Genus Orthellia R.-D. found in Papua New Guinea, with the description of three new species (Diptera, Muscidae)*

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Abstract: Five species of the genus Orthellia Robineau-Desvoidy, 1863 were recorded from Papua New Guinea. Three of them are newly described and illustrated. They are O. gressitti, O. kaindiensis and O. montana, that were captured on cow or horse dung and human feces. A key to the species of New Guinean Orthellia is given.

Two species belonging to the genus Orthellia R.-D. have been recorded from Papua New Guinea (Pont, 1973). They are O. timorensis (R.-D.) and O. australis (Macquart). During the study on the medically important dipterous insects in Papua New Guinea, the authors found 3 new species of the genus. Descriptions, figures of the new species and a key to all species are presented.

Orthellia montana Shinonaga and Kano, new species

Metallic green to blue-green species.

MALE: Body length 5.5 to 6.0 mm. Head: Eyes bare, facets uniform, none strikingly enlarged; frons open, about 0.12 of head width at narrowest point and 0.17 at vertex; frontal stripe black; orl cruciate and reaching to occellar triangle; ors absent; parafrontals and parafacials black with silvery pollen; genae black; face black with grayish pollen; antennae black, length of 3rd segment about 2 times that of the 2nd; arista black, long plumose; vibrissae situated at vibrissaal angles; palpi black. Thorax: In posterior view mesonotum gray to brown dusted before suture, undusted on posterior part and scutellum; pleura undusted; ac 0+1; dc 1+4; ia 0+1; prs 1; h 3; ph 1; nt 2; pra present; sa 2; pa 2; scut 2 lateral and 1 preapical; st 1+3; pro sternum hairy; propleuron bare; mesothoracic and metathoracic spiracles black; hypopleuron bare; notopleuron with short setae around bristles. Legs: Entirely black; f1 with a row of long and strong pd and pv; t1 without p-seta; f2 with 3 strong al on the middle, long hair-like av and pv on basal half; t2 with 4 p-seta and 1 strong pv on distal 1/3; f3 with a row of long av and pv, strong preapical pd on distal part; t3 with a row of ad, several av on distal half, pd (calcar) absent. Wings: Hyaline, faintly brownish anterior margin; membrane entirely and uniformly covered with microtrichiae; r1 bare; r4+5 with short setae from basal node to half way to r-m; m1+2 bow-shaped, bending anteriorly; squamae brown, lateral half of upper squamae whitish, marginal cilia brownish; knob of halter yellowish, stem brown; epaulent and subcostal sclerite black. Abdomen: Without dusted pat-
tern and markings; sternites black. **Genitalia:** Male surstylus, cercal plate and aedeagus as shown in Figs. 1–3. Male aedeagus with the epiphallus absent.

**Holotype:** Male, Keglsugule, 2,600 m, Chimbu District, 3 August 1982, S. Shinonaga. **Paratypes:** 2♀♂, same data as holotype; 2♀♂, Tanbul, 2,200 m, W. Highland District, 12 August 1982, S. Shinonaga; 11♀♂, 14♀♀, Margarima Farm, S. Highland, 2,000 m, 5 Feb. 1978, R. Kano.

**Remarks:** The present species is closely related to *Orthellia kaindiensis* n. sp. in external feature, but differs from it by having 4 strong post *dc*, long hair-like bristles on basal half of *av* and *pv* of *f* and paler squamae. This species was collected on cow dung.

**Orthellia kaindiensis** Shinonaga and Kano, new species

Metallic green to blue-green species.

**MALE:** Body length 5.0 to 7.0 mm. **Head:** Eyes bare, facets uniform, none enlarged; frons open, about 0.08 of head width at narrowest point and 0.13 at vertex; frontal stripe black, slightly covered with grayish pollen; parafroinals and parafacials black with grayish dust; *ori* cruciate and reaching to ocellar triangle; *ors* absent; face black with grayish pollen; genae black; genal hairs black; antennae black, length of 3rd segment about 2.5 times that of the 2nd; arista dark brown to black, long plumose; vibrissae situated at vibrissal angles. **Thorax:** In posterior view mesonotum gray to brownish dusted before suture; undusted on posterior part and scutellum; ac 0+1; dc 1+4, anterior 2 indistinct; ia 0+1; h 3; prs 1; ph 1; nt 2; pra present; sa 2; pa 2; scut 2 laterally and 1 preapically; st 1+3; prothoracic hairy; pleuropleuron bare; notopleuron with short setae around *nt-*bristles; hypopleuron hairy under metathoracic spiracles. **Legs:** Entirely black; *f* with a row of strong bristles on *pd* and *pv*; *t* without *p*-seta; *f* with 2–3 strong *pv* on basal half; 1 strong *av* on near base, 1 or 2 *al* on middle part; *t* with 3–4 *p*-seta and 1 strong *pv*; *f* with a row of long *ad* and *pv*, 1–4 long *pv* on basal half; *t* with 3 *av*, 1 *ad* and 1 *pd* (calcar). **Wings:** Anterior margin dark brown; veins dark brown; without markings; membrane entirely and uniformly covered with microtrichiae; *r* bare; *r*+*s* with a row of short setae beyond *r*-m; *m*+*s* bending anteriorly; upper and lower squamae blackish brown, marginal cilia black; lateral half of upper squamae whitish; knob of halter black, basal part of stem paler; epaulet and subcostal sclerite blackish brown. **Abdomen:** Without dusted pattern and markings; sternites black. **Genitalia:** Male surstylus, cercal plate and aedeagus as shown in Figs. 4–6.

**FEMALE:** Body length 5.5–7.5 mm. Frons 0.23–0.30 of head width; 2 proclinate *ors* present; other characters similar to those of the male.


**Remarks:** This species is closely related to *O. montana* n. sp., but differs from it by having 4 *post dc*, dark squamae, and hairy hypopleuron. This fly was collected on human feces along the mountain stream running in forests.

Figs. 1–3 *Orthellia montana* n. sp.
1: male surstylus, 2: male cecal plate, 3: male aedeagus.

Figs. 4–6 *Orthellia kaindiensis* n. sp.
4: male surstylus, 5: male cecal palte, 6: male aedeagus.

Figs. 7–9 *Orthellia gressitti* n. sp.
7: male surstylus, 8: male cecal plate, 9: male aedeagus.
a: phallapodeme, b: epiphallus, c: distiphalus, d: postgonite, e: praegonite. Scale: 0.02 mm.
Orthellia gressitti Shinonaga and Kano, new species

Metallic green to bronze-green to blue-green species.

MALE: Body length 5.0 to 6.5 mm. 

Head: Eyes bare, facets uniform, none strikingly enlarged; frons widely open (Fig. 10), about 0.27 of head width at vertex and 0.32 at widest point (antennal base); frontal stripe black, slightly covered with grayish pollen; parafrontals and parafacials black with faintly covered with pollen, middle part of parafrontals very narrow; frontal bristles cruciate, 2 proclinate ors present as in those of the female; face black with grayish pollen; 2nd antennal segment black, 3rd segment dark brown with grayish dust, basal part of 3rd reddish, length of 3rd segment about 4 times that of the 2nd segment; arista black, long plumose; vibrissae strong and situated at vibrissal angles; palpi black, slightly clavate towards tip. 

Thorax: In posterior view mesonotum gray to brownish gray dusted before suture; undusted on posterior part and scutellum; pleura undusted; ac 0+1; de 1+4, anterior 2 weak; ia 0+1; prs 1; h 2; ph 1; nt 2; pra present; sa 2; pa 2; scut 2 laterally and 1 subapically; st 1+3; prothoracic hairy; propleuron bare; hypopleuron hairy on upper part, near metathoracic spiracles; mesothoracic spiracles black; metathoracic spiracles black with 2 or 3 strong bristles on posterior part. 

Legs: Entirely black; f1 with a row of pd and pv; t1 without p-seta; f2 with 4 av on basal 1/4, a row of short po, 1 on basal 1/4 and 1 on middle part of pv, 2 strong subapicals on pd, 3 on distal 1/3 and 1 basal 1/3 on av, 2 strong subapical pd; t3 with 4 av and 1 pd (calcar), 1 ad on middle. 

Wings: Anterior margin yellowish, veins yellow to brown, without markings; membrane entirely and uniformly covered with microtrichiae; r1 bare; r4+5 with a row of short setae on dorsal and ventral

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Fig. 10 Orthellia gressitti n. sp., male head
Scale: 0.5 mm.
surfaces from basal node to near wing margin; $m_{1+2}$ bow-shaped, anterior part closing to $r_+s$; $R_5$ cell slightly open; epaulet and subcostal sclerite brown; squamae dark brown, lateral half of upper squamae whitish, marginal cilia dark brown; knob of halter black, reddish brown basally. Abdomen: Without dust, pattern and markings; sternites black. Genitalia: Male surstylist, cerate plate and aedeagus as shown in Figs. 7-9.

FEMALE: Body length 5.5-7.0 mm. Froms about 0.28 of head width at vertex and 0.34 at widest point (antennal base); 1 strong and 1 weak proclinate ors present; parafrontals with a row of short setae; other characters similar to those of the male.

Holotype: Male, Baiyer River Sanctuary, 1,300 m, W. Highland District, 4–8 August 1982, S. Shinonaga. Paratypes: 17 8, 20 9, same data as holotype.

Remarks: This species is easily distinguished from other species by having widely separated eyes in the male. Female of this species is closely related to $O. kaindiensis$ n. sp. in external features, but differs from it by lacking complete row of av bristles on hind femur. This species was found on horse and cow dung in the forest. The new species is named in honour of the late Dr. J. L. Gressitt, Director of Wau Ecology Institute, Wau.

*Orthellia timorensis* (Robineau-Desvoidy, 1830)


*Orthellia australis* (Macquart, 1848)


Key to the species

1. Two presutural *dc* .................... *O. timorensis* (R.-D.)
   One presutural *dc* .................... (2)
2. All postsutural *dc* strong .................... *O. montana* n. sp.
Anterior 2 of postsutural dc indistinct . . 
                                                                                       (3)
3. Upper facets of male enlarged; squamae 
light brown in female 
                                                                                       .............. O. australis (Mackq.)
Facets of male uniform; squamae dark 
brown to black 
                                                                                       (4)
4. Frons of male widely open, ors present 
in male; hind femur without complete 
row of bristles on av 
                                                                                       .............. O. gressitti n. sp.
Frons of male slightly open, ors absent; 
hind femur with complete row of long 
bristles on av 
                                                                                       .............. O. kaindiensis n. sp.

Holotypes of this study are preserved in 
Department of Entomology, Bishop Museum, 
Honolulu and paratypes (1 male, 1 female) 
are deposited in Division of Entomology, De- 
partment of Primary Industry, Port Moresby; 
Department of Entomology, British Museum 
(Nat. Hist.), London; U.S. National Museum, 
Washington, D.C.; Division of Entomology, 
CSIRO, Canberra; and National Science 
Museum, Tokyo, respectively.

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Summary

Papua・ニューギニア産ミドリハナバエ属 (Genus Orthellia R.-D.) の 3 新種

Papua・ニューギニアから、ミドリハナバエ属の 3
新種、O. montana, O. kaindiensis, O. gressitti を
記載した。従来、ニューギニアからは、O. timoren-
sis と O. australis の2種が記録されていたが、こ
れら3新種は、背面剛毛が1+4であることで timore-
sis (2+4) と、額 (複眼の間) が離れていること
で australis と区別でき、これら以外の形質の違いも
加えて新種とした。3種とも、ニューギニア高地の森
林性の種で、牛馬糞や人糞に集まる性質がある。種の
検索表 と 雄外部生殖器の図、および timorensis と
australis の採集記録を加えた。