

**BLOW FLIES FROM FIJI, WITH DESCRIPTIONS OF
THREE NEW SPECIES OF THE GENUS *ONESIA*
(DIPTERA: CALLIPHORIDAE)¹**

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Abstract. Twelve species of calliphorid flies from Fiji are keyed and treated, including 8 species previously known from Fiji. *Onesia bryani*, n. sp., *O. fijiensis*, n. sp. and *O. kraussi*, n. sp. are described and figured. The blow fly fauna of Fiji is characterized by the dominance of endemic forms.

I had an opportunity to examine Fijian calliphorid flies preserved in the Bishop Museum, Honolulu and collected during the zoogeographical survey of dipterous insects of medical importance in the South Pacific area (Tokyo Medical & Dental University Overseas Scientific Research Project, January to March 1978). There are only a few previous works on the Fijian blow flies. Bezzi (1927, 1928) reported 6 species from Fiji. Kurahashi (1970) and James (1971) described a new species of *Melinda* and *Hemipyrellia*, respectively, from Viti Levu, Fiji. Twelve species of Fijian Calliphoridae, including 3 new species of *Onesia* and a probable new species of *Chrysomya*, are recorded in this paper. The calliphorid fauna of Fiji seems to be poor but characterized by the frequency of endemic species (6 spp., 50% of the total). The remaining 6 species comprise Australian (2 spp., 17%), Oriental-Australasian (3 spp., 25%) and Pantropical (1 sp., 8%) elements.

Abbreviations for institutions housing specimens are as follows: Bishop Museum, Honolulu (BISHOP) and Tokyo Medical and Dental University (TMDU). Holotypes are deposited in BISHOP and paratypes are in BISHOP and the National Science Museum, Tokyo (NSMT).

KEY TO THE SPECIES OF FIJIAN CALLIPHORIDAE

- | | | |
|---|----------------------------|---|
| 1. Stem vein bare | subfam. Calliphorinae ... | 2 |
| Stem vein setulose above | | 8 |
| 2. Thoracic squama more or less hairy on dorsal surface | | |
| | tribe Calliphorini ... | 3 |
| Thoracic squama bare | | 6 |
| 3. Abdomen entirely metallic blue, distinctly white dusted on tergite 5 | | |
| | Calliphora salivaga | |

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- Abdomen submetallic bronzy or metallic blue, each tergite more or less densely covered with gray dusting which is sometimes conspicuously tessellated 4
4. Epaulet black; basicosta dark brown; *ac* 2+2; *ia* 0+2; abdomen black, golden dusted, tessellated **Onesia bryani, n. sp.**
- Epaulet and basicosta yellowish brown; *ac* 2+3; *ia* 1+2; abdomen metallic blue, gray dusted, more or less tessellated 5
5. Jowls and postgenae clothed with black hairs; parafacialia dull golden dusted, rather densely setulose; external *ph* present; prothoracic spiracle brown **Onesia kraussi, n. sp.**
- Posterior part of jowls and postgenae with yellow hairs; parafacialia silver-gray dusted, sparsely setulose; external *ph* absent; prothoracic spiracle light yellow **Onesia fijiensis, n. sp.**
6. Suprasquamal ridge without posterior parasquamal tuft of hairs; abdomen almost entirely yellowish orange; wings infuscated on apical $\frac{1}{2}$, yellowish on basal $\frac{1}{2}$ tribe Calliphorini . . . **Melinda elegans**
- Suprasquamal ridge with posterior parasquamal tuft; abdomen metallic blue, purple, green or copper; wings hyaline or entirely infuscated tribe Luciliini . . . 7
7. Supraspiracular convexity clothed with fine erect hairs; basicosta black; subcostal sclerite with black setulose hairs; wings entirely infuscated **Hemipyrellia fijiensis**
- Supraspiracular convexity pubescent; basicosta yellow; subcostal sclerite pubescent; wings hyaline **Lucilia cuprina**
8. Thoracic squama bare above; subcostal sclerite with fine pubescence; infra-alar bulla bare; R_5 open in wing margin; *h* 1; thoracic squama not lobulated, the inner margin diverging from the scutellum subfam. Rhiniinae . . . **Stomorhina discolor**
- Thoracic squama with hairs on dorsal surface; subcostal sclerite setulose; infra-alar bulla usually setulose (if bare, then metallic blue and yellow flies as in *Eucompsomyia* Malloch) subfam. Chrysomyinae . . . 9
9. Prothoracic spiracle white 10
- Prothoracic spiracle fuscous 11
10. Legs metallic black; parafacialia fuscous, densely silver dusted; wings hyaline in δ and η ; fore femur in δ with no conspicuous white hairs **Chrysomya albiceps rufifacies**
- Legs testaceous yellow in part; parafacialia orange, densely yellow dusted; fore femur in δ with dense erect white hairs on dorsal $\frac{2}{3}$ **Chrysomya varipes**
11. Body stout, but rather elongate, submetallic dark blue; thoracic squama largely blackish; vibrissaria, medianae and facialia with black hairs **Chrysomya sp. nr megacephala**

Body stout and rounded, metallic green; thoracic squama largely brownish;
vibrissaria, medianae and facialia only with yellow hairs

..... **Chrysomya megacephala**

Calliphora (Paracalliphora) salvaga Bezzi

Calliphora (Calliphora) salvaga Bezzi, 1927, Bull. Entomol. Res. **17**: 242; 1928, Dipt. Brach. Ather. Fiji Is: p. 188.

Calliphora salvaga: Kurahashi, 1971, Pac. Insects **13**: 170.

Length: 7.0-10.0 mm.

Specimens examined. VITI LEVU: 47♂, 93♀, Mt Victoria, 1000 m, 4-6.III.1978, Shinonaga & Kurahashi (TMDU); 18♂, 38♀, Nausori Highlands, 500 m, 7-8.III.1978, Kurahashi (TMDU); 21♂, 34♀, 25 km N of Vatukarasa, 9.III.1978, Shinonaga & Shima (TMDU); 4♀, W of Suva, 0-200 m, 2.III.1978, Kurahashi (TMDU).

Bionomics. Adults are attracted to decaying meat in native forests.

Distribution. Fiji (Viti Levu).

Onesia kraussi Kurahashi, new species

Fig. 1-4

♂. *Head*: eyes bare, holoptic, narrowly separated on frons by a distance equal to width of ocellar triangle, with uniform facets; frons index 0.06; frontal stripe reddish black; parafrontalia and parafacialia dull yellowish gray dusted, rather densely covered with black setulae; face fuscous, slightly gray dusted, without facial carina; facialia fuscous black, with black setulae on lower ½ from vibrissae to antennal bases; vibrissae strongly developed; vibrissaria fuscous black; genae and postgenae black, clothed with black hairs; antennae fuscous, but reddish on bases and venter of 3rd segment, 3rd segment slightly more than 3.5× as long as 2nd; arista dark brown, long plumose; palpi brown. *Thorax*: black, with bluish tinge, gray dusted, with a pair of fine median and broad lateral longitudinal stripes; scutellum and humeri concolorous with thoracic dorsum; propleura with black setulae, other pleural sclerites also covered with black hairs; hypopleural bristles black; prostigmal and propleural bristles developed; prosternum and pleurotergite with black hairs; suprascapular convexity pubescent; postalar declivity with blackish hairs on central portion; anterior parasquamal tuft consists of several black hairs; tympanic tuft also of black hairs; prothoracic spiracle brown, metathoracic one fuscous. *Chaetotaxy*: *ac* 2+?, *dc* 3+3, *ia* 1+3, *h* 3, *ph* 3, *prs* 1, *sa* 3, *pa* 2, *n* 2, *st* 1+1, *sc* 3+1. *Wings*: hyaline, epaulet and basicosta brown; veins fuscous brown; subcostal sclerite dark brown, pubescent; node of 2nd and 3rd longitudinal veins with several black setulae above and below; 4th vein bending forward at obtuse angle; squamae dark brown, thoracic one with a small patch of blackish hairs on basal ½ of upper surface. Halteres brown. *Legs*: black, with black hairs; front tibia with 1 *p* and a row of short *ad*; mid tibia with 1 *ad*, 1 *pd*, 2 *p* and 1 *v*; hind tibia with a row of 5-6 *ad* and 4 *pd*. *Abdomen*: metallic dark blue, gray dusted; median dark longitudinal stripe more or less conspicuous on tergite 3; typical marginal row of bristles developed on 4th and 5th tergites; tergite 1+2 and 3 with several erect marginals on lateral sides of abdomen. Hypopygium normal in size, ♂ genitalia as shown in Fig. 1-4.

Length: 6.0 mm.

Holotype ♂, FIJI: VITI LEVU: Nausori Highlands, 500-600 m, 9.XI.1971, N. Krauss (BISHOP 12,110).

Bionomics. Unknown.

Distribution. Fiji (Viti Levu).

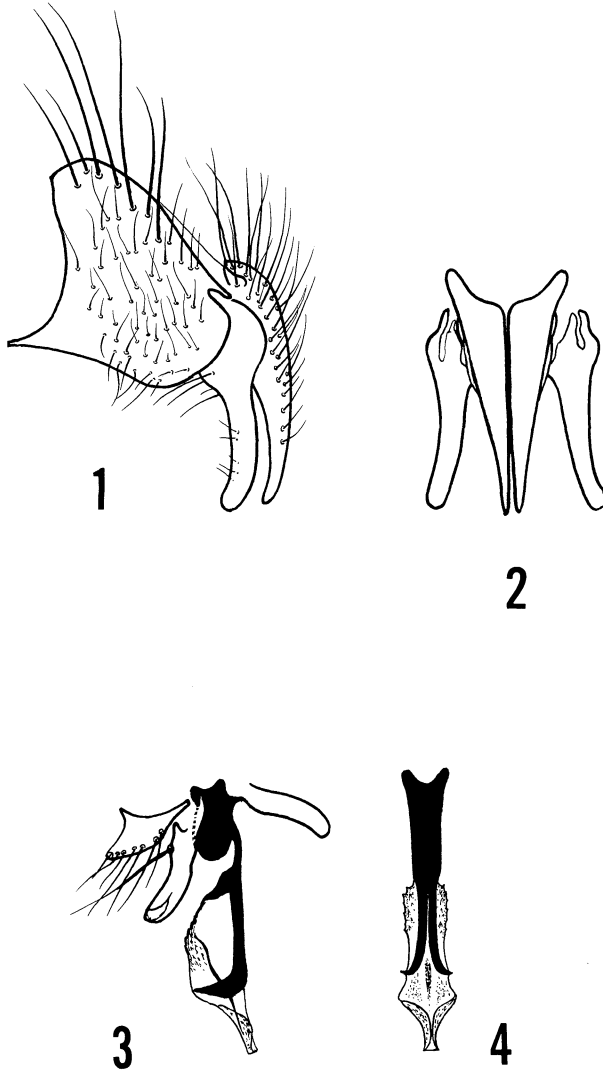


FIG. 1-4. *Onesia kraussi*, ♂ genitalia: 1, epandrium, cercus and paralobus, lateral view; 2, cerci and paralobi, posterior view; 3, aedeagus with anterior and posterior parameres, lateral view; 4, aedeagus, posterior view.

***Onesia fijiensis* Kurahashi, new species**

Fig. 5-8

♂. *Head*: eyes bare, narrowly separated on frons by a distance equal to width of ocellar triangle, with uniform facets; frons index 0.06; parafrontalia and parafacialia silver-gray dusted, sparsely with black setulae; face fuscous, brownish on lower $\frac{1}{3}$, with a trace of median carina; facialia brown, with black setulae on lower $\frac{1}{3}$ from vibrissae to antennal bases; vibrissae strongly developed; vibrissaria and medianae brown; genae fuscous, gray dusted, with black hairs; postgenae fuscous, gray dusted, with yellow hairs; occiput

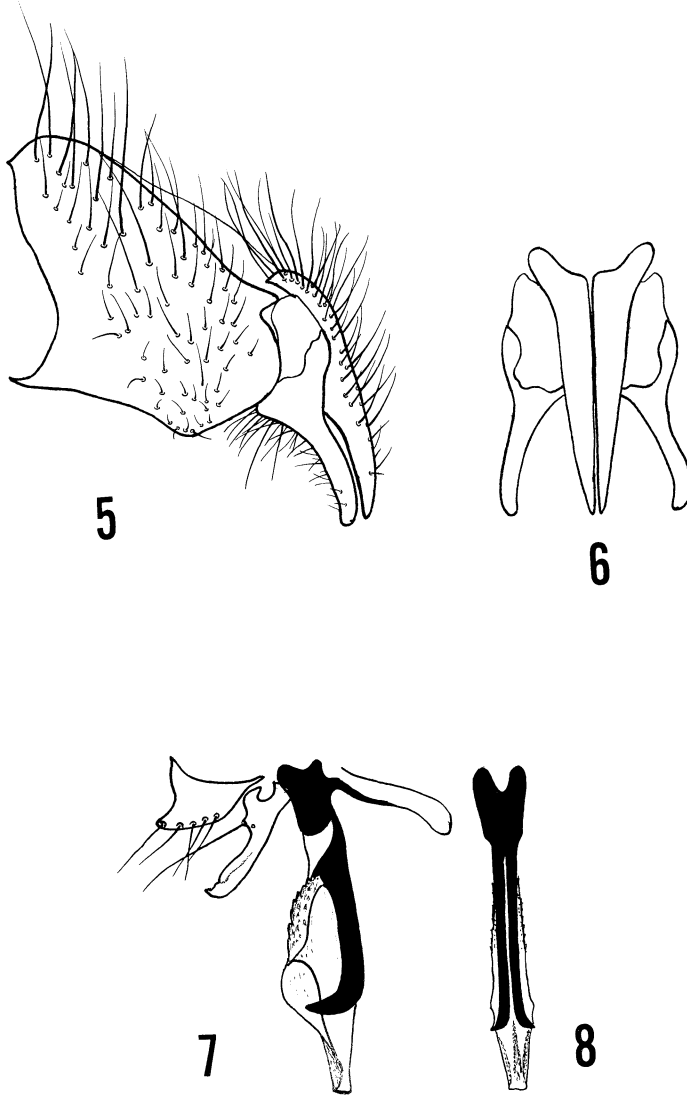


FIG. 5-8. *Onesia fijiensis*, ♂ genitalia: 5, epandrium, cercus and paralobus, lateral view; 6, cerci and paralobi, posterior view; 7, aedeagus with anterior and posterior parameres, lateral view; 8, aedeagus, posterior view.

also with yellow hairs on central portion; antennae reddish brown, 3rd segment darkened apically, about 2× as long as 2nd; arista brown, blackish brown on basal ½, long plumose; palpi orange. *Thorax*: black, densely covered with silver gray dusting, with 2 pairs of median fine and broad lateral longitudinal stripes which are indistinct on prescutum; prosternum and propleura with yellowish hairs, other pleura with black hairs; supraspiracular convexity pubescent; pleurotergite with black hairs; postalar declivity with tuft of black hairs in center; anterior parasquamal and tympanic tufts consist of black hairs; prothoracic spiracle yellow, metathoracic one brown. Chaetotaxy: *ac* 2+3, *dc* 2+3, *ia* 1+2, *h* 3, *ph* 1-2, *prs* 1, *sa* 3, *pa* 2, *n* 2, *st* 2+1, *sc* 3+1, 1 additional fine lateral scutellar present at base of scutellum and between 1st and 2nd

laterals, respectively, propleural and prostigmatal bristles well developed. *Wings*: hyaline, slightly brownish; epaulet and basicosta yellowish brown; veins brown; subcostal sclerite brown, pubescent; node of 2nd and 3rd longitudinal veins with several black setulae above and below; 4th vein bending forward at obtuse angle; squamae yellowish brown; thoracic one with a small patch of black hairs on basal $\frac{1}{2}$ of upper surface. Halteres orange. *Legs*: fuscous black, with black hairs; front tibia with 1 *p* and a row of short *ad*; mid tibia with 1 *ad*, 2 *p* and 1 *v*; hind tibia with 4 *pd*, 1 *av* and a row of 5–8 *ad*. *Abdomen*: black, with bluish tinge, densely gray dusted; median dark longitudinal stripe more or less conspicuous on tergite 3; typical marginal row of bristles developed on 4th and 5th tergites; tergite 1+2 and 3 with several erect marginals on lateral sides of abdomen. Hypopygium normal in size, δ genitalia as shown in Fig. 5–8.

Length: 7.0 mm.

Holotype δ , FIJI: LAU: Ongea, 28.III.1924, E.H. Bryan, Jr (BISHOP 12,111).

Bionomics. Unknown.

Distribution. Fiji (Ongea I).

Onesia bryani Kurahashi, new species

Fig. 9–12

δ . *Head*: eyes bare, narrowly separated on frons by a distance equal to width of ocellar triangle; frons index 0.06; frontal stripe reddish black; parafrofrontalia and parafacialia dark yellowish-gray dusted, with black setulae; face fuscous, gray dusted, with trace of a median carina at antennal bases; facialia reddish brown with black setulae on lower $\frac{1}{3}$ from vibrissae to antennal bases; vibrissae strongly developed; vibrissaria and medianae reddish brown; genae fuscous, gray dusted; postgenae concolorous with genae, with yellow hairs; occiput clothed with black hairs except for several yellow ones on lower part; antennae reddish brown, 3rd segment largely darkened apically and dorsally, slightly less than $3\times$ as long as 2nd; arista blackish brown, long plumose; palpi brown. *Thorax*: black, densely yellowish gray, with 1 median and 2 lateral longitudinal stripes which are usually indistinct on prescutum; 1 obscure longitudinal stripe present along dorsocentral line; scutellum concolorous with thoracic dorsum; prosternum and propleura with blackish hairs, other pleura also with black hairs; supraspiracular convexity pubescent; pleurotergite with black hairs; postalar declivity with tuft of black hairs in center; suprasquamal ridge bare, without anterior parasquamal tuft; tympanic tuft also absent, but with a few hairs on the tympanic portion; thoracic spiracles blackish. Chaetotaxy: *ac* 2+2–3, *dc* 2–3+3, *ia* 0+3, *h* 3, *ph* 3, *prs* 1, *n* 2, *sa* 3, *pa* 2, with 2–3 additional fine bristles, *st* 2+1, *sc* 3–4+1–2, propleural and prostigmatal bristles well developed. *Wings*: brownish hyaline; epaulet black; basicosta brown; veins brown; subcostal sclerite brown, pubescent; node of 2nd and 3rd longitudinal veins with several black setulae above and below; 4th veins bending forward at right angle; squamae yellowish brown, thoracic one with a small patch of black hairs on basal $\frac{1}{2}$ of upper surface. Halteres yellowish brown, sometimes darkened apically. *Legs*: black, with black hairs; front tibia 1 *p* and a row of short *ad*; mid tibia with 2 *ad*, 1 *pd*, 2 *p*, without *v*; hind tibia with 2 strong *ad* and a row of several fine *ad*, 2 *av* and 2 *pd*. *Abdomen*: bronzy, densely gray dusted, with yellowish tinge, tessellated; median dark longitudinal stripe more or less conspicuous on tergite 3–4; typical marginal row of bristles developed on tergites 4–5; a few pairs of median marginals developed on tergite 3; tergites 1+2 and 3 with several erect marginals on lateral sides of abdomen. Hypopygium normal in size, genitalia as shown in Fig. 9–12.

φ . *Head*: eyes widely separated at vertex; frons index 0.24–0.25; frontal stripe reddish black to black, broad, almost parallel-sided, slightly narrowed posteriorly, index 7–8:5, the width about $3\times$ one of parafrofrontalia just in front of anterior ocellus; parafrofrontalia provided with 5–7 pairs of *ori*, *ors* 2+1, reclinate *ors* not so strongly developed as in proclinate ones; *oc* developed; *ov* and *iv* well developed; *poc* parallel; 1 occipital hair present. *Legs*: front tibia with rather strong 4 *ad*; mid tibia with 1 strong *v* on apical $\frac{1}{3}$; hind tibia with 2–3 *pd*; ovipositor fuscous to brown. Otherwise as described for δ .

Length: 7.5–8.0 mm.

Holotype δ , FIJI: MOALA I, 13.VII.1924, E.H. Bryan, Jr (BISHOP 12,112). Paratypes: VANUA MBALAVU I: 1 φ , Mvana, 9.VIII.1938, E.C. Zimmerman (BISHOP); VITI LEVU: 1 φ , Mt Victoria, 1000 m, 4–6.III.1978, Kurahashi (NSMT).

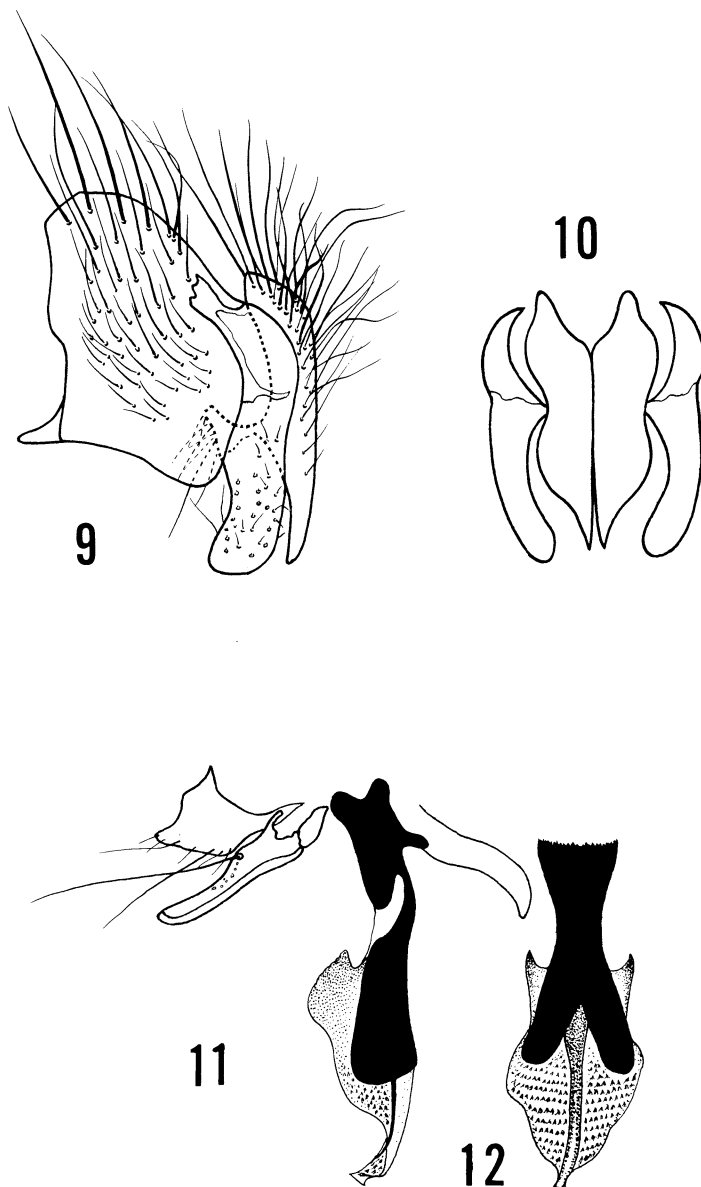


FIG. 9-12. *Onesia bryani*, ♂ genitalia: **9**, epandrium, cercus and parolobus, lateral view; **10**, cerci and paralobi, posterior view; **11**, aedeagus with anterior and posterior parameres, lateral view; **12**, aedeagus, posterior view.

Remarks. This species seems to have certain affinities to *Tainanina javanica* Kurahashi from Java. The genitalic and general external characteristics are similar in the 2 species, except for the ♂ eye characters, which separate the genera *Onesia* and *Tainanina*.

Bionomics. Unknown.

Distribution. Fiji (Moala I, Vanua Mbalavu I, and Viti Levu).

Melinda elegans Kurahashi

Melinda elegans Kurahashi, 1970, Pac. Insects **12**: 532.

Length: 6.5–9.0 mm.

Specimens examined. VITI LEVU: 1 ♀, Mt Victoria, 1000 m, 4–6.III.1978, Shinonaga (TMDU); 1 ♀, Nausori Highlands, 500 m, 7–8.III.1978, Kurahashi (TMDU).

Bionomics. Adults were found only in native forests.

Distribution. Fiji (Viti Levu).

Hemipyrellia fijiensis James

Fig. 13–16

Hemipyrellia fijiensis James, 1971, Pac. Insects **13**: 4.

Length: 7.0–10.0 mm.

Specimens examined. VITI LEVU: 6 ♀, 25 km N of Vatukarasa, 700 m, 9.III.1978, Kurahashi (TMDU); 1 ♂, Colo-i-Suva, I.1955, N. Krauss (BISHOP); 1 ♀, Lami, III.1951, Krauss (BISHOP). MANGO I; 1 ♀, 1 mi. [1.6 km] S of Marona, 200' [322 m] 14.VIII.1938, E.C. Zimmerman (BISHOP).

Bionomics. Adults are attracted to decaying meat in native forests.

Distribution. Fiji (Viti Levu & Mango I).

Lucilia cuprina (Wiedemann)

Musca cuprina Wiedemann, 1830, Auss. Zweifl. Insek. **2**: 654.

Lucilia cuprina: Bezzi, 1928, Dipt. Brach. Ather. Fiji Is: p. 188.

Length: 5.0–10.0 mm.

Specimens examined. VITI LEVU: 6 ♂, 4 ♀, Suva, 0–200 m, 1.III.1978, Kurahashi (TMDU).

Bionomics. Adults are found around garbage in dumping grounds. No studies have been done on the general biology in Fiji.

Distribution. Widely distributed in the temperate and tropical zones of the world.

Chrysomya albiceps rufifacies (Macquart)

Lucilia rufifacies Macquart, 1843, Mem. Soc. Sci. Agric. Lille, **1842**: 303 (1843: 146).

Chrysomya (Achoetandrus) rufifacies: Bezzi, 1927, Bull. Entomol. Res. **17**: 235; 1928, Dipt. Brach. Ather. Fiji Is: p. 187.

Length: 7.0–10.0 mm.

Specimens examined. VITI LEVU: 1 ♀, Suva, 0–200 m, 1.III.1978, Kurahashi (TMDU); 1 ♂, 7 ♀, 70 km W of Suva, 0–200 m, 2.III.1978, Kurahashi (TMDU); 1 ♂, 13 ♀, Mt Victoria, 1000 m, 4–6.III.1978, Kurahashi (TMDU); 3 ♂, 14 ♀, Nausori Highlands, 500 m, 7–8.III.1978, Kurahashi (TMDU); 3 ♀, 25 km N of Vatukarasa, 700 m, 9.III.1978, Shinonaga (TMDU).

Bionomics. Larvae are predaceous (Kurahashi & Fauran 1980). Adults are commonly found in Fiji.

Distribution. Widely distributed in the Oriental and Australasian regions.

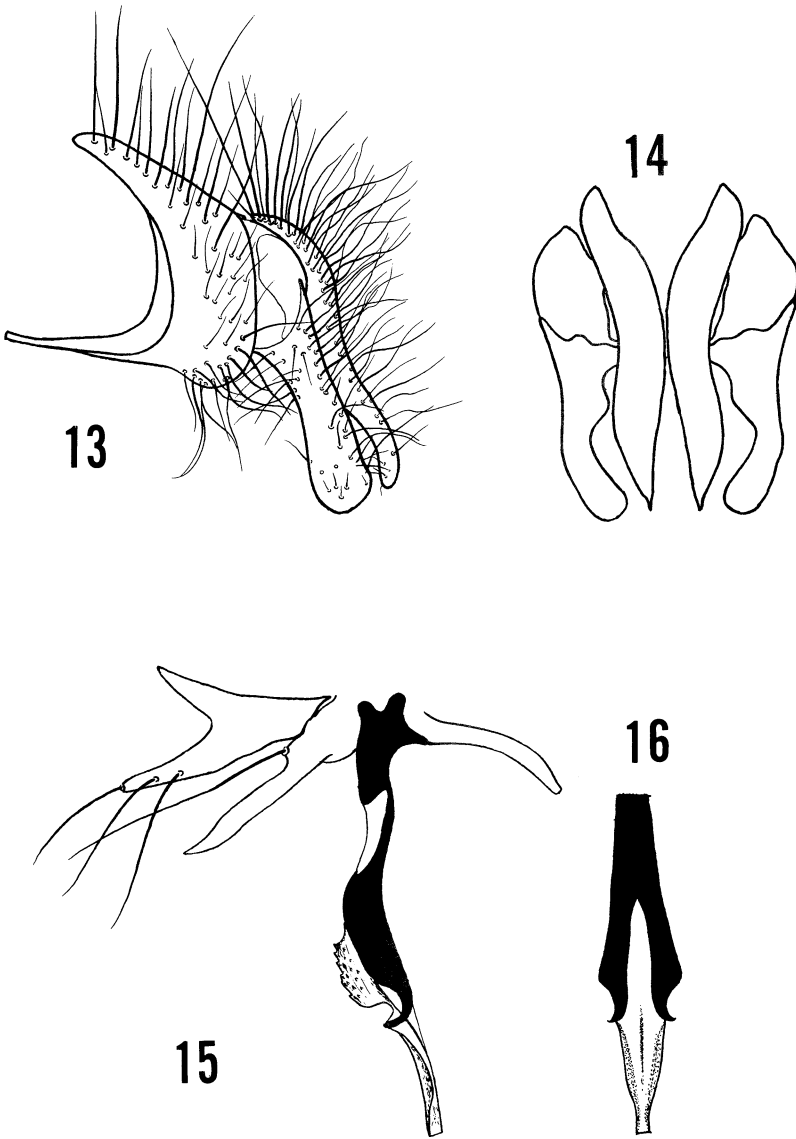


FIG. 13-16. *Hemipyrellia fijiensis*, ♂ genitalia: **13**, epandrium, cercus and parolobus, lateral view; **14**, cerci and paralobi, posterior view; **15**, aedeagus with anterior and posterior parameres, lateral view; **16**, aedeagus, posterior view.

***Chrysomya megacephala* (Fabricius)**

Musca megacephala Fabricius, 1794, Entomol. Syst. **4**: 317.

Chrysomyia (Chrysomyia) megacephala: Bezzi, 1927, Bull. Entomol. Res. **17**: 235; 1928, Dipt. Brach. Ather. Fiji Is: p. 187.

Length: 10.0 mm.

Specimens examined. VITI LEVU: 1♂, Mt Victoria, 1000 m, 4–6.III.1978, Kurahashi (TMDU); 4♀, Nausori Highlands, 500 m, 7–8.III.1978, Kurahashi (TMDU).

Bionomics. Adults are commonly found on garbage in towns, but not in dense natural forests.

Distribution. Widely distributed in the Oriental and Australasian regions and recently immigrated into West Africa (Kurahashi 1978), South Africa (Prins 1979) and South America (Guimaraes et al. 1978).

Chrysomya sp. nr **megacephala** (Fabricius)

This species is probably new to science and will be described in a separate paper.

Length: 8.5–10.0 mm.

Specimens examined. VITI LEVU: 12♂, 40♀, Mt Victoria, 1000 m, 4–6.III.1978, Kurahashi (TMDU); 6♂, 33♀, Nausori Highlands, 500 m, 7–8.III.1978, Kurahashi (TMDU); 6♂, 10♀, 70 km W of Suva, 0–200 m, 2.III.1978, Kurahashi (TMDU); 1♂, 6♀, Suva, 0–200 m, 1.III.1978, Kurahashi (TMDU); 1♂, 9♀, 700 m, 25 km N of Vatukarasa, 9.III.1978, Shinonaga (TMDU).

Bionomics. Adults are commonly found in native forests.

Distribution. Fiji (Viti Levu) and New Caledonia (Kurahashi & Fauran 1980).

Chrysomya varipes (Macquart)

Lucilia varipes Macquart, 1850, Dipt. Exot., Suppl. 4: 259.

Microcalliphora varipes: Bezzi, 1927, Bull. Entomol. Res. 17: 236; 1928, Dipt. Brach. Ather. Fiji Is: p. 188.

Length: 4.0–6.5 mm.

Specimens examined. VITI LEVU: 6♂, 17♀, Mt Victoria, 1000 m, 4–6.III.1978, Kurahashi (TMDU); 4♂, 5♀, Nausori Highlands, 500 m, 7–8.III.1978, Kurahashi (TMDU); 6♀, 70 km W of Suva, 0–200 m, 2.III.1978, Kurahashi (TMDU); 1♀, 25 km N of Vatukarasa, 9.III.1978, Shinonaga (TMDU).

Bionomics. Adults are commonly found in forests and are attracted to decaying meat.

Distribution. Fiji, New Caledonia (Kurahashi & Fauran 1980), New Guinea (James 1971), and Australia (Queensland & New South Wales).

Stomorphina discolor (Fabricius)

Musca discolor Fabricius, 1794, Entomol. Syst. 4: 320.

Stomorphina discolor: Bezzi, 1927, Bull. Entomol. Res. 17: 234; 1928, Dipt. Brach. Ather. Fiji Is: p. 188.

Length: 5.5–7.0 mm.

Specimens examined. VITI LEVU: 5♀, 25 km N of Vatukarasa, 700 m, 9.III.1978, Shima (TMDU); 5♂, 3♀, Nausori Highlands, 500 m, 7–8.III.1978, Kurahashi & Shima (TMDU); 5♀, Mt Victoria, 1000 m, 4–6.III.1978, Kurahashi (TMDU).

Bionomics. Larvae seem to be predaceous (Kurahashi & Fauran 1980).

Distribution. Widely distributed in the Oriental and Australasian regions.

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