

**STUDIES IN PACIFIC BOMBYLIIDAE (DIPTERA)**  
**IV. On some Philippine Bombyliidae in the collection**  
**of the Bishop Museum, with**  
**descriptions of new species<sup>1</sup>**

By **Neal L. Evenhuis and Keith T. Arakaki<sup>2</sup>**

*Abstract.* Seventeen species of Bombyliidae from the Philippines in the Bishop Museum collection are identified, including 6 new species: *Geron philippinensis*, *Petrorossia nigrifascia*, *P. williamsi*, *Villa lepidopyga*, *Anthrax bifuscatipennis* and *A. philippinensis*. The subfamily Gerontinae and the genera *Geron* and *Villa* are newly-recorded from this area.

The Philippine Bombyliidae are poorly known. Early workers in the area include Osten Sacken (1882), Elero (1895), and Bezzi (1913, 1916). In papers by Delfinado (1969) and Delfinado & Hardy (1971), the types of Diptera from the Philippines are listed. Bowden (1971) described *Ligyra erato* from Palawan and recorded 2 undescribed forms of the *Anthrax distigma* group from Tawi Tawi and Mindanao.

The following list of Bombyliidae species previously recorded from the Philippines is compiled primarily from Bowden (1975); other records are from Osten Sacken (1882), Bezzi (1916) and Boyes & Shewell (1973): *Toxophora javana* Wiedemann, 1821; \**Toxophora zilpa* Walker, 1849; *Systropus sphegoides* Walker, 1859; *Systropus tipuloides* Westwood, 1876; \**Systropus valdezi* Bezzi, 1916; *Petrorossia fulvula* (Wiedemann, 1821); \**Anthrax distigma* Wiedemann, 1828; \**Exoprosopa (Pterobates) pennipes* (Wiedemann, 1821); *Ligyra doryca* (Boisduval, 1835); *Ligyra erato* Bowden, 1971; *Ligyra flaviventris* (Doleschall, 1858); *Ligyra oenomaus* (Rondani, 1875); *Ligyra tantalus* (Fabricius, 1794); *Ligyra umbrifer* (Walker, 1849).

Of the 14 species listed, only 4 (marked by an asterisk) are recorded in this study of material in the Bishop Museum; 13 additional species are recorded for the first time from the Philippines. Most of the specimens of *Ligyra* examined in this study closely resemble *Ligyra tantalus* and *L. doryca*. However, further examination of the Philippine specimens and comparisons with the original descriptions of *L. tantalus* and *L. doryca* showed them to represent different species.

The present study examines 65 specimens in the Bishop Museum collection and records 17 species (6 new) in 8 genera. One subfamily (Gerontinae) and 2 genera (*Geron* and *Villa*) are recorded for the first time from the Philippines.

All types are deposited in Bishop Museum, Honolulu (BISHOP).

1. Material examined is partially the results of fieldwork supported by a grant to Bishop Museum from the U.S. National Institutes of Health (AI-01723).
2. Department of Entomology, Bishop Museum, P.O. Box 19000-A, Honolulu, Hawaii 96819, USA.

## Subfamily GERONTINAE

The subfamily Gerontinae, represented in this study by the genus *Geron*, is poorly represented in the Oriental Region. Prior to this study only 2 species had been recorded, both from India. Though only 1 species of the genus *Geron* is represented from the Philippines, future concentrated collecting from this area should reveal many more species. Other species in the Bishop Museum collection show this genus to be well represented in SE Asia, the Malay Archipelago and surrounding islands in the southwestern Pacific.

***Geron philippinensis* Evenhuis & Arakaki, new species**

FIG. 1

♀. *Head*: face shining brown with small bulge above oral margin, silver tomentose laterally; frons shining black, silver tomentose lateral to antennal bases; vertex black, bare; occiput brown above, gray below, sparse yellow-white pilose and golden tomentose; gula gray, white pilose; antennae brown; segments I and II yellow pilose; segment III missing; antennal ratio: 3:1:— . *Thorax*: scutum and scutellum black, sparse pale yellow pilose; pleura gray, silver-white pilose and tomentose; halter yellow. *Legs*: fore coxa brown; mid and hind coxae gray; all coxae white pilose and silver-white tomentose; femora and tibiae brown, with sparse white scales; tarsi brown, bare. *Wing* (FIG. 1): hyaline; veins light brown; R<sub>4</sub> curved slightly upward at wing margin; r-m crossvein  $\frac{2}{3}$  beyond base of discal cell; vein at base of 2nd posterior cell slightly sigmoid; squama tan with white fringe. *Abdomen*: brown; tergites sparse white pilose dorsally, dense laterally; sternites sparse pale yellow pilose.

♂. Unknown.

Holotype ♀, unique, PHILIPPINES: Luzon I: Mountain Prov.: Abatan, Buguias, 60 km S of Bontoc, 1800–2000 m, 25.IV.1964, H.M. Torre Villas (BISHOP 11,418).

*G. philippinensis* can be separated from its congeners in the Oriental Region by the shape and ground color of the face and the yellow antennal pile, in addition to its distribution.

## Subfamily TOXOPHORINAE

***Toxophora zilpa* Walker**

*Toxophora zilpa* Walker, 1849: 298.

A male and a female fitting Walker's description of *T. zilpa* are represented in the collection.

*Material examined.* PHILIPPINES: Luzon I: Laguna Prov., 1♂, 1♀, Los Baños, VI–VII.1917, F.X. Williams.

## Subfamily SYSTROPINAE

***Systropus valdezi* Bezzi**

*Systropus valdezi* Bezzi, 1916: 26; 1917: 126.

This species is distributed in the northern areas of the Philippine Is. The series of specimens at hand shows little variation from Bezzi's original description.

*Material examined.* PHILIPPINES: Luzon I: Camarines Sur Prov., 2♂, 1♀, Mt Isarog, Pili, 600 m, 15.IV.1965, H.M. Torre Villas; Ifugao Prov., 1♂, Jacmal Bunhian,

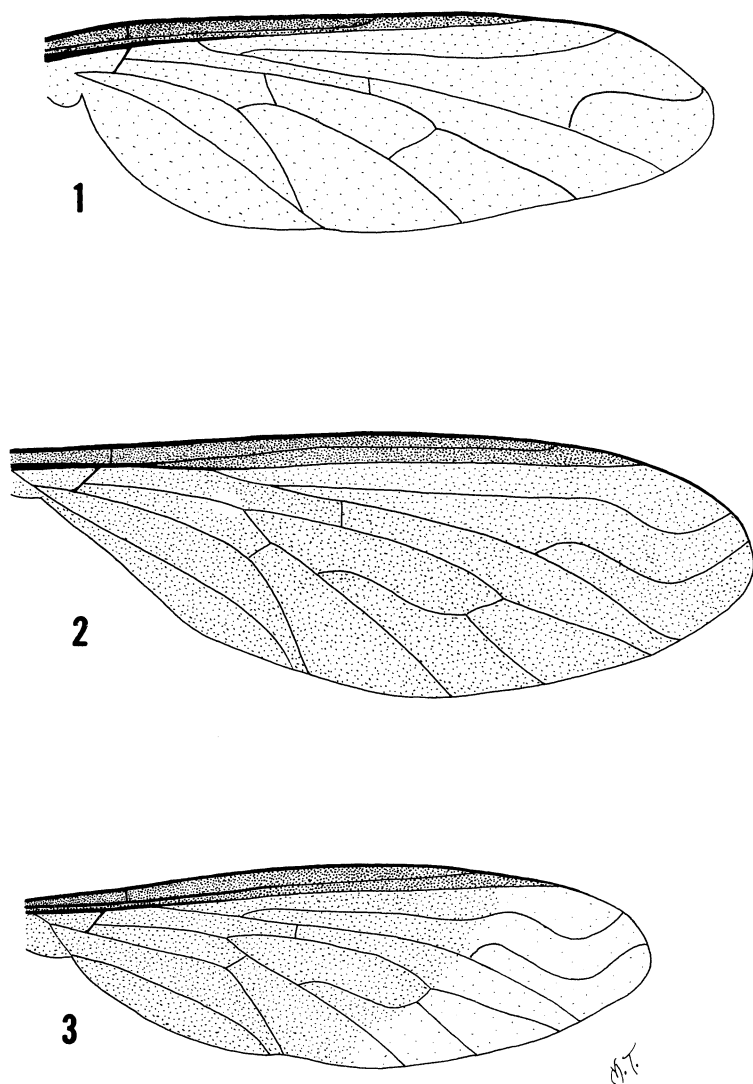


FIG. 1-3. 1, *Geron philippinensis*, wing. 2, *Petrorossia nigrifascia*, wing. 3, *Petrorossia williamsi*, wing.

24 km Mayoyao, 800-1000 m, 1-10.V.1967, Torrevillas; Laguna Prov., 1♂, Los Baños, III-VI.1925, C.E. Pemberton; La Union Prov., 1♂, Baguio, VI.1917, F.X. Williams; Leyte I: Leyte Prov., 1♀, Bagahupi, 7.IX.1957 [no collector].

***Systropus violascens* (Enderlein)**

*Cephenius violascens* Enderlein, 1926: 78.

*Systropus violascens*: Bowden, 1975: 169.

This represents the first record of *S. violascens* from the Philippines. Previously, it had been recorded only from the type-locality in Sumatra. It was collected in Mindanao and Leyte islands.

*Material examined.* PHILIPPINES: Leyte I: Leyte Prov., 1 ♀, Bagahupi, 7.IX.1957 [no collector]; Mindanao I: Misamis Oriental Prov., 1 ♂, 1 ♀, Minalwang, 24.III–4.IV.1961, H.M. Torrevillas.

#### Subfamily LOMATIINAE

#### ***Petrorossia nigrifascia* Evenhuis & Arakaki, new species**

FIG. 2

♀. *Head*: face and oral margin gray with black pile; frons black with intermixed black and sparse yellow recumbent pile; vertex black, bare; occiput brownish black, yellow pilose, golden yellow tomentose laterally; gula gray-black, light yellow pilose; proboscis projecting just beyond oral margin; antennal segments I and II black, black pilose; segment III gray-brown, bare; style segment I black; segment II brown; antennal ratio: 1:5:1:4.5. *Thorax*: scutum and scutellum brown; scutum dense yellow pilose anteriorly, notum with golden yellow recumbent pile, black hairs laterally above wing and posteriorly near scutellum; scutellum yellow pilose, golden yellow tomentose; humeral callus gray, long yellow pilose; post alar callus brown, golden yellow tomentose with intermixed black and orange bristles; pleura gray; dense light yellow pilose on mesopleuron, sparse yellow pilose on metapleuron, bare elsewhere; halter stem yellow, knob yellow and black. *Legs*: coxae gray, yellow pilose; femora yellow-orange with sparse brown hairs; tibiae yellow-orange with sparse short brown hairs and spines; tarsi brown, short spinose; claws black. *Wing* (FIG. 2): tinted smoky brown; squama yellow-white with fine white fringe. *Abdomen*: tergites brown-black, segments II–VII orange laterally; dense yellow pilose laterally, sparse yellow pile and tomentum dorsally; sternites orange-yellow, yellow pilose.

♂. Unknown.

Holotype ♀, PHILIPPINES: Luzon I: Camarines Sur Prov., Mt Iriga, 500 m, 29.III.1962, H. Holtman (BISHOP 11,419). 1 ♀ paratype, Leyte I: Leyte Prov., Dagami, Mt Leyte, 27.VII.1957 [no collector].

This species is similar to *P. fulvula* (Wiedemann) and can be separated from it by the orange spots laterally on tergites II–VII (in *P. fulvula* the orange spots restricted to tergites II–IV).

Bezzi (1916) recorded *P. fulvula* from the Philippines, but this is most likely a misidentification. Specimens in the Bishop Museum collection identified as *P. fulvula* with labels in Bezzi's handwriting are apparently undescribed species. The genus *Petrorossia* is well distributed throughout SE Asia and the Malayan Archipelago, as is evident from numerous specimens examined in the Bishop Museum collection. Comparisons of these specimens with the original description of *P. fulvula* show that *P. fulvula* is apparently restricted in its distribution to its type-locality of Java. The specimens from other localities exhibit many color forms and, in all probability, comprise undescribed taxa. These undescribed species will be treated in a future paper.

#### ***Petrorossia williamsi* Evenhuis & Arakaki, new species**

FIG. 3–7

♀. *Head*: frons, vertex and occiput black; frons intermixed black and yellow pilose; vertex bare; occiput with dense yellow pile posteriorly overlying shorter blackish-brown pile, recumbent yellow tomentum laterally; face gray with golden yellow hair, sparse black hairs mixed in; gula gray-black, sparse white pilose; oral margin light yellow with yellow pile apically; antennal segments as in *P. nigrifascia*. *Thorax* and

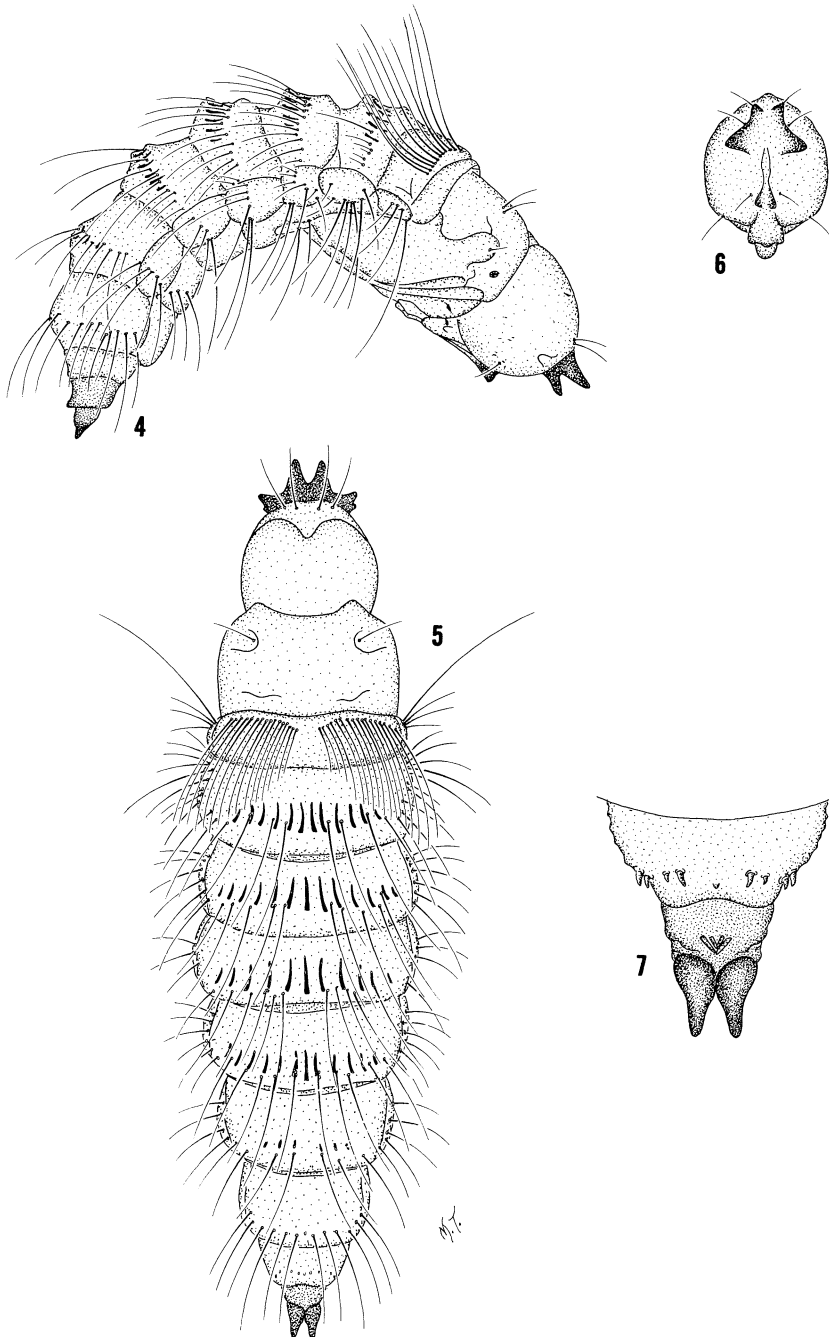


FIG. 4-7. *Petrorossia williamsi*, pupal exuvium: 4, lateral view; 5, dorsal view; 6, anterior view of head; 7, dorsal view of caudal segments.

*legs*: same as in *P. nigrifascia*. *Wing* (FIG. 3): tinted smoky brown with infuscation extending to end of  $R_1$ , anterior and posterior crossveins, and fading beyond into hyaline margin; squama yellow, fringe white. *Abdomen*: same as in *P. nigrifascia*.

♂. Unknown.

Holotype ♀, PHILIPPINES: Luzon I: Laguna Prov.: Los Baños, 12.VII.1918, F.X. Williams (BISHOP 11,420); paratypes: Luzon I: Camarines Sur Prov., 1 ♀, Mt Isarog, 750–850 m, 13–15.V.1963, H.M. Torreallas; Rizal Prov., 1 ♀, Mt Montalban, Wa-wa Dam, 150–200 m, 8–12.III.1965, Torreallas.

*P. williamsi* is most similar in appearance to *P. nigrifascia* and can be easily separated from it by the partial infuscation of the wings, the predominantly yellow pile of the face and the light yellow oral margin with yellow pile apically.

On the same pin with the holotype female is a pupal exuvium (FIG. 4–7) with the label "Parasite in *Sceliphron deformis* nest." Williams (1919) confirms this association between the larva of *P. williamsi* and the *Sceliphron* wasp. The following is a description of the pupa of *Petrorossia williamsi*:

Head strongly chitinized possessing 2 pairs of large spines dorsally and 1 pair of smaller spines ventrally. Abdominal segment I with 36 long hairs dorsally. Remaining segments with chitinized bars alternating with long hairs. The number of bars on each segment range from 16 on segment II to 4 on segment VI. Segments VII and VIII with minute spines. Segment IX with a small chitinized spine. Caudal segment with a pair of chitinized spines 2× as long as spine on segment IX.

This species is named after its collector, F. X. Williams.

#### Subfamily EXOPROSOPINAE

##### **Villa abeilla** Hull

*Anthrax antecedens* Walker, 1859: 111 (preocc. Walker, 1852: 193).

*Villa abeilla* Hull, 1973: 374.

*Villa antecedens*: Bowden, 1975: 177.

Only 1 specimen of this species was found in the material studied. It had been previously recorded only from Sulawesi.

*Material examined*. PHILIPPINES: Luzon I: Nueva Vizcaya Prov., 1 ♀, Dalton Pass, 9–10.V.1968, D.E. Hardy.

##### **Villa lepidopyga** Evenhuis & Arakaki, **new species**

FIG. 8–11

♂. *Head* (FIG. 8): black; face and oral margin with intermixed black pile and erect yellow scales of same length; frons with short black pile overlying recumbent yellow scales; vertex short black pilose; occiput with collar of dense yellow pile, sparse recumbent black tomentum laterally, bare elsewhere; proboscis brown, not projecting beyond oral margin; palpi brown; antennae black-brown, segment I with black pile above, yellow pile below, segment II with short black pile, segment III bare; style segments brown; antennal ratio: 1.5:1:4. *Thorax*: dull gray-brown; scutum dense yellow pilose anteriorly and laterally, dorsum with sparse recumbent black tomentum, intermixed sparse fine yellow hairs and yellow and black tomentum posteriorly near scutellum, few black hairs above wing base; post alar callus brown, intermixed black and yellow pilose with a few long orange bristles; scutellum recumbent black tomentose anteriorly, yellow tomentose posteriorly, scattered long black hairs on posterior margin; halter stem yellow, knob white. *Legs*: dark brown; coxae dense yellow pilose; fore femur with brown scales and fine yellow hairs; mid and hind

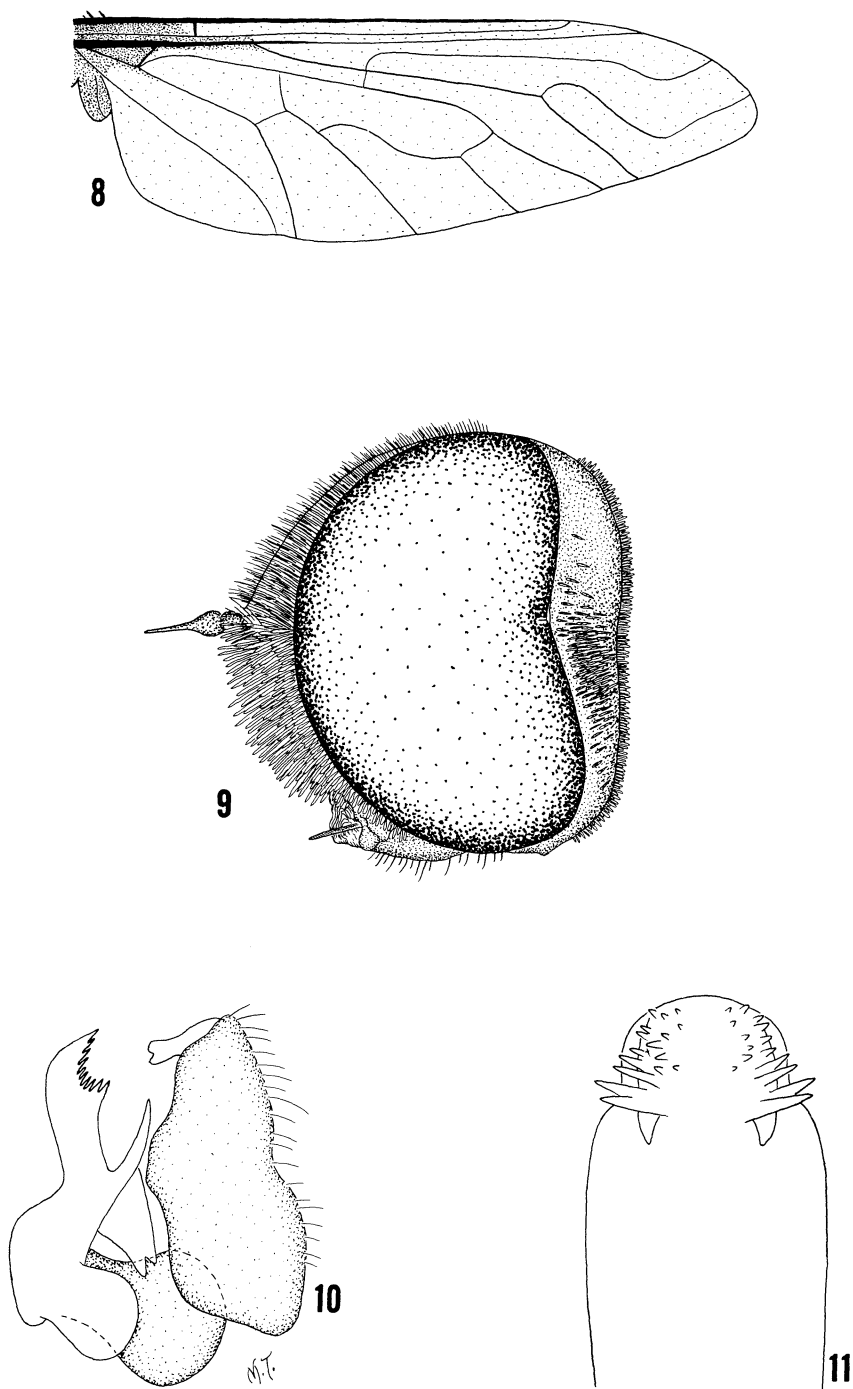


FIG. 8-11. *Villa lepidopyga*: 8, wing; 9, lateral view of head; 10, lateral view of ♂ genitalia; 11, ventral view of tip of epiphallus.

femora with intermixed yellow and brown scales and stronger spines; fore tibia with brown scales and short brown spicules; mid and hind tibiae with brown scales and strong spines; tarsi with brown scales and numerous spines; claws brown-black; pulvilli reduced to fine hairs. *Wing* (FIG. 9): hyaline; extreme base tinted brown; base of costal vein with tuft of silver scales; squama tan, fringe yellow. *Abdomen*: black; tergites with recumbent black tomentum on all segments gradually increasing in size becoming black scales laterally on segments II–VII; dense yellow pilose laterally on segments I and II; segment I with fine yellow hairs on dorsum; segments II and IV with transverse crossband of yellow tomentum interrupted medially on segment IV; segments III, IV, and VII with dorsolateral tuft of silver scales; segment V with small transverse crossband of yellow tomentum interrupted medially; segments VI and VII with black scales. *Genitalia* (FIG. 10–11): basistylus subtriangular, fine white pile ventrally; dististylus long, thin, bifid at apex; epiphallus broad, tip with numerous spines; aedeagus tapering sharply to a point; lateral rami broad, cup-shaped; basal apodeme large, subovate.

♀. Unknown.

Holotype ♂, PHILIPPINES: Palawan I: Palawan Prov.: Balsahan Riv, nr Iwahig, SW Puerto Princesa, 18.IV.1968, M.D. Delfinado (BISHOP 11,421); paratypes: Luzon I: Rizal Prov.: 1 ♂, Mt Montalban, Wa-wa Dam, 150–200 m, 24.III.1965, H.M. Torrevillas; Mindanao I: Zamboanga Del Sur Prov., 1 ♂, 5–8 km W of Zamboanga, 1.VIII.1958, H.E. Milliron.

This species can be separated from its congeners in this region by the silver scales on abdominal tergites III, IV and VII. The ♂ genitalia are most similar in appearance to *V. orientalis* Zaitzev, which is figured in Zaitzev (1966).

### **Villa sp.**

Two specimens, both female, are too abraded to make any positive identification. The larger of the 2 could possibly be the ♀ of *V. lepidopyga*.

*Material examined.* PHILIPPINES: Luzon I: Rizal Prov., 1 ♀, Mt Montalban, Wa-wa Dam, 150–200 m, 19.III.1965, H.M. Torrevillas; Palawan I: Palawan Prov., 1 ♀, 8–13 km SE of Tarumpitao Pt, 21.V.1958, H.E. Milliron.

### **Exoprosopa (Pterobates) pennipes (Wiedemann)**

*Anthrax pennipes* Wiedemann, 1821: 129.

*Exoprosopa pennipes*: Brunetti, 1920: 197.

*Exoprosopa (Pterobates) pennipes*: Bowden, 1975: 182.

Two specimens from Palawan I correspond to the description of *E. pennipes*. Bowden (1975) records the distribution as “Borneo, India [Assam, Bihar], Java, Philippines [Luzon].” The material presented here marks a new island record for the Philippines. Specimens from Macao and Hong Kong are also in the Bishop Museum collection.

*Material examined.* PHILIPPINES: Palawan I: Palawan Prov., 1 ♂, 1.6 km S of Tarumpitao Pt, 28.V.1958, H.E. Milliron; 1 ♀, Tarumpitao Pt, 23.V.1958, Milliron.

### **Ligyra formosana (Paramonov)**

*Hyperalonia formosana* Paramonov, 1931: 195.

*Velocia formosana*: Painter, 1932: 368.



*Ligyra formosana*: Bowden, 1975: 183.

This is the first record of *L. formosana* from the Philippines. The material in the collection shows size variation among a series of large specimens measuring 15–18 mm and a series of smaller specimens measuring 10–13 mm in length. Paramonov's description was based on a small specimen (9.5 mm); the smaller specimens of *L. formosana* in the Bishop Museum collection agree with Paramonov's original description. The larger specimens differ in having orange along the eye margin extending from the lower frons to the gena; the subantennal tuft is distinctly yellow and in some specimens a few black hairs are intermixed with the yellow pile; this, in contrast to predominantly black hairs and a few yellow hairs intermixed in the subantennal tuft of some of the smaller specimens. In addition, the larger specimens have yellow hairs at the lateral margins of abdominal tergites I–III; in a few specimens, yellow hairs are intermixed with black hairs on segment IV. In smaller specimens, yellow hairs are present on segment I and the anterior angles of segment II, and sometimes the anterior angles of segment III. The dissected ♂ genitalia of both the large and small specimens show them to be conspecific.

*Material examined.* PHILIPPINES: Leyte I, 5♂♀, Utap, 27.I.1958, 21.II.1958, 2.III.1958, 17.XI.1957 [no collector]; Luzon I: Camarines Sur, 1♂, Mt Isarog, Pili, 29.IV.1965, H.M. Torre Villas; Rizal Prov., 7♂♀, Mt Montalban, Wa-wa Dam, 150–200 m, 6.III.1965, 11.II.1965, 16.III.1965, 18.III.1965, 19.III.1965, 14.III.1965, Torre Villas; Mindanao I: Bukidnon, 1♂♀, Malaybalay, Alanib, 910 m, 25.X.1958, L.W. Quate, C. Yoshimoto; Palawan I: Palawan, 1♂, Eran Pt, 8 km SW of Tarumpitao Pt, 31.XII.1959–4.I.1960, Quate; 1♀, Balabac, 4.III.1957, Y. Kondo.

### ***Ligyra ochracea* Bowden**

*Ligyra ochracea* Bowden, 1971: 10.

The 3 specimens of *L. ochracea* studied fit Bowden's original description, except that 2 have the 2nd antennal segment red.

The record below extends the distribution of *L. ochracea* into the Philippine Subregion. It was previously recorded from New Guinea.

*Material examined.* PHILIPPINES: Mindanao I: Misamis Oriental, 3♀, Mt Empagatao, 1050–1200 m, 19–30.IV.1961, H.M. Torre Villas.

### ***Ligyra orientalis* (Paramonov)**

*Hyperalonia orientalis* Paramonov, 1931: 198.

*Velocia orientalis*: Painter, 1932: 369.

*Ligyra orientalis*: Bowden, 1975: 184.

On hand are 6 female specimens of *L. orientalis* from Camarines Sur Province and a single male from Misamis Oriental Province. The wing venation varies slightly from Paramonov's original description. Paramonov described  $M_1$  as long and bent; in the specimen studied, it appears rather straight.

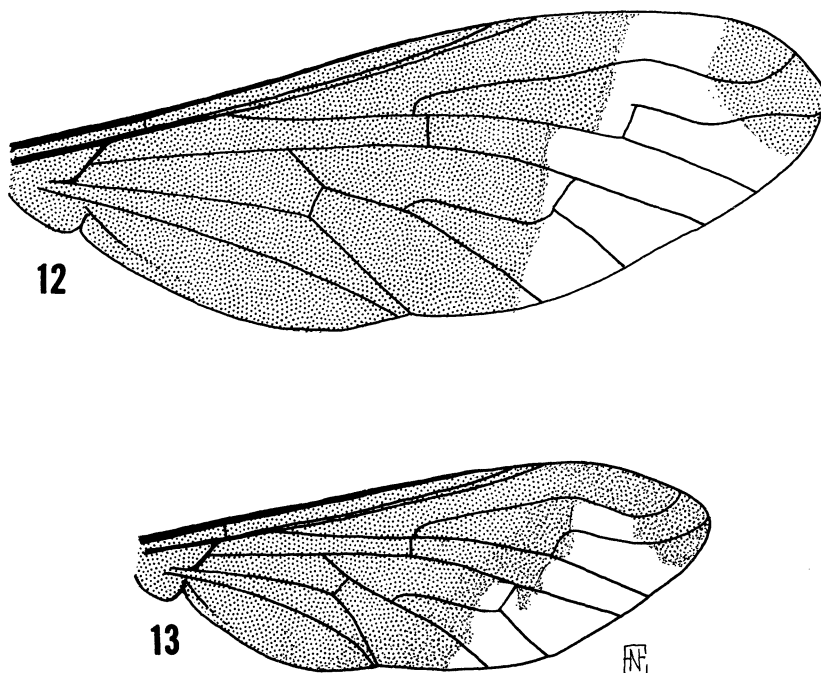


FIG. 12-13. 12, *Anthrax bifuscatipennis*, wing. 13, *Anthrax philippinensis*, wing.

*Material examined.* PHILIPPINES: Mindanao I: Camarines Sur, 3♀, Mt Isarog, 4.IV.1963, 15-17.V.1963, H.M. Torrevillas; 3♀, 20 km E of Naga, 500-600 m, 6.IV.1963, 7.IV.1963, 9.IV.1963, Torrevillas; Misamis Oriental, 1♂, Dinawihan, Gingoog, 26 km E of Gingoog City, 100-300 m, 29.VIII.1965, Torrevillas.

#### Subfamily ANTHRACINAE

#### *Anthrax bifuscatipennis* Evenhuis & Arakaki, new species

FIG. 12

♀. *Length*: 10 mm. *Head*: black; face, frons, oral margin and gula black pilose; vertex short black pilose; occiput dense short brown pilose along occipital ridge, sparse black pubescence elsewhere; antennal segments I and II short black pilose; segment III bare. *Thorax*: brown, mesonotum short black pilose dorsally, dense collar of white pile anteriorly overlying sparse golden brown tomentum; post alar callus and scutellum with long black bristles posteriorly; macrochaetae black; pleura with few black hairs superiorly on meso- and hypopleura, white pilose elsewhere; halter brown. *Legs*: brown; fore coxa white pilose; mid and hind coxae intermixed white and black pilose; femora and tibiae with white scales; tarsi with sparse white scales on upper segments, bare elsewhere. *Wing* (FIG. 12): tinted dark brown basally, infuscation extending to end of  $R_1$ ,  $\frac{1}{2}$  of 3rd posterior and all of discal and 4th posterior cells; separated infuscation distally including tip of marginal and 2nd and 3rd submarginal cells; squama dark brown with black fringe. *Abdomen*: brown; tergite I dense white pilose dorsolaterally and laterally; tergites II-VII black tomentose; tergite V with few white scales laterally; tergite VII with red-brown pile at apex; sternite I bare; sternites II-VII sparse pale yellow to white pilose. *Genitalia*: not dissected.

♂. Unknown.

Holotype ♀, PHILIPPINES: Luzon I: Nueva Vizcaya Prov., Dalton Pass, 9–10.IV.1968, M.D. Delfinado (BISHOP 11,422).

This species is closest in appearance to *Anthrax carbo* Rondani and can be separated from it by the wing patterning.

***Anthrax philippinensis* Evenhuis & Arakaki, new species**

FIG. 13

♀. *Length*: 5–6 mm. *Head*: black; face, frons, oral margin and gula black pilose; vertex short black pilose; occiput dense short brown pilose along occipital ridge, sparse black pubescence elsewhere; antennal segments I and II short black pilose; segment III bare. *Thorax*: brown; mesonotum short black pilose dorsally, dense collar of white pile anteriorly overlying sparse golden brown tomentum, post alar callus and scutellum with long black hairs posteriorly, macrochaetae black; pleura with a few black hairs superiorly on meso- and hypopleura, white pilose elsewhere; halter brown. *Legs*: brown, fore coxae white pilose; mid and hind coxae intermixed white and black pilose; femora and tibiae with white scales; tarsi with sparse white scales on upper segments, bare elsewhere. *Wing* (FIG. 13): tinted dark brown basally and apically as in *A. bifuscatipennis* except tinting continuous to bases of 2nd posterior and 2nd and 3rd submarginal cells; squama dark brown with black fringe. *Abdomen*: brown; tergite I dense white pilose dorsolaterally and laterally; tergites II–VII black tomentose; tergite V with a few white scales laterally; tergite VII with reddish-brown pile at apex; sternite I bare; sternites II–VII sparse white pilose, black hairs on posterior margins. *Genitalia*: not dissected.

♂. Unknown.

Holotype ♀ (BISHOP 11,423) and 1 ♀ paratype, PHILIPPINES: Luzon I: Laguna Prov., Los Baños, 19.VIII.1921, F.X. Williams; 1 ♀ paratype, Mindanao I: Misamis Oriental Prov., Mt Kibungol, 20 km SE of Gingoog, 700–800 m, 9–18.IV.1960, H.M. Torrevillas.

*A. philippinensis* can be separated from its closest apparent relative, *Anthrax bifuscatipennis*, by the following: infuscation on distal portion of wing connected to basal infuscation; bases of 3rd posterior and 2nd submarginal cells tinted; sternites sparse white pilose; black hairs on posterior margins of all sternites.

Due to the similarity of many species of the *Anthrax distigma* group occurring in the Pacific fauna, only the 3 following species are identifiable in this study. The *A. distigma* group is characterized by spots in the hyaline portion of the wing in addition to the basal infuscation and the presence of silver scales on the dorsum of the abdomen. Many new species may be present, but these are best left undescribed until the entire Oriental and Pacific fauna can be studied.

***Anthrax distigma* Wiedemann**

*Anthrax distigma* Wiedemann, 1828: 309.

*Material examined*. PHILIPPINES: Luzon I: Laguna Prov., 1 ♂, Los Baños, 19–20.IX.1959, L.W. Quate; Mindanao I: Zamboanga Del Norte Prov., 1 ♂, 9.6 km E of Sindangan, 20.VII.1958, H.E. Milliron.

***Anthrax semiscitus* Walker**

*Anthrax semiscitus* Walker, 1857: 118.

The single specimen of *A. semiscitus* marks the first record of this species in the Philippines.

Bowden (1971) provided a redescription of *A. semiscitus*, which aided in the identification of this specimen.

*Material examined.* PHILIPPINES: Palawan I: Palawan Prov., 1♀, Tarupitao Pt, 1.VI.1958, H.E. Milliron.

### **Anthrax wulpi** Bowden

*Anthrax wulpi* Bowden, 1975: 176.

*Anthrax trimaculatus* Wulp, 1868: 110.

Previous to this study, *A. wulpi* had been recorded from only the type-locality, Timor. From the material examined and records from other islands in the South Pacific in the Bishop Museum collection, it appears that this species is well distributed throughout most of the Oriental Region. Further collections and studies should bear this out.

*Material examined.* PHILIPPINES: Luzon I: Camarines Sur Prov., 1♂, Mt Isarog, Pili, 600 m, 1.V.1965, H.M. Torre Villas; Palawan I: Palawan Prov., 2♂, Tarumpitao Pt, 16.V.1958, H.E. Milliron.

*Acknowledgments.* I wish to thank Mr Jack C. Hall for reviewing the manuscript and Mr Mark Thomas for preparing most of the illustrations.

### LITERATURE CITED

- Bezzi, M.** 1913. Studies in Philippine Diptera. I. *Philipp. J. Sci. (D)* **8**: 305–32.  
 1916. *Studies in Philippine Diptera. II.* Publ. Dep. Int. Bur. Sci. Manila No. 10. P. 1–59. (Also, 1917, in *Philipp. J. Sci. (D)* **12**: 107–59.)
- Bowden, J.** 1971. The Bombyliidae collected by the Noona Dan Expedition in the Philippines and the Bismarck Islands (Insecta, Diptera). *Steenstrupia* **1**(25): 309–22.  
 1975. Family Bombyliidae. P. 165–84. In: Delfinado, M. D. & D. E. Hardy (eds.), *A catalog of the Diptera of the Oriental Region. Vol. II. Suborder Brachycera through Division Aschiza, Suborder Cyclorrhapha.* Univ. Hawaii Press, Honolulu. 459 p.
- Boyes, J. W. & G. E. Shewell.** 1973. Cytotaxonomy of Bombyliidae. *Can. J. Genet. Cytol.* **15**: 21–37.
- Brunetti, E. A.** 1920. *Fauna of British India including Ceylon and Burma. Diptera Brachycera.* Vol. I. Taylor & Francis, London. 401 p.
- Delfinado, M. D.** 1969. Some type specimens of Philippine Diptera described by M. Bezzi in the Museo Civico di Storia Naturale, Milano. *Pac. Insects* **11**: 165–73.
- Delfinado, M. D. & D. E. Hardy.** 1971. Type specimens of Philippine Diptera. *Not. Entomol.* **51**: 15–32.
- Elero, R. P. F. C. de.** 1895. *Catálogo sistemático de toda la fauna de Filipinas.* Vol. II. *Articulados.* Manila. 676 p.
- Enderlein, G.** 1926. Zur Kenntnis der Bombyliiden-Subfamilie Systropodinae (Diptera). *Wiener Entomol. Ztg.* **43**: 69–92.
- Hull, F. M.** 1973. Bee flies of the world. The genera of the family Bombyliidae. *Bull. U.S. Natl. Mus.* **286**: 1–687.
- Osten Sacken, C. R.** 1882. Diptera from the Philippine Islands, brought home by Dr. Carl Semper. *Berl. Entomol. Z.* **26**: 83–120, 187–252.
- Painter, R. H.** 1932. The Bombyliidae of China and near-by regions. *Lingnan Sci. J.* **11**: 341–74.
- Paramonov, S. J.** 1931. Beiträge zur Monographie der Bombyliiden-Gattungen *Amictus*, *Lyophlaeba*, etc. (Diptera). *Zbiri. Prats. Zool. Mus.* **11**: 1–218.

- Walker, F.** 1849. *List of the specimens of dipterous insects in the collection of the British Museum*. Vol. 2. London. P. 231–484.
1852. Diptera. Vol. 1. P. 157–252. In: Saunders, W. W. (ed.), *Insecta Saundersiana: Or characters of undescribed insects in the collection of William Wilson Saunders, F. R. S., F. L. S., & c.* London. 474 p.
1857. Catalogue of the dipterous insects collected at Sarawak, Borneo, by Mr. A. R. Wallace, with descriptions of new species. *J. Proc. Linn. Soc. London* **1**: 10–36.
1859. Catalogue of the dipterous insects collected at Makassar in Celebes, by Mr. A. R. Wallace, with descriptions of new species. *J. Proc. Linn. Soc. London* **4**: 90–144.
- Westwood, J. O.** 1876. Notae dipterologicae. No. 4. Monograph of the genus *Systropus*, with notes on the economy of a new species of that genus. *Trans. Entomol. Soc. London* **1876**: 571–79.
- Wiedemann, C. R. W.** 1821. *Diptera exotica*. Kiliae. xix + 244 p.
1828. *Aussereuropäische zweiflügelige Insekten, als Fortsetzung des Meigenschen Werkes*. Vol. 1. Hamm. xxxii + 608 p.
- Williams, F. X.** 1919. Philippine wasp studies. *Bull. Hawaii. Sugar Plant. Assoc.* **14**: 1–186.
- Wulp, F. M. van der.** 1868. Diptera uit den Oost-Indischen Archipel. *Tijdschr. Entomol.* **11**: 97–119.
- Zaitzev, V. F.** 1966. *Parasitic flies of the family Bombyliidae in the fauna of Transcaucasia*. Moscow; Leningrad. 375 p. [In Russian.]