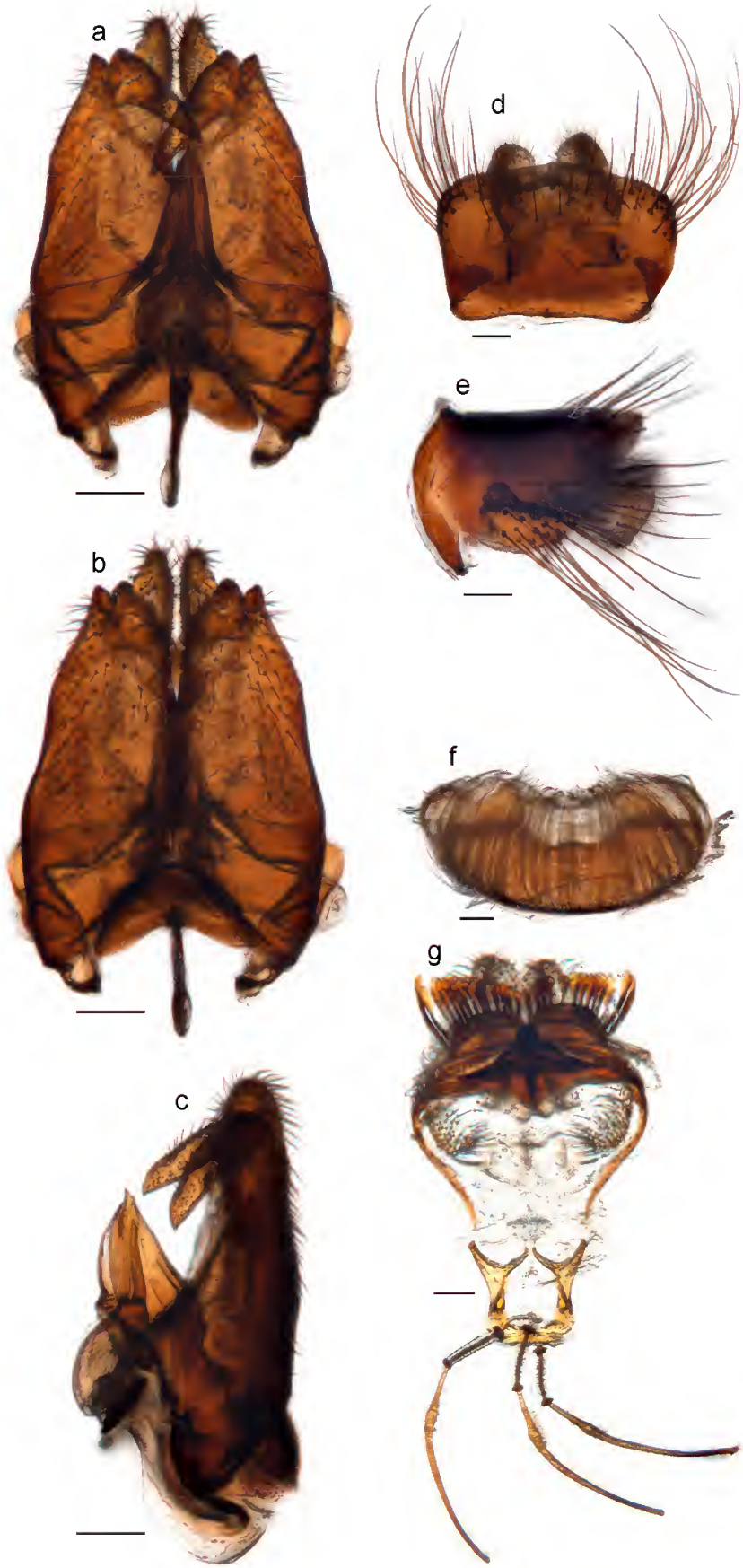

Figure 25. *Thevenetimyia nuri* Rodrigues and Lamas, sp. nov., genitalia (a–e ♂; f, g ♀): *(a)* genital capsule, dorsal; *(b)* genital capsule, ventral; *(c)* genital capsule, lateral; *(d)* epandrium, dorsal; *(e)* epandrium, lateral; *(f)* sternite 8, ventral; *(g)* genitalia and spermathecae. Scale bars = 0.1 mm.

Moffatt NP, SCQ, Mt Moffatt summit, 1097 m, 25°04'S 148°03'E, 25 Nov 1995, C. J. Burwell, QM; 2♂♂, Mt Moffatt NP, Mt Moffatt summit, 15 Dec 1987, D. K. Yeates, QM; 1♀, QLD, Helidon, 14.xii.1928, J. Mann, QM.

Diagnosis. Medium-sized *Thevenetimyia*, body covered with dense long white hairs; male eye near holoptic; wing membrane hyaline; costa with small spines; abdominal tergites 6 to 8 admixed with dense long black hairs ventrally; male epandrium with slender lobe anteroventrally; outer apex of gonocoxite relatively sharp.

Description. **Male**. Body length 9.4 mm, wing length 8.2 mm.

Head. Head about 1.7× wider than long, mostly blackish with thick pale pruinescence and covered in white and black hairs. Eye narrowly separated, by 0.2× width of ocellus. Frons slender and long, upper triangular section small, lower triangular section black, middle narrow part about 0.7× length of frons. Ocellar tubercle slightly raised, black with grey pruinescence, with black hairs. Face with thick pale pruinescence, with white hairs on laterodorsal area. Gena with thick pale pruinescence and long white hairs. Clypeus swollen, with thick pale pruinescence and long white hairs admixed with some blackish brown hairs. Occiput with long white hairs except dorsal margin admixed with black hairs. Posterior eye margin slightly sinuous. Antennae blackish brown; scape and pedicel with thick pale pruinescence and black hairs, except ventral half of scape with white hairs. Scape 3.5× as long as wide, and 3.5× as long as pedicel, uniform from base to apex. Pedicel 1.1× as long as wide. Flagellum 6.5× as long as wide, 1.1× as long as scape+pedicel (1.6× as long as scape), conical and slightly laterally compressed, one-segmented with apical style (Fig. 23c). Palp thin and long, extending beyond oral cavity, black with blackish brown hairs, two-segmented, with palpal pit. Mouthparts slender, 3.7× as long as eye length (2.4× as long as head length), labella thin and filiform (Fig. 23f).

Thorax. Integumental colour of scutum and scutellum mostly black with thick pale pruinescence, pruinescence more dense around margins. Scutum and scutellum covered with long white hairs. Three pale yellow notopleural setae present, postalar seta absent. Scutum with some short, thick spines. Pleura and coxae black with thick pale pruinescence, anepisternum, katepisternum, katepimeron, metepisternum and mediotergite with dense long white hairs, anepimeron, meron and laterotergite bare.

Legs. Legs mostly blackish brown. Femora covered with white scales and long white hairs on ventral half, tibia most with blackish brown scales but posterior face of fore and mid tibia admixed with white scales. Hind femur with a row of short ventral bristles on apical half. Other hairs and bristles on legs short and blackish brown to black. Fore tibia 1.8× longer than fore basitarsus, mid tibia 2.2× longer than mid basitarsus; hind tibia 2.0× longer than hind basitarsus.

Wings. Wing membrane hyaline, only slightly infuscated on area around crossvein *r-m*. Cell r_5 widely open; cell *br* much longer than cell *bm*, crossvein *r-m* arising a little over half way from the base of cell *dm*; crossvein *m-m* long, and 1.0× as long as crossvein *r-m*; cell *cup* open (Fig. 23d). Costa with small spines. Haltere stem brown, knob blackish brown.

Abdomen. Integumental colour of tergites black with thick pale pruinescence, laterally covered with long white hairs and medial area with short black hairs admixed white hairs. Tergites 7 to 9 with dense long black hairs lateroventrally, tergites 8 and 9 with dense long white hairs laterally. Sternites with dark brown integumental colour except posterior margins yellow, with thick grey pruinescence and white hairs, sternites 6 to 8 admixed with some black hairs. Genitalia. Epandrium wide and short, posterior margin slightly convex, anteroventral with a slender lobe (Fig. 25d). Hypandrium present. Gonocoxal apex slightly narrower than the base in dorsal view, ejaculatory apodeme relatively small (Figs 25a, b); gonocoxal apodeme strong and incurved; lateral ejaculatory process strong, 2.4× longer than wide, apex expanded; inner apex of gonocoxite rounded, elongate and broad; outer apex of gonocoxite relatively sharp; dorsal bridge without lateral hollow (Fig. 25c); gonostylus slender and pointed dorsally, 5.0× longer than wide.

Female. Body length 9.8–10.0 mm, wing length 8.8–9.0 mm. Very similar to male, except frons black with thick pale pruinescence, 2.0× as wide as ocellar tubercle, frons with black hairs (Fig. 24c). Occiput with black setae. Wing membrane hyaline, costa without small spines. Scutum and scutellum admixed with some black hairs, posterior margin of scutellum with long black setae. Abdomen tergites mostly covered with black hairs and scales, tergite 1 with white scales and posterior margin with long black hairs; tergites 2 to 6 with white hairs and scales laterally; tergite 8 with white scales on middle area; tergites 7 and 8 with dense long black hairs laterally. Sternites 7 and 8 admixed with some black hairs. Posterior margin of tergite 7 with slender dorsal median apodeme. Tergite 7 with ventral spines. Tergite 8 with a row of sparse hairs, 13 acanthophorite spines present, lateral spines long, spines in middle short, apex of spines expanded. Furca straight and connected at apex. Sperm pump strong and nearly as long as furca, not clothed in longitudinal muscle, with lateral papillae; distal spermathecal duct short but strong; spermatheca elongate, cylindrical, base slightly swollen (Fig. 25g).

Remarks. *Thevenetimyia nuri* Rodrigues & Lamas, sp. nov. is similar to *Thevenetimyia fergusoni* Li & Rodrigues, sp. nov., but differs as follows: palpus longer; male eye near holoptic; wing costa and scutum with small spines; outer apex of gonocoxite sharper; epandrium with anteroventral slender lobe.

Distribution. QLD.

Etymology. The name derives from the Nuri Aboriginal people who once lived on the lowland southern areas in the Mt Moffatt section. The specific epithet is treated as a noun in apposition.

Thevenetimyia tenta Hall, 1969

Figs 26–28

Thevenetimyia tenta Hall, 1969: 75. Type-locality: Australia (NSW); holotype, ANIC.

Types and other specimens examined. Holotype ♂, Australia, **NSW**, Currajong [spelt "Currajang" in Hull (1969: 76), might be a synonym of the Blue Mountains town "Kurrajong"], Macl[eay] M[useum], now in ANIC 29-009852 (Figs 26, 28g). **QLD**, 1♀, Rockhampton, Macl[eay] M[useum], ANIC 29-041303; 2♂♂, QLD, Rockpool Gorge, Mt Walsh NP, Biggenden, 4 Oct 1976, H. Frauca, ANIC 29-041299–300; 1♂, QLD, Bluff Ra. foothills, Biggenden, Sep 1974, H. Frauca, ANIC 29-041301; 1♀, QLD, Sunnybank, 15 Oct 1939, C. F. Ashby, ANIC 29-041302.

Diagnosis. Medium to small-sized *Thevenetimyia*, wing membrane with large dark brown infuscation on apical half, middle of cell r_{2+3} with a narrow lighter brown spot, wing apex hyaline; costa with two rows of small spines; scutum and scutellum with golden scales; abdominal tergites 6 to 8 with dense lateral long black hairs.

Redescription. **Female**. Body length 8.1–13.2 mm, wing length 7.9–11.7 mm.

Head. Head about 1.4× wider than long, mostly blackish with thick pale pruinescence and covered in admixed white to blackish brown hairs. Frons blackish brown with thick pale pruinescence, 2.5× as wide as ocellar tubercle, frons with blackish brown hairs (Fig. 26e). Ocellar tubercle slightly raised, brown to blackish brown with grey pruinescence, with blackish brown hairs. Face with thin pale pruinescence, lateral area of antenna with some brown hairs, parafacial area dark brown and bare. Gena with thin pale pruinescence and long white hairs. Clypeus swollen, with thick pale pruinescence and admixed white and brown hairs. Occiput with long white hairs except dorsal margin with blackish brown hairs. Posterior eye margin slightly sinuous. Antennae blackish brown; scape and pedicel with thin pale pruinescence and black hairs, ventral face of scape admixed with white hairs. Scape 3.4× as long as wide, and 3.4× as long as pedicel, uniform from base to apex. Pedicel 0.9× as long as wide. Flagellum 5.0× as long as wide, 1.4× as long as scape+pedicel (1.8× as long as scape), conical and slightly laterally compressed, one-segmented with apical style (Fig. 26c). Palp thin and long, extending beyond oral cavity, black with blackish brown hairs, two-segmented, with palpal pit. [Mouthparts broken, apex of proboscis missing.]

Thorax. Integumental colour of scutum and scutellum mostly black with sparse grey pruinescence, pruinescence more dense around margins. Scutum and scutellum with golden scales admixed with a few blackish brown hairs, except margin with dense white scales. Three notopleural setae present, postalar seta absent. Postalar callus and posterior margin of scutellum with strong hairs. Notopleural setae pale yellow, strong hairs on postalar callus and posterior margin of scutellum pale yellow to white. Pleura and coxae black with thick grey pruinescence, anepisternum, dorsal half of katepisternum and metepisternum with long white hairs, mediotergite with dense white hairs and setae, anepimeron, meron and laterotergite bare.

Legs. Legs brownish yellow, mostly covered with blackish brown scales, except posterior face of femora with white scales. Other hairs and bristles on legs short and blackish brown to black. Fore tibia 2.0× longer than fore basitarsus, mid tibia 2.0× longer than mid basitarsus. [Hind tarsus broken.]

Wings. Wing membrane with large brown infuscation on apical half, but wing apex hyaline. Apical 0.4 of cell r_1, apical 0.9 to 0.6 of cell r_{2+3}, basal 0.4 of cell r_4, basal 0.8 of cell r_5, apical 0.3 of cell *dm*, basal 0.9 of cell m_1, apical 0.8 of cell m_2, and apical 0.5 of cell cua_1 all covered by the infuscation, anterior darker than posterior, posterior without a distinct margin. Cell r_5 widely open; cell *br* much longer than cell *bm*, crossvein *r-m* arising a little over half way from the base of cell *dm*; crossvein *m-m* long, and 2.0× as long as crossvein *r-m*; cell *cup* open (Fig. 26d). Costa without small spines. Haltere stem pale yellow, knob black.

Abdomen. Integumental colour of tergites dark brown with thin pale pruinescence, except lateral margin with thick pruinescence. Tergites mostly covered with blackish brown scales and short black hairs. Tergite 1 covered with admixed white and pale yellow scales lateral with long white hairs. Tergites 2 to 5 with white scales laterally. Tergites 6 and 7 with long black hairs laterally. Sternites with dark brown integumental colour except posterior margins yellow, with thick grey pruinescence and white hairs. Genitalia. Posterior margin of tergite 7 with slender dorsal median apodeme. Tergite 7 with ventral spines. Tergite 8 with a row of sparse hairs, 11 acanthophorite spines present, lateral spines long, spines in middle short, apex of spines expanded. Furca narrow and straight, connected at apex. Sperm pump strong and nearly as long as furca, not clothed in longitudinal muscle, with few lateral papillae; distal spermathecal duct short but strong; spermatheca elongate, cylindrical (Fig. 28g).

Male. Body length 13.7–15.0 mm, wing length 12.1–13.5 mm. Very similar to female, except wing costa with two rows of short, thick spines. Genitalia. Epandrium wide and short, posterior margin slightly convex (Fig. 28d). Hypandrium present. Gonocoxal apex slightly narrower than the base in dorsal view, ejaculatory apodeme large (Fig. 28a,b); gonocoxal apodeme strong and incurved; lateral ejaculatory process strong, 2.2× longer than wide, apex expanded; inner apex of gonocoxite rounded, elongate and broad; outer apex of gonocoxite rounded; dorsal bridge with long lateral hollow (Fig. 28c); gonostylus slender and pointed dorsally, 3.2× longer than wide.

Remarks. *Thevenetimyia tenta* Hall, 1969 is redescribed and the male is described for the first time. The holotype of *Thevenetimyia tenta* Hall, 1969 is smaller than all other specimens we examined. Some specimens middle of wing cell r_{2+3} with a narrow lighter brown spot.

Distribution. NSW, QLD.

Figure 26. *Thevenetimyia tenta* Hall, 1969 ♀ holotype: *(a)* dorsal; *(b)* lateral; *(c)* flagellum; *(d)* wing; *(e)* head, dorsal; *(f)* head, lateral; *(g)* head, frontal; *(h)* head, profile. Scale bars = 1 mm (a, b, d–h); = 0.1 mm (c).

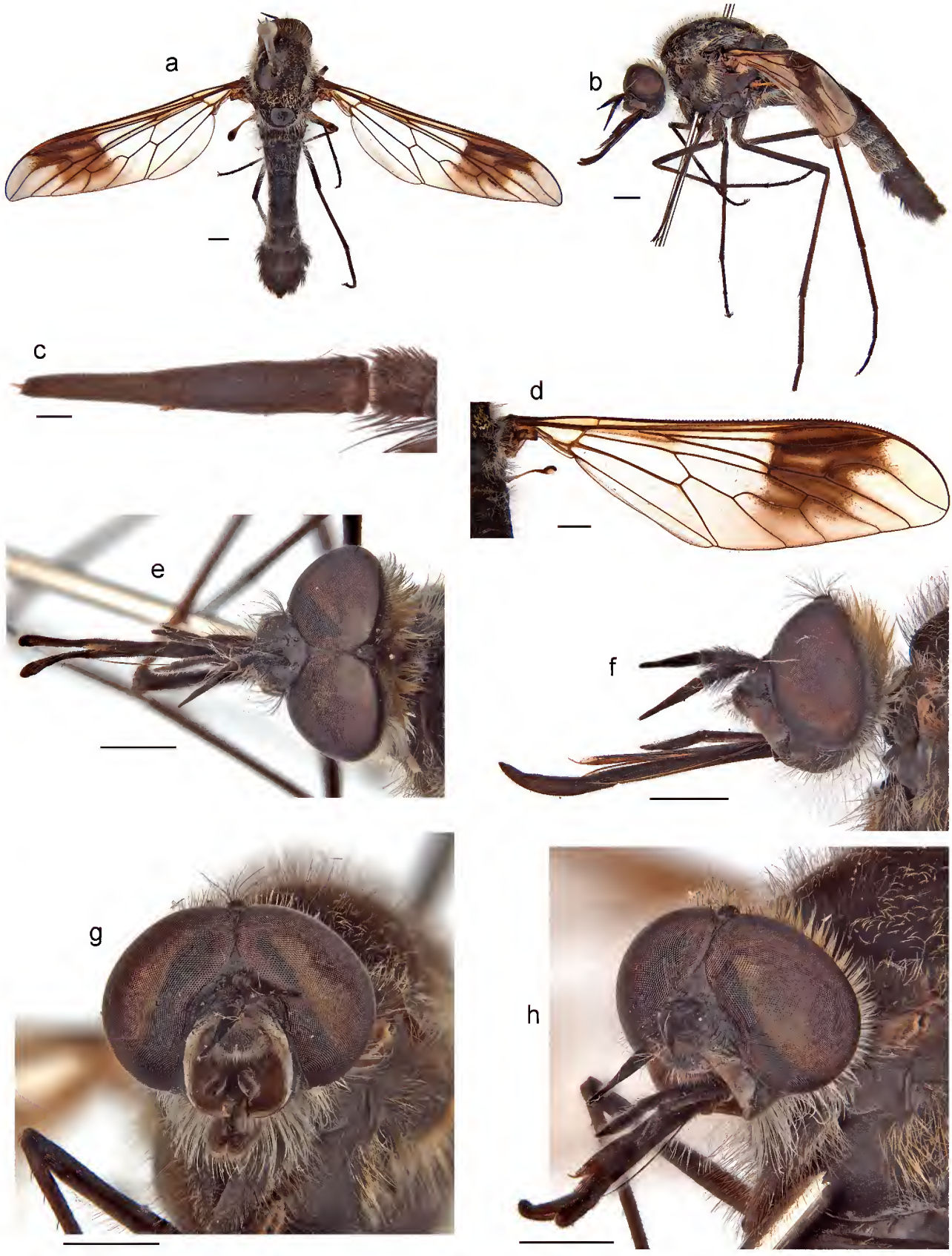

Figure 27. *Thevenetimyia tenta* Hall, 1969 ♂: *(a)* dorsal; *(b)* lateral; *(c)* flagellum; *(d)* wing; *(e)* head, dorsal; *(f)* head, lateral; *(g)* head, frontal; *(h)* head, profile. Scale bars = 1 mm (a, b, d–h); = 0.1 mm (c).

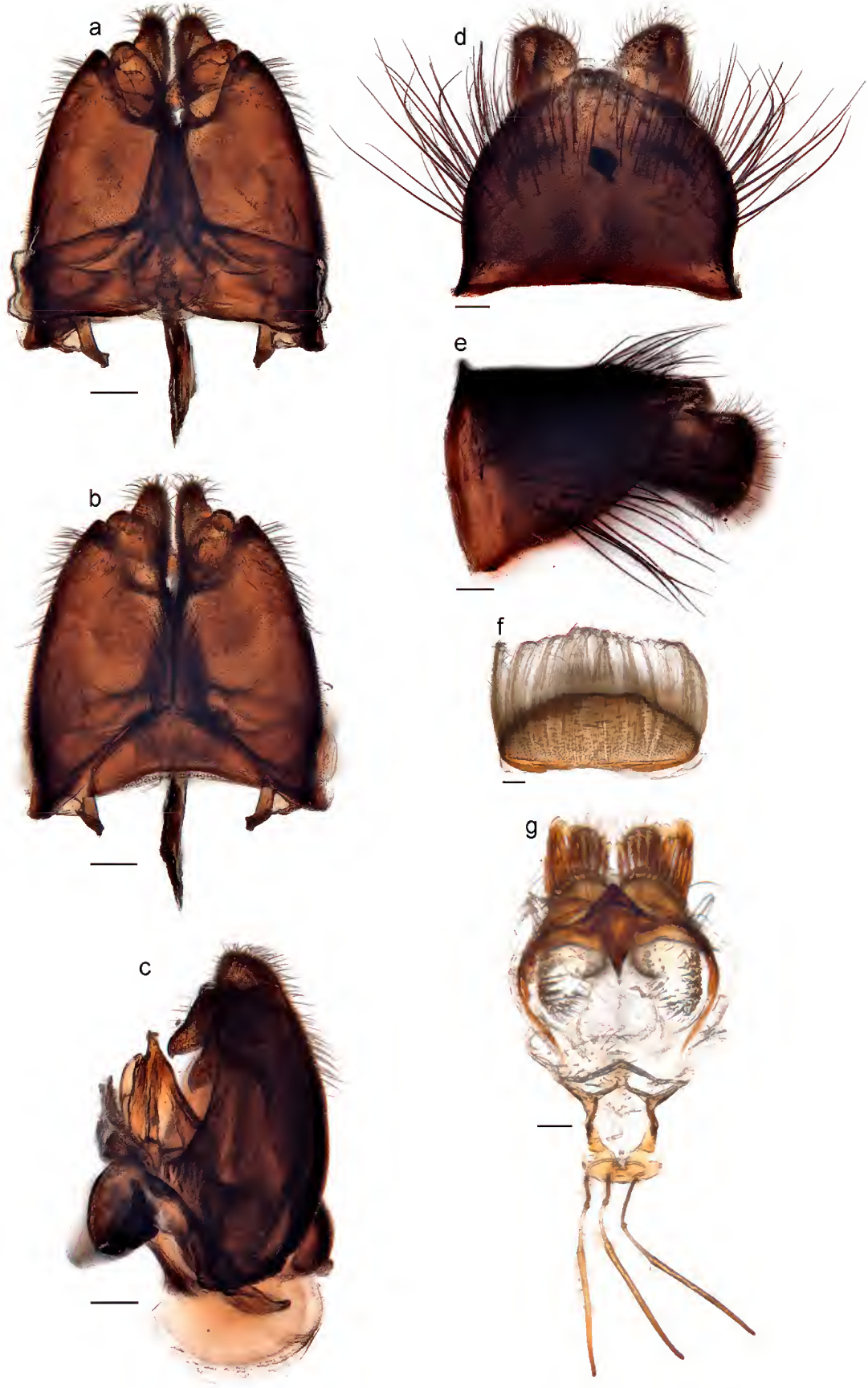

Figure 28. *Thevenetimyia tenta* Hall, 1969 genitalia (a–e ♂; f, g ♀): *(a)* genital capsule, dorsal; *(b)* genital capsule, ventral; *(c)* genital capsule, lateral; *(d)* epandrium, dorsal; *(e)* epandrium, lateral; *(f)* sternite 8, ventral; *(g)* genitalia and spermathecae. Scale bars = 0.1 mm.

Pupal Cases of *Thevenetimyia*

Among specimens of the genus we had access to the pupal cases of the Australian species, *Thevenetimyia longipalpis* (Hardy, 1921), described for the first time herein, and the North American species, *Thevenetimyia lanigera* (Crasson, 1919), described by Cresson in 1919.

Thevenetimyia longipalpis (Hardy, 1921)

Fig. 29

Eclimus longipalpis Hardy, 1921: 63. Type-locality: Australia (NSW); holotype, AM.
Thevenetimyia longipalpis (Hardy, 1921).–Hall, 1969: 43.

Specimens examined. Australia, ACT, 1♂ pupal case, Mt Clear, emg Jan 1981, K. R. Pullen, from *Acacia dealbata* infested with Bostrychidae + wasp parasite.

Description. *Pupal case*. Length: 7.3 mm. Head width: 1.0 mm. Thorax width: 1.1 mm. Abdominal width: 1.2 mm, tapering to 0.3 mm at width of anal segment. *Coloration*. predominantly pale yellow, spines dark brown to black. Head. Armed with 6 pairs of cephalic spines. One anterior antennal processes (aap) present, aap strong with a small anterodorsal spine, aap 3.0× longer than the anterodorsal spine (Figs 29g, h), base area of anterodorsal spine with one dorsal long hair, base area of aap with one lateral long hair. Two posterior antennal processes (pap) present, one large anterior pap with two lateral small spines fused in basal area, one small anteroventral pap with ventral lobe (Figs 29g, h). One lateral facial spine (lfsp) present, one median facial hair (mfha) present, one frontal spine (fsp) present. Labral sheath (lsh) long, slightly rugose laterally. Proboscidal sheath (prsh) long, as long as lsh, smooth. Maxillary sheath (msh) smooth, extending 0.3 length of prsh. Palpal sheath (pash) smooth, extending 0.6 length of lsh (Figs 29c, d). Thorax. Mostly smooth, one small posterior mesothoracic callosity (pmc) present, without other spines or setae. Wing sheath (wsh) and base half of leg sheaths (lesh) smooth, apex half of lesh rugose (Fig. 29d). Fore leg sheath (lesh 1) not exceeding apex of wing sheath, mid leg heath (lesh 2) reaching abdominal segment 4, hind leg sheath (lesh 3) reaching abdominal segment 6. Abdomen. Eight abdominal segments visible, segments 8 and 9 fused (Fig. 29b). Abdominal tergite 1 with small short spines, with short setae in the middle. Abdominal tergites 1 to 7 with well-developed chitinous rods with posterior apex raised as spines, and with short setae in the middle (Fig. 29e). Abdominal pleurae 2 to 7 each with a transverse row of short setae. Sternites 6 and 7 with a transverse row of setae on posterior half. Anal segment rugose, one dorsal rugose plate present (Fig. 29i), one ventral small spine present (Fig. 29j). Dorsal posterolateral process (dpp) large and slightly incurved, ventral posterolateral process (vpp) vestigial, tuberculate (Fig. 29j).

Thevenetimyia lanigera (Cresson, 1919)

Fig. 30

Eclimus laniger Cresson, 1919: 182. Type-locality: USA (California); holotype in ANSP.
Eclimus leechi Hall, 1954b: 147. Type-locality: USA (California); holotype in CAS; new synoymy given by Hall (1969: 40).
Thevenetimyia lanigera (Cresson, 1919).–Hall, 1969: 40.

Specimens examined. **USA**, 1♀ pupal case, California, Los Gatos, 31 May 1918, reared, BPBM; 4 pupal cases, California, 1917, BPBM; holotype USA, of the "*Eclimus leechi* Hall, 1954"♀, pupal case, California, Marin Co., Mill Valley, 1 Jul 1951, H. B. Leech, emerged from *Ceanothus thyrsiflorus* heavily infested by *Ptilinus* (CAS type no. 6347).

Redescription. *Pupal case*. Length: 8.0–10.6 mm. Head width: 1.4–1.5 mm. Thorax width: 1.6–2.0 mm. Abdominal width: 1.6–2.0 mm, tapering to 0.4–0.5 mm at width of anal segment. *Coloration*. predominantly pale yellow, spines dark brown to black. Head. Armed with 6 pairs of cephalic spines. One anterior antennal processes (aap) present, aap strong with a small anterodorsal spine (Figs 30g, h), base area of anterodorsal spine with one dorsal long hair, base area of aap with one lateral long hair. Two posterior antennal processes (pap) present, one large anterior pap with lateral small raise from basal area, one small anteroventral pap with ventral lobe (Figs 30g, h). One lateral facial spine (lfsp) present, one median facial hair (mfha) present, one frontal spine (fsp) present. Labral sheath (lsh) short, slightly rugose laterally. Proboscidal sheath (prsh) short, slightly longer than lsh, smooth. Maxillary sheath (msh) smooth, extending 0.8 length of prsh. Palpal sheath (pash) smooth, extending 0.8 length of lsh (Figs 30c, d). Thorax. Mostly smooth, one small and weak posterior mesothoracic callosity (pmc) present, without other spines or setae. Wing sheath (wsh) and base half of leg sheaths (lesh) smooth, apex half of lesh rugose (Fig. 30d). Fore leg sheath (lesh 1) not exceeding apex of wing sheath, mid leg heath (lesh 2) reaching abdominal segment 4, hind leg sheath (lesh 3) reaching abdominal segment 6. Abdomen. Eight abdominal segments visible, segments 8 and 9 fused (Fig. 30b). Abdominal tergites 1 and 7 with small short spines, with short setae in the middle. Abdominal tergites 1 to 6 with well-developed chitinous rods with posterior apex raised as spines, and with short setae in the middle (Fig. 30e). Abdominal pleurae 2 to 7 each with a transverse row of short setae. Sternites 6 and 7 with a transverse row of setae on posterior half. Anal segment rugose, one dorsal rugose plate present (Fig. 30i), one ventral small spine present (Fig. 30j). Dorsal posterolateral process (dpp) large and slightly incurved, ventral posterolateral process (vpp) vestigial, tuberculate (Fig. 30j).

Remarks. *T. lanigera* is similar to *T. longipalpis*, but differs by having a short lsh and prsh; and a less armed aap and pap. Both are similar to Hull's drawing of a *Thevenetimyia* pupa (1973).

The only pupae described from the tribe Eclimini were *Thevenetimyia lanigera* (Cresson, 1919) (Hall, 1954) and *Lepidophora culiciformis* Walker (Lamas & Lopes, 2004). The pupae of *Lepidophora* is similar to *Thevenetimyia*, but differs as follows: mfha located further from middle; spines on dorsal of abdominal segment 8+9 stronger; aap and pap shorter; legs short. The characters shared by *Lepidophora* and *Thevenetimyia* are: hairs short; dpp small and blunt; vpp vestigial; pap small. Bombyliidae pupae do exhibit considerable variation and future, more extensive, comparative studies will reveal the taxonomic and phylogenetic utility of pupal characters.

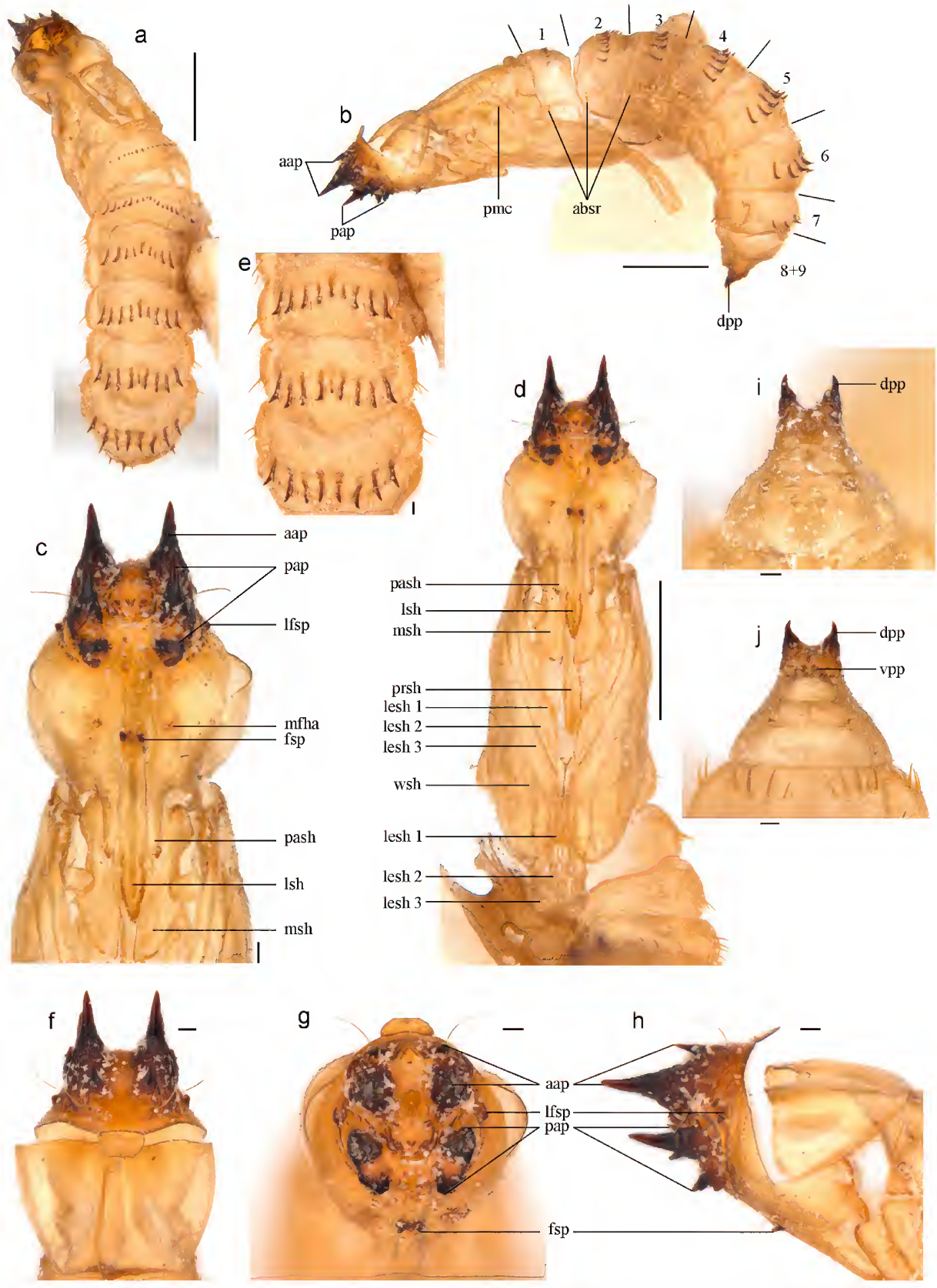

Figure 29. *Thevenetimyia longipalpis* (Hardy, 1921) pupal case: *(a)* dorsal; *(b)* lateral; *(c)* head, ventral; *(d)*; head and thorax, ventral; *(e)* abdominal segments 4 to 6, dorsal; *(f)* cephalic spines, dorsal; *(g)* cephalic spines, frontal; *(h)* cephalic spines, lateral; *(i)* anal segment, dorsal; *(j)* anal segment, ventral. Scale bars = 1 mm (c, e–j); 0.1 mm (a, b, d). Abbreviations: *aap* = anterior antennal process; *absr* = abdominal spiracle; *dpp* = dorsal posterolateral process; *fsp* = frontal spine; *lesh 1* = fore leg sheath; *lesh 2* = mid leg sheath; *lesh 3* = hind leg sheath; *lfsp* = lateral facial spine; *lsh* = labral sheath; *mfha* = median facial hair; *msh* = maxillary sheath; *pap* = posterior antennal process; *pash* = palpal sheath; *pmc* = posterior mesothoracic callosity; *prsh* = proboscidal sheath; *vpp* = ventral posterolateral process; *wsh* = wing sheath.

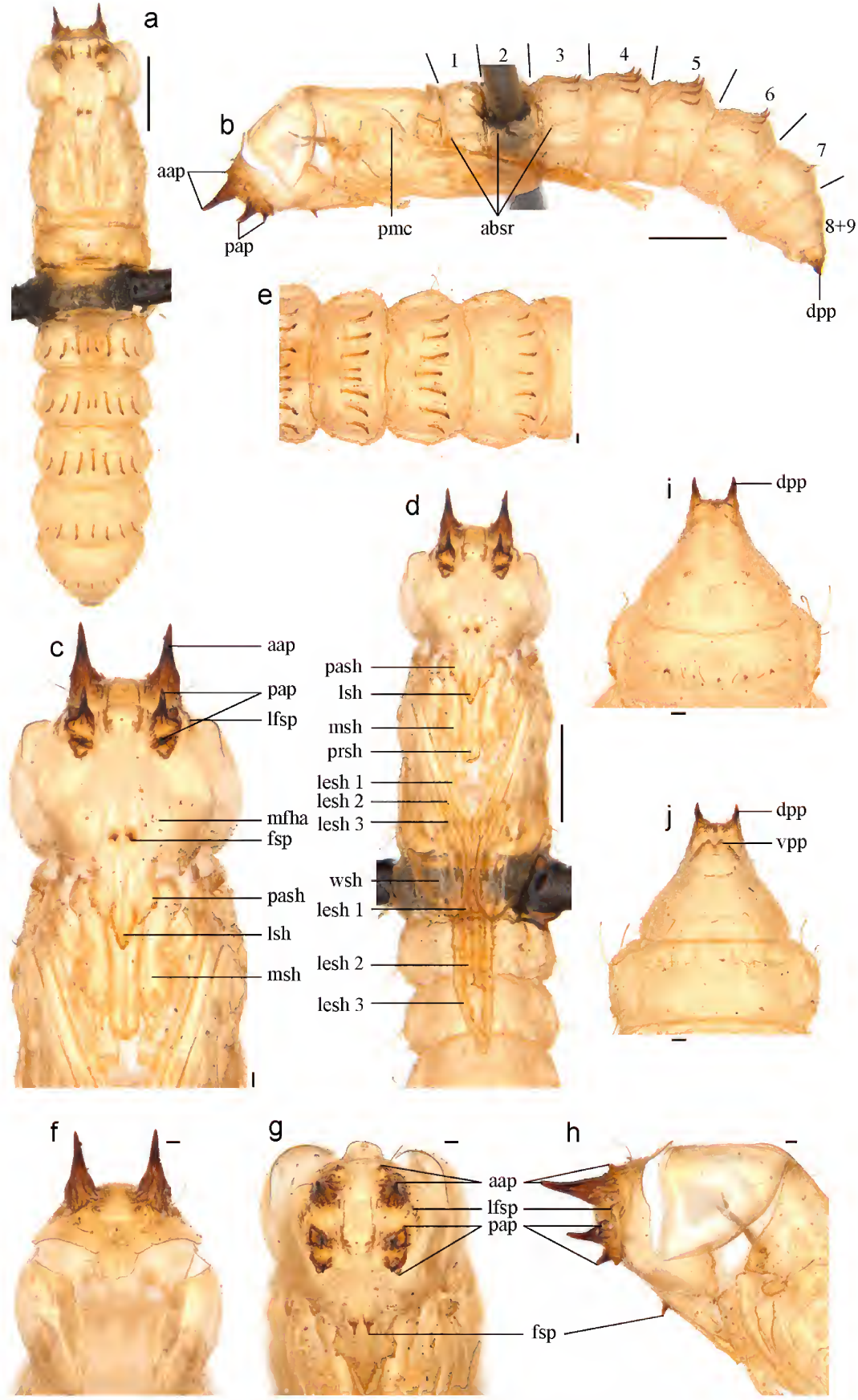

Figure 30. *Thevenetimyia lanigera* Cresson, 1919 pupal case: *(a)* dorsal; *(b)* lateral; *(c)* head, ventral; *(d)*; head and thorax, ventral; *(e)* abdominal segments 4 to 6, dorsal; *(f)* cephalic spines, dorsal; *(g)* cephalic spines, frontal; *(h)* cephalic spines, lateral; *(i)* anal segment, dorsal; *(j)* anal segment, ventral. Scale bars = 1 mm (c, e–j); = 0.1 mm (a, b, d).

Host records for *Thevenetimyia*

Du Merle (1975) summarized the host records of *Thevenetimyia* species he obtained from Jack Hall (University of California, Riverside): *Thevenetimyia* sp. reared from *Phymatodes* sp. (Cerambycidae) (1969); *T. accedens* on *Callimoxys fuscipennis* (Cerambycidae) (1969); *T. lanigera* reared one from logs which contained *Ptilinus acuminatus* (Anobiidae) (1954). According to Hull (1973), the pupae of USA *Thevenetimyia* are normally found in dead or decaying wood (e.g., *Acer*, *Umbellularia californica*), and the adults of *Thevenetimyia* observed to have a propensity for fire-blackened trees.

Pupae of two of the Australian species, *T. longipalpis* (Hardy, 1921) and *T. major* Li and Yeates, sp. nov., were found protruding from decaying *Acacia* trunks. Kim Pullen (ANIC) collected *T. longipalpis* together with different wood feeding beetle larvae such as Bostrychidae, Buprestidae and Cerambycidae.

Based on these records, the genus is a parasite of beetle larvae feeding on dead or decaying wood in both Australia and the USA.

Sexual dimorphism of wing and scutum

Most species of *Thevenetimyia (T. australiensis, T. furvicostata, T. infuscata* Li and Yeates, sp. nov., *T. longipalpis, T. mimula, T. nigrapicalis, T. tenta, T. accedens, T. californica, T. canuta, T. funesta, T. harrisi, T. lanigera, T. lotus, T. luctifera, T. maculipennis, T. magna, T.melanderi, T. muricata, T. notata, T. painterorum, T. phalantha, T. quadrata, T. sodalis* and *T. speciosa)* display sexual dimorphism in the setae on the leading edge of the costa of the wing. This modification might be a synapomorphy of this genus but lost in some species. Females have normally tapering setae (Fig. 31a), but males have shortened, blunt setae (Fig. 31b). The same morphology and dimorphism is found in the Eclimini genera *Cyrtomyia* Bigot (Lamas & Rodrigues, 2013) and *Lepidophora* Westwood (Rodrigues & Lamas, 2013), and in the Lomatiinae genus *Comptosia* and was studied in detail by Dodson & Yeates (1990) while observing the mating system of *C. tutela* Yeates. In addition, characteristic scratches on the scutum of male *Thevenetimyia* are very similar to those found on male *C. tutela*, and are also likely caused by the blunt costal spines of rival males

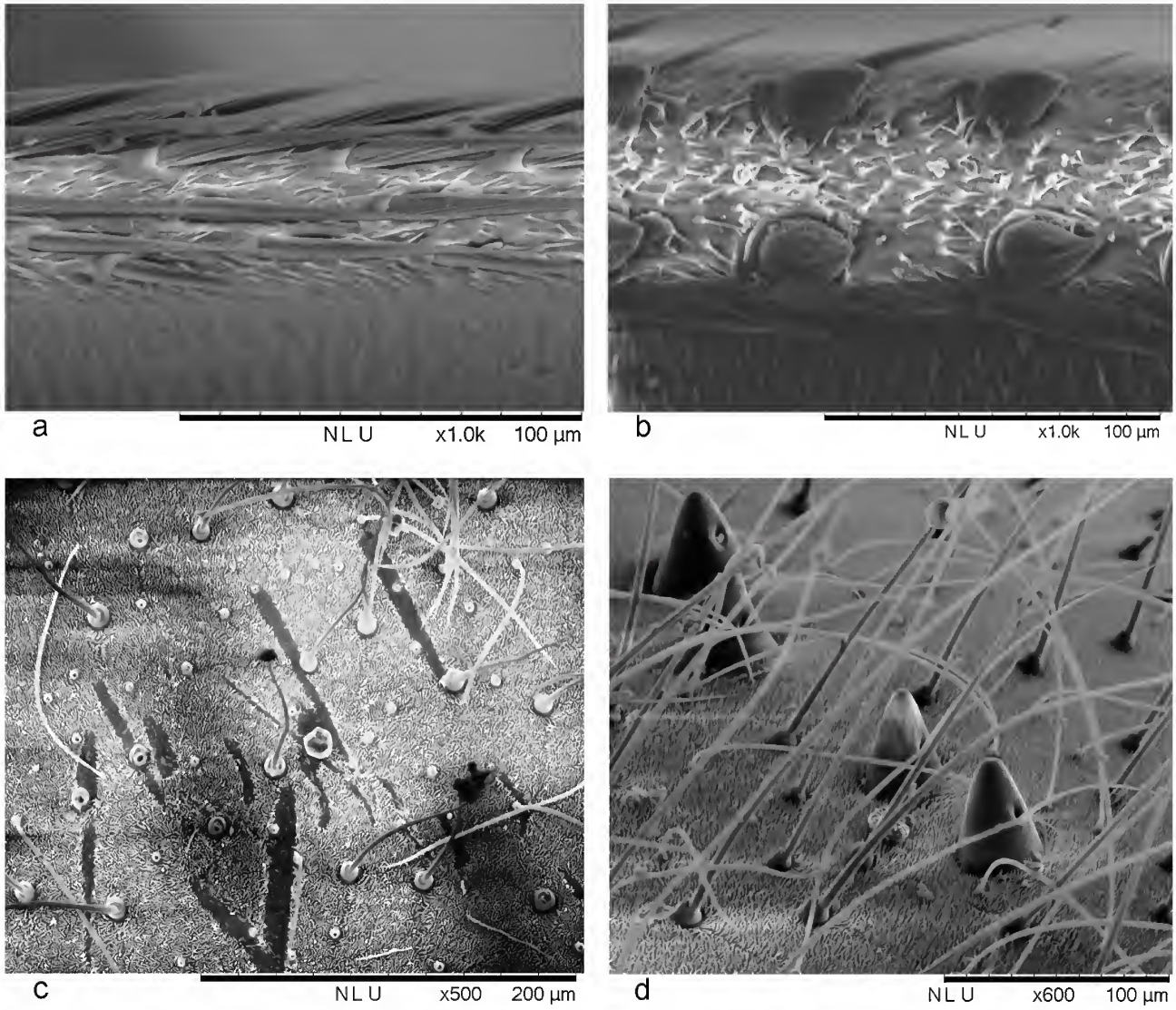

Figure 31. *Thevenetimyia australiensis* Hall, 1969, SEM: *(a)* female wing costa; *(b)* male wing costa; *(c)* male scutum, showing scratches; *(d)* male scutum, showing modified base of microtrichia.

as they clash in flight over access to territories. Unlike *Comptosia*, some *Thevenetimyia* males also have distinctive blunt projections on the scutum that are probably enlarged hair bases (Fig. 31d). These may function to protect the male scutum from the blunt spines of rival males.

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