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## Signal Flies of the Genus *Bama* (Diptera: Platystomatidae) in Papua New Guinea

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**ABSTRACT.** The genus *Bama* McAlpine, 2001, is known only from the mainland of Papua New Guinea. The main diagnostic characters for the genus are listed, and a key is given to the 16 available species, several of which are known only from one sex. *Xiria strigata* Hennig, 1940, is treated as a new junior synonym of *Bama papuanum* (Hennig, 1940). The following new species are described: *Bama aurantium*, *B. bickeli*, *B. brevitarse*, *B. divergens*, *B. flavifrons*, *B. flexifer*, *B. grande*, *B. gressitti*, *B. ismayi*, *B. martini*, *B. monstrans*, *B. robertsi*, *B. signifer*.

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The small amount of available material of *Bama* has limited the coverage and accuracy of this taxonomic treatment. Probably many more species occur on mainland New Guinea (including Indonesian West New Guinea) than are here recognised, and significant taxonomic characters of male genitalia are known for only eight of the sixteen species, though other important specific characters are used.

Morphological terminology follows that used in my previous studies of Platystomatidae (McAlpine, 1973; 2001) except that I have modified some terms for parts of the aedeagus (see below).

The following abbreviations refer to institutions holding specimens.

AM	Australian Museum, Sydney
ANIC	Australian National Insect Collection, Canberra
BMNH	The Natural History Museum, London
BPB	Bernice P. Bishop Museum, Honolulu
FRIL	Forest Research Institute, Lae, Papua New Guinea
MNHN	Muséum national d'Histoire naturelle, Paris
NSMT	National Science Museum, Tokyo
SDEI	Senckenberg Deutsches Entomologisches Institut, Müncheberg
WM	Natural History Museum, Vienna

The following collectors' names are abbreviated to the initials: L. E. Cheesman, J. L. Gressitt, M. Gressitt, P. Hornabrook, J. W. Ismay, R. Kano, L. Loria, R. Pullen, H. Roberts, T. Schellen, R. Schlechter, J. Sedláček, M. Sedláček, P. Shanahan, F. R. Wylie.

### Systematics

#### Genus *Bama* McAlpine

*Bama* McAlpine, 2001: 165–166. Type species (original designation) *Xiria papuana* Hennig.

**Relationships and identification.** Hendel (1914a,b) recognized a subtribe Cleitamiina to include the New Guinea genera *Loriomyia* Kertész, *Cleitamia* Macquart, and *Laglaisia* Bigot, which he separated from some other platystomatine taxa in his key (1914b: 8) by having the crossveins (anterior and discal) strongly approximated, tergite 5 of male abdomen with some long posterior-marginal bristles, and the squama (or lower calypter) small. The genus *Loriomyia* (j. syn. *Agnostophana* Hering) must now be excluded as belonging in the family Tephritidae (Korneyev, 2001), although convergent in some

venational characters with *Cleitamia*. The New Guinea genera *Cleitamoides* Malloch and *Bama* also belong in this *Cleitamia* alliance. However, I do not at present recognize formal tribes or subtribes within the subfamily Platystomatinae (as delimited by McAlpine, 1973, 2001), to which the four genera of this alliance belong.

Examples of the genus *Bama* can generally be determined as such by means of the key to Australasian platystomatid genera given by McAlpine (2001), where *Bama* occurs in three places, according to the combination of diagnostic characters possessed by the various species. Some significant character states for the genus are here given, though, as indicated, some of these are not present in all included species.

- Two pairs of fronto-orbital bristles present. This condition occurs in many platystomatine genera, but its consistent presence helps to distinguish *Bama* spp. from the apparently related *Laglaisia* spp., which consistently have a single, large fronto-orbital pair.
- Face (fused prefrons and clypeus—see McAlpine, 2007a) without central, steep-sided, platform-like carina. Such carina is generally present in the platystomatine genera *Euprosopia* Macquart, *Lamprogaster* Macquart, *Achias* Fabricius, and *Duomyia* Walker.
- Antennal segment 6 (occupying most of length of arista) with fairly uniform armature of non-dense short hairs (or long pubescence). *Bama signifer* n.sp. is exceptional, totally lacking these hairs.
- Stem vein (base of R) with fine, usually black dorsal setulae (see Fig. 37). Setulae in this position are present in all known *Bama* spp. except *B. shinonagai* McAlpine and *B. robertsi* n.sp. They are generally present in the genera *Euprosopia* and *Pterogenia* Bigot, which are not closely related to *Bama*, but are quite rarely present in other platystomatids.
- Anal cell (*cup*) of wing largely bare, usually with small distal zone of microtrichia and linear anterior marginal microtrichose stripe. In related genera (including *Laglaisia*, *Cleitamia*) the membrane of the anal cell is generally extensively or entirely microtrichose.
- Squama (lower calypter) reduced. It is significantly smaller than in *Euprosopia*, *Lamprogaster*, *Pterogenia*, and most *Achias* spp. In *B. shinonagai* the squama is less reduced than in other *Bama* spp., but still occupies

less than a semicircle in relation to its basal line of attachment to the thorax.

- Anterior plate of mid coxa laterally with two differentiated black bristles and mesad of these a marginal comb of finer setulae. This is a common condition in many platystomatid genera, but the major bristles are less distinct in *Achias*, *Lamprogaster*, and many *Euprosopia* spp. There are specific differences in the marginal comb among *Bama* spp.
- Mid tibia with one large terminal ventral spur much longer than tibial diameter, any additional spurs being very small. This condition is diagnostic for the *Cleitamia* alliance as above delimited, most other platystomatids having the mid-tibial spur relatively short. However, in *Euxestomoea* de Meijere there are two long apical spurs on the mid tibia.
- In female, abdominal tergite 3 enlarged; tergites 4 and 5 much reduced in size and often more or less concealed in dried specimens. This is one of the most marked diagnostic traits for the genus *Bama*, and does not occur in *Cleitamia*, *Cleitamoides*, *Laglaisia*, and any other platystomatine genus of Australasia.
- In male, aedeagus with pair of tapering terminal filaments of unequal size, arising from apex of elongate bulb. The cuticle of both filaments bears closely placed sclerotized rings on most of its length. The unequal size of the terminal filaments seems to distinguish *Bama* from species of the related genera *Cleitamia*, *Cleitamoides*, and *Laglaisia*, so far as this has been observed. Unequal pairs of terminal filaments occur in a few species of *Lamprogaster* (see McAlpine, 1973) and *Euprosopia* (McAlpine, 2007b), but the aedeagus of such species does not otherwise resemble that of *Bama* spp.

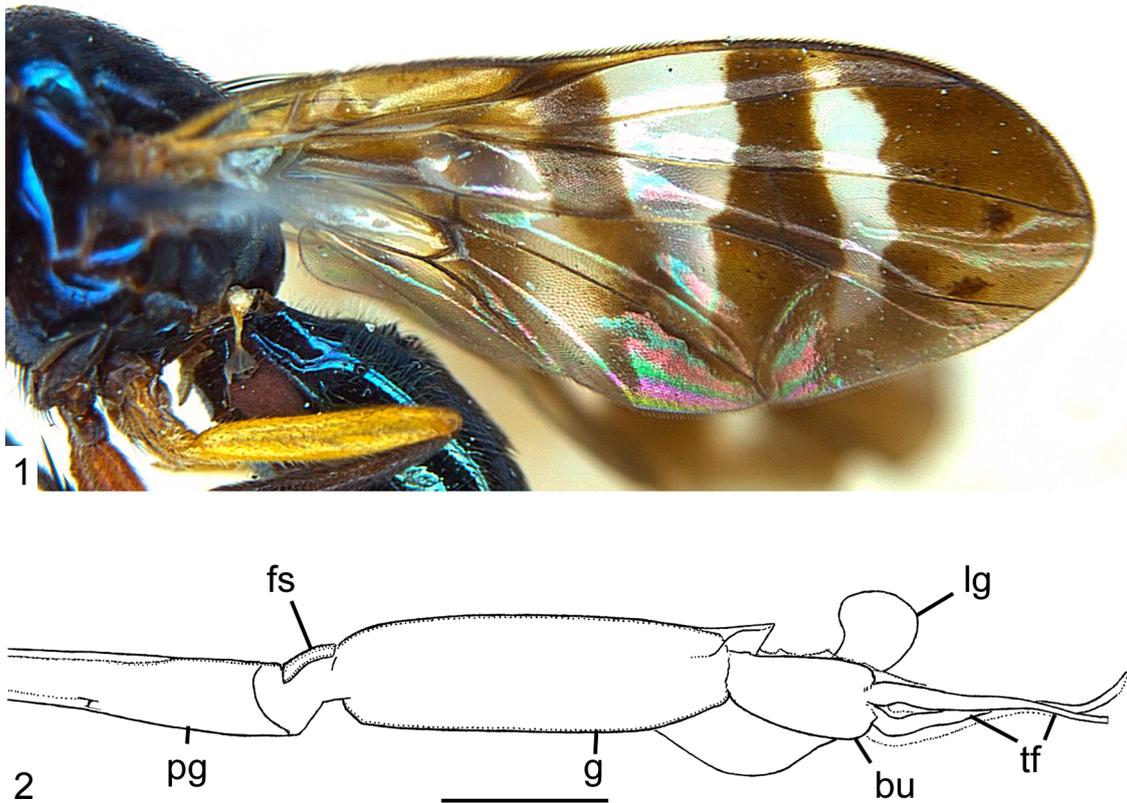
In the present study, I have slightly altered the terminology for parts of the aedeagus from that used previously (McAlpine, 2001: figs 75, 78). The part immediately preceding the glans is now termed the flexible section of the aedeagus, instead of the preglans, and the variably differentiated part preceding this is termed the preglans (Figs 41, 46, in accordance with my more recent studies of *Duomyia* spp. (McAlpine, 2011: fig. 1).

Abdominal tergite 5 in males of *Bama* spp. generally has the posterior-marginal bristles less enlarged than in *Cleitamia* and *Laglaisia*.

Key to species of *Bama*

- 1 Scutellum laterally setulose, dorsally glossy without pubescence; intermediate scutellar bristle much shorter than basal scutellar bristle; wing markings as in Fig. 53 ..... *shinonagai* McAlpine
- Scutellum without setulae, its dorsal surface with covering of minute erect pubescence; intermediate scutellar bristle c. as long as basal scutellar bristle; wing markings otherwise ..... 2
- 2 Marginal and submarginal cells of wing entirely dark brown to black, or (in male) first posterior cell with spotted pattern (Fig. 23) ..... 3
- Marginal and submarginal cells with hyaline to pale yellowish zones; first posterior cell without such pattern ..... 5
- 3 Vein 5 on distal part of discal cell surrounded by pale brown zone; discal crossvein almost straight; palpus dark grey-brown; ♂ only: first posterior cell with complex spotted pattern (Fig. 23) ..... *gressitti* n.sp.
- Vein 5 on discal cell not clouded with brown; discal crossvein curved; palpus variable in colour; ♂ only: first posterior cell without spotted pattern (so far as known) ..... 4
- 4 Vein 2 with abrupt flexure just before level of anterior crossvein (Fig. 8); dark mark enclosing discal crossvein broadly confluent with dark costal zone; prescutellar acrostichal bristle present; arista uniformly short-haired, with simple apex (Fig. 10) ..... *flexifer* n.sp.
- Vein 2 with moderate curvature only (Fig. 17); discal crossvein not enclosed in brown mark; prescutellar acrostichal bristle absent; arista bare on most of length, with lanceolate subapical palette (at least in female; Fig. 19) ..... *signifer* n.sp.
- 5 Anal crossvein subangularly bent near mid-length; wing markings approximately as in Fig. 1, but sometimes stigmal brown band fading posteriorly; fore femur entirely brown; hind femur yellow ..... *bipunctatum* (Hendel)
- Anal crossvein most strongly bent or curved on anterior part; wing markings diverse; coloration of femora diverse ..... 6
- 6 Capitellum of halter dark brown to black; apical part of first posterior cell largely hyaline, but with very narrow apical marginal brown line ..... 7
- Capitellum of halter white or yellow; apical part of first posterior cell variable, but often partly brown ..... 8
- 7 Distal parts of veins 3 and 4 almost straight, markedly diverging to apex; wing markings as in Fig. 3 (male) ..... *divergens* n.sp.
- Distal parts of veins 3 and 4 curved, not divergent; wing markings as in Fig. 5 (female) ..... *robertsi* n.sp.
- 8 Hind basitarsus less than one third length of hind tibia (Fig. 12); discal crossvein curved, but not with general oblique orientation; brown wing markings diffuse and irregular (at least in male, Fig. 11) ..... *brevitarse* n.sp.
- Hind basitarsus more than one third length of hind tibia; discal crossvein usually with general oblique orientation, despite curvature; wing markings variable, but not as above ..... 9
- 9 Scutellum tawny-orange ..... 10
- Scutellum black or brown-black ..... 12

- 10 Mid coxa with distomedial brush of very dense black setulae (Fig. 40); posteroventral angle of sternopleuron (katepisternum) with only very fine pale setulae ..... *aurantium* n.sp.
- Mid coxa without such brush of dense, coarse, black setulae (Figs 34, 38); posteroventral angle of sternopleuron (near mid coxa) with some black setulae ..... 11
- 11 Dark brown stripe enclosing both anterior and discal crossveins (Figs 35, 36); base of submarginal cell brown; first costal cell extensively microtrichose; discal crossvein less than twice as long as anterior crossvein ..... *martini* n.sp.
- Only incomplete brownish stripe on anterior and discal crossveins (Fig. 33); base of submarginal cell hyaline; first costal cell bare except near distal extremity; discal crossvein more than twice as long as anterior crossvein ..... *grande* n.sp.
- 12 Postfrons yellow, with small black markings posteriorly; fore femur entirely dark brown; wing markings and contour of vein 2 approximately as in Fig. 21 ..... *flavifrons* n.sp.
- Postfrons largely black; fore femur yellow on at least basal third; wing markings otherwise; vein 2 usually with more definite and uneven curvature ..... 13
- 13 Penultimate section of vein 4 c. as long as discal crossvein; anterior and discal crossveins enclosed in well separated blackish zones (Fig. 22) ..... *ismayi* n.sp.
- Penultimate section of vein 4 much shorter than discal crossvein; wing markings otherwise ..... 14
- 14 Fore femur yellow basally, brown distally; first basal cell with brown to blackish transverse mark (smaller in male) c. halfway between basal and anterior crossveins; second section of vein 4 almost straight; penultimate section of vein 4 not shorter than anterior crossvein; distomedial lobe of mid coxa prominent but broadly rounded, setulose, but without single isolated spinescent bristle (Fig. 29); male: hind basitarsus broadened, compressed ..... *bickeli* n.sp.
- Fore femur entirely yellow; first basal cell with substantial dark mark only at distal extremity; second section of vein 4 slightly curved; penultimate section of vein 4 much shorter than anterior crossvein; distomedial lobe of mid coxa narrowed, setulose, and with one isolated strongly spinescent apical bristle; male: hind basitarsus slender, cylindrical ..... 15
- 15 Point of junction of discal crossvein with vein 4 located on hyaline incision of dark zone (Fig. 43); second basal cell with apical bare spot delimited by narrow microtrichose strip; penultimate section of vein 4 more than half as long as anterior crossvein; mid coxa with elongate finger-like distomedial extension lacking marginal ridge (Fig. 47); male: wing with apical dark zone almost as extensive as in female (Fig. 42); lobe of preglans with many peg-like spinules (Fig. 46) ..... *monstrans* n.sp.
- Point of junction of discal crossvein with vein 4 located within oblique dark band (Figs 48, 49); second basal cell with solid apical microtrichose zone; penultimate section of vein 4 less than half as long as anterior crossvein; mid coxa with distomedial extension narrow, but less elongate, with sharp marginal ridge extending almost to apex (Fig. 51); male: wing with apical dark zone much reduced (Fig. 49); lobe of preglans without spinules (Fig. 52) ..... *papuanum* (Hennig)



Figures 1, 2. *Bama bipunctatum* (Hendel). (1) Left wing of male, Sirinumu Dam. (2) Distal part of aedeagus, Sirinumu Dam, scale = 0.1 mm. *bu*, bulb; *fs*, flexible section of aedeagus; *g*, glans; *lg*, distal lobe of glans; *pg*, preglans; *tf*, terminal filaments.

### *Bama (Bama) bipunctatum* (Hendel)

Figs 1, 2

*Euxestomoea bipunctata* Hendel, 1914a: 93, pl. 9, figs 162, 163. Hendel, 1914b: 188 (description). Malloch, 1939: 106, pl. 4, fig. 6.

*Bama bipunctatum* (Hendel)—McAlpine, 2001: 166.

**Type material.** I am unclear as to the status of the type specimens of *E. bipunctata*. Hendel (1914a) first established this name by publication of figures of the head and wing, without any specific description. The figured specimen or specimens therefore constitute the only type specimens. Later (1914b), Hendel described the species from “♂ ♀ aus Neu-Guinea, S.O. [south east], Moroka, 1300 m (leg. Loria), im Mus. Civ. Genova.” This is not a clear indication of the number of specimens available to him. However, during my visits to European museums in 1973, I found one male and one female with data agreeing with Hendel’s (1914b) material coll. L.L. (Loria) in WM, now labelled “Paratypes”, but I could find no specimens of the species in MCG. With regard to the two WM specimens, I noted at the time that neither seemed to be a figured specimen and therefore perhaps was not a type. I now consider it more probable that Hendel’s fig. 163 is inaccurate. The type locality “Moroka” seems to be identical with Meroka, Owen Stanley Ra., on or near an upper tributary of Kemp Welch River, E of Pt Moresby, c. 9°23’S 147°37’E.

**Other material examined.** Central Province: 1 ♀, Sogerri Plateau (probably Itiki Numu Estate), near Port Moresby,

May 1965, T.S. (AM); 1 ♂, 5 km S of Sirinumu Dam, 800 m, J.W.I., June 1984 (AM). The female specimen recorded and illustrated by Malloch (Mafulu, near Woitape, L.E.C.) has not been re-examined. It was not located by Lee et al. (1956).

**Description** (♂, ♀). Small to medium-sized black fly, with heavily marked wings.

**Coloration.** Head black to dark brown, with some grey pruinescence. Antenna tawny, becoming brown beyond base of segment 3; arista tawny basally, blackish beyond. Prelabrum dark brown; palpus predominantly tawny. Thorax black, largely shining, with slightly blue-green tinted reflections. Fore and mid coxae brown; hind coxa tawny-yellow; fore femur brown; mid femur tawny-yellow; hind femur yellow; tibiae and tarsi brown-black. Wing partly hyaline, with extensive dark brown markings (Fig. 1); costal cells and some adjacent parts yellowish; pair of blackish dots within distal dark brown zone of first posterior cell present in male, absent in only available female (see Hendel, 1914a: fig. 163; and my Fig. 1); halter yellow with blackish capitellum (at least in male). Abdomen shining black.

**Head.** Postfrons almost parallel-sided, not convex anteriorly, near mid-length c. 0.33–0.35× as wide as head; height of cheek c. 1.7–1.9 of height of eye; face in profile slightly concave to mid region, not distinctly convex below; fronto-orbital bristles rather large; postvertical bristle scarcely differentiated. Antennal segment 3 narrowly rounded apically; segments 4 and 5 apparently very short (better study material needed); segment 6 with hairs relatively long for genus on most of length. Palpus moderately short.

**Thorax.** Mesoscutum bare and largely glossy between dorsal setulae, pubescent-pruinescent only towards lateral margins; mesopleuron almost entirely glossy, with only small trace of pruinescence; scutellum with fine pubescence on most of dorsal surface; thoracic chaetotaxy as given for *B. robertsi*. Fore femur with long, moderately stout posteroventral and posterodorsal bristles; mid coxa with comb of marginal setulae and rounded anteromedian lobe with non-linear group of smaller setulae. Wing (Fig. 1): first costal cell largely bare; second costal cell almost uniformly microtrichose; stem vein with non-linear group of dorsal setulae; vein 2 with very slight sigmoid curvature; second section of vein 4 with sigmoid curvature; penultimate section of vein 4 almost as long as anterior crossvein, c. half as long as discal crossvein; in first basal cell, only sub-basal hyaline zone bare; second basal cell bare on c. basal half; anal cell bare, except near anal crossvein; anal crossvein with abrupt bend near mid-length.

**Abdomen.** Male: sternite 4 not cleft; aedeagus (Fig. 2) with preglans smooth, more sclerotized than stipe but scarcely swollen and without lobe; flexible section short, with well defined sclerite; glans rather slender, subcylindrical, with membranous distal lobe rather long, broad basally, rounded apically; bulb c. 0.4× as long as glans, c. twice as long as wide; left terminal filament tapered, but slightly expanded again at apex, c. 0.8× as long as glans; right terminal filament only slightly shorter, of similar diameter except at narrowly truncate apex. Female: compound tergite 1+2 c. 0.65× as long as exposed part of tergite 3; sternites not observed.

**Dimensions.** Total length, ♂ 5.2 mm, ♀ 7.1 mm; length of thorax, ♂ 2.0 mm, ♀ 3.2 mm; length of wing, ♂ 4.9 mm, ♀ 7.0 mm; length of glans of aedeagus, 0.24 mm.

**Notes.** Hendel described this species in his genus *Euxestomoea*, which it somewhat resembles in wing markings and general appearance. However, the largely

bare anal cell, the dorsally setulose stem vein, the one very large apical mid-tibial spur, in the male the long but unequal terminal filaments arising from a rather long bulb, and in the female the vestigial abdominal tergites 4 and 5 in contrast to the large tergite 3, are all in contrast to *Euxestomoea* and in agreement with *Bama*.

Hendel (1914a, b) illustrated and described two black-brown dots in the distal dark zone in the first posterior-marginal cell of the wing, and these appear to be the basis of the specific epithet. These dots are present in the only male now available to me (Fig. 1), but are absent in the only available female, as they are also in the female wing figured by Malloch.

Hendel described the species as having the halter yellow with black capitellum, and this is in agreement with my one available male. However Malloch described his female specimen as having the capitella (“knobs”) yellow. My female has the capitellum missing from both halteres. This character needs checking on a better series of specimens. *Bama robertsi* and *B. divergens* are the only other known species of the subgenus *Bama* with dark capitellum.

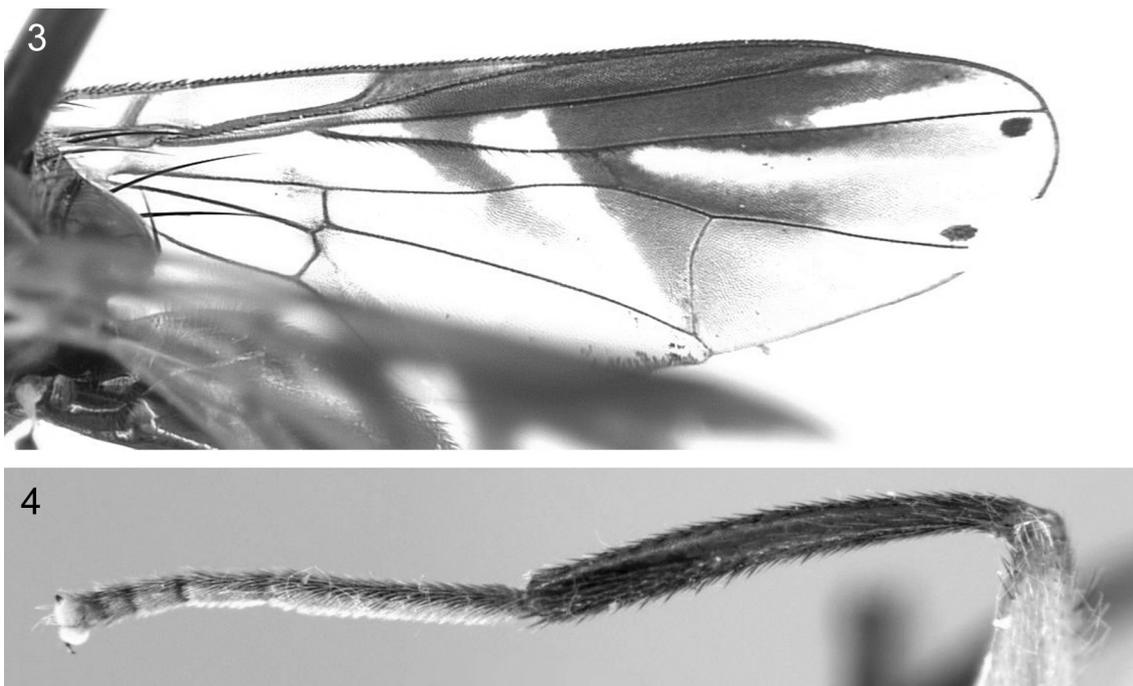
### *Bama (Bama) divergens* n.sp.

Figs 3, 4

**Type material.** Holotype ♂ (unique). Morobe Province: Upper Watut [River, i.e. probably district to W of Bulolo and Wau, other label data indecipherable], J.S., M.S. (BPB). Impaled on large pin, left wing damaged.

**Description** (♂, ♀ unknown). Moderately small, largely black fly, with distinctive wing markings (perhaps sexually dimorphic).

**Coloration.** Head dark brown to blackish; parafacial with silvery-pruinescent line which broadens at level of antennal socket; face grey-pruinescent except towards lower margin,



Figures 3, 4. *Bama divergens* n.sp., male. (3) Left wing. (4) Right hind tibia and tarsus.

more densely so in upper part of antennal fovea; postorbital silvery-pruinescent zone very broad, extending broadly on to cheek region. Antenna tawny-orange; arista brownish. Prelabrum dark brown; palpus tawny-yellow. Thorax black, largely shining. Coxae brown; fore coxa largely finely grey-pruinescent and with whitish setulae; fore femur tawny-brown on c. basal half, becoming yellow distally, but brownish again at apex; other femora yellow; tibiae tawny-brown; tarsi brown. Wing: brown zones anterior to vein 5 as in Fig. 3, no brown zones posterior to vein 5 except for small spot on anterior part of anal crossvein; pair of intensely black spots in distal part of first posterior cell. Halter yellow, with black capitellum. Abdomen shining black.

**Head.** Postfrons at mid-length  $0.32\times$  as wide as head; height of cheek c.  $0.15\times$  that of eye; face almost flat, but becoming slightly prominent towards lower margin; posterior fronto-orbital bristle large, anterior one damaged, but probably large; ocellar bristle very minute; postvertical bristle moderately small. Antennal segment 3 c.  $3.5\times$  as long as deep; segment 4 very short; segment 5 cylindrical, rather short; segment 6 slender beyond base, coarsely pubescent on whole length. Prelabrum shallow; palpus much deeper, moderately long.

**Thorax** with only very slight development of pruinescence, but scutellum minutely pubescent as in related species; prescutellar acrostichal bristle large. Fore femur with short posteroventral bristles distally, with long, slender, spaced posterodorsal bristles; mid tibia with one moderately large and one very small apical spur; mid basitarsus very slender, cylindrical; hind tarsus (Fig. 4) c.  $0.93$  of length of tibia; hind basitarsus moderately slender, subcylindrical, its length c.  $0.49$  of that of tibia. Wing: first costal cell bare, except in anterodistal angle; second costal cell, first basal cell, and discal cell entirely microtrichose; second basal cell microtrichose on at least distal third; vein 2 with very slight almost uniform curvature; distal sections of veins 3 and 4 almost straight, broadly divergent; penultimate section of vein 4 only slightly shorter than discal crossvein; discal crossvein curved; anal crossvein abruptly curved at c. anterior third of length.

**Abdomen.** Sternite 3 rather large and squarish; sternite 4 slightly shorter, quadrate, neither divided nor incised; sternite 5 similar, but shorter again. Cercus rather short and simple; apical section of outer surstylus apparently small and rounded; other postabdominal parts not observed.

**Dimensions.** Total length, 6.2 mm; length of thorax, 2.6 mm; length of wing, 6.6 mm.

**Notes.** The general distribution of pruinescence on the face and the rather large fronto-orbital bristles of *Bama divergens* are characters otherwise found in *B. bipunctatum*, as is the black capitellum of the halter (at least in males). *Bama divergens* differs from *B. bipunctatum* in the pattern of wing markings (Fig. 3) and the different contour of the anal crossvein. It differs from all other known *Bama* species in the almost straight and widely divergent distal sections of veins 3 and 4. The two black spots near the costal margin of the first posterior cell are reminiscent of those observed in males (? only) of *B. bipunctatum*, and may therefore be absent in females. Unlike *B. bipunctatum*, *B. divergens* has these spots on an almost hyaline, instead of dark brown zone.

The specific epithet is a Latin participle, referring to the distal divergence of veins 3 and 4.

### *Bama (Bama) robertsi* n.sp.

Figs 5, 6

**Type material.** Holotype ♀ (unique). Papua New Guinea: Southern Highlands Province: Mount Giluwe [c.  $6^{\circ}05'S$   $143^{\circ}50'E$ ], 7.xii.1979, H.R., on ground foliage (AM K352854). On micropin through polyporus.

**Description** (♀, ♂ unknown). Moderately large, largely metallic black fly, with heavily marked wing.

**Coloration.** Head largely black; anterior margin of postfrons and frontal lunule tawny-brown. Antenna, including arista, tawny-brown. Prelabrum black; palpus dark brown. Thorax black, largely glossy, with reflections slightly tinted with blue-green. Legs almost entirely dark brown to black; mid coxa with all setulae on anterior plate pale yellow, except for one or two larger lateral black setulae. Wing hyaline, with predominantly dark brown to blackish markings as in Fig. 5; halter tawny, with dark brown capitellum. Abdomen black, dorsally largely glossy, with blue- to purple-tinted reflections.

**Head.** Postfrons almost parallel-sided, near mid-length c.  $0.37\times$  as wide as head; height of cheek c.  $0.20$  of height of eye; two fronto-orbital bristles rather large; ocellar bristles distinct but minute; postvertical bristles very small, closely placed and almost parallel. Antennal segment 3 broadly rounded apically, more than twice as long as deep; segment 4 very short; segment 5 apparently slightly longer than its diameter; segment 6 with short pubescence, except near base. Prelabrum moderately deep, well sclerotised; palpus rather narrow, tapered distally.

**Thorax.** Mesoscutum bare and glossy between dorsal setulae, pubescent-pruinescent only towards lateral margins; scutellum uniformly pubescent on dorsal surface, except for glossy subapical zone; ventromedial extremity of sternopleuron with numerous slender yellow setulae of various sizes forming a loose brush; dorsocentral and prescutellar acrostichal bristles large; chaetotaxy otherwise generic. Fore femur with moderately developed posteroventral bristles, without posterodorsal bristles. Wing (Fig. 5): first costal cell largely bare, only narrowly microtrichose along distal margin; second costal cell entirely microtrichose; stem vein without dorsal setulae basad of humeral crossvein; vein 2 with only slight curvature; anterior crossvein not more than half as long as penultimate section of vein 4; second section of vein 4 with deeply concave curvature; both anterodistal and posterodistal distal angles of discal cell acute; second basal cell bare on c. basal half; anal cell bare, except towards distal extremity; anal crossvein strongly bent at c. anterior third, with concave curvature posteriorly.

**Abdomen** (Fig. 6). Compound tergite 1+2 c.  $3\times$  as long as exposed part of tergite 3; sternites 1, 2, and 3 rather large; sternites 4, 5, and 6 progressively shorter.

**Dimensions.** Total length, 7.8 mm; length of thorax, 3.7 mm; length of wing, 8.9 mm.

**Notes.** *Bama robertsi* should be readily distinguished by the wing pattern (Fig. 5) in addition to characters given in the key. The remarkably long female compound tergite 1+2 and the absence of dorsal setulae on the stem vein (base of R) are characters not yet observed in other species of the subgenus *Bama*.

The specific epithet refers to the late Hywel S. Roberts whose collections (AM and FRIL) have significantly increased knowledge of the platystomatids of Papua New Guinea.

5



6



Figures 5, 6. *Bama robertsi* n.sp., holotype female. (5) Right wing. (6) Abdomen, dorsal view.

***Bama (Bama) flexifer* n.sp.**

Figs 7–10

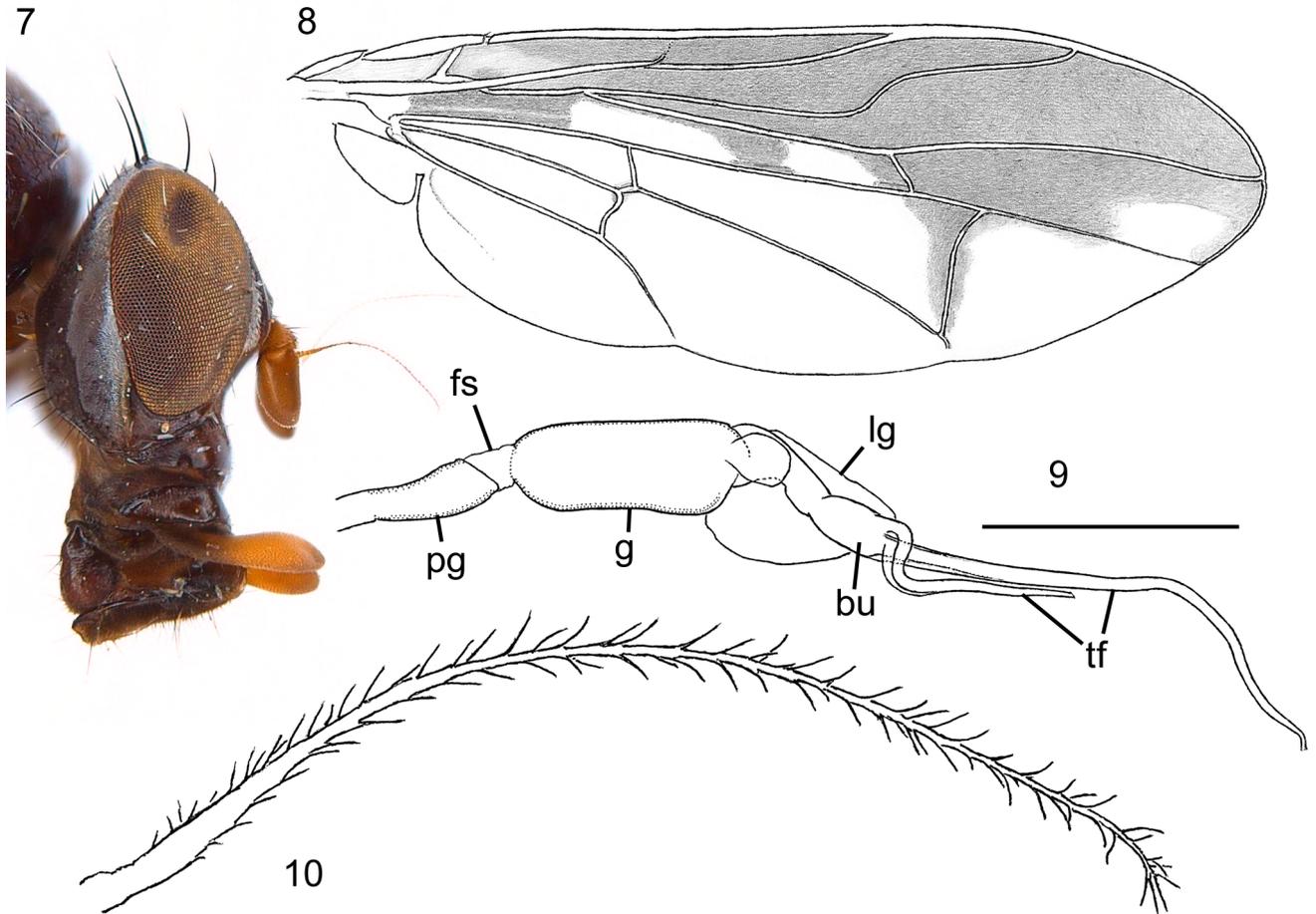
**Type material.** Holotype ♂ (unique). Eastern Highlands Province: South Wanitabe, near Okapa, 5000–6000 feet [c. 1500–1830 m], 13.xi.1964, P.H. (ANIC).

**Description** (♂, ♀ unknown). Slightly elongate blackish fly, with wing heavily marked, mainly anteriorly to vein 4.

**Coloration.** Head largely brown-black, with silvery pruinescence on postorbital to postgenal zone. Antenna tawny with brown arista. Prelabrum dark brown; palpus largely tawny, brown basally. Thorax dark brown. Legs: coxae brownish; mid coxa with most setulae black; femora dull yellow, becoming brown distally; tibiae and tarsi brown to dark brown. Wing (Fig. 8) anteriorly to vein 4 largely brown-black; first costal cell and sub-basal zone in second costal cell yellow; first basal cell with two hyaline zones; first posterior cell with posterodistal hyaline zone, but brown zone of this cell extending posteriorly to enclose discal crossvein; discal cell otherwise without brown zones; halter pale yellow. Abdomen shining black.

**Head.** Postfrons apparently similar to that of *B. signifer*; height of cheek 0.18 of height of eye; face rather strongly concave in profile, except on slightly convex lower marginal zone; fronto-orbital bristles moderately short; postvertical bristles present but minute. Antennal segment 3 c. 1.7× as long as deep; segment 4 short; segment 5 apparently slightly longer than its maximum diameter; segment 6 (Fig. 10) gradually tapered beyond bare basal section, thence with well-developed pubescence for rest of length. Prelabrum deep and prominent; palpus much longer than in *B. signifer* (comparing opposite sexes), slightly spatulate.

**Thorax** generally as described for *B. signifer*, but prescutellar acrostichal bristle present, c. as large as dorsocentral bristle. Fore femur with rather slender posteroventral bristles and less developed posterodorsal bristles; hind basitarsus distinctly shorter than in *B. signifer* (female); mid coxa resembling that of *B. signifer*, but with more numerous fine black setulae on distomedial lobe. Wing: much of first costal cell and entire second costal cell microtrichose; section of costa between costagial break and humeral break more thickened than in other species; stem vein with several minute dorsal setulae; vein 2 with



Figures 7–10. *Bama flexifer* n.sp., holotype male. (7) Head. (8) Left wing. (9) Distal part of aedeagus, scale = 0.3 mm. (10) Right arista (basal segmentation unclear). *bu*, bulb; *fs*, flexible section of aedeagus; *g*, glans; *lg*, distal lobe of glans; *pg*, preglans; *tf*, terminal filaments.

strong flexure near mid-length, so that submarginal cell is markedly broadened from level of anterior crossvein; second section of vein 4 almost straight; penultimate section of vein 4 slightly longer than anterior crossvein, c. half as long as discal crossvein; anal cell, large part of second basal cell, and basal hyaline zone in first basal cell bare; anal crossvein strongly curved near anterior end, with concave curvature on rest of extent.

**Abdomen.** Condition of sternite 4 not known; aedeagus (Fig. 9): preglans simple, not markedly expanded or spinulose; flexible section little developed; glans subcylindrical, with large membranous distal lobe; bulb elongate, slightly shorter than glans; terminal filaments elongate, right one c. as long as glans, left one c. twice as long.

**Dimensions.** Total length, 4.3 mm; length of thorax, 2.2 mm; length of wing, 5.5 mm; length of glans of aedeagus, 0.29 mm.

**Notes.** *Bama flexifer* has the wing pattern (Fig. 8) most resembling *B. signifer*, but the uniformly short-haired (or long-pubescent) arista is very different from that of *B. signifer*.

The specific epithet is a Latin compound noun, flexure-bearer, referring to the course of vein 2.

### *Bama (Bama) brevitarse* n.sp.

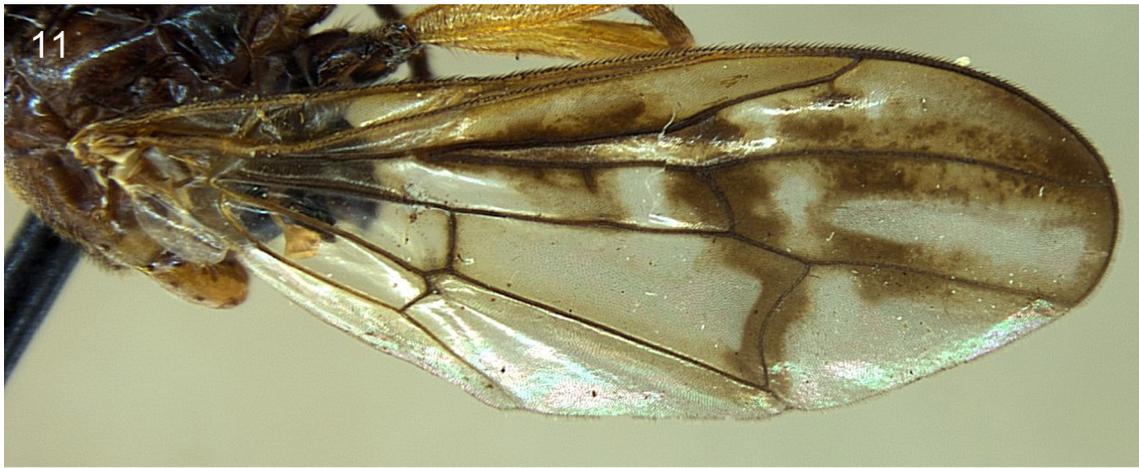
Figs 11–16

**Type material.** Holotype ♂ (unique). Highlands of Central Province: Murray Pass, N of Woitape, 2800–2900 m, 11.xi.1965, J.S., M.S. (BPB). Impaled on large pin. Perhaps somewhat discoloured through exposure to moisture, but not mouldy. Abdomen in genitalia tube on pin.

**Description** (♂, ♀ unknown). Moderate-sized robust fly, with poorly defined wing markings.

**Coloration.** Generally brownish appearance perhaps partly due to fading. Head tawny-brown; postorbital silvery-pruinose zone apparently extending on to cheek. Antenna tawny-yellow; arista slightly darker. Prelabrum brown; palpus tawny-yellow. Thorax brown to tawny-brown, largely shining, less so on mesoscutum. Legs: coxae brown to tawny-brown; femora dull tawny-yellow; tibiae tawny-brown; tarsi somewhat darker brown. Wing markings (Fig. 11) irregular and partly nebulous, though widely distributed over anterior part of wing and crossveins. Halter tawny basally, with yellow capitellum. Abdomen brown to brown-black.

**Head.** Postfrons slightly narrowed anteriorly; width near mid-length 0.38 of total width of head; height of cheek 0.35



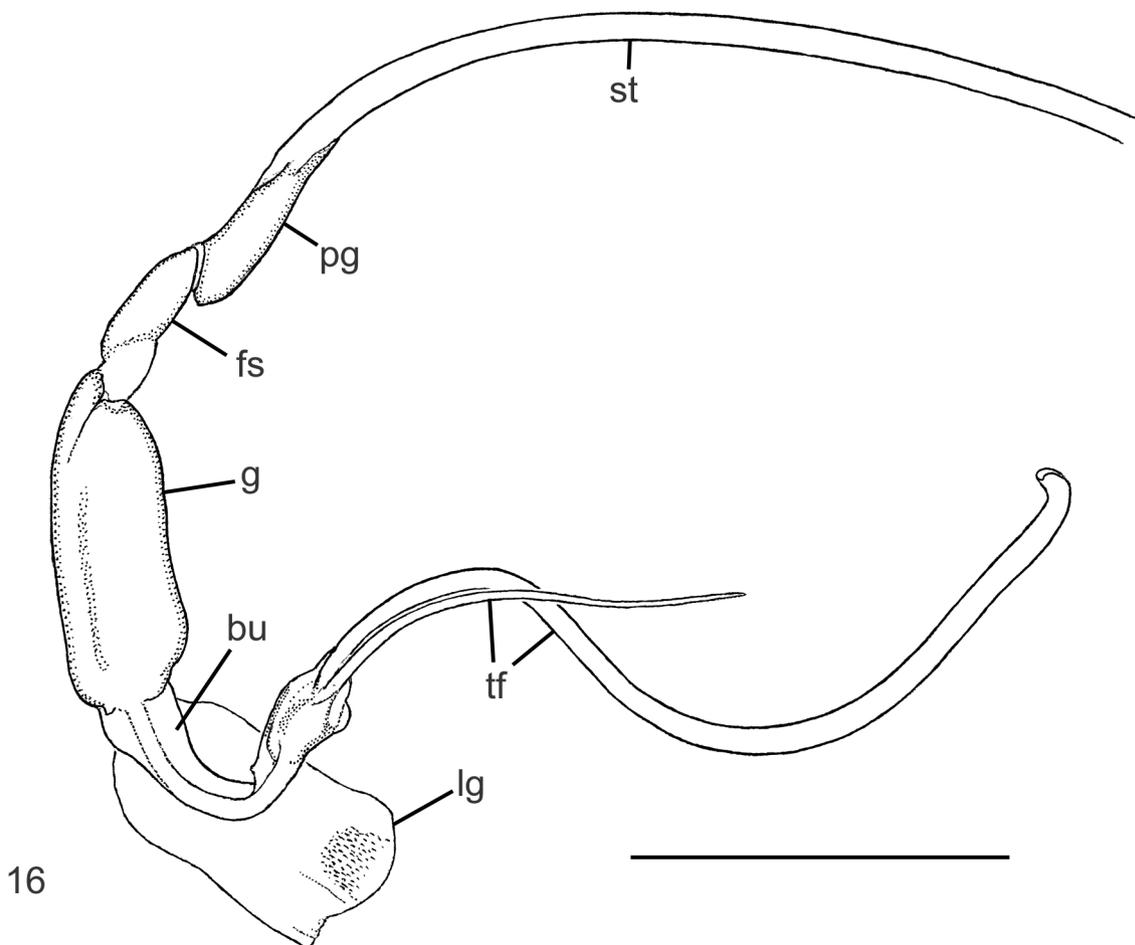
Figures 11–13. *Bama brevitarse* n.sp., holotype male. (11) Right wing. (12) Right hind tibia and tarsus. (13) Right mid coxa and associated parts.

of height of eye; face with slight depression across mid-length, slightly convex below; both fronto-orbital bristles probably moderately developed (damaged). Antennal segment 3 c.  $2.8\times$  as long as deep, apically narrowly rounded; segment 4 short and rounded; segment 5 only slightly larger; segment 6 only slightly thickened basally, loosely pubescent beyond base. Prelabrum small for genus; palpus rather slender.

*Thorax* apparently mainly as described for *B. gressitti* (some details of surface and chaetotaxy difficult to interpret). Marginal comb of mid coxa (Fig. 13) with several non-crowded black setulae and less conspicuous finer, mostly pale setulae; fore femur with both slender and moderate posteroventral bristles and fairly stout posterodorsal bristles; mid tibia with one moderate-sized terminal spur; mid

basitarsus cylindrical, much shorter than in *B. bickeli* (and in female of *B. gressitti*); length of hind basitarsus (Fig. 12) c. 0.26 of length of hind tibia, c. 0.39 of total length of tarsus. Wing: first and second costal cells entirely microtrichose; discal cell almost entirely microtrichose, not much narrowed basally; vein 2 with gentle sigmoid curvature beyond basal third; distal sections of veins 3 and 4 both slightly arched, subparallel; penultimate section of vein 4 slightly longer than anterior crossvein, slightly more than half as long as discal crossvein; discal crossvein strongly curved, its general orientation almost transverse; anal crossvein subangularly bent near anterior third of length.

*Abdomen*. Abdominal sternites 3 to 5 (Fig. 14) increasingly broad in that order; sternite 4 broader than long, neither divided nor incised; sternite 5 large, flat, with deep median



Figures 14–16. *Bama brevitarse* n.sp., holotype male. (14) Abdominal sternites 2–5. (15) Genital segment and associated structures, anterolateral view. (16) Distal part of aedeagus; scale = 0.5 mm. *bu*, bulb; *fs*, flexible section of aedeagus; *g*, glans; *lg*, distal lobe of glans; *st*, stipe; *tf*, terminal filaments.

posterior incision; cercus rather large, distally inflated and posteriorly curved; aedeagus (Fig. 16): preglans more heavily sclerotized than stipe, with oblique distal margin and terminal prominence, without spinules; flexible section subcylindrical, its length c. 0.35 of that of glans; glans irregularly ovoid-

cylindrical, with large mainly transparent distal lobe bearing dense micropubescence near apex; bulb elongate, thickened at apex; apparent right terminal filament stout, scarcely tapering, nearly 3× as long as glans; apparent left filament much smaller with very fine apex and no visible pore.

*Dimensions.* Total length, 6.2 mm; length of thorax, 2.7 mm; length of wing, 7.7 mm; length of glans of aedeagus 0.46 mm.

**Notes.** The irregular and roughly defined wing markings in the male of *B. brevitarse* (Fig. 11) are unlike those of any other known *Bama* species, but it is conceivable that they are highly sexually dimorphic. The hind basitarsus is shorter relative to adjacent parts than in other *Bama* species, and the mid basitarsus is also unusually short. The shape and proportions of abdominal sternites 4 and 5 of the male (Fig. 14) appear to be distinctive, but these characters are unknown in some species, as are those of the aedeagus. The general condition of the holotype makes me uncertain if the tawny-brown coloration of the thorax is natural or due to fading.

The specific epithet is treated as a Latin compound adjective, indicating the unusually short tarsi.

### *Bama (Bama) signifer* n.sp.

Figs 17–20

**Type material.** Holotype ♀ (unique). Milne Bay Province (highlands of NE): Agaun, 4400 feet [c. 1340 m, c. 9°55'S 149°21'E], Aug. 1969, R.P. (ANIC). On micropin through polyporus.

**Description** (♀, ♂ unknown). Slightly elongate brown to blackish fly, with wing heavily marked anteriorly to vein 4.

*Coloration.* Head largely brown, shading to black on vertex and much of occiput, with silvery pruinescence on postorbital to postgenal zone. Antenna tawny-brown; arista becoming darker distally. Prelabrum tawny-brown; palpus grey-brown. Thorax largely dark brown; mesoscutum predominantly shining black. Legs: coxae tawny; mid coxa with larger setulae black, finer ones yellow; femora yellow; tibiae tawny-brown; tarsi darker-brown. Wing (Fig. 17) anteriorly to vein 4 largely brown-black, with first costal and base of second costal cell yellow, extreme base of marginal cell mid-brown, and hyaline zones in first basal and first posterior cells; behind vein 4 membrane largely hyaline, with narrow brown zone in second posterior cell along vein 4 and three small brown zones in discal cell; halter entirely pale yellow. Abdomen dorsally tawny to brownish; tergite 1 and lateral parts of tergite 2 blackish.

*Head.* Postfrons almost parallel-sided, near mid-length c. 0.39× as wide as head; height of cheek c. 0.23 of height of eye; face in profile mainly concave, becoming flat towards lower margin; fronto-orbital bristles apparently rather small (damaged); postvertical bristles very fine, closely placed. Antennal segment 3 c. 2.5× as long as deep, apically rounded; segment 4 prominent, rounded; segment 5 bare, relatively elongate, length distinctly more than twice its maximum diameter; segment 6 (Fig. 19) quite bare, becoming attenuated shortly beyond base, with leaf-like subapical expansion (palette). Prelabrum rather shallow, not prominent; palpus short, moderately broad but not distally expanded.

*Thorax.* Mesoscutum almost bare between setulae on much of dorsal surface, pubescent-pruinescent laterally; scutellum pubescent on entire dorsal surface; mesopleuron partly glossy, with very little pruinescence centrally and posteriorly; prescutellar acrostichal bristle absent; single pair of dorsocentral bristles more closely placed than in other species. Fore femur with stout posteroventral bristles on distal half and smaller posterodorsal bristles; mid coxa

with distomedial lobe not narrowly produced, with large and small setulae. Wing (Fig. 17): much of first costal cell and small basal zone of second costal cell bare; stem vein with few minute dorsal setulae; vein 2 curved but not abruptly flexed; second section of vein 4 moderately curved; penultimate section of vein 4 c. as long as anterior crossvein, almost 0.7× as long as discal crossvein; second basal and anal cells and basal hyaline zone in first basal cell largely bare; anal crossvein strongly curved on anterior part, with slight concave curvature posteriorly.

*Abdomen* (Fig. 20). Compound tergite 1+2 subequal in length to tergite 3; sclerotized part of segment 7 (oviscape) almost as long; sternites 1, 2, and 3 large; sternite 4 relatively small; sternites 5 and 6 apparently very short (not clearly visible in type).

*Dimensions.* Total length, 6.0 mm; length of thorax, 2.4 mm; length of wing, 7.0 mm.

**Notes.** The complete absence of prescutellar acrostichal bristles and the bare arista (Fig. 19) distinguish *B. signifer* from all other known species of *Bama*. The presence of a subapical palette on the arista is an unusual condition of the female holotype. In males of a number of platystomatid species in several other genera an arista palette is present, but in these the palette is generally absent in females. In *Euprosopia maculipennis* (Güerin-Méneville) the palette is present in both sexes, but smaller in the female. I expect that the presently unknown male of *B. signifer* will be found to have the palette at least as developed as in the female.

The specific epithet is a Latin noun, meaning flag-bearer, in reference to the palette of the arista.

One specimen (unsexed, abdomen missing) from Mount Missim, Morobe Province (labelled *Bama* sp. P, BPB) has the contour of vein 2 and wing markings much as in *B. signifer*, except that the discal crossvein is enclosed in a brown mark. However, the arista is creamy-white and pubescent on its whole length, without apical expansion. I regard its specific status as indeterminate at present.

### *Bama (Bama) flavifrons* n.sp.

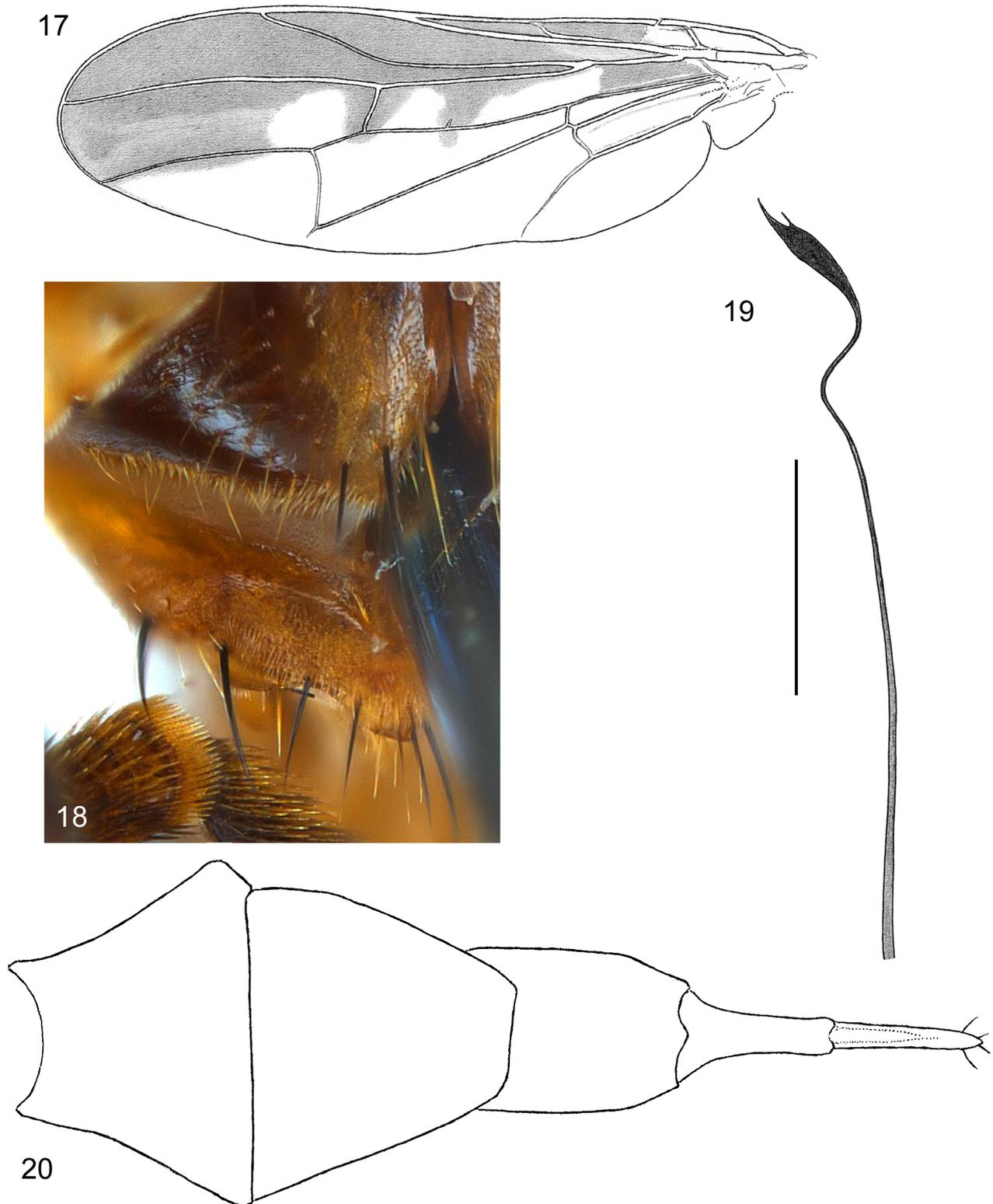
Fig. 21

**Type material.** Holotype ♀ (unique). Morobe Province: Upper Stony Logging Area, near Bulolo [near 7°15'S 146°40'E], 27.vii.1979, H.R., under *Euphorbia* leaf (AM K352855). On micropin through polyporus.

**Description** (♀, ♂ unknown). Moderately small, largely dark fly of moderate proportions, with heavily marked wing.

*Coloration.* Head: postfrons yellow, with small black fronto-orbital and ocellar zones posteriorly; face and cheek-region tawny brown; occipital region tawny, becoming blackish towards vertex, with silvery-pruinescent postocular zone. Antenna tawny; arista tawny-brown. Prelabrum tawny-brown; palpus tawny, with brownish apex. Thorax predominantly black; dense fine setulae on mesoscutum pale yellowish. Fore leg dark brown; mid and hind femora yellow; mid and hind tibiae and tarsi largely tawny. Wing with first costal cell pale tawny, second costal cell pale tawny, becoming slightly darker basally; dark brown markings otherwise as shown in Fig. 21; halter yellow. Abdomen black.

*Head.* Postfrons almost parallel-sided, nowhere gibbous, near mid-length c. 0.37× as wide as head; height of cheek c. 0.22 of height of eye; face in profile slightly concave



Figures 17–20. *Bama signifer* n.sp., holotype female. (17) Left wing. (18) Right mid coxa, anteroventral view. (19) Distal half of left arista, scale = 0.2 mm. (20) Dorsal view of abdomen, sclerites outlined only.

on greater part of surface, almost flat on shallow ventral zone; fronto-orbital bristles moderately large; ocellar and postvertical bristles rather small but distinct, latter slightly divergent. Antennal segment 3 c. twice as long as deep; segment 4 very short; segment 5 rounded, its length

apparently less than its diameter; segment 6 gradually tapered, with well-developed pubescence on whole length, becoming sparser apically. Prelabrum moderately developed, with lower margin prominent; palpus moderately long and slender.



Fig. 21. *Bama flavifrons* n.sp., holotype female.

**Thorax.** Mesoscutum minutely pruinulent between setulae on almost entire dorsal surface; scutellum minutely pubescent on entire dorsal surface; mesopleuron densely pruinulent on slightly more than posterior half; dorsocentral and prescutellar acrostichal bristles large. Fore femur with large, stout posteroventral bristles on distal half and moderately large posterodorsal bristles; mid coxa with short anteromedial lobe and dense series of large and small marginal setulae. Wing: first costal cell very finely microtrichose; second costal cell more obviously microtrichose; stem vein with a single series of dorsal setulae; vein 2 with only very slight sigmoid curvature, from near its base more evenly divergent from vein 3 than in most other species; second section of vein 4 with slight sigmoid curvature; penultimate section of vein 4 c. half as long as discal crossvein; first basal cell with sub-basal (but not distal) hyaline zone largely bare; second basal cell bare on c. basal two thirds; anal cell bare except on small apical zone; discal crossvein with almost even curvature, its posterodistal angle much more acute than anterodistal angle; anal crossvein curved only on c. anterior half, almost straight posteriorly.

**Abdomen.** Compound tergite 1+2 c. half as long as tergite 3 (accurate measurement not possible); sternite 1 apparently broad; sternites 2, 3 and 4 moderately large; sternites 5 and 6 shorter, but less reduced than in most other species.

**Dimensions.** Total length, 5.2 mm; length of thorax, 2.4 mm; length of wing, 6.1 mm.

**Notes.** *Bama flavifrons* differs from other species of the genus in the very extensive covering of fine microtrichia or pruinescence on almost the entire mesoscutum. This feature

is probably only detectable in clean, dry specimens. The wing pattern somewhat resembles that of *B. robertsi*, though not in detail, and the predominantly yellow postfrons should prove distinctive.

The specific epithet is a Latin compound noun referring to the last-mentioned feature.

### *Bama (Bama) ismayi* n.sp.

Fig. 22

**Type material.** Holotype ♀. Central Province: 5 km NW of Brown River bridge, forest [lowland, c. 9°10'S 147°11'E], 13.iii.1983, J.W.I. (AM K352859). On micropin through foam plastic. Paratype. Central Province: 1 ♀, same data as above (AM).

**Description** (♀, ♂ unknown). Moderately elongate predominantly black fly, with heavily marked wing.

**Coloration.** Head black to dark brown. Antenna tawny-orange; arista tawny-brown. Prelabrum dark brown; palpus brown basally, tawny-orange distally. Thorax black, slightly shining, with blue-tinted reflections. Coxae brown, hind coxa paler; femora yellow; tibiae and tarsi blackish. Wing hyaline, pale yellow at extreme base, with yellowish costal and marginal cells and dark brown markings as in Fig. 22; halter yellow. Abdomen black, dorsally with purple-tinted reflections.

**Head.** Postfrons almost parallel-sided, convex anteriorly, near mid-length c. 0.41× as wide as head; height of cheek c. 0.21 of height of eye; face in profile only slightly concave on



Fig. 22. *Bama ismayi* n.sp., holotype female, right wing and adjacent parts.

upper half, slightly convex on lower half, with lower margin not prominent; fronto-orbital bristles rather small, but distinct; ocellar and postvertical bristles minute. Antennal segment 3 slightly tapered distally, c. 2.7× as long as deep; segment 6 with moderately short hairs on most of length. Palpus rather narrow.

*Thorax.* Mesoscutum bare between setulae on much of dorsal surface, rather broadly pubescent-pruinescent laterally; mesopleuron pruinescent mainly on upper-central region, largely glossy elsewhere; scutellum minutely pubescent on entire dorsal surface; thoracic chaetotaxy as given for *B. robertsi*. Fore femur with long, moderately stout posteroventral bristles, posterodorsal bristles less developed; mid coxa with moderately developed distomedial lobe and well developed series of large and small marginal setulae. Wing: first costal cell bare, except on short brown distal zone; second costal cell entirely microtrichose; stem vein with few minute dorsal setulae; vein 2 with gentle sigmoid curvature; second section of vein 4 with slight, almost even (non-sigmoid) curvature; penultimate section of vein 4 c. as long as discal crossvein; first basal, second basal and anal cells bare, except on very limited brown zones; hyaline zones on distal half of wing finely microtrichose; discal crossvein with slight sigmoid curvature, its general orientation slightly oblique; anal crossvein with maximum curvature only slightly anterior to mid-length.

*Abdomen.* Compound tergite 1+2 c. 0.6–0.7× as long as exposed part of tergite 3; sternite 1 moderately large; sternites 2 and 3 larger; sternite 4 slightly shorter, sternites 5 and 6 transversely almost linear.

*Dimensions.* Total length, 7.0–7.1 mm; length of thorax, 2.9 mm; length of wing, 7.1–7.2 mm.

**Notes.** *Bama ismayi* is most easily recognized by the wing markings and vein proportions (Fig. 22), but it is conceivable that the dark markings may be less extensive in the still unknown male.

The specific epithet refers to John W. Ismay who has made significant research collections of many families of Diptera in Papua New Guinea.

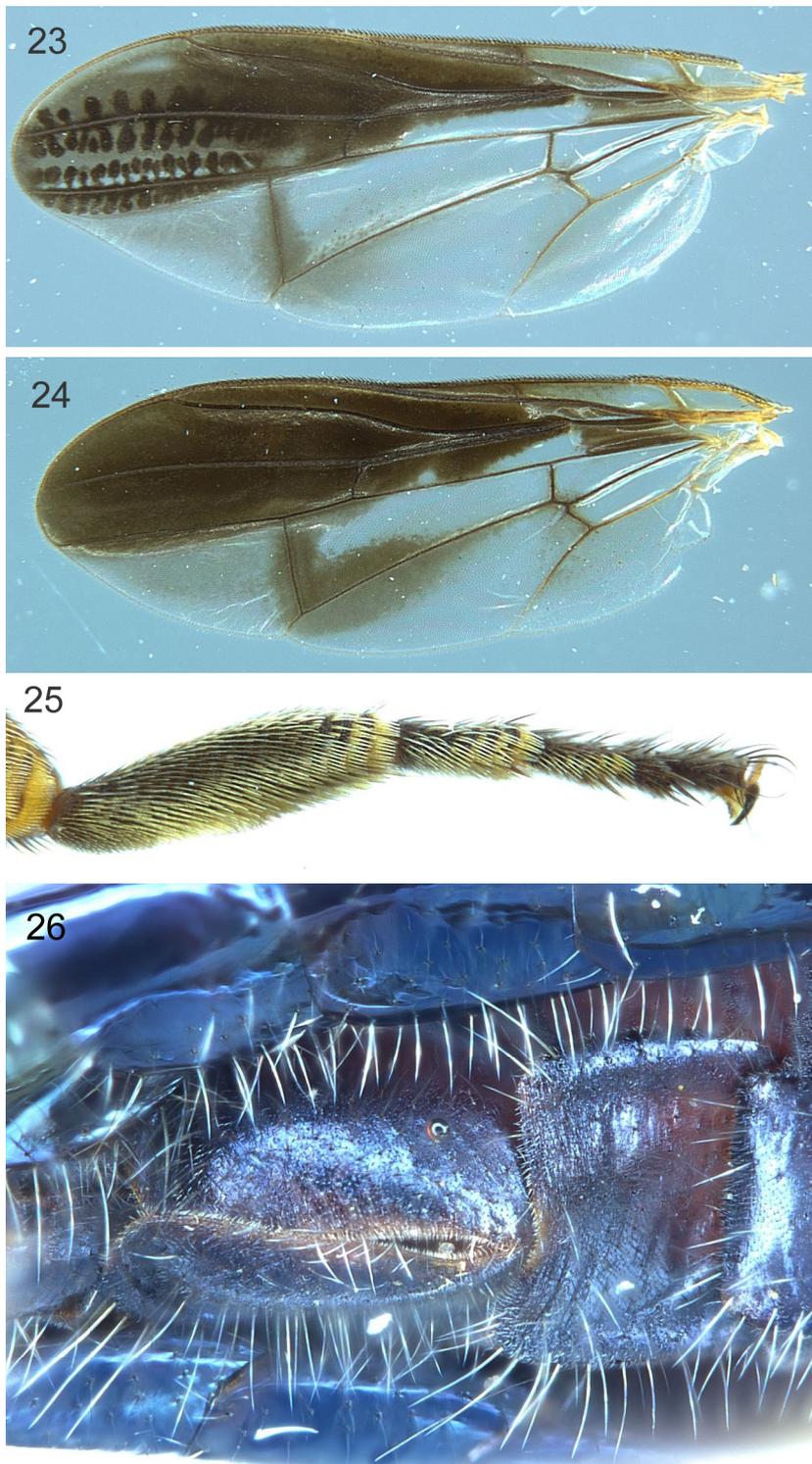
### *Bama (Bama) gressitti* n.sp.

Figs 23–26

**Type material.** Holotype ♂. Eastern Highlands Province: Karimui, S. of Goroka, 1000 m, 6.vi.1961, J.L.G., M.G. (BPB). Impaled on large black pin, thorax damaged, mid legs broken off beyond trochanters, right wing damaged, left wing on slide. Paratype. Eastern Highlands Province: 1 ♀, same data as holotype, except 5.vi.1961 (BPB). Legs and wings intact, left wing on slide.

**Description** (♂, ♀). Moderately small, largely blackish fly, with sexually dimorphic wing pattern.

*Coloration.* Head dark brown to blackish, with narrow silvery-pruinescent stripe along eye margin on anterior part of postfrons and upper part of parafacial, broadened where the two regions meet; upper part of face with silvery-pruinescent zone; postorbital pruinescent zone extending on to cheek. Antenna tawny-brown, including arista. Prelabrum shining dark brown; palpus dark grey-brown. Thorax brown-black, predominantly shining. Legs: fore coxa dark brown; mid and hind coxae tawny-brown; femora dull yellow basally, brown distally; tibiae and tarsi brown, latter often darker. Wing of male (Fig 23): area of membrane anterior to vein 4 largely rather dark brown, paler in both costal cells, and with single long hyaline zone in first posterior cell, which does not reach base, anterior crossvein, and vein 3; distal part of wing anterior to vein 4 with some diffuse paler zones, and a series of dark brown connected spots on each side of vein 3 and vein 4 (details in Fig. 23); light brown suffusion enclosing discal crossvein and, less strongly, distal part of vein 5; small brown suffusion covering short second section of vein 5; posterior parts of wing otherwise largely hyaline. Wing of female (Fig. 24): differing from above mainly in the more uniformly dark brown anterodistal region, with no trace of spotted pattern, with hyaline zone in first posterior cell reduced and divided in two, and with brown suffusion surrounding vein 4 more marked than in male. Halter dull yellow. Abdomen shining black.



Figures 23–26. *Bama gressitti* n.sp. (23) Left wing of male. (24) Left wing of female. (25) Right hind tarsus of male. (26) Abdomen of male, sternites 3 and 4 (on left).

*Head.* Postfrons near mid-length  $0.37\times$  as wide as head; height of cheek  $0.24$  of height of eye; face with depression across mid-length, convex below; posterior fronto-orbital bristle moderately small, anterior one much smaller; ocellar and postvertical bristles very fine. Antennal segment 3 c.  $2.7\times$  as long as deep, apically rounded; segment 4 very short; segment 5 longer than wide, apparently bare; segment 6 slender beyond base, coarsely pubescent on most of length,

more finely so towards apex. Prelabrum rather deep, slightly more so in male; palpus of moderate size.

*Thorax.* Mesoscutum almost bare between sockets of setulae except towards slightly pruinose lateral margins; scutellum minutely pubescent dorsally; pleura largely shining, with very little pruinoscence, but becoming densely pruinose posteriorly; prescutellar acrostichal bristle well developed, rather widely spaced. Fore femur with slender

posteroventral bristles, developed mainly on distal half, and with mainly shorter posterodorsal bristles; mid tibia with one long and one very short apical spur; mid basitarsus elongate, cylindrical, c.  $0.59\times$  as long as mid tibia (female); hind tarsus of male (Fig. 25) almost as long as hind tibia; hind basitarsus of male broadened, its length 0.49 of that of hind tibia, that of female only slightly less broadened. Wing: first costal cell almost entirely bare; second costal cell with broad bare basal zone; discal cell almost entirely microtrichose; first basal cell with bare zone covering much of hyaline area; second basal and anal cells with quite small distal microtrichose zones; vein 2 with gentle sigmoid curvature; distal sections of veins 3 and 4 very slightly convergent towards apex; penultimate section of vein 4 c. 0.7 of length of discal crossvein; discal crossvein straight, almost transverse; anal crossvein bent very near anterior extremity.

**Abdomen.** Male (Fig. 26): sternite 4 longer than sternite 3, divided by median membranous channel except at anterior extremity; outer surstylus much narrowed near end of inner surstylus, with broad apical expansion, acutely angular on its basal side; other details of genitalia not observed. Female: tergite 1+2 much shorter than tergite 3; sternite 2 longer and narrower than other sternites; sternite 4 short, undivided.

**Dimensions.** Total length, ♂ 6.7 mm, ♀ 5.5 mm; length of thorax, ♂ 2.6 mm, ♀ 2.7 mm; length of wing, ♂ 7.1 mm, ♀ 6.7 mm.

**Notes.** *Bama gressitti* resembles other dark-coloured *Bama* species with the wing area in front of vein 3 extensively darkened (e.g., *B. flexifer*), though the male only has the distal part curiously variegated (Fig. 23). The slight brown suffusion around the distal part of vein 5, the straight discal crossvein and the dark palpus aid specific identification, while such deeply divided male sternite 4 is so far otherwise known only in *B. bickeli*.

The specific epithet refers to the collector J. Linsley Gressitt, formerly of the B.P. Bishop Museum.

### *Bama (Bama) bickeli* n.sp.

Figs 27–32

**Type material.** Holotype ♂. Madang Province: Mount Wilhelm, 2200 m, 5.7590°S 145.1861°E, Malaise, 17–18.x.2012, IBISCA Niugini P2607 (MNHN). On micropin through polyporus. Paratypes (all Madang Province): 4♂♂, 3♀♀, same locality as holotype, 17–22.x.2012, IBISCA-P2607, -P2595, -P2563 (AM, MNHN); 2♂♂, 2♀♀, Mount Wilhelm, 2200 m, 5.7593°S 145.2356°E, 25–27.x.2012, IBISCA-P2168, -P2169, -P2216 (BMNH, MNHN); 1♀, same locality, but 7–8.xi.2012, IBISCA-P2229 (MNHN); 2♀♀, Mount Wilhelm, 2200 m, 5.7609°S 145.2353°E, 27.x.2012–2.xi.2012, IBISCA-P2202, -P2207 (MNHN); 1♂, Mount Wilhelm vicinity, 2012, no other data (AM). All specimens obtained during the IBISCA Niugini 2012–2013 expedition.

**Description** (♂, ♀). Slightly elongate black fly, with heavily marked, sexually dimorphic wing.

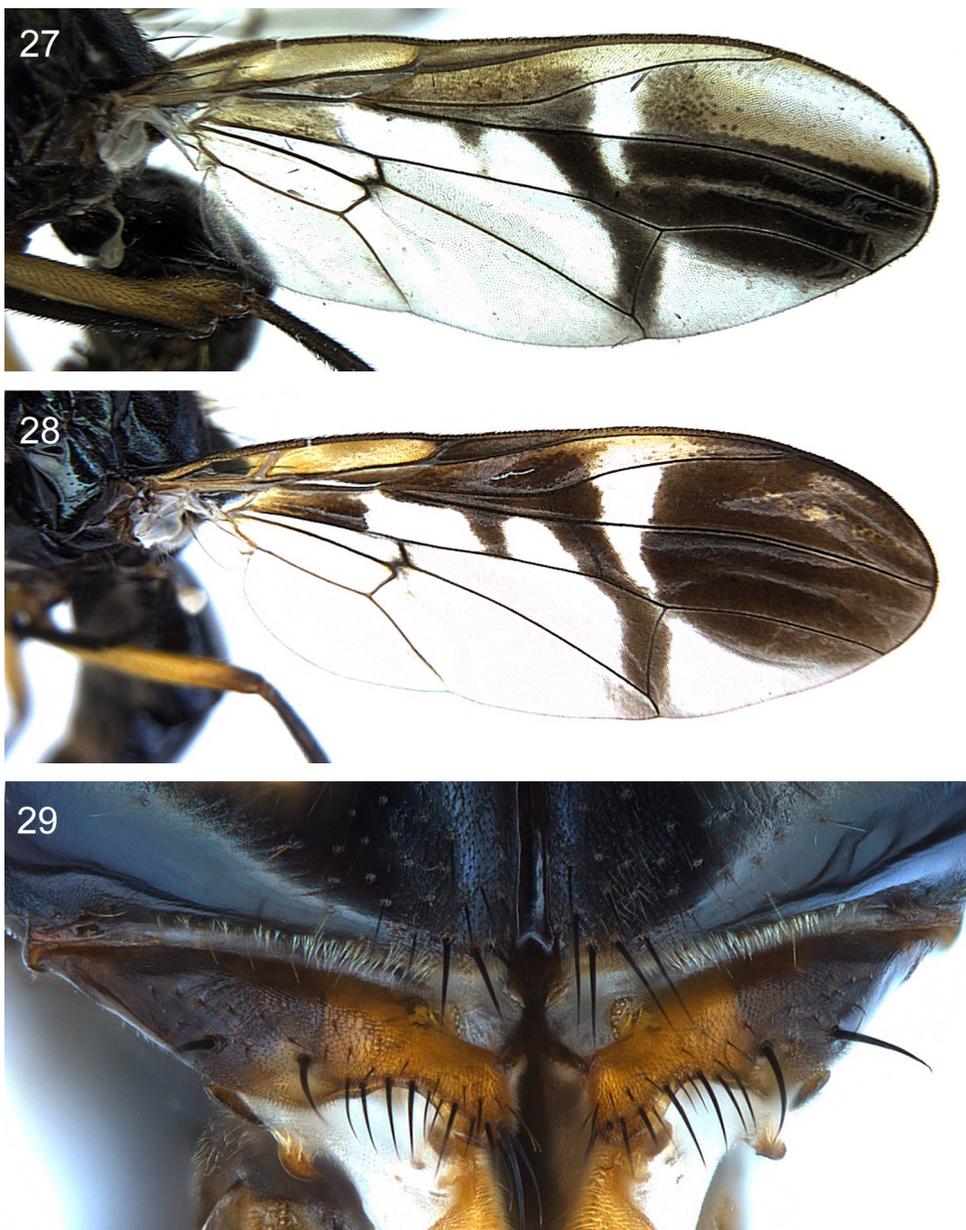
**Coloration.** Head largely blackish; face and at least part of cheek region tawny brown; postorbital to postgenal zone and smaller upper parafacial zone silvery pruinose. Antenna tawny with brown suffusions; arista becoming black beyond base. Prelabrum brown; palpus grey-brown, with variable tawny suffusions. Thorax black dorsally, pleura black to brown-black. Legs: fore coxa dark brown; hind

coxa tawny; mid coxa usually partly tawny, partly brown; fore femur yellow basally, brown on c. distal third to half; mid and hind femora yellow, with narrowly brown apices; tibiae and tarsi dark brown to black. Wing of female with brown to black markings as in Fig. 28; that of male (Fig. 27) with less extensive dark markings, in particular distal extremity of marginal cell without blackish zone, distal blackish zone in submarginal cell reduced to little more than a stripe along vein 3 and some yellowish to brown suffusion, dark transverse zone between two hyaline zones in first basal cell much reduced, central pale longitudinal stripe in first posterior cell usually more distinct than in female, and narrow pale line on each side of distal parts of veins 3 and 4 usually more distinct; halter creamy white. Abdomen largely black; tergites without paler zones.

**Head.** Postfrons almost parallel-sided, near mid-length  $0.38\text{--}0.39\times$  as wide as head; height of cheek  $0.19\text{--}0.23$  of height of eye; face in profile largely concave, becoming very slightly convex below; posterior fronto-orbital bristle moderately large, anterior one smaller; postvertical bristles small or vestigial, often not forming a symmetrical pair. Antennal segment 3 c.  $2.6\times$  as long as deep, narrowly rounded apically; segment 4 short but distinct; segment 5 c. as long as its diameter; segment 6 strongly tapered over short section beyond cylindrical basal section, coarsely pubescent over entire length except for that basal section. Prelabrum moderately developed, convex in profile; palpus not broadened distally, distinctly longer in male than in female.

**Thorax.** Mesoscutum bare and glossy between setulae on central part, with gradually increased pruinescence laterally, including that on humeral callus; scutellum pubescent on almost entire dorsal surface, glossy laterally; mesopleuron largely glossy, with little pruinescence near upper margin; prescutellar acrostichal and dorsocentral bristle of moderate size, almost transversely aligned. Fore femur with several moderately long posteroventral and posterodorsal bristles, often one or more of former somewhat thickened; mid coxa (Fig. 29) with distomedial lobe prominent, broadly rounded with flat surface, its margin otherwise with very irregular comb of mostly black setulae; hind basitarsus slender, cylindrical in female, in male (Fig. 30) broadened and compressed, its length 0.57 of length of hind tibia. Wing: most of first costal cell and basal zone of second costal cell bare; stem vein with small non-linear dorsal group of setulae; vein 2 with moderate curve near level of anterior crossvein so that submarginal cell widens from that level; second section of vein 4 almost straight; penultimate section of vein 4 c. as long as anterior crossvein, more than half as long as discal crossvein; large basal zone in first basal cell densely microtrichose, hyaline zone just beyond this largely bare; second basal cell with some microtrichia distally; anal cell almost bare; anal crossvein strongly bent near anterior end, almost straight or with slight concave curvature elsewhere.

**Abdomen.** Female: length of compound tergite 1+2 c. 0.8 of that of tergite 3; tergites 4 and 5 vestigial; sternites 2 and 3 large; sternite 1 slightly shorter; sternite 4 less than one third as long as sternite 3, transverse; sternites 5 and 6 very short, but sclerotized and setulose. Male: sternite 4 large, with very deep median cleft (Fig. 31); aedeagus (Fig. 32) with slender, almost undifferentiated preglans, and short simple flexible section; glans ovoid, with membranous subquadrate distal lobe and two narrow lobes associated with base of bulb; bulb slender, elongate, sclerotised, almost as long as glans; left



Figures 27–29. *Bama bickeli* n.sp. (27) Left wing of holotype male. (28) Left wing of female. (29) Mid coxae and adjacent parts of female, anteroventral view.

terminal filament moderately elongate, slightly longer than glans; right terminal filament slightly shorter than glans.

*Dimensions.* Total length, ♂ 5.8–6.6 mm, ♀ 5.1–6.1 mm; length of thorax, ♂ 2.5–2.6 mm, ♀ 2.5–2.9 mm; length of wing, ♂ 6.8–7.0 mm, ♀ 6.7–7.1 mm; length of glans of aedeagus, 0.28–0.30 mm.

**Notes.** *Bama bickeli* approaches *B. monstrans* and *B. papuanum* in general appearance, including its dark body coloration, wing venation, and wing pattern, the last with a degree of sexual dimorphism. However, the male differs from those two species in its broadened hind basitarsus and absence of a lobe on the preglans of the aedeagus, while both sexes have a more generalized mid coxa.

The specific epithet refers to Daniel J. Bickel who arranged for access to material of this species and other interesting platystomatids collected by the *IBISCA Niugini 2012–2013* expedition (a module of *Our Planet Reviewed Papua New Guinea*), in which he co-operated.

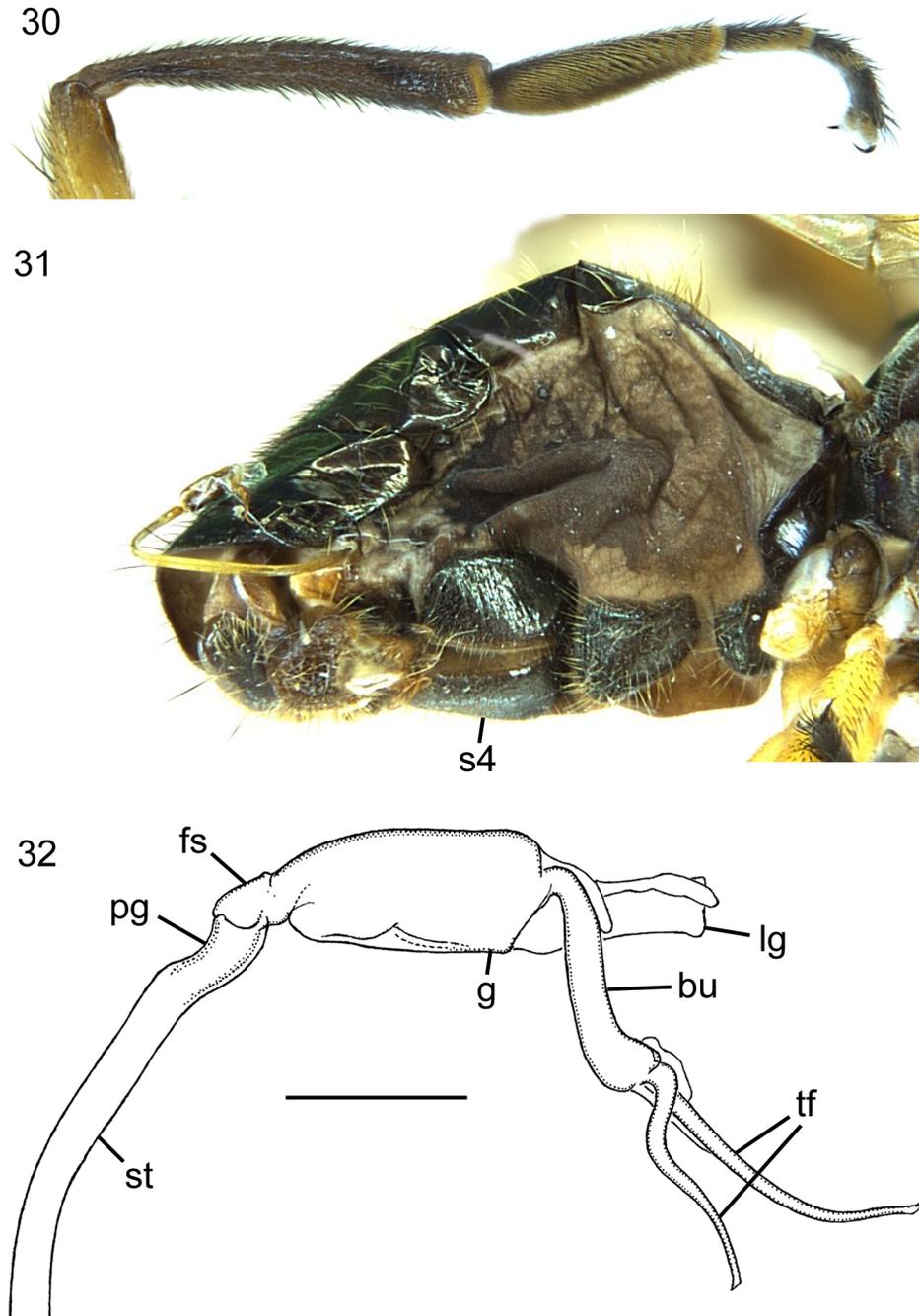
### *Bama (Bama) grande* n.sp.

Figs 33, 34

**Type material.** Holotype ♀ (unique). Morobe Province: Mount Kaindi, near Wau, 2000–2350 m, 10–11.i.1965, J.S., M.S. (BPB).

**Description** (♀, ♂ unknown). Relatively large, stout, tawny-brown fly, with faintly marked wings.

*Coloration.* Head tawny-brown, darker in region of vertex; upper part of face with creamy pruinescence. Antenna tawny-yellow; arista becoming dark brown distally. Prelabrum tawny-brown; palpus tawny-orange. Thorax tawny-brown; upper region of sternopleuron slightly darker. Legs: coxae tawny-yellow; femora entirely yellow; tibiae slightly darker than femora; tarsi brown to tawny-brown. Wing (Fig. 33) largely hyaline, slightly tinged with yellow anteriorly, more intensely yellowish in



Figures 30–32. *Bama bickeli* n.sp. (30) Right hind tibia and tarsus of male. (31) Abdomen of male, right lateroventral view. (32) Distal part of aedeagus, scale = 0.2 mm. *bu*, bulb; *fs*, flexible section of aedeagus; *g*, glans; *lg*, distal lobe of glans; *pg*, preglans; *s4*, abdominal sternite 4; *st*, stipe; *tf*, terminal filaments.

stigmatal section of subcostal cell and extreme basal part of marginal cell; slight brown mark surrounding anterior crossvein and longer, paler brown mark on discal crossvein; halter yellow. Abdominal tergites tawny-orange; ovipositor sheath brown-black.

*Head.* Postfrons almost parallel-sided, near mid-length c. 0.31× as wide as head; height of cheek 0.24 of height of eye; face approximately as in *B. aurantium*; two moderate-sized fronto-orbital bristles present and a much smaller one in front of these; postvertical bristle

very small. Antennal segment 3 c. 2.6× as long as deep, apically rounded; arista (segment 6), except at extreme base, with moderately developed pubescence, becoming sparser apically. Prelabrum becoming shallow anteriorly; palpus somewhat elongate.

*Thorax* generally as described for *B. aurantium*; posteroventral margin of sternopleuron (in front of mid coxa) with transverse series of larger black setulae. Fore femur with a series of large black posteroventral bristles on distal half, and sparse posterodorsal bristles; mid coxa (Fig.

33



34



Figures 33, 34. *Bama grande* n.sp., holotype female. (33) Right wing. (34) Mid coxae.

34) with irregular marginal comb of black setulae mixed with finer pale setulae, these not forming a dense brush as in *B. aurantium*; hind tarsus slender, subcylindrical, almost as long as hind tibia. Wing: details of venation mainly as in *B. aurantium*; preapical section of vein 4 as long as anterior crossvein; first costal cell bare, except for small anterodistal microtrichose zone; second costal cell sparsely and not uniformly microtrichose; second basal cell largely bare, almost to base.

**Abdomen.** Length of compound tergite 1+2 c. 0.7 of that of tergite 3.

**Dimensions.** Total length, 10.4 mm; length of thorax, 4.7 mm; length of wing, 11.1 mm.

**Notes.** *Bama grande* most resembles *B. martini* and *B. aurantium* in key characters, including the pale thorax and some venational features. It is distinguished from *B. aurantium* by the armature of the mid coxa and ventral extremity of the sternopleuron, and from *B. martini* by the very reduced wing markings, the less extensive microtrichiation of the wing membrane, the longer preapical section of vein 4, and the much darker ovipositor sheath. The type of *B. grande* is notably larger than any available specimens of *B. martini* and *B. aurantium*.

The specific epithet is a Latin adjective, indicating the relatively large size of the insect.

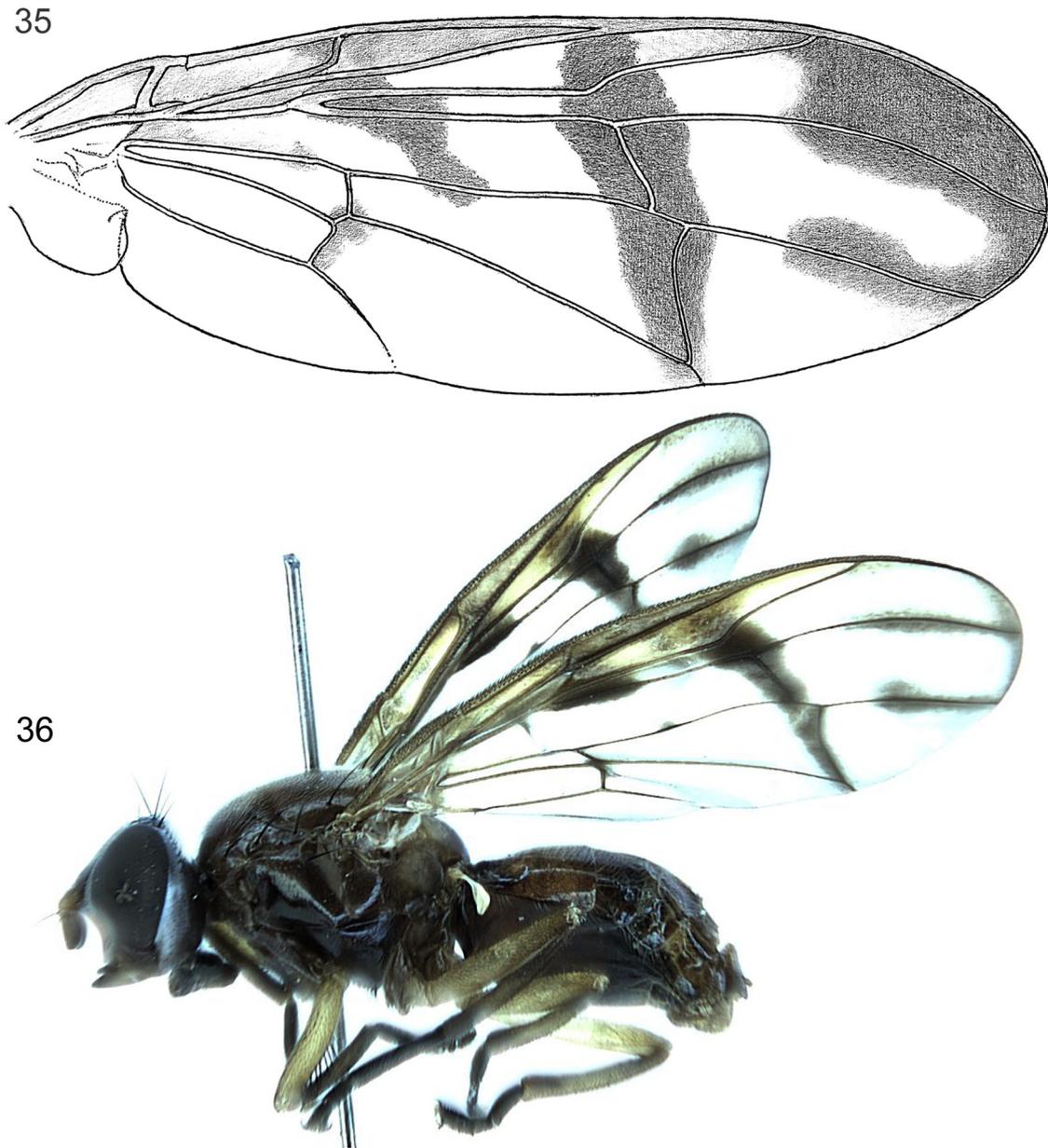
### *Bama (Bama) martini* n.sp.

Figs 35–38

**Type material.** Holotype ♀. Oro Province: Myola 2, 2080 m [c. 9°05'S 147°42'E], 4.vi.1984, J.W.I. (AM K352857). Paratypes. Oro Province: 1 ♀, same data as above (AM); 1 ♂, Myola 2, 2100 m, 15.ix.1985, J.W.I. (AM).

**Description** (♂, ♀). Slightly elongate tawny-brown fly, with patterned, sexually dimorphic wing.

**Coloration.** Head brown to tawny-brown, darker dorsally, with silvery pruinescence on postorbital to postgenal zone and on smaller parafacial to fronto-orbital zone. Antenna tawny to tawny-brown; arista brown beyond base. Prelabrum tawny to tawny-brown; palpus tawny, with grey-brown apex in male only. Thorax tawny to tawny-brown; scutellum tawny-orange. Legs: coxae tawny-brown; femora tawny-yellow; tibiae dull tawny with brownish suffusions; tarsi dark brown. Wing: membrane tinged with yellow, more intensely so anteriorly to vein 2, in female with dark brown markings as in Fig. 35, in male (Fig. 36) with brown mark on base of submarginal cell not crossing first basal cell, but represented in that cell by narrow mark along vein 3 and small spot on vein 4, brown band enclosing anterior and discal crossveins narrower and less intense than in female, and apical brown wing zone reduced to narrow brown clouds enclosing apical



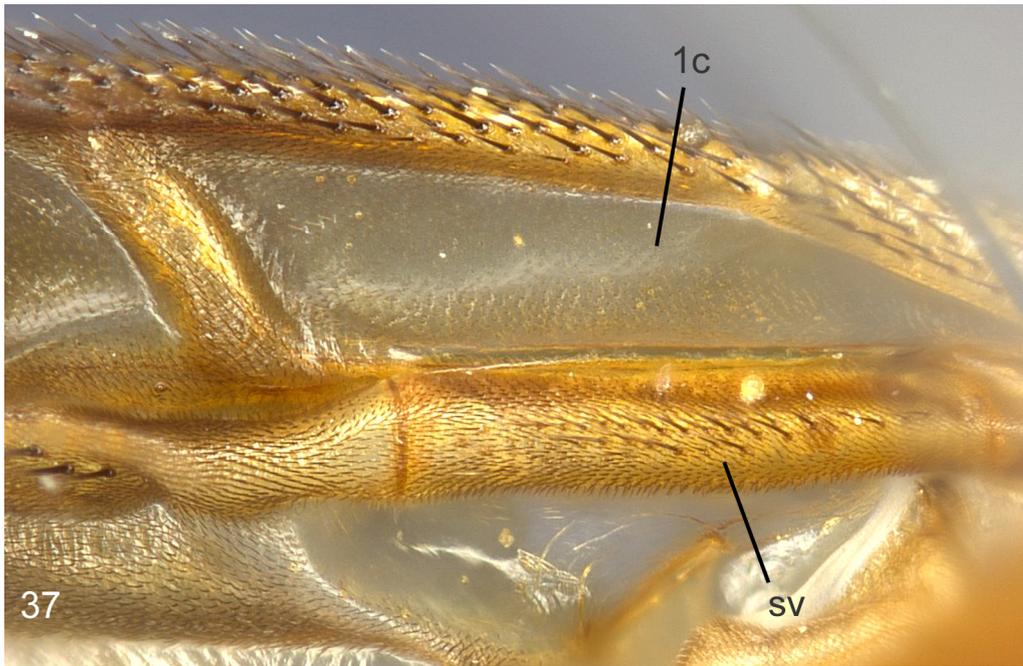
Figures 35, 36. *Bama martini* n.sp., (35) Right wing of holotype, female. (36) Paratype male.

parts of veins 4 and 5 and yellowish marginal zone between veins 2 and 4; halter pale yellow. Abdominal tergites tawny to brownish (partly discoloured in dried specimens).

*Head.* Postfrons almost parallel-sided (female), or slightly broadened anteriorly (male), near mid-length 0.36–0.39× as wide as head; height of cheek 0.24–0.26 of height of eye; face in profile concave, except towards lower margin; fronto-orbital bristles moderately short; postvertical bristle vestigial. Antennal segment 3 c. 2.9× as long as deep; segment 4 very short; segment 5 microtrichose distally, not distinctly longer than its diameter; segment 6 gradually tapered over c. basal half, with moderately short pubescence extending almost to apex. Prelabrum moderately shallow, not prominent; palpus not broad, longer and more prominent in male than in female.

*Thorax.* Mesoscutum bare and glossy between setulae on most of dorsal surface; scutellum finely pubescent on entire dorsal surface; mesopleuron largely glossy, with little pruinescence near upper margin; prescutellar acrostichal

bristle large, located slightly in advance of dorsocentral bristle; posteroventral extremity of sternopleuron with several black setulae (Fig. 38). Fore femur with several large posteroventral bristles and smaller posterodorsal bristles, the former more numerous and strongly thickened in male; mid coxa with comb of moderately developed unequal black setulae, and anteromedial lobe somewhat produced and flattened; hind basitarsus broader in male than in female. Wing (Figs 35, 36): first and second costal cells almost entirely microtrichose; stem vein with extensive dorsal zone of setulae; vein 2 with abrupt flexure near level of anterior crossvein so that submarginal cell becomes widened from this level; second section of vein 4 with slight sigmoid curvature; penultimate section of vein 4 not over half as long as anterior crossvein, little over one quarter as long as discal crossvein; large zone in first basal cell and most of second basal and anal cells bare in male; these bare zones less extensive in female; curvature of anal



Figures 37, 38. *Bama martini* n.sp., holotype female. (37) First costal cell and adjacent region of left wing, dorsal view. (38) Mid coxae and adjacent parts, anteroventral view. sv, stem vein (note black setulae); 1c, first costal cell.

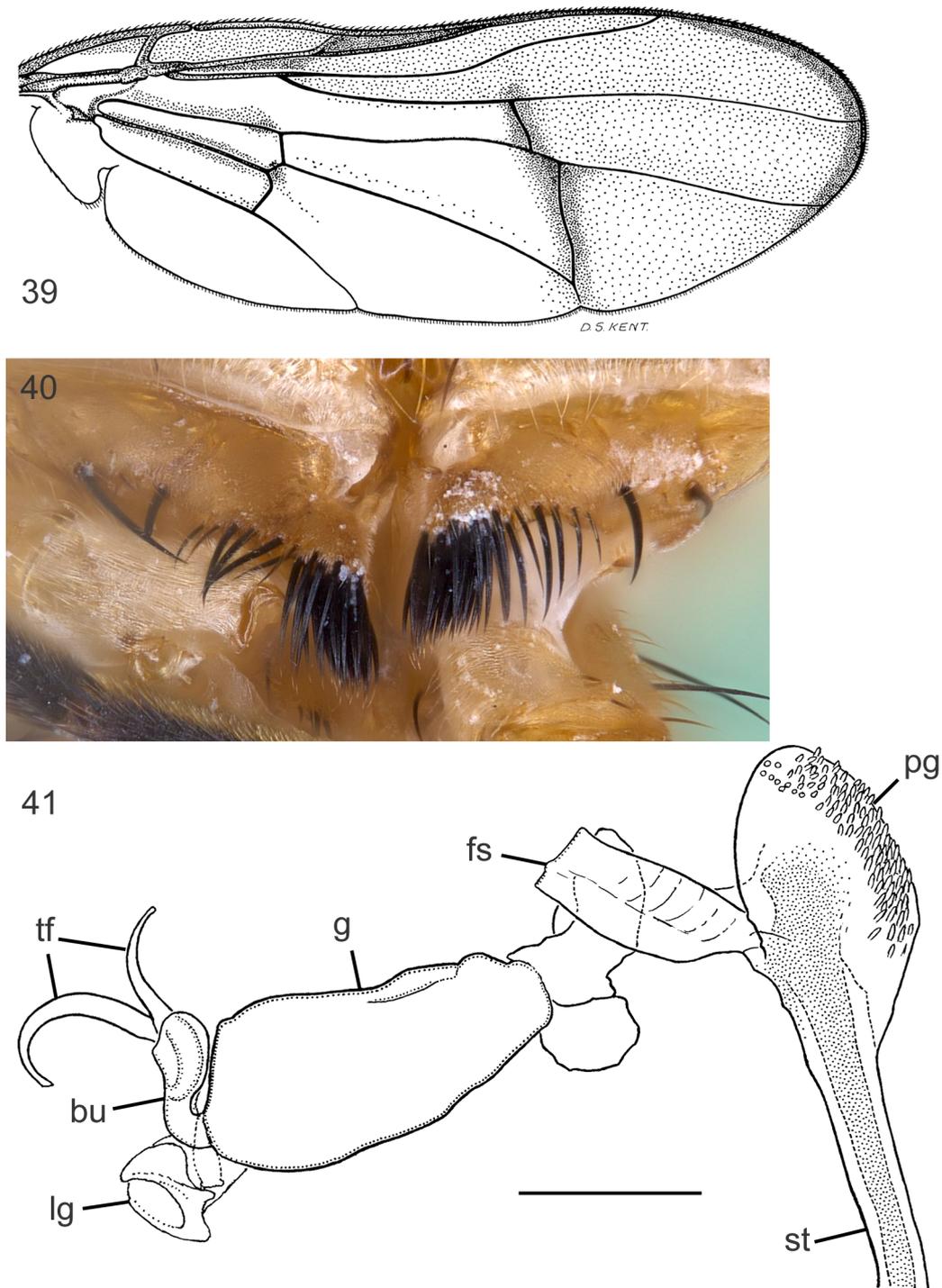
crossvein variable, that of only available male without posterior concave curvature.

**Abdomen.** Female: length of compound tergite 1+2 c. 0.74 of that of tergite 3; sternites 1, 2 and 3 large; sternite 4 not over half as long as sternite 3; sternites 5 and 6 much reduced. Male: sternite 4 without cleft; genitalia not observed (aedeagus broken).

**Dimensions.** Total length, ♂ 7.8 mm, ♀ 6.3–7.3 mm; length of thorax, ♂ 3.0 mm, ♀ 2.9–3.2 mm; length of wing, ♂ 8.6 mm, ♀ 7.9–8.3 mm.

**Notes.** *Bama martini* differs from other *Bama* spp., except *B. aurantium* and *B. grande*, in the more tawny toning of the thorax, particularly of the scutellum. It is readily distinguished from *B. aurantium* and *B. grande* by the absence of the dense, coarse brush on the mid coxa and the more developed, though sexually dimorphic wing markings. The thoracic pleura and antennal segment 3 are more strongly suffused with brown than in *B. aurantium*.

The specific epithet refers to John C. Martin, in recognition of his help, especially with micro-photography.



Figures 39–41. *Bama aurantium* n.sp. (39) Wing of female (Stony Logging Area). (40) Mid coxae, male. (41) Distal part of aedeagus (Upper Manki), scale = 0.2 mm. *bu*, bulb; *fs*, flexible section of aedeagus; *g*, glans; *lg*, distal lobe of glans; *pg*, preglans; *st*, stipe; *tf*, terminal filaments.

***Bama (Bama) aurantium* n.sp.**

Figs 39–41

**Type material.** Holotype ♂. Morobe Province: Stony Logging Area, near Bulolo [7°15'S 146°40'E], 25.iv.1979, H.R. (AM K352856). Paratypes. Morobe Province: 1 ♀, same data as holotype (AM); 1 ♂, 1 ♀, Upper Manki Logging Area, near Bulolo, 5000 feet [c. 1500 m], 15.xii.1972 and 16.iii.1973, F.R.W., P.S. (AM); 1 ♀, Wau, Jan. 1974, R.K.

(NSMT); 1 ♂, 3 ♀♀, Mount Missim, near Wau, Feb., Mar. 1963, J.S. (BPB). 1 ♀, Milne Bay Province: Milne Bay, 1969, J.S., M.S. (BPB).

**Description** (♂, ♀). Moderately large, predominantly tawny-orange fly, with very lightly marked wing.

**Coloration.** Head predominantly dark reddish brown, darker towards vertex, with silvery pruinescence on postorbital to postgenal zone and on smaller parafacial to fronto-orbital zone. Antenna yellow to tawny-yellow; arista

brown beyond base. Prelabrum dark brown; palpus tawny-yellow, becoming darker basally. Thorax tawny-orange. Coxae and femora tawny-yellow; tibiae and tarsi dark brown to blackish. Wing (Fig. 39) largely hyaline, with faint yellow tinge anteriorly (intensified in subcostal cell), with brownish markings very restricted and pale compared with those of other species, except *B. grande*; halter pale tawny, capitellum slightly darker. Abdominal tergite 1+2 tawny; other tergites becoming blackish posteriorly.

**Head.** Postfrons parallel-sided, near mid-length 0.36–0.37× as wide as head; height of cheek 0.19–0.23 of height of eye; face in profile slightly concave above central depression, broadly convex below; fronto-orbital bristles of moderate size; postvertical bristle moderately small. Antennal segment 3 c. 2.5× as long as deep, rounded apically; segment 4 extremely short; segment 5 rounded, pubescent on distal margin, its length not distinctly greater than its diameter; segment 6 gradually tapered over c. basal third, with moderately developed pubescence, becoming sparser towards apex. Prelabrum moderately developed, slightly convex; palpus elongate, with few enlarged ventral bristles.

**Thorax.** Mesoscutum shining and sparsely pruinose between setulae dorsally, more distinctly pubescent-pruinose laterally; scutellum finely pubescent on entire dorsal surface; mesopleuron largely glossy, with pale-pruinose posterodorsal zone; prescutellar acrostichal bristle large, located slightly anteriorly to dorsocentral bristle; posteroventral margin of sternopleuron without black setulae. Fore femur with a series of large, stout posteroventral bristles and a longer series of smaller posterodorsal bristles; mid coxa with marginal comb of coarse black setulae, becoming very numerous and dense medially but not located on a defined lobe (Fig. 40); hind basitarsus slender and subcylindrical in both sexes. Wing: first costal cell microtrichose towards margins, less distinctly so on large central area; second costal cell coarsely microtrichose, but with sub-basal almost bare zone; stem vein with dorsal tract of fine black setulae; vein 2 with slight flexure in front of anterior crossvein; second section of vein 4 with slight sigmoid curvature; penultimate section of vein 4 0.45–0.59 as long as anterior crossvein, 0.21–0.25× as long as discal crossvein; first and second basal and anal cells predominantly bare; anal crossvein most strongly bent on anterior part, but slightly variable.

**Abdomen.** Female: length of compound tergite 1+2 c. 0.6 of that of tergite 3; sternites 2 and 3 rather large; sternites 1 and 4 shorter; sternites 5 and 6 very short, but sclerotised. Male: sternite 4 without cleft; aedeagus (Fig. 41) with preglans expanded into broad partly membranous rounded lobe bearing many fine peg-like spinules; flexible section elongate, c. as long as glans when straightened out; glans ovoid with short distal lobe, ensheathing hatchet-like sclerite; bulb less than half as long as glans, curved basally, swollen distally; left terminal filament c. 0.6 as long as glans, right terminal filament much shorter.

**Dimensions.** Total length, ♂ 8.1–8.4 mm, ♀ 7.3–8.2 mm; length of thorax, ♂ 3.6–3.7 mm, ♀ 3.6–3.7 mm; length of wing, ♂ 8.8–9.0 mm, ♀ 8.5–8.9 mm; length of glans of aedeagus, 0.40 mm.

**Notes.** *Bama aurantium* has the palest general coloration of any *Bama* sp., except *B. grande*. The wing venation most resembles that of *B. papuanum*, but details of the aedeagus differ from that species and approach those of *B. monstrans*. In the absence of strong black setulae on the posteroventral

margin of the sternopleuron, *B. aurantium* resembles *B. monstrans* and *B. papuanum*, but differs from most other species. The armature of the mid coxa, including the dense brush of coarse black setulae (Fig. 40) is unique in the genus.

The specific epithet is a noun in botanical Latin—an orange, in reference to the coloration of the thorax.

### *Bama (Bama) monstrans* n.sp.

Figs 42–47

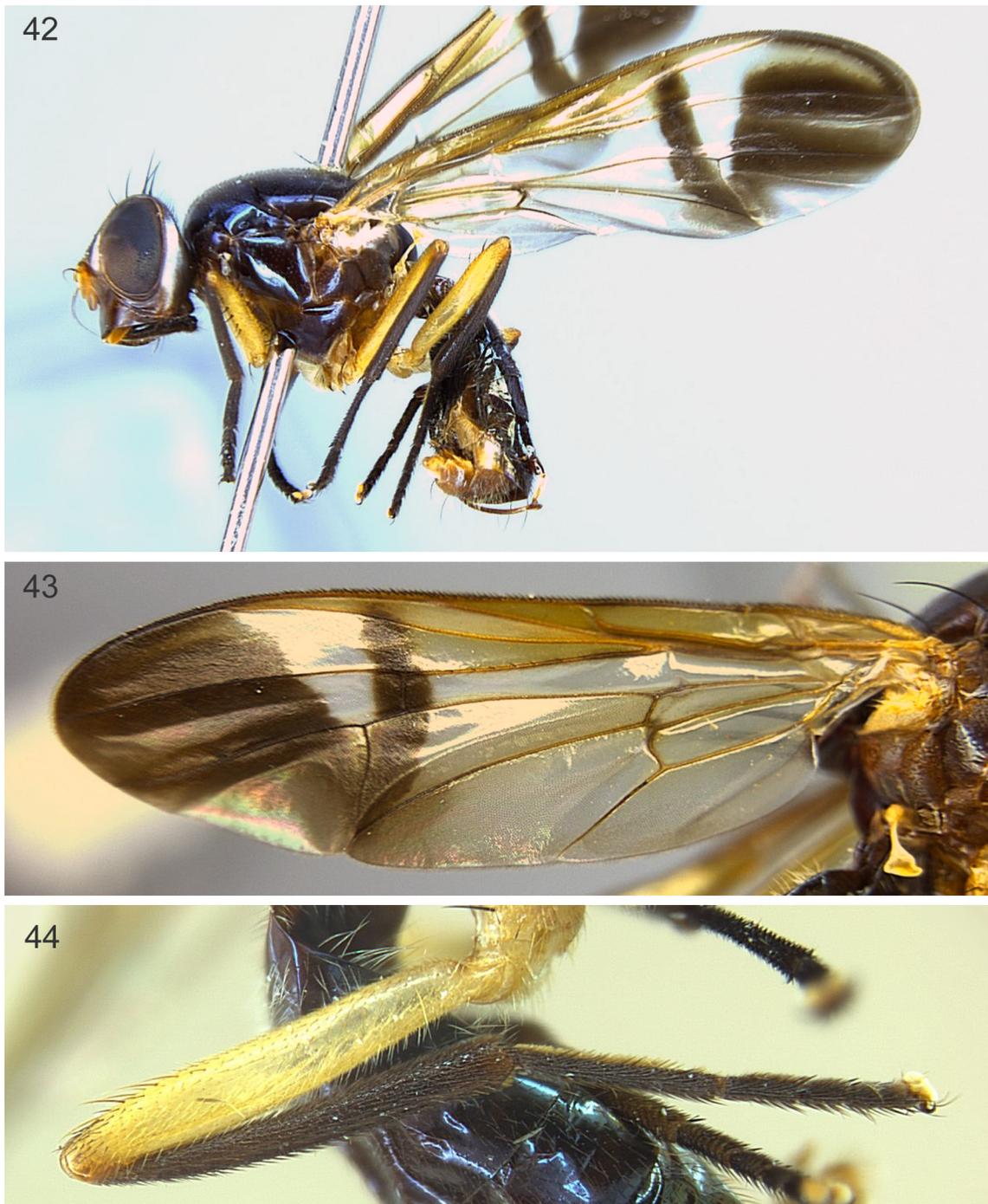
**Type material.** Holotype ♂. Morobe Province: Stony Logging Area, near Bulolo, 765 m [7°15'S 146°40'E], 18.i.1979, H.R., yellow tray (AM K352858). Paratypes. Morobe Province: 1 ♀, same data as holotype (AM); 2 ♂♂, 1 ♀, Tobo to Salembeng, Huon Peninsula, April 1963, J.S. (BPB).

**Description** (♂, ♀). Moderately elongate blackish fly, with wing darkly marked on distal part only.

**Coloration.** Head dark tawny-brown to blackish, with silvery-grey pruinescence on postorbital to postgenal zone and on smaller parafacial to fronto-orbital zone. Antenna tawny-orange; arista brown beyond base. Prelabrum brown; palpus brown basally, yellow distally. Thorax: mesoscutum black, with slightly blue-tinted reflections; scutellum black, with slightly blue to purplish reflections; pleura dark tawny-brown. Coxae and femora yellow; tibiae and tarsi dark brown to black. Wing (Figs 42, 43) largely hyaline, with costal, subcostal, and marginal cells and part of submarginal cell yellow; dark brown slightly curved transverse band enclosing anterior crossvein and extending from marginal cell to behind vein 5 but narrowly avoiding anterodistal angle of discal cell; large apical dark brown zone reaching posterior part of discal crossvein and posteriorly fusing with transverse band, slightly more extensive in female than in male, especially in submarginal cell; large part of wing basad of transverse band without distinct brown markings; halter pale yellow. Abdominal tergites black.

**Head.** Postfrons very slightly narrowed posteriorly, near mid-length 0.38× as wide as head (female); height of cheek 0.19–0.20 of height of eye; face in profile concave above, extensively slightly convex below; in male fronto-orbital bristles rather long, ocellar and postvertical bristles very small but distinct, in female all these bristles smaller. Antennal segment 3 c. 2.3–2.4× as long as deep, rounded apically; segment 4 very short, but sclerotised; segment 5 with length not much greater than diameter; segment 6 slightly thickened on basal section, moderately slender on most of length with numerous hairs, many of them at least twice as long as basal diameter of segment. Prelabrum apparently broad and shallow (retracted in type specimens); palpus moderately elongate.

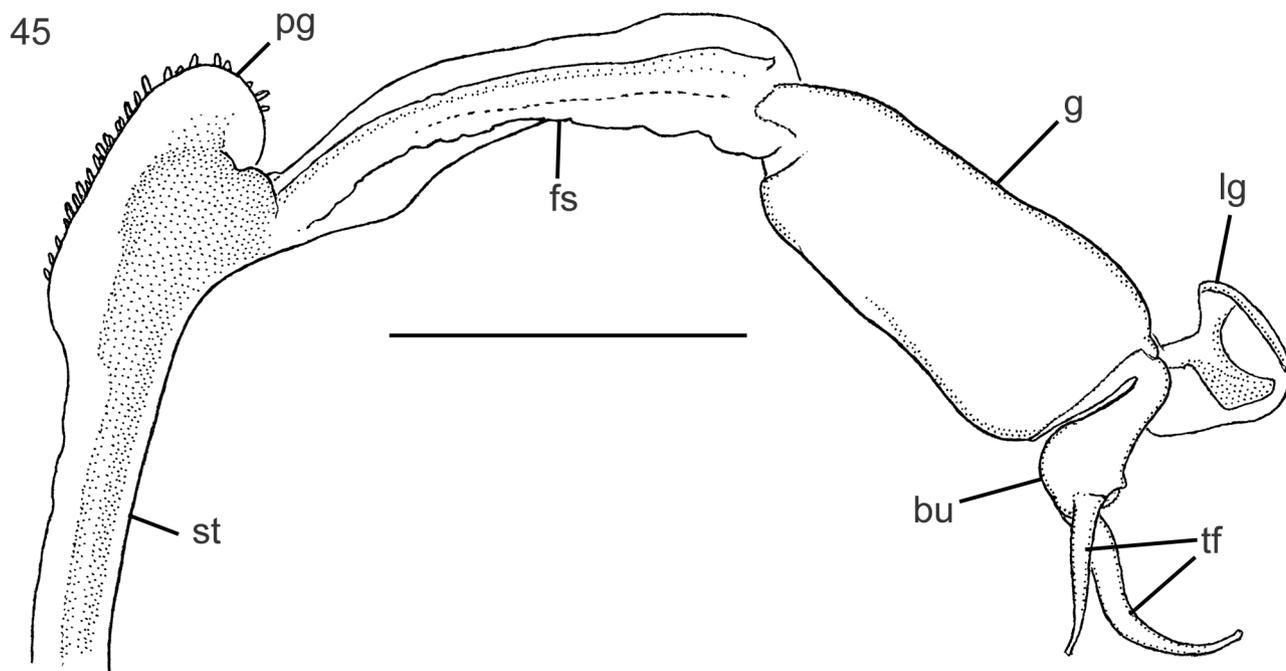
**Thorax.** Mesoscutum shining, but entirely pubescent-pruinose, more finely so on central part; scutellum finely, densely pubescent on entire dorsal surface; mesopleuron largely glossy, with little pruinescence on dorsal and posterior margins; prescutellar acrostichal bristle rather large. Fore femur with large, stout posteroventral bristles on c. distal half and longer series of moderately large posterodorsal bristles; mid coxa (Fig. 47) with comb of black setulae on margin in addition to numerous non-seriate smaller pale setulae, medially with prominent, non-compressed, almost finger-like lobe bearing one very stout terminal setula; hind



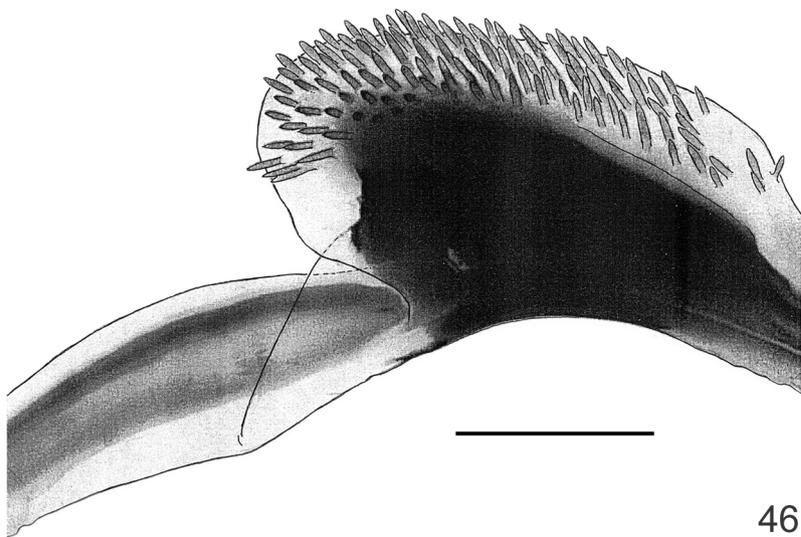
Figures 42–44. *Bama monstrans* n.sp. (42) Holotype male. (43) Right wing of female. (44) Right hind leg of male.

basitarsus slender and subcylindrical in both sexes. Wing: first costal cell very largely microtrichose; second costal cell entirely microtrichose; stem vein with narrow dorsal tract of black setulae; vein 2 with slight sigmoid curvature; second section of vein 4 with slight curvature; penultimate section of vein 4 more than half as long as anterior crossvein, less than half as long as discal crossvein; first and second basal cells and anal cell predominantly bare, but second basal cell with narrow microtrichose stripe enclosing small apical bare spot; anal crossvein most strongly curved or bent on anterior half, but slightly variable.

*Abdomen.* Female: length of compound tergite 1+2 c. 0.67 of that of tergite 3; sternites 1, 2, and 3 large; sternite 4 somewhat smaller; sternites 5 and 6 very short, but sclerotised. Male: sternite 4 with small notch on posterior margin, not cleft; aedeagus (Fig. 45) with preglans (Fig. 46) expanded into subovate, partly membranous lobe bearing many peg-like spinules; flexible section large, longer than glans; glans stoutly ovoid with short distal lobe ensheathing hatchet-like sclerite; bulb rather short; left terminal filament c. half as long as glans, right terminal filament conspicuously smaller.



47



46

Figures 45–47. *Bama monstrans* n.sp. (45) Distal part of aedeagus of holotype, right lateral view, scale = 0.3 mm. (46) Preglans from left side, scale = 0.1 mm. (47) Pair of mid coxae of male, left lateroventral view. *bu*, bulb; *fs*, flexible section of aedeagus; *g*, glans; *lg*, distal lobe of glans; *pg*, lobe of preglans; *st*, stipe; *tf*, terminal filaments.

**Dimensions.** Total length, ♂ 7.1 mm, ♀ 7.6 mm; length of thorax, ♂ 3.4 mm, ♀ 3.3 mm; length of wing, ♂ 8.7 mm, ♀ 8.1 mm; length of glans of aedeagus, 0.40 mm.

**Notes.** *Bama monstrans* differs from other species of the genus in the non-compressed, distally almost finger-like medial prominence of the mid coxa. As in *B. papuanum*, this prominence has an isolated stout terminal setula. This

last feature, together with many features of coloration, suggest a close relationship between *B. monstrans* and *B. papuanum*, but the aedeagus of *B. monstrans* is very distinct from that of *B. papuanum* and similar in detail to that of *B. aurantium*.

The specific epithet is a Latin participle, pointing out or indicating, in reference to the finger-like process on the mid coxa.



Figures 48–51. *Bama papuanum* (Hennig). (48) Right wing of female (holotype of *X. papuana*). (49) Right wing of male (holotype of *X. strigata*). (50) Humeral region of right wing of female, showing microtrichia on membrane. (51) Mid coxae of male from right side.

### *Bama (Bama) papuanum* (Hennig)

Figs 48–52

*Xiria papuana* Hennig, 1940: 316–317, pl. 24, fig. 10.

*Xiria strigata* Hennig, 1940: 317, pl. 24, fig. 9. N. Syn.

Doubtfully available name—no clearly descriptive statement.

*Bama papuanum* (Hennig) McAlpine, 2001: 166.

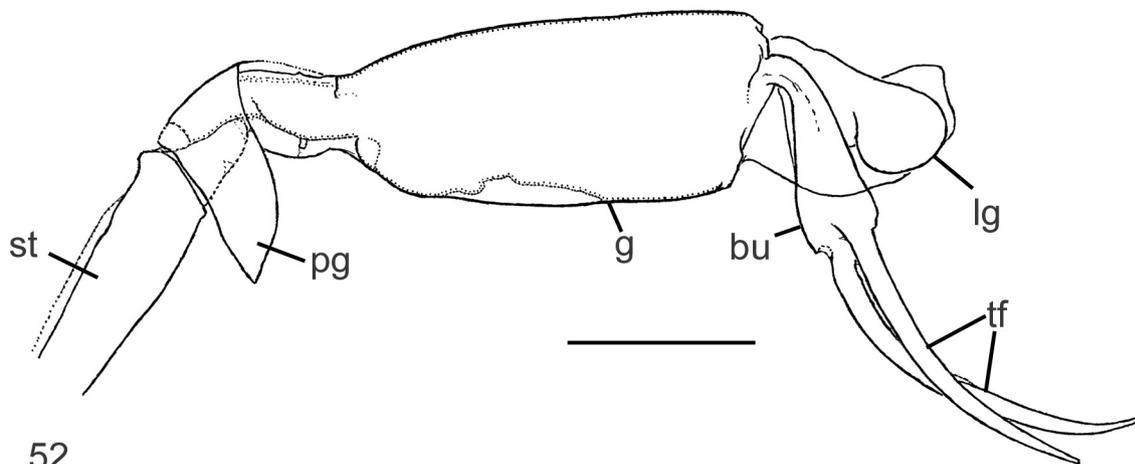
*Bama strigatum* (Hennig) McAlpine, 2001: 166.

**Type material.** Holotype ♀ of *Xiria papuana* (given as ♂ by Hennig). Madang Province: “Kaiser Wilhelmsland, Minjemfluss” (Mindjim River), no date, R.S. (SDEI, ex Lichtwardt coll.). Head slightly mouldy; abdomen slightly damaged; right wing mounted on slide. Holotype ♂ of *Xiria strigata*. Madang Province: identical collection data to those

of *X. papuana* (SDEI). Slightly damaged by psocopterans and repaired with glue; aedeagus now in genitalia tube on main pin; right wing mounted on slide. The precise locality on the Mindjim River is not stated, but the river mouth is located at 5°58'S 145°16'E.

**Description** (♂, ♀). Relatively large blackish fly, with sexually dimorphic dark wing markings; agreeing with description of *B. monstrans* except as indicated.

**Coloration.** Head: antenna tawny-yellow. Thorax black to brown-black. Wing markings of female resembling those of *B. monstrans*, except that discal crossvein lies completely within transverse brown band (Fig. 48); in male distal dark zone reduced to narrow brown margin on costal section from vein 2 to vein 4 and brown stripe on apical part of vein 4 (Fig. 49).



52



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Figures 52, 53. (52) *Bama papuanum* (Hennig), distal part of aedeagus. Scale = 0.2 mm. (53) *Bama shinonagai* McAlpine, left wing of holotype, male. *bu*, bulb; *g*, glans; *lg*, distal lobe of glans; *pg*, lobe of preglans; *st*, stipe; *tf*, terminal filaments.

**Head.** Postfrons near mid-length c. 0.37–0.38 as wide as head; height of cheek 0.23 (male)–0.25 (female) of height of eye. Arista (only intact in female) with slightly longer hairs than in *B. monstrans*. Prelabrum moderately prominent.

**Thorax.** Central part of mesoscutum apparently without pruinescence between setulae. Mid coxa (Fig. 51) with relatively weak marginal comb of mainly yellow setulae, medially bearing moderately prominent lobe with flat anterior surface and single stout terminal setula. Wing: penultimate section of vein 4 less than half as long as anterior crossvein; first and second basal cells with somewhat more extensive microtrichiation than in *B. monstrans*.

**Abdomen.** Female: tergite 3 slightly longer than compound tergite 1+2; sternites not clearly visible. Male: sternite 4 not observed; aedeagus (Fig. 52) with preglans bearing narrow, acute, leaf-like lobe entirely lacking peg-like spinules; flexible section very short; glans slightly longer than that of *B. monstrans*, its distal membranous lobe bearing relatively large, rounded sclerite; bulb c. half as long as glans; both terminal filaments much longer than those of *B. monstrans*, longer (left) filament only slightly shorter than glans.

**Dimensions.** Total length, ♂ 9.2 mm, ♀ 9.2 mm; length of thorax, ♂ 3.6 mm, ♀ 4.3 mm; length of wing, ♂ 9.0 mm, ♀ 10.0 mm; length of glans of aedeagus, 0.48 mm.

**Notes.** Hennig (1940) determined the male and female of *B. papuanum* as separate species, though with an expression of doubt. After careful comparison of Hennig's two type specimens with both sexes of *B. monstrans* and other species, I am convinced that the former represent one species, showing sexual dimorphism in wing markings. The slightly stronger curvature of the apical section of vein 4 in the male specimen than in the female is also observed in *B. monstrans* and in at least some specimens of *B. bickeli*. The less extensive dark wing markings of the male of *B. papuanum* than in the female of the species is a more extreme development of the condition also present in *B. monstrans*, *B. bickeli*, and *B. martini*.

The details of the aedeagus, including the proportions of the parts and especially the nature of the lobe of the preglans leave no doubt as to the distinction of *B. papuanum* from *B. monstrans*.

***Bama (Polimen) shinonagai* McAlpine**

Fig. 53

*Bama (Polimen) shinonagai* McAlpine, 2001: 167–169, figs 76–78.

**Type material.** Holotype ♂. Morobe Province: Gumi, near Bulolo, 2010 m, 6.viii.1979, H.R. (AM K359369). Paratypes. See McAlpine (2001).

**Description and distribution.** See McAlpine (2001).

**Notes.** Careful consideration has been given to the taxonomic placement of this species. *Bama shinonagai* resembles typical species of the genus in the following characters: two pairs of fronto-orbital bristles and no lateral occipital bristle present; silvery pruinose zones of similar extent to other species present on parafacial–fronto-orbital and postgenal regions; arista short-haired (not plumose or bipectinate) on almost whole length of segment 6; prescutellar acrostichal bristle present; fine ventral setulae present on vein 3; membrane of anal cell bare on most of surface; in female, abdominal tergite 3 much enlarged and tergites 4 and 5 much reduced; in male the two terminal filaments of aedeagus unequal in size and arising from elongate bulb.

Although these character states confirm the generic position of *B. shinonagai*, the species differs from all or most other *Bama* species in having: scutellum rounded, convex, and glossy, without dorsal pubescence, but with dorsolateral setulae and the intermediate lateral bristle smaller than the other scutellars; squama significantly larger, almost semicircular; preglans of aedeagus with double series of lobes (with one lobe or none in other investigated species). The absence of dorsal setulae on the stem vein (base of R) disagrees with all other *Bama* species except *B. robertsi*, which shares no other significant points of resemblance to *B. shinonagai*. For these reasons, I believe that the placement of *B. shinonagai* in the monotypic subgenus *Polimen* is justified.

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