

THE FLOWER FLY GENUS *ORNIDIA* (DIPTERA: SYRPHIDAE)

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Abstract.—The flower fly genus *Ornidia* (Diptera: Syrphidae) is revised. The genus is redescribed; a key to species is presented; the phylogenetic relationships of the genus and species are hypothesized; the included species are redescribed; with a new species, *whiteheadi*, described from Panama (type) and Colombia; and the critical characters are illustrated.

Key Words: key, phylogenetic relationships, neotropical

Ornidia is small group of brilliant metallic green or purple flies found mainly in the New World tropics: Anyone who has spent time in these tropics knows these beautiful flies as they are common around human habitations. The genus contains only 4 species: One common species found everywhere in the New World tropics and that has spread extensively through the Old World tropics during the last century with commerce, two others which are less common but widespread, and one new species, presently known from a few specimens from Panama and Colombia. This paper presents a revision of the genus, with complete synonymies (except only major references given for *obesa*), descriptions, and distributional and biological data for all taxa.

Genus *Ornidia* Lepeletier and Serville

Ornidia Lepeletier & Serville, 1828: 786.

Type-species, *Syrphus obesus* Fabricius (orig. des.). Curran 1930: 2 (key); Val 1972 (key, biometry, evolution); Thompson 1972: 106 (descr., relationships).

Volucella, subg. *Ornidia*: Hull 1949: 348 (description); Hardy 1964: 403 (description).

Head: face concave beneath antenna,

straight below median tubercle, with distinct median tubercle and smaller lateral tubercle; frontal prominence distinct, low, above middle of head; frontal triangle short, 1/2 as long as eye contiguity, slightly puffed out; front of female narrow, about twice as long as wide at antennal base, as long as face, with convergent sides dorsally, puffed out, with a transverse depression about 1/3 of frontal length above antenna, with short sublateral longitudinal depression extending about 1/3 the length of front above transverse depression. Eye pilose, holoptic in male. Antenna short, shorter than face; basoflagellomere elongate, twice as long as broad at base; arista plumose, as long as antenna.

Thorax: about as long as broad; notopleuron enlarged, swollen and elongate posteriorly on lateral 1/2; meso-anepisternum with anterior portion bare; meso-katepisternum with posterior 1/2 completely pilose; meso-anepimeron with posterior portion pilose; meropleuron with barrette pilose; with a patch of pile anterobasal to metathoracic spiracle; scutellum with a pre-apical depression, without ventral pile fringe. Wing: without microtrichia; marginal cell closed, petiolate, with apical portion an-

gulate posteriorly; apical crossvein recessive.

Abdomen: suboval, convex, without bristles.

Ornidia belongs to the tribe Volucellini and is the sister of *Copestylum* [Volucellini = *Graptomyza* + (*Volucella* + (*Ornidia* + *Copestylum*))], see Thompson and Whitehead (1986) for explanation of cladistic formulae] (Thompson 1972). The genus is defined (synapomorphy) by its facial and notopleural structure, the arrangement of a large medial and smaller sublateral tubercles on the face (Figs. 1–3), and the enlarged, posteriorly produced notopleuron (Fig. 4), states which are unique among flower flies. The cladistic relationships are derived from the following characters (see Table 1), with the polarity determined by outgroup comparison (tribe Rhinigiini, genus *Ferdinandea*):

1) Male eyes holoptic (0) or dichoptic (1). This character varies within the genus *Copestylum*, one species group has dichoptic eyes, the rest holoptic, which is accepted as the ground plan condition.

2) Arista bare (0), sparsely and short pilose (1), or plumose (densely and long pilose) (2). The arista pilosity varies greatly in both *Graptomyza* and *Copestylum*. In *Graptomyza* most species have the arista sparsely pilose with short hairs, which I accept as the ground plan condition (as *inclusa*), some species have only a few very short arista hairs, one undescribed species from Australia has no arista hairs, and some species have long and numerous hairs (as in *longirostris*). In *Copestylum*, there are a few species groups with distinctive arista pilosity, but these are all clearly derived from the basic plumose condition. One species, *pseudotachina*, has the arista bare, a secondary reduction.

3) Meso-anepisternum bare (0) or pilose (1).

4) Meso-katepisternum continuously pilose (0) or bare medially (1).

5) Meso-anepimeron bare posteriorly (0) or pilose (1).

6) Meso-katepimeron (barrette) bare (0) or pilose (1).

7) Postalar wall bare (0) or pilose posteriorly (1).

8) Scutellum without (0) or with pre-apical depression (1).

9) Medius with apical portion (apical crossvein) processive (0), arcuate and strongly recurrent (1) or straight (2).

10) Cell R4+5 (apical cell) open (0), petiolate (1) or bulbous apically (2). Within *Copestylum*, the apical cell varies from widely open, to petiolate and bulbous. I accept the widely open state as the ground plan condition for *Copestylum*.

11) M2 present (0) or absent (1).

12) Larvae saprophagous (0) or specialized inquilines in nests of social Hymenoptera (1).

The taxa examined were:

Copestylum (*apicalis* Loew, *compactus* Curran, *forax* Townsend, *gibbera* Schiner, *hirtipes* Macquart, *marginatum* Say, *mexicanum* Macquart, *trituberculatum* Thompson, *tympanitis* Fabricius);

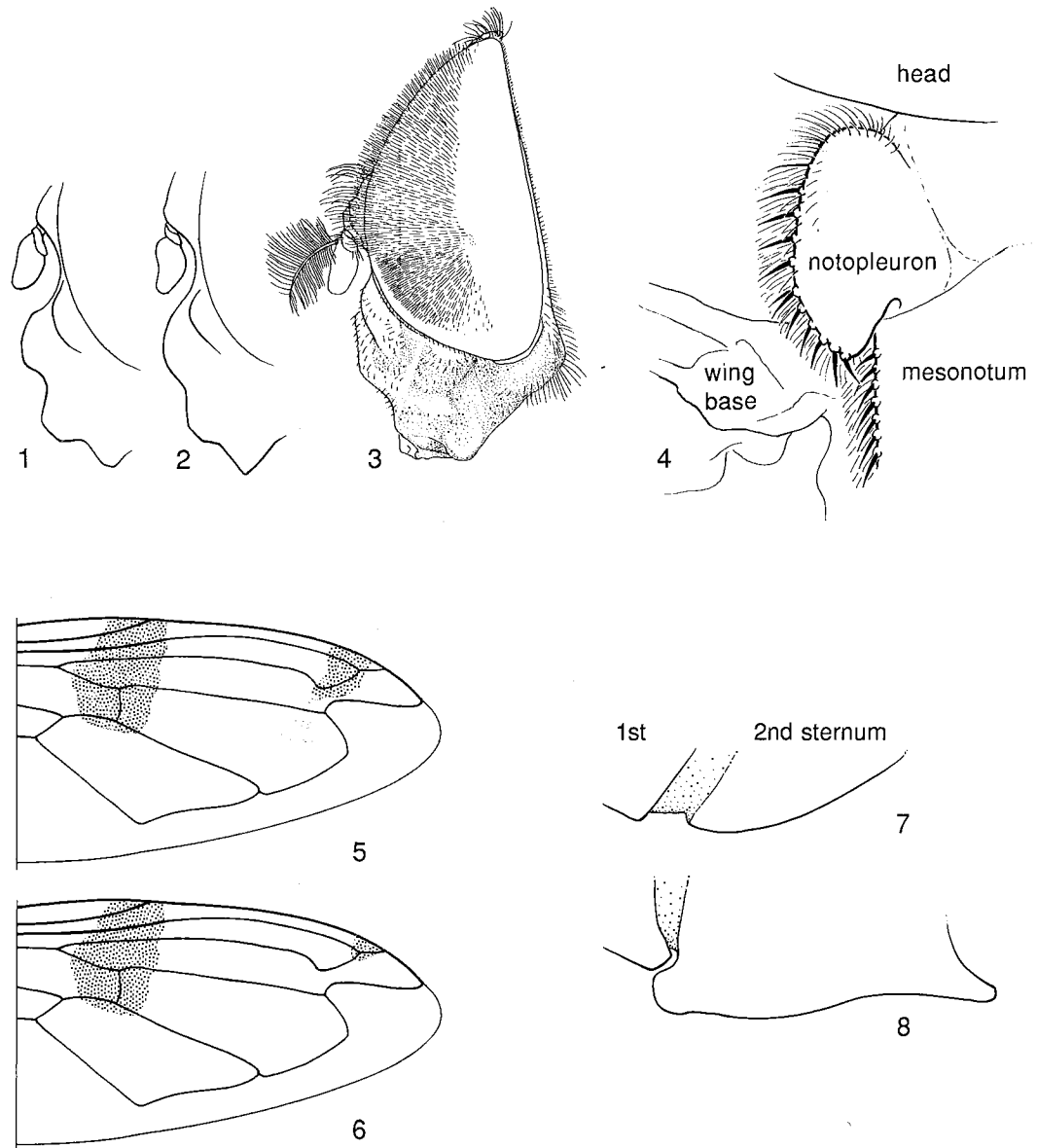
Ferdinandea (*cupreus* Scopoli);

Graptomyza (*alabeta* Mutin, *doddi* Ferguson, *flavicollis* Ferguson, *inclusa* Walker, *liberia* Greene, *longirostris* Wiedemann, *maculipennis* de Meijere, *microdon* Osten Sacken, *nigripes* Brunetti, *plumifer* Ferguson, *signata* Walker);

Ornidia (all species);

Volucella (*bombylans* Linnaeus, *decolorata* Walker, *elegans* Loew, *inanis* Linnaeus, *inflata* Fabricius, *jeddona* Bigot, *linearis* Walker, *nigricans* Coquillett, *pellucens* Linnaeus, *rotundata* Edwards, *tabanoides* Motschulsky, *trifasciata* Wiedemann, and *zonaria* Poda).

I now accept the diphyletic origin of the Old World volucellines as *Graptomyza* are now known to be saprophagous, not specialized inquilines. Also, *Tachinosyrphus* is no longer accepted as a genus distinct from *Copestylum* (new synonymy) as that ar-



Figs. 1-8. Features of *Ornidia*. 1, 2. Facial profiles. 1, *aemula* Williston. 2, *major* Curran. 3, *obesa* Fabricius, head, lateral. 4, *obesa* Fabricius, notopleuron and adjacent structures, dorsal view. 5, 6. Wing, apical half. 5, *aemula* Williston. 6, *major* Curran. 7, 8. Abdominal sternum, lateral profile. 7, *major* Curran. 8, *aemula* Williston.

rangement left *Copestylum* as undefined. The above cladistic formula, which is the same as my 1972 phylogeny, is derived when the type species are used as exemplars (CI = 87, RI = 71, 1 tree). The possibility that *Ornidia* is a specialized subgroup of *Copestylum* rests on the evaluation of one char-

acter, the pilosity of the posterior portion of the anepimeron. In my previous analysis, I considered the pilose condition to be primitive in all situations. Hence, *Copestylum* was defined by a bare posterior anepimeron. However, under a strict outgroup criterion, the bare condition is primitive within the

Table 1. Characters of volucelline taxa.

Taxa	Characters											
	1	2	3	4	5	6	7	8	9	10	11	12
<i>Ferdinandea cuprea</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Graptomyza inclusa</i>	1	1	1	1	0	0	0	1	2	0	0	0
<i>Graptomyza longiventris</i>	1	2	1	0	0	0	0	1	2	0	0	0
<i>Volucella pellucens</i>	0	2	1	0	0	1	1	0	1	1	1	1
<i>Ornidia obesa</i>	0	2	0	0	1	1	1	1	1	2	1	0
<i>Copestylum marginatum</i>	0	2	0	0	0	1	1	0	1	2	1	0
<i>Copestylum mexicanum</i>	0	2	0	0	0	0	1	0	1	1	1	0
<i>Copestylum nasicum</i>	1	2	0	0	0	0	1	0	1	1	1	0
<i>Copestylum tympanitis</i>	0	2	0	0	0	0	1	1	1	1	1	0
<i>Copestylum apicale</i>	0	2	0	0	0	0	1	1	1	0	1	0
<i>Copestylum pseudotachina</i>	0	2	0	0	0	1	1	0	1	1	1	0
<i>Copestylum trituberculatum</i>	0	2	0	0	0	0	1	0	1	0	1	0
<i>Copestylum fornax</i>	0	1	0	0	0	0	1	0	1	2	1	0
<i>Copestylum hirtipes</i>	0	2	0	0	0	0	1	0	1	0	1	0
<i>Copestylum gibbera</i>	0	2	0	0	0	0	1	0	1	1	1	0
<i>Copestylum compactus</i>	0	2	0	0	0	0	1	0	1	2	1	0
<i>Copestylum ground plan</i>	0	2	0	0	0	1	1	0	1	0	1	0

See text for descriptions of the characters.

tribe Volucellini. *Copestylum* is a large genus (350+ species) with many distinct groups. When exemplars of these groups are added to the analysis and strict outgroup criterion is used, a far different statement of relationship results (Volucellini = *Graptomyza* + (*Volucella* + *Ornidia* + *Copestylum*), consensus of some 100 trees). Thus, until *Copestylum* can be revised, the relationships of *Ornidia* will remain uncertain.

Ornidia is an endemic New World group consisting of 4 known species. One species (*obesa*), however, is hemisynanthropic and has spread extensively in the Pacific and across the Orient to the east coast of Africa. The cladistic relationships among the species (*Ornidia* = *aemula* + (*obesa* + (*major* + *whiteheadi*))) are tentative as they rest on only a few characters (size, scutellar depression, male genitalia), and without knowing the outgroup the polarity of these characters is uncertain.

KEY TO THE SPECIES OF *ORNIDIA*

- 1. Apical wing spot large (Fig. 5); 2nd sternum with basomedial digitate process (Fig. 8). Mesonotum and 3rd tergum black pilose; oc-

- ciput extensively white pollinose *aemula* Williston
- Apical wing spot small (Fig. 6); 2nd sternum without process (Fig. 7) 2
- 2. Mesonotum and 3rd tergum extensively pale pilose; occiput shiny. Scutellar depression divided medially *whiteheadi* Thompson
- Mesonotum and 3rd tergum black pilose; occiput extensively white pollinose 3
- 3. Scutellar depression divided medially; with prescutellar bristles *major* Curran
- Scutellar depression continuous medially; without prescutellar bristles *obesa* Fabricius

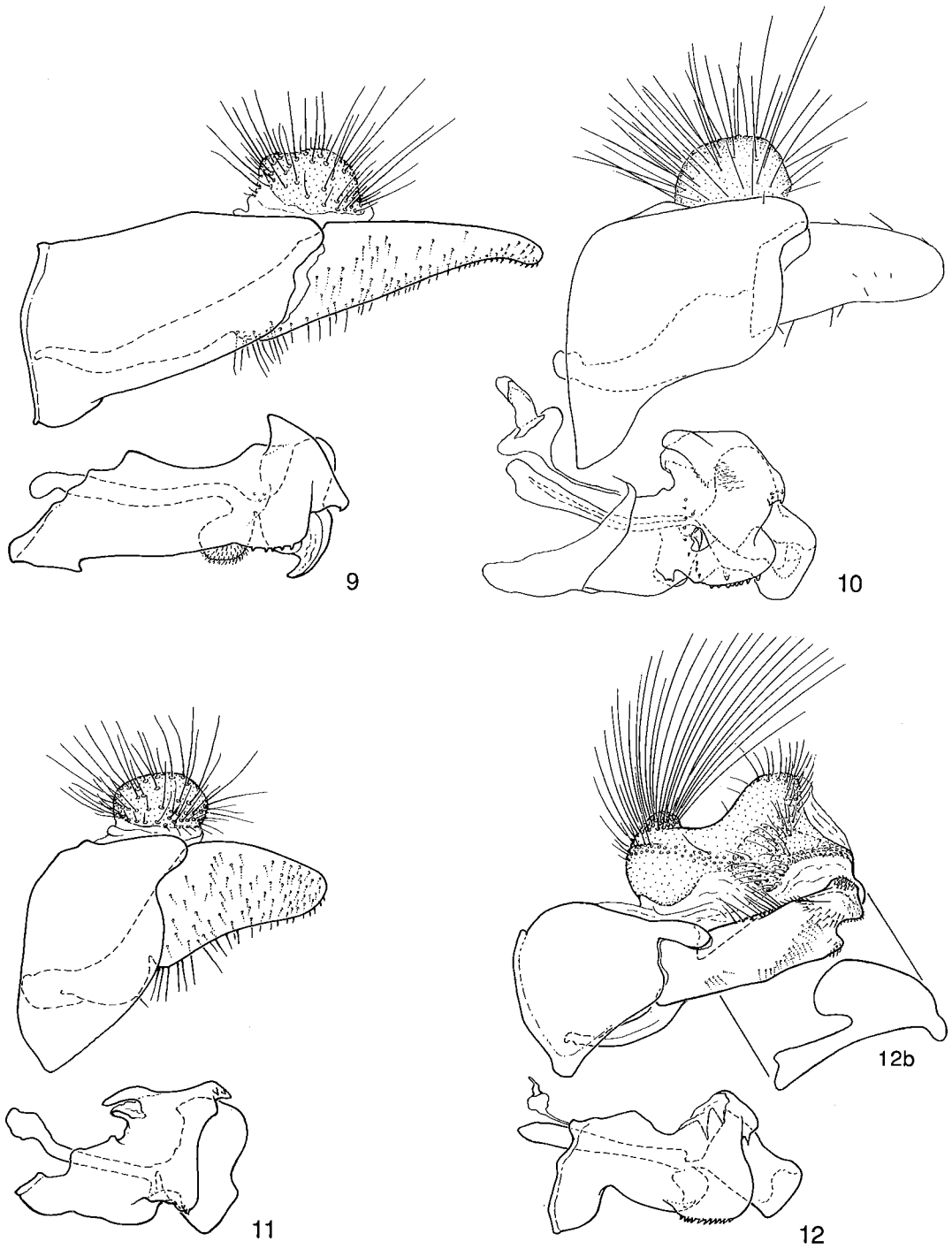
Ornidia aemula Williston

Figs. 1, 5, 8, 9, 13

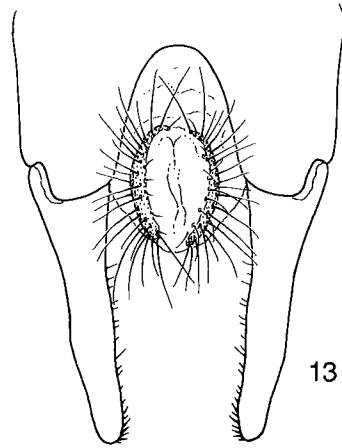
Volucella aemula Williston 1888: 272. Type-locality: Bolivia, Santa Cruz, Piedra Blanca [4 km west of Corumba, Mato Grosso, Brazil]. Lectotype ♀ AMNH here designated. Kertész 1910: 184 (catalog citation); Fluke 1957: 58 (catalog citation).

Ornidia aemula: Curran 1930: 2 (key reference); Doesburg 1963: 17, 1966: 96 (Surinam); Val 1972 (biometry, distribution, male genitalia figured); Baez 1985: 74 (Venezuela).

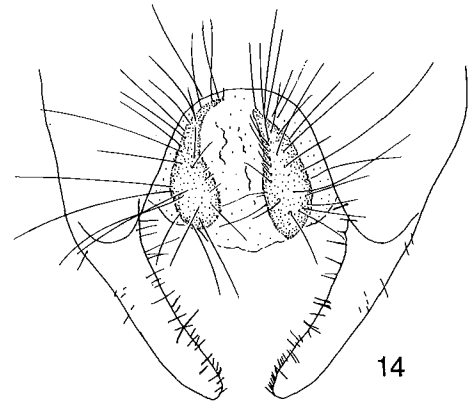
Head: dark purplish black; face shiny,



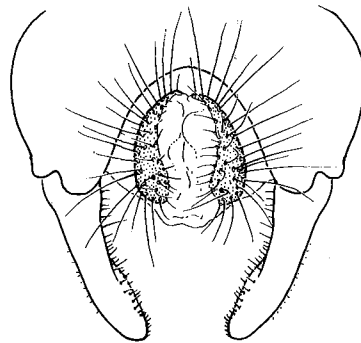
Figs. 9-12. Male genitalia of *Ornidia*, lateral view. 9, *aemula* Williston. 10, *obesa* Fabricius. 11, *major* Curran. 12, *whiteheadi* Thompson.



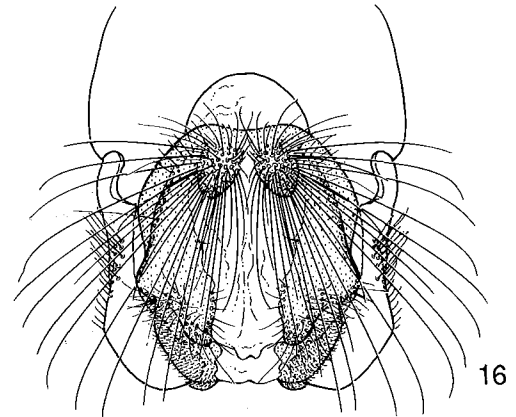
13



14



15



16

Figs. 13-16. Male genitalia of *Ornidia*, dorsal view. 13, *aemula* Williston. 14, *obesa* Fabricius. 15, *major* Curran. 16, *whiteheadi* Thompson.

black pilose except white pollinose under antenna; cheek shiny, black pilose; frontal triangle shiny, black pilose; frontal lunule brown; antenna brownish black, black pilose; arista orange, with arista hairs black; vertical triangle shiny, black pilose; eye brown pilose on dorsal $\frac{1}{2}$ only; occiput shiny on ventral $\frac{1}{5}$, white pollinose elsewhere, white and black pilose.

Thorax: metallic purplish black, shiny except narrowly grayish-white pollinose anteriorly; pleuron black pilose; mesonotum

black pilose, without pre-scutellar bristles; scutellum with pre-apical depression broad, shallow and not distinctly divided medially, black pilose; squama and plumula black; halter white except stem brownish. Wing: hyaline except for maculae; apical macula large, covering all of apex of cell R1+2. Legs: metallic purplish black, black pilose.

Abdomen: metallic purplish black, shiny; venter black pilose except white pilose on basal $\frac{1}{2}$ of 2nd sternum; 4th sternum without bristle apicolaterally; dorsum black pi-

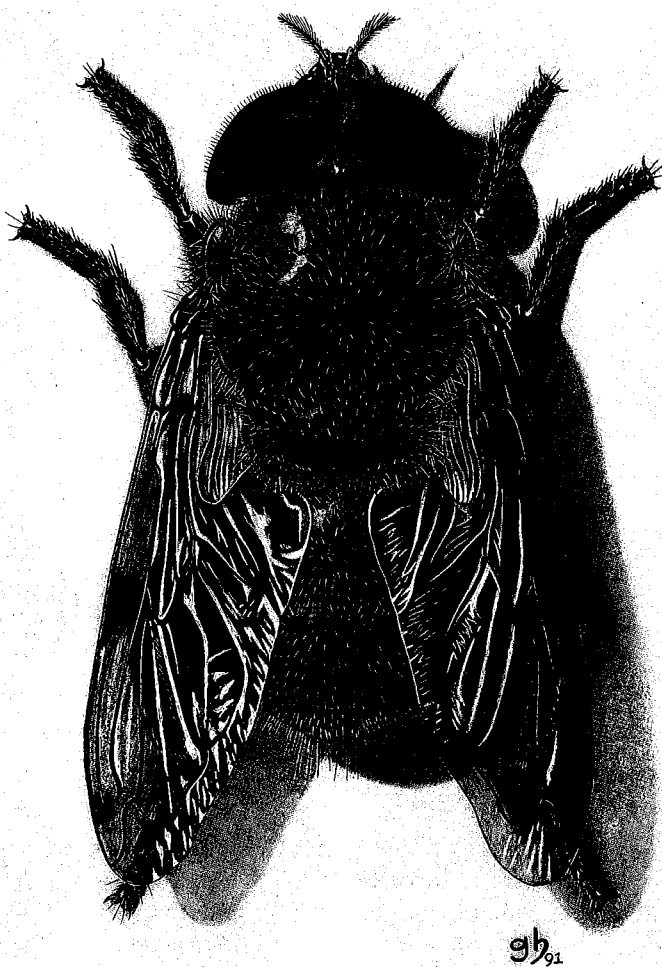


Fig. 17. Habitus of *Ornidia whiteheadi* Thompson.

lose except with long tawny pile on basal $\frac{2}{3}$ of 4th tergum; male genitalic segments black pilose.

Size.—Mesonotal length, 3.9–4.4; wing length, 12.4–14.3 (see Val 1972).

Types.—*Volucella aemula* was based on two female specimens, both of which are in the American Museum of Natural History with identical labels (“Brazil, Piedra, HH Smith” “*Volucella aemula* Williston”). One is here designated lectotype and has been so labeled, the other paralectotype.

Distribution.—Costa Rica*, Colombia*, Venezuela*, Surinam, Brazil, Bolivia* (* indicates specimens examined from these countries).

Ornidia aemula is easily distinguished from the other species of the genus by its large apical wing spot (Fig. 5), digitate process on the second sternum (Fig. 8) and the more pronounced facial tubercle (Fig. 1).

Ornidia major Curran

Figs. 1, 11, 15

Volucella violacea Macquart 1842: 23, pl. 6, fig. 3 (habitus), 3a (head). Type-locality: Brazil. Lectotype ♀ MNHN, Paris here designated. Preoccupied by *Volucella violacea* Say 1830. New synonym.

Ornidia major Curran 1930: 2. Type-locality: Brazil. Holotype ♂ AMNH. Val 1972 (biometry, distribution, male genitalia figured); Baez 1985: 74 (Venezuela).

Metallic green or purplish blue flies.

Head: face shiny, black pilose except white pollinose under antenna; cheek shiny, black pilose; frontal triangle shiny, black pilose; frontal lunule orange; front shiny, tawny and black pilose; antenna brownish black, black pilose; arista orange, with arista hairs black; vertical triangle shiny, black pilose; eye black pilose; occiput shiny on ventral $\frac{1}{4}$, white pollinose dorsally, white pilose with a few black hairs dorsally.

Thorax: shiny except narrowly grayish-white pollinose anteriorly; pleuron white pilose except black pilose on anepisternum

and anepimeron; mesonotum black pilose, with short weak pre-scutellar black bristles; scutellum with pre-apical depression divided medially, black pilose except tawny pilose on margins; squama and plumula black; halter white except stem brownish orange. Wing: hyaline except for maculae; apical macula small, only covering area around R1+2. Legs: front and mid coxae and trochanters metallic green, shiny; hind coxa metallic green, grayish-white pollinose; middle coxa black pilose; front and hind coxae white pilose basally, black pilose apically; femora shiny, dark metallic green to bluish black, becoming black apically, black pilose; tibiae metallic purplish black, shiny, black pilose; tarsi brownish black, black pilose.

Abdomen: shiny except extensively black pollinose on 2nd tergum; venter black pilose except black on basal $\frac{1}{3}$ of 2nd sternum; 4th sternum without bristles apicolaterally; 1st tergum tawny pilose; 2nd and 3rd terga short black pilose; 4th tergum long tawny pilose; male genitalic segments white pilose, except 8th tergum black pilose.

Size.—Mesonotal length, 3.6–4.2; wing length, 10.6–12.5 (see Val 1972).

Types.—*Volucella violacea* Macquart was based on an unspecified number of female specimens. A single female with the appropriate Macquart determination label (“*V. violacea*, Mr. Sylvira Bresil”) and museum labels (“Sylvair . . . [unreadable], Brasil, 1839” “No 1094, *Volucella*, *violacea*”) was found in Paris, is here designated lectotype and has so been labeled. Giglio-Tos (1892b: 64) synonymized *violacea* with *obesa*; this synonymy was accepted by subsequent workers. The holotype of *major* Curran was examined and found to correspond to the current concept of the name.

Distribution.—Mexico (Vera Cruz)*, Guatemala*, Costa Rica*, Panama*, Colombia*, Venezuela*, Ecuador*, Peru*, Brazil*, Bolivia* and Paraguay*.

Ornidia major is distinguished from *obesa* by its larger size (see Val 1972), more or

less divided preapical scutellar depression and the presence of short prescutellar bristles; *major* differs from *aemula* and *whiteheadi* as noted under those species. Earlier authors, such as Williston (1891), misidentified *major* as *obesa*.

***Ornidia obesa* Fabricius**

Figs. 3, 4, 6, 10, 14

Syrphus obesus Fabricius 1775: 763. Type-locality: "America" [= Virgin Islands]. Lectotype ♂ UZM, Copenhagen (Thompson 1981: 195).

Musca obesa: Gmelin 1790: 2868 (description).

Volucella obesa: Wiedemann 1830: 199 (re-descr.); Macquart 1842: 21 (distribution; Chile); Walker 1849: 637 (distribution, Mauritius, synonymy); Bigot 1859: 431 (Madagascar; descriptive note; breeds in latrines in Mexico); Macquart 1850: 311 (note on distribution); Williston 1887: 143 (description, head figured), 1891: 50 (synonymy, distribution); Giglio-Tos 1892b: 64 (distribution; synonymy), 1895: 360 (Seychelles); Aldrich 1905: 380 (catalog citation); Banks 1907: 450 (Virginia); Kertész 1910: 763 (catalog citation); Bezzi 1915: 4 (questionable record from Africa); Banks et al. 1916: 186 (Virginia); Sack 1921: 138 (Paraguay, larva figured); Jones 1922: 33, 53 (Colorado); Hull 1923: 297 (New Jersey); Curran 1925: 206 (male genitalia figured); Johnson 1925: 172 (Massachusetts); Johannsen 1926: 798 (New York); Bezzi 1928: 77 (Tahiti); Williams 1931: 284, 1939: 284 (life history, Hawaii); Shannon & Aubertin 1933: 168 (Argentina; not in Chile); Doesburg 1963: 18, 1966: 96 (Surinam); Hardy 1964: 404 (Hawaii, description, head & male genitalia figured); Greenberg & Povolny 1971: 83 (public health importance); Greenberg 1971: 201 (biotic associates).

Ornidia obesa: Lepeletier & Serville 1828: 786 (descr.; Asia, Mauritius); Val 1972 (biometry, geographic variation, male genitalia figured); Knutson et al. 1974: 335

(Oriental distribution); Smith & Vockeroth 1980: 497 (Afrotropical distribution); Thompson 1981: 120 (West Indian references, status); Baez 1985: 75 (Venezuela); Thompson & Vockeroth 1989: 447 (Australian distribution); Bullock 1990: 253 (ex rotting *Jacaratia mexicana* (Caricaceae)).

Volucella obesoides Giglio-Tos 1892a: 4. Type-locality: Mexico. Holotype ♂ IMZ. Giglio-Tos 1892b: 65 (description), 1895: 360 (Paraguay, Argentina); Godman & Salvin 1903: 90 (citation); Aldrich 1905: 380 (catalog citation); Kertész 1910: 197 (catalog citation); Curran 1930: 2 (key). Synonymy by Thompson et al. 1976: 70. *Ornidia obesoides*: Curran 1930: 2 (key); Doesburg 1963: 18, 1966: 97 (Surinam).

Metallic green or purplish blue flies.

Head: face shiny, white pilose except white pollinose under antenna; cheek shiny, white pilose; frontal triangle shiny, white and black pilose; frontal lunule orange; front shiny, tawny and black pilose; antenna brownish black, black pilose; arista orange, with arista hairs black; vertical triangle shiny, black pilose; eye brown pilose; occiput shiny on ventral ¼, white pollinose dorsally, white pilose with a few black hairs dorsally.

Thorax: shiny except narrowly grayish-white pollinose anteriorly and with black pollinose medial vitta on anterior ½ of mesonotum; pleuron tawny pilose with a few black hairs intermixed; mesonotum black pilose; scutellum with pre-apical depression continuous, not divided medially, black pilose except tawny pilose on margins; squama and plumula black; halter white except stem brownish orange. Wing: hyaline except for maculae; apical macula small, only covering area around R1+2. Legs: front and mid coxae and trochanters metallic green, shiny; hind coxa metallic green, grayish-white pollinose; middle coxa black pilose; front and hind coxae white pilose basally, black pilose apically; femora shiny, dark metallic green to bluish black, becom-

ing black apically, black pilose; tibiae metallic purplish black, shiny, black pilose; tarsi brownish black, black pilose.

Abdomen: shiny except black pollinose on most of 2nd tergum in male; venter yellow pilose except black on apical edge of 3rd and apical $\frac{1}{3}$ of 4th sternum; 4th sternum without bristles apicolaterally; 1st tergum tawny pilose; 2nd and 3rd terga short black pilose; 4th tergum long tawny pilose; male genitalic segments tawny pilose, except 8th tergum black pilose; female genitalic segments tawny pilose.

Size.—Mesonotal length, 2.3–3.6; wing length, 7.4–11.2 (see Val 1972).

Types.—The syntypes of *obesa* Fabricius were examined, and a lectotype designated (Thompson 1981). Vockeroth (in Thompson et al. 1976) examined the holotype of *obesoides* Giglio-Tos and identified it as a specimen of *obesa* Fabricius.

Distribution.—Massachusetts, New York, New Jersey, Colorado, Arizona, New Mexico*, Texas*, Florida*, Bahamas*, Cuba*, Jamaica*, Dominican Republic*, Haiti*, Puerto Rico*, Lesser Antilles*, Trinidad*, Mexico*, Guatemala*, El Salvador*, Belize*, Honduras*, Nicaragua*, Costa Rica*, Panama*, Colombia*, Venezuela*, Surinam*, Guyana*, French Guiana*, Ecuador*, Peru*, Brazil*, Paraguay*, Bolivia*, Argentina*, Hawaii*, Marquesas*, Society Islands*, Marshall Islands*, Samoa*, Niue*, Solomon Islands*, New Caledonia*, Java, Seychelles, Madagascar, Mauritius, Reunion, Tanzania, South Africa.

Ornidia obesa is a ubiquitous fly in the New World tropics and once was more widespread in the Old World tropics and the north of the New World. In the New World, the species have been recorded as far north as Colorado, Massachusetts and New York, and in the Old World tropics as far west as mainland Africa, but there are no modern records from these areas [in the above synonymy I have tried to give all the exotic citations to *obesa*, but only the principal New World ones]. *Ornidia obesa* is

known to breed in human latrines and other semiliquid wastes, and back when sanitation was not as good as today, *Ornidia obesa* apparently had a more extensive range. As Macquart (1850: 311) first noted, *Ornidia obesa* is the only New World fly that has spread to the Old World tropics. *Ornidia obesa* is known to carry bacteria of public health importance (*Salmonella*, *Shigella*) (Alcivar and Campos 1946) and *Mycobacterium* (Currie 1910). The species is also beneficial as the maggots can convert coffee-production waste products into useful protein sources for cattle feed (Larde 1989).

Ornidia whiteheadi Thompson,

NEW SPECIES

Figs. 12, 16

Male.—*Head*: metallic green; face shiny, black and tawny pilose except white pollinose under antenna; cheek shiny, white pilose; frontal triangle shiny, tawny and black pilose; frontal lunule orange; antenna brownish black, black pilose; arista orange, with arisal hairs black; vertical triangle shiny, black pilose; eye brown pilose; occiput shiny, white pilose with a few black hairs dorsally.

Thorax: metallic green, shiny except narrowly grayish-white pollinose anteriorly; pleuron tawny pilose with a few black hairs intermixed; mesonotum tawny pilose except medial $\frac{1}{3}$ black pilose, with a single weak pre-scutellar black bristle on left side; scutellum with pre-apical depression divided medially, black pilose except tawny pilose on margins; squama and plumula tawny; halter orange except stem brownish. *Wing*: hyaline except for maculae; apical macula small, only covering area around R1+2. *Legs*: coxae and trochanters metallic green, shiny, white pilose; femora shiny, bright metallic green and tawny pilose on basal $\frac{1}{3}$, becoming dark apically, with apex black, black pilose on apical $\frac{2}{3}$; tibiae metallic purplish black, shiny, black pilose; tarsi brownish black, black pilose.

Abdomen: metallic green, shiny; venter

white pilose except bare on medial $\frac{1}{3}$ of 3rd and $\frac{2}{3}$ of 4th sterna; 4th sternum with apicolateral black pile fused together to give appearance of strong black bristles; 1st tergum tawny pilose; 2nd tergum black pilose on apical $\frac{3}{4}$, tawny pilose basally; 3rd tergum short black pilose on apical $\frac{1}{3}$ and narrow medially, elsewhere tawny pilose; 4th tergum tawny pilose; male genitalic segments white pilose, except 8th tergum black pilose; male genitalia as figured (Figs. 12, 16), with a large postanal process posterior to cerci and between surstyles (see Fig. 12b).

Female similar to male except for normal sexual dimorphism and more extensively pale tawny pilose: mesonotum almost entirely tawny pilose, 2nd and 3rd terga tawny pilose except for black pilose on apical $\frac{1}{6}$.

Size.—Mesonotal length, 3.0–3.2; wing length, 9.5–10.2.

Holotype.—Male, PANAMA: Cerro Campana, 15 July 1963, W. G. Real, deposited in California Academy of Sciences, San Francisco. Paratypes: 3 females in United States National Museum. Panama: Canal Zone, Barro Colorado Island, 13 May 1979, Silberglied & Aiello, ovipositing on *Attadung*. COLOMBIA: Antioquia, Aljibes, Providencia, c. 33 km sw Zaragosa; 29 December 1970, Richard W. Pinger, "in hamster trap"; same locality and collector, 13 October 1970.

Ornidia whiteheadi is similar in size and appearance to *major*, but is readily distinguished from all other *Ornidia* species by the extensive tawny pile on the mesonotum, pleuron and 3rd tergum. The structure of the male genitalia is also unique among volucellines.

Ornidia whiteheadi is named for Donald R. Whitehead (see the appended eulogy). When I first saw the unique male (back in 1974) I asked Don, who knew Central America well, about the type locality—was it unique in any way? Don thought not. We then discussed the ethics of describing species from unique specimens. Our conclusion was that such new species should only

be described when the more inclusive taxa (genus, tribe or family) are revised. Don assured me that more specimens of my new species would appear some day as Central America was an area of active exploration, but, like the man for which the species is named, *whiteheadi* remains represented by a unique male! So, to remain true to his convictions, I have herewith revised the more inclusive taxon, *Ornidia*!

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Don Whitehead Remembered

(1938–1990)

I don't know when I first met Don, but I first came to know him when I joined the staff of the Systematic Entomology Laboratory back in 1974. Don was then a Research Fellow working for Dan Janzen. Dan is interested in saving the tropics and was then trying to figure out how tropical dry forests, such as those in Costa Rica, really work. Seeds and the insects associated with them were the key components to this puzzle. Don was Dan's insect specialist. And there has never been a specialist as versatile and competent as Don. While he worked mainly with John Kingsolver deciphering the patterns of evolution and distribution of seed weevils, Don also tackled some parasitic wasps and seed bugs. Don had worked on ground beetles for his graduate work and his real love was for millipeds. From his first major paper, which received unusual praises in a rare review (for a Ph.D. thesis) in *Systematic Zoology*, every paper of Don's was carefully crafted to present the findings and always a unique interpretation of their significance.

Don had the best mind in the laboratory. When I needed an answer Don was my source. In the beginning it was cladistics, statements of how things were interrelated. Back then there were no PCs, one either had access to mainframe computers or one worked it out by hand. Don was better than either approach! Once I received a manuscript for review. I knew the cladogram, the tree of relationships, was wrong despite the author's assertion otherwise, for I saw a few misplaced characters. However, I wanted to be certain as I was reviewing someone else's work. So, with manuscript in hand I went off to see if Don was ready for a beer. It was late in the afternoon, and Don and I did our best thinking over a beer or two, in those days. With a pencil and couple of napkins, Don quickly found a number of shorter trees, with one significantly so. Today kids with their PCs and Hennig86s can do this, but then and now only Donald Whitehead could do it the old-fashioned way faster! Later the questions became more mundane, like what is the best way to prioritize research in SEL. But regardless of topic, I always sought Don's advice on virtually everything. Don was quiet, a careful thinker. Hence, he wasn't always speaking out at meetings. He would instead dissect the problem, consider the logical alternatives, and formulate the best argument. So, frequently his input came later, and hence many will never know how critical Don was in shaping his Science and organization, SEL. I can only say what Newton said before, if I have seen further and achieved more, it's because I have stood on the shoulders of giants. Don was my giant.

Don was always a support for me; from providing the little things like reading my manuscript to critical things like sharing thoughts on life. Don's last act for me was to re-direct me to the essentials. Last summer when Don discovered he had cancer, he quietly re-assessed his life, ordered his affairs, and turned his mind back to critical questions. There is one unique characteristic of life on this earth and that is that it is diverse. "Why is life so diverse?" is the essential question for systematists. Don began with that question, providing insights to its answer with his studies on ground beetles, seed weevils and the like. Don had always been fascinated by the strange and delightful many-legged "worms," millipeds, that are found in our mountains. The diverse array of colors of these millipeds didn't seem to correlate with where Don found them. So over the last year, Don searched to formulate an answer to this puzzle. And in October at Providence, he told the Eastern Branch of the Entomological Society of America that he had an answer. He likewise told his colleagues here at a meeting of the Entomological Society of Washington. I was with him at both places. Don was having fun for he was again reveling in the excitement of his science. He was struggling with that essential question of why life is diverse. All the while I was lost in the strange world of government red-tape trying to get a computer system for the laboratory. Don saved me, his example being an inspiration—Order your life, seek the essential, and you will find your rewards.

Don's devotion to Science will always live. His colleagues have and will continue to establish monuments to it. And the uniqueness of some of these monuments is such that all generations will know his name. Years ago and in the mountains of Mexico, George Ball and Don pursued ground beetles. Don also collected a stray milliped. Today that creature is known as *Geoballus caputalbus*, or in English, Whitehead's milliped. No one will ever forget that name!