

*Head*: face usually black, orange in *cybele* and partially orange in *incertus*, usually with strongly developed facial carinae, carinae weak in *incertus* and *chloropygus* group, usually straight and without tubercle, weakly tuberculate only in *incertus* and with epistoma produced only in *auricaudatus*, usually pollinose laterally and shiny medially, completely pollinose only in *cybele* and *chloropygus*; third antennal segment usually elongate, usually  $1\frac{1}{2}$  times or more as long as broad, *chloropygus* group (and probably *incertus*) with oval third segments; eyes of male holoptic or narrowly dichoptic in *fascithorax* group.

*Thorax*: black or brownish black, usually dull pollinose, frequently with yellow pollinose markings, only shiny in *batesi* and *incertus*; metathoracic spiracle either large or small; scutellum with or without apical emarginate rim; wings frequently with dark anterior margins, otherwise hyaline except *plagiatus* with diagonal brown stripe. *Legs*: frequently with hind femora enlarged, with or without trochanteral or tibial spurs.

*Abdomen*: ranging from parallel sided to strongly petiolate.

**DISCUSSION**: The subgenus *Ceriogaster* can be divided into two sets of species groups: those groups with weakly carinate faces and oval third antennal segments, and those with strongly carinate faces and elongate third antennal segments. The first division, a symplesiomorphous grouping, includes only the *incertus*, *auricaudatus* and *chloropygus* groups; whereas all the other groups fall into the second division. The groups of the first division can be easily separated by their facial shape, and the groups of the second division by abdominal shape (figs. 18-21). Other differences between these species groups are listed in the following Table.

TABLE II

Character table for the species groups of *Sterphus* (*Ceriogaster*)

Species groups	Character states											
	1	2	3	4a	4b	4c	5	6	7	8	9	10
<i>incertus</i>	-	?	-	-	-	-	?	-	0	?	-	-
<i>auricaudatus</i>	-	-	+	-	-	+	-	-	0	+	-	-
<i>chloropygus</i>	-	-	-	-	-	-	+	+	0	+	-	-
<i>cybele</i>	-	-	-	-	-	-	?	-	2	?	-	+
<i>plagiatus</i>	-	+	-	-	-	-	+	+	0-2	-	+	+
<i>fascithorax</i>	+	+	-	-	-	+	-	+	0	-	+	+
<i>tinctus</i>	+	+	+	-	-	+	-	-	0	-	+	+
<i>coarctatus</i>	+	+	+	-	+	+	+	+	1	-	+	+
<i>batesi</i>	+	+	+	+	+	+	-	r	2	+	-	+

TABLE II (continued)

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List of species group characters

- 1) Cheeks linear, about four times as long as broad (+); about twice as long as broad (-).
- 2) Third antennal segment elongate, usually two times as long as broad (+); oval, about as long as broad (-).
- 3) Wing with dark anterior margin (+); without dark anterior margin (-).
- 4) a) Abdomen strongly petiolate, with long petiole (+); not so (-).  
b) Abdomen strongly petiolate, with long or short petiole (+); not so (-).  
c) Abdomen slightly (or strongly petiolate) (+); not so (-).
- 5) Males with spurs on hind trochanter (+); unspurred (-).
- 6) Hind femora enlarged (+); simple (-).
- 7) Hind tibiae with spurs, one (1), two (2), or none (0).
- 8) Male frontal triangle shiny (+); or golden pollinose (-).
- 9) Mesonotum with golden pollinose markings (+); without (-).
- 10) Face with strong facial carinae (+); not so (-).

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*incertus* group

The *incertus* group can be easily separated from all other species groups by its partially orange and slightly tuberculate face. Other diagnostic characters for the group have been listed in Table II.

***Sterphus* (*Ceriogaster*) *incertus*, new species**

Type locality: Venezuela, La Negra, Paramo. Holotype ♀ MZUSP

*Head*: (fig. 2), face black medially, orange laterally, light yellowish pollinose on orange areas, shiny on black areas, slightly concave beneath antennae, with slight tuberculate swelling above epistoma; cheeks black, shiny, light pollinose posteriorly, yellow pilose posteriorly; frontal lunule yellow; front black, shiny and bare on lower half, brownish pollinose on upper half, golden brown pilose on upper half with a few black hairs intermixed; vertex black, lightly brownish pollinose, black pilose; occiput black, silvery pollinose, yellow pilose below becoming darker above. Antennae with first two segments reddish orange, with black pile; third segment missing.

*Thorax*: black except reddish brown postalar calli; pleurae silvery pollinose, yellow pilose except black pilose on upper posterior corner of anepisterna; mesonotum shiny except brownish pollinose narrowly on sides and across front edge between humeri and with medial posteriorly directed spur of pollinosity, reddish brown pilose. Scutellum shiny black, with reddish brown pilose with a few longer black hairs intermixed, with subscutellar fringe yellow. Squamae

dirty white, with dark brown fringe; plumulae and halteres brownish orange. *Legs*: black except orange tibiae and basal two tarsal segments, yellow pilose except black pilose on apical third of femora and medial third of tibiae and apical four tarsal segments. *Wings*: pale yellowish brown, completely microtrichose.

*Abdomen*: black, greenish bronze pollinose except shiny lateral margins and fifth segment. Pile long and erect yellow on sterna, lateral margins of all terga, all first tergum, second and third terga except for postero-medial triangular patch of appressed black pile, and narrowly on anterior margins of fourth and fifth terga; short appressed black pilose on second and third terga in form of postero-medial triangular patch on posterior half and three-fourths respectively of second and third terga, and all fourth and fifth terga except yellow pilose on lateral and anterior margins.

**MATERIAL EXAMINED**: VENEZUELA: La Negra, Paramo, August 1948, Lichy, 1 ♀ (holotype, MZUSP).

**DISCUSSION**: *S. incertus* differs from the typical species of the subgenus *Ceriogaster* in that its: 1) face is orange laterally; 2) face is slightly concave beneath the antennae and has a distinct tuberculate swelling above the epistoma; 3) transverse sutures are shiny; and 4) tibiae and apical two tarsal segments are orange. *S. incertus* is represented by a single female which has the third antennal segments missing and for these reasons I have named this species, *incertus*.

#### *auricaudatus* group

The *auricaudatus* group is readily distinguished from all other species groups by its anteriorly produced epistoma. Other diagnostic characters for the group have been listed in Table II.

#### **Sterphus (Cerioaster) auricaudatus** (Williston)

*Cerioaster auricaudata* Williston, 1892, p. 73, pl. 2, figs. 10 (habitus), 10a (head). Type locality: Mexico, Guerrero, Omiltemi, 8000 ft. Types ♂ ♀ BM (NH). Subsequent references: Kertész, 1910, p. 308 (cat. citation).—Shannon, 1926, p. 50 (note on placement in *Temnostomini*).—Curran, 1934, p. 405 (note, key ref.).

*Mutillimya auricaudata*: Hull, 1943, pp. 137, 140 (described as mutillid mimic).—Fluke, 1957, p. 109 (cat. citation).

*Head*: face black except for orange spot on either side of epistoma, shiny medially, yellowish-white pollinose laterally; cheeks shiny black, with some yellow pile posteriorly; front black except for small narrow yellow triangle above antennal bases, shiny about antennal bases, elsewhere yellowish-white pollinose, yellow pilose;

vertex black, yellow pilose; occiput black, white pollinose, yellow pilose. Antennae reddish brown, about three-fourths as long as face; third segment quadrate, slightly longer than wide, about as long as first two segments; arista yellow, slightly longer than antenna.

*Thorax*: black, light pollinose, silvery pollinose on pleurae, brownish pollinose on mesonotum except velvety black pollinose on transverse suture, short yellow pilose except longer golden pilose in front of postalar calli; scutellum black, lightly brownish pollinose, white pilose. *Legs*: white pilose, coxae and femora blackish except yellowish apically on all femora and also basally on hind femora; tibiae and tarsi dark reddish brown; hind femora with double row of ventroapical short yellow spines. Halteres brownish yellow with dark head. Squamae dirty white with brown fringe. Plumulae brownish. *Wings*: brownish anteriorly and hyaline posteriorly, microtrichose except bare anterior quarter of anal cell. Brown extends back to anal and discal cell basad to anterior crossvein, beyond anterior crossvein brown area bordering on spurious vein and extending diagonally from tip of spurious vein to apical corner of first posterior cell (also see Williston's figure for exact extent of brownish anterior margin of wings).

*Abdomen*: petiolate, minimal width about one-third maximal width; first tergum opaque velvety black except shiny on sides; second tergum opaque velvety black except two large lateral shiny metallic triangles on petiole, with triangles connected medially; remainder of terga black, lightly whitish-yellow pollinose; pile of dorsum short yellow except thick, opaque golden on apical margin of first, second, and third terga, and all fourth and fifth terga. Venter black, with short appressed white pile except black medially on third and fourth and all of fifth sterna.

MATERIAL EXAMINED: MEXICO: Guerrero, Omiltemi, 8000 ft., 1 ♀ 1 ♂ (cotypes, BM(NH)).

DISCUSSION: *S. auricaudatus* is readily separated from all other species of *Sterphus* by its anteriorly produced epistoma. In appearance it is similar to *S. tinctus* (Fluke) but it is easily distinguished by the characters given in the key. The female cotype was figured in color in the original publication. However, a few discrepancies between the female cotype and figure should be noted: 1) the epistoma is produced more in the type; 2) the antennae are longer than shown, reaching almost to the epistoma; 3) too much yellow is shown on front, there is only a small narrow triangle of yellow extending back from the frontal lunule; and 5) the color on the tips of the femora is not reddish but yellowish.

*chloropygus* group

*Sterphus chloropygus*, *woodorum* and *intermedius* are very closely related, being separated from all other species of *Sterphus* by the structure of their hind tibiae, scutellum and male genitalia. The hind tibia (fig. 10) of the males, with its subbasal medial keel and apical keel-like spur, is unique among syrphids. In the females these structures are less pronounced, the apical spur does not have the keel-like basal portion and the subbasal medial keel is much lower. All the members of *chloropygus* group have a distinct apical emarginate rim on the scutellum, this rim being absent or very weak and indistinct in all other species of *Sterphus*. The surstylus with its large ventral extension to the dorsal lobe is also distinctive among *Sterphus* species. Thus, the *chloropygus* group is clearly monophyletic.

***Sterphus* (*Ceriogaster*) *chloropygus* (Schiner)**

*Xylota chloropyga* Schiner, 1868, p. 366. Type locality: "Columbien" (= Venezuela). Lectotype ♂ VMNH. Kertész, 1910, p. 298 (cat. citation).—Shannon, 1926, p. 50 (questioned generic placement).—Fluke, 1957, p. 157 (cat. citation).

**Male.**—**Head:** black; face straight, slightly convex about epistoma, completely silvery gold pollinose; cheeks shiny, with a few yellow hairs posteriorly; frontal triangle silvery gold pollinose, with some black hairs at junction of eyes; frontal lunule reddish brown; vertical triangle dull black, black pilose; occiput light silvery pollinose, thickly yellow pilose below and sparsely black pilose on upper quarter. Antennae black, short, about three-fourths as long as face; third segment trapezoidal, ventral margin slightly longer than dorsal; arista black, about 1½ times as long as face.

**Thorax:** black, dull brownish pollinose (there appears to be a trace of a pair of faint, medial, light brownish, pollinose vittae as in *intermedius*), black pilose except yellow pilose on propleurae; metathoracic spiracle distinctly larger than third antennal segment, with white fringe; scutellum with emarginate rim, shiny bluish black, black pilose including subscutellar fringe; squamae brownish with brown margin and fringe; plumulae yellow. **Wings:** brownish, completely microtrichose. **Legs:** black except reddish brown basal two tarsal segments of anterior legs and only first tarsal segment of hind leg, black pilose; hind trochanter with long flatten spur; hind femora only slightly enlarged; hind tibiae with ventral keel on basal third and long apical keel-like spur.

**Abdomen:** orange, except brownish black first tergum and medially on second, third and basal half of fourth terga, long yellow

pilose except shorter black pilose on dark areas of first thru third terga, shiny except dull on first thru third terga.

Female.—Quite similar to male except for normal sexual dimorphism and front shiny except for silvery pollinose spot on eye margin half way between antennae and vertex, black pilose on upper half; mesonotum with a few scattered golden hairs intermixed with black pile; tarsi much darker and hind tarsi all black; abdomen much darker, sterna dark reddish brown, terga mostly dull black, shiny bronze on lateral margin of second, third and all of fourth terga, with yellow pile on sterna and lateral margins of second, third, and all of fourth terga, rest black pilose.

MATERIAL EXAMINED: VENEZUELA: 1864, Lindig, 1 ♂ 1 ♀ (cotypes of *chloropygus*, VMNH).

DISCUSSION: *S. chloropygus* is readily distinguished from both *woodorum* and *intermedius* by its completely pollinose face, black pilose legs and mesothorax. I have examined the types of *chloropygus* Schiner, both of which are labelled "Lindig, 1864, Venezuela," "*chloropygus*, Alte Sammlung." The male is hereby designated lectotype and has been so labelled. The type locality is thereby restricted to Venezuela. Schiner in his part of "*Reise der österreichischen Fregatte Novara*" described a number of species as "*aus Columbien*" and types of all the syrphids so described have been found to be Lindig material from Venezuela as are the *chloropygus* cotypes. Thus, it is apparent that Schiner's "*Columbien*" included Venezuela.

#### ***Sterphus (Ceriogaster) woodorum*, new species**

Type locality: Venezuela, Distrito Federal, Parque Nacional Avila, 2000 m. Holotype ♂ CNC.

*Head*: black; face straight, shiny medially, silvery-white pollinose laterally, bare; cheeks shiny, white pilose; frontal triangle of male shiny except very narrowly silvery white pollinose along eye margins, with a few black hairs at junction of eyes; frontal lunule brownish black; front of female shiny on lower half, silvery-white pollinose and black pilose on upper half; vertex sparsely silvery pollinose anteriorly and bronze pollinose posteriorly, black pilose; occiput white pollinose and pilose below becoming bronze pollinose and black pilose on upper third. Antennae short, about two-thirds as long as face, black pilose; third segment trapezoidal, dorsal edge about half as long as ventral; arista yellow, about twice as long as antenna.

*Thorax*: black, mainly bronze pollinose, predominately yellowish silver pilose with some black pile intermixed on all sclerites except on

mesokatepisterna, with disc of mesonotum completely short black pilose in female; mesonotum with distinct pair of light brownish pollinose, medial vittae and a pair of indistinct, grayish pollinose, sublateral vittae behind suture; pile on margins of mesonotum and scutellum thicker, opaque and brighter in color; scutellum with distinct apical emarginate rim, with thick white ventral fringe, without apical spines, with intermixed black pile much longer than light colored pile; mesonotum without black spine-like pile above wing bases; metathoracic spiracle distinctly larger than third antennal segment; halteres orange; plumulae orange; squamae light orange with upper margin dark brown and lower margin orange, with fringe orange. *Wings*: light brownish, completely microtrichose. *Legs*: black and dull pollinose except hind femora shiny bronze to bluish black, reddish brown femoral-tibial joints and basal segment of middle and hind tarsi; white pilose except black pilose in male as follows: apical posterior third and ventral margin of front femora, apical posterior tip and ventral margin of middle femora, apical half of hind femora, intermixed on middle and hind coxae, medial posterior third of front tibiae, ventral and posterior surface of middle tibiae, all of hind tibiae, apical four tarsal segments of all legs; legs more extensively white pilose in female; hind trochanter with short sharp papilla in male, papilla reduced in female; hind femora greatly swollen, with large tuberculate swelling on basal third of inner side of male; hind tibiae with ventral keel on basal third and long apical keel-like spur in males, these structures reduced in female but still quite distinct.

*Abdomen*: shiny bronze except dull pollinose medially on second and third terga in males and first thru third in females, long bronze-yellow pile on shiny areas and appressed black on dull areas. *Male genitalia*: (Fig. 26), cerci elongate, produced posterodorsally. Surstyli: dorsal lobe very broad, broader than long, with curved dorsal and ventral ridges, with slight mediodorsal projection, with a few longer hairs on anterodorsal edge, with ventroapical edge angulate and extending slightly beneath ventral lobe; cleft between dorsal and ventral lobes short and broad; ventral lobe short, broad, broader than long, with fairly extensive marginal pile, with broadly rounded apical margin. Ninth sternum with dorsolateral membranous opening; lingula short, broadly triangular, with apex blunt; superior lobe sparsely pilose, with dorsoapical margin angulate, with large lateral excavation extending dorsally from ventral margin, with single large tooth on ventral margin. Aedeagus: dorsal lobe produced posteriorly, with large lateral flaps; large, long cleft between dorsal and lateral lobes; lateral lobes divided into basal and medial processes, with basal

process directed ventrally and with blunt apex, with medial process curved posteriorly and with pointed apex. Ejaculatory apodeme rod-shaped, with anterior end slightly expanded.

**MATERIAL EXAMINED:** VENEZUELA: D. F., Parque Nac. Avila, 2000 m, 28 Feb. 1971, G & M Wood, 1 ♂ (holotype), 1 ♀ (allotype) (CNC).

**DISCUSSION:** The species is named after its collectors, Dr. Monty Wood, of the Canada Department of Agriculture, and his wife. *S. woodorum* differs from the other species of the *chloropygus* group in that: 1) the arista is yellowish orange, not black; 2) the frontal triangle of the male is shiny, not golden pollinose; and 3) the lateral margins of the mesonotum are silvery golden pilose.

***Sterphus (Ceriogaster) intermedius*, new species**

**Type locality:** Bolivia, Cochabamba, Chapare, Limbo, 2200 m. Holotype ♂ MZUSP

**Head:** (fig. 5), black; face straight beneath antennae, slightly convex above epistoma, shiny except broadly silvery pollinose on sides; cheeks shiny, with a few light yellowish hairs posteriorly; frontal triangle light golden pollinose with two black hairs on each side near eye contiguity; frontal lunule orange; vertical triangle light pollinose, black pilose; occiput silvery pollinose, light yellow pilose except with black pile intermixed on upper part. Antennae black, short, slightly more than half as long as face; third segment trapezoidal, ventral margin about twice as long as dorsal; arista black, about as long as face.

**Thorax:** black, brownish pollinose except for faint pair of medial light brownish pollinose vitta on mesonotum; pile yellow and black intermixed, except all black pilose on dorsal posterior corner of mesoanepisterna, above wings and on postalar calli; metathoracic spiracle slightly larger than third antennal segment, with white fringe; scutellum with emarginate rim, black with metallic luster, black and yellow pilose, with yellow ventral fringe; halteres orange; squamae light brownish orange, with dark brown margin and fringe; plumulae orange. **Legs:** black, yellow pilose except black pilose as follows: apical posterior tip of front femora, apical third of middle femora, apical half of hind femora, both middle and hind tibiae, apical four of front and middle tarsal segments and all hind tarsal segments; hind femora only slightly enlarged; hind trochanter (fig. 12) with short curved bilobed spur; hind tibiae (fig. 10) with large apical spur and ventral keel on basal third. **Wings:** light brownish, completely microtrichose.

**Abdomen:** elongate, parallel-sided, metallic bluish black, shiny



except for dark brown pollinose bands on apical half of second and third terga, with pollinose bands not reaching lateral margins and bands of second terga with narrow medial projection reaching to anterior margin; pile long, erect yellow except appressed black on pollinose areas. *Male genitalia*: (fig. 27), quite similar to *woodorum* except as follows: 1) dorsal lobe of surstyli without mediodorsal projection; 2) cleft between the dorsal and ventral lobes much longer; 3) posteroventral edge of dorsal lobe of surstyli rounded, not angulate; 4) ventral lobe of surstyli larger and produced more into a postero-dorsal lobe; 5) dorsolateral membranous opening on ninth sternum triangularly shaped, not round; 6) lingula longer and with apex rounded; 7) superior lobe without lateral excavation; 8) superior lobe with two large ventral teeth which are hidden in lateral view; 9) dorsoapical margin of superior lobes more rounded, not angulate; 10) superior lobe with pile sparse except for dense patch near basoventral corner; 11) basolateral process of aedeagus ending in sharp point, not blunt point; 12) cleft between lateral and dorsal lobes of aedeagus very short; and 13) ejaculatory apodeme umbrella-shaped.

**MATERIAL EXAMINED:** BOLIVIA: Cochabamba, Chapare, Limbo, 2200 m, November 1953, Martínez, 1 ♂ (Holotype, MZUSP); Cochabamba, October 1965, Steinbach, 1 ♂ (paratype, CNC).

**DISCUSSION:** The name *intermedius*, is an adjective from latin, alluding to the position of the species and its group in the phylogeny of *Sterphus*.

*S. intermedius* is distinguished from the other species of the *chloropygus* group in that: 1) it lacks the abundant semiopaque golden pile on the tip of the abdomen; 2) the tarsi are all black; and 3) the male hind trochanter has a bilobed process. Also, the second tergum has two large shiny spots and the third tergum has a broad basal shiny band whereas both *woodorum* and *chloropygus* have only the lateral margins of these terga shiny.

#### *cybele* group

The *cybele* group can be easily separated from all other species groups by its pilose metasterna. Other diagnostic characters for the group have been listed in Table II.

#### ***Sterphus* (*Cerogaster*) *cybele* (Hull)**

*Crepidomyia cybele* Hull, 1951, p. 184. Type locality: Peru, Chanchamayo. Type ♀ Hull. Subsequent reference: Fluke, 1957, p. 106 (cat. citation).

*Head*: face bright yellowish orange, yellow pilose, golden pollinose, without medial shiny stripe; cheeks black, shiny, yellow pilose; front black, shiny except brownish golden pollinose across middle, yellow pilose; vertex shiny black, black pilose; occiput black, yellowish pollinose, brassy yellow pilose throughout. Antennae brownish black, third segment roughly oval, about as long as broad, about as large as metathoracic spiracle.

*Thorax*: black, mesonotum with broad, medial, posteriorly furcate, faint, reddish pollinose vitta and still more faint similar ones sublaterally; lateral margins of mesonotum and medial vitta on anterior half with appressed, opaque, brassy yellow pilose; pleural and scutellar pile brassy yellow; remainder of mesonotum with short black pile, without short black bristle-like hair above wings; scutellum with distinct apical emarginate rim, subscutellar fringe thick, brassy yellow; metasterna with long distinct pile; squamae and halteres pale orange. *Legs*: Anterior legs orange except brownish orange coxae and trochanters, with similarly colored pile; hind coxae black; hind trochanter reddish brown; hind femora yellowish brown basally, becoming reddish through middle, still darker at apices, golden pilose except black pilose on apical quarter, with nine black ventral spines; hind tibiae nearly blackish, but actually dark reddish sepia, with black pile except for short streak of golden hair basolaterally and medio-apically, with two stout, short spinous apical processes; hind tarsi yellowish brown. *Wings*: almost uniformly pale yellowish brown with costal cells and first basal cell light yellow with pterostigma deep yellow except apically; microtrichose except very narrowly bare behind Ax.

*Abdomen*: dorsum black except slightly reddish on medial sides of second and third terga, dull medially on second thru fourth terga, shiny with brassy yellow to purplish iridescence on all first tergum and laterally on second thru fourth terga, with shiny laterally areas in form of medially pointed triangles; with appressed short black pile on dull areas and long erect golden pile on shiny areas; venter white pilose, with first sternum reddish brown, with second and basal three-fourths of third sternum orange, with apical quarter of third and all of fourth and fifth sternum black.

**MATERIAL EXAMINED**: PERU: Chanchamayo, 20 Jan. 1949, J. Schunke, 1 ♀ (holotype, Hull). COLOMBIA: Cundinamarca, Monterredondo, 19 Jan. 1957, 1 ♀ (Cornell University).

**DISCUSSION**: *S. cybele* appears to be a typical member of the subgenus *Ceriogaster* except that the metasterna are pilose and the face is yellowish orange in ground color. The first character state is

*Head*: face bright yellowish orange, yellow pilose, golden pollinose, without medial shiny stripe; cheeks black, shiny, yellow pilose; front black, shiny except brownish golden pollinose across middle, yellow pilose; vertex shiny black, black pilose; occiput black, yellowish pollinose, brassy yellow pilose throughout. Antennae brownish black, third segment roughly oval, about as long as broad, about as large as metathoracic spiracle.

*Thorax*: black, mesonotum with broad, medial, posteriorly furcate, faint, reddish pollinose vitta and still more faint similar ones sublaterally; lateral margins of mesonotum and medial vitta on anterior half with appressed, opaque, brassy yellow pilose; pleural and scutellar pile brassy yellow; remainder of mesonotum with short black pile, without short black bristle-like hair above wings; scutellum with distinct apical emarginate rim, subscutellar fringe thick, brassy yellow; metasterna with long distinct pile; squamae and halteres pale orange. *Legs*: Anterior legs orange except brownish orange coxae and trochanters, with similarly colored pile; hind coxae black; hind trochanter reddish brown; hind femora yellowish brown basally, becoming reddish through middle, still darker at apices, golden pilose except black pilose on apical quarter, with nine black ventral spines; hind tibiae nearly blackish, but actually dark reddish sepia, with black pile except for short streak of golden hair basolaterally and medio-apically, with two stout, short spinous apical processes; hind tarsi yellowish brown. *Wings*: almost uniformly pale yellowish brown with costal cells and first basal cell light yellow with pterostigma deep yellow except apically; microtrichose except very narrowly bare behind Ax.

*Abdomen*: dorsum black except slightly reddish on medial sides of second and third terga, dull medially on second thru fourth terga, shiny with brassy yellow to purplish iridescence on all first tergum and laterally on second thru fourth terga, with shiny laterally areas in form of medially pointed triangles; with appressed short black pile on dull areas and long erect golden pile on shiny areas; venter white pilose, with first sternum reddish brown, with second and basal three-fourths of third sternum orange, with apical quarter of third and all of fourth and fifth sternum black.

**MATERIAL EXAMINED**: PERU: Chanchamayo, 20 Jan. 1949, J. Schunke, 1 ♀ (holotype, Hull). COLOMBIA: Cundinamarca, Monterredondo, 19 Jan. 1957, 1 ♀ (Cornell University).

**DISCUSSION**: *S. cybele* appears to be a typical member of the subgenus *Ceriogaster* except that the metasterna are pilose and the face is yellowish orange in ground color. The first character state is

unique in *Sterphus* (usually considered as a primitive state in other syrphids) but the second character state is found in the two primitive subgenera, *Telus* and *Sterphus*. The question of whether *cybele* represents a case of the retention of some primitive traits in a otherwise highly derived fly or convergence in those derived character states, cannot be decided without the study of additional characters, such as those of the male genitalia. Until this question is answered, I have taken the most parsimonious alternative and have tentatively included *cybele* in *Sterphus* (*Ceriogaster*).

*plagiatus* and *fascithorax* groups

The transverse pollinose markings on the mesonotum of these groups are unique among the taxa of the *Xylota* group of genera as well as of the tribe Milesini (see Thompson, 1972). The similar pollinose markings in *Temnostoma* (*Temnostoma* group) are quite different and many other characters strongly support my groupings and thereby the contention that this is a convergent character state in *Temnostoma*. Thus the possession of transverse pollinose mesonotal markings in both the *fascithorax* and *plagiatus* groups is synapomorphy and demonstrates the monophyly of this combined grouping.

The character states previously used to separate the *fascithorax* group as a genus are only specialized states easily derived from those of a *plagiatus*-type ancestor: 1) the medial facial keel becomes convex below; 2) the frontal and vertical triangles are elongate and the eyes separate slightly; 3) the occiput and mesonotum acquire a row of short spines (a few spines are already present on occiput of *plagiatus*); 4) the metathoracic epimera extends to complete the post-metacoxal bridge; 5) the scutellum loses its ventral pile fringe; and 6) the abdomen becomes slightly constricted.

Since the unique character states of the *fascithorax* group could have been derived from a *plagiatus*-type ancestor and the group does share synapomorphic character states (facial keels and color, antennal shape, pollinose markings, etc.) with other *Sterphus* species, the *fascithorax* group is included in *Sterphus* and placed as the sister group to the *plagiatus* group.

To maintain the *fascithorax* group as a separate genus in its traditional sense, would require one of two courses of action: 1) one would have to accept the hypothesis that the *fascithorax* group arose independently of *Sterphus*, but that the two are sister groups and that the apparent similarities in various character states are convergences due to homoiology (Griffiths, 1972:24); or 2) if one accepts my phylogenetic analysis of the group, then one would be required

to elevate almost all of the other species groups here recognized to generic rank to avoid either paraphyletic or polyphyletic genera. I have rejected both these alternatives, the first on the basis of the rule of parsimony and the second on utilitarian grounds (see discussion under *Telus*)—my arrangement does not involve any convergences in character states and utilizes only one medium size genus instead of ten very small genera.

*plagiatus* group

The *plagiatus* group roughly corresponds to the original limits of Shannon's genus *Crepidomyia*, but three species groups, which would have been undoubtedly included by Shannon in his genus, have been left out of the *plagiatus* group. The *chloropygus*, *tinctus*, and *incertus* groups all lack the pollinose bands on the mesonotum and further differ by: the short antennae in the *chloropygus* and probably *incertus* groups; the slightly petiolate abdomen in the *tinctus* group; and the slightly concave and tuberculate face in the *incertus* group.

***Sterphus* (*Ceriogaster*) *plagiatus* (Wiedemann)**

*Xylota plagiata* Wiedemann, 1830, p. 98. Type locality: Brazil. Type ♀ VMNH. Subsequent reference: Kertész, 1910, p. 304 (cat. citation).

*Crepidomyia plagiata*: Shannon, 1926, p. 48 (descript. note, distr. rec.—Brazil).—Curran, 1934, p. 404 (note on type, distr. rec.—Guyana).—Doesburg, 1963, p. 19 (distr. rec.—Surinam); 1966, p. 98 (distr. rec.—Surinam).—Fluke, 1957, p. 106 (cat. citation).

*Zelima plagiata*: Sack, 1941, p. 116 (also, 1951, p. 112) (distr. rec.—Peru).

*Head*: black; face shiny medially, silvery pollinose laterally; cheeks shiny anteriorly, white pilose, silvery pollinose posteriorly; front bare and sparsely white pollinose on lower half, yellow pilose and thickly white pollinose below becoming browner near vertex on upper half; frontal lunule dark reddish brown; vertex brownish pollinose, yellow pilose; occiput white pollinose, white pilose below becoming yellower above, with row of short thick spine-like hairs above; antennae elongate, slightly longer than face, brownish black, yellow pilose with a few longer black bristle-like hairs on ventral and dorsal margins of basal two segments; third segment about twice as long as broad, narrowed apically into blunt tip; arista yellowish on basal half, brown apically; distinctly longer than antennae.

*Thorax*: black; pleurae sparsely silvery pollinose, short white pilose, with patch of long hairs behind metathoracic spiracle; mesono-

tum mainly blackish pollinose and short, appressed, black pilose except as follows: long white pilose on notopleurae, shorter white pilose on humeri, two lateral golden pilose vittae stretching from basal corners of scutellum and posterior corners of postalar calli to level of wing bases, with patch of short thick spine-like black pile above wing bases, silvery pollinose on mesial sides of humeri and on transverse sutures, dark brown pollinose on medial ends of transverse suture, with faint medial and sublateral grayish pollinose vittae; scutellum with appressed black pile except thickly golden pilose on margin. Halteres white; squamae white with brown margin and fringe. *Legs*: front legs dark brownish black, white pilose except black pile on anterior tip of femora, ventral half of tibiae, and all tarsi; middle legs similar to front legs except tawny basal three tarsal segments with white pile; hind legs brownish black except tawny femora, femora short black pilose except white pilose laterally on basal half and dorsal fourth, tibiae sparsely white pilose; tarsi black pilose; hind tibiae with strong apical spur. *Wings*: (fig. 13), hyaline except for diagonal brown stripe along posterior edge of second basal cell, across base of third posterior and discal cell, through basal two-thirds of apical cell to wing margin; microtrichose except bare behind spurious vein in first basal cell and basad to branching of Rs.

*Abdomen*: black; venter sparsely silvery pollinose; first three sterna white pilose and fourth and fifth sterna black pilose; first tergum silvery pollinose, long white pilose; second tergum brownish black pollinose except shiny reddish laterally on basal seven-eighths, shiny portion with long white pile, rest with appressed black pile; third tergum shiny grayish silvery pollinose basally and dull brownish-black pollinose apically shiny area reaching from basal third medially to apical quarter laterally, dull area with short appressed black pile and shiny areas with short white pile; fourth and fifth terga shiny grayish silvery pollinose, short appressed black pilose.

**MATERIAL EXAMINED**: MEXICO: 1 ♀ (USNM). PANAMA: Canal Zone, Barro Colorado, 1 Aug 1924, N. Banks, 1 ♀ (MCZ). BRITISH GUIANA: Kamakusa, 1922, H. Lang, 2 ♀ (AMNH & HULL). ECUADOR: Napo, Napo River, Coca, 250m, May 1965, L. Peña, 3 ♀ (CNC); Napo, Pano River, 12 Feb 1923, F. X. Williams, 1 ♀ (USNM); Pastaza, Napo River, Pompeya, 14-22 May 1965, L. Peña, 1 ♀ (CNC). PERU: Madre de Dios, Avispas, 400 m, 1-15 Oct 1962, L. Peña, 1 ♀ (CNC); Middle Río Ucayali, 18 Nov 1923, H. Bassler, 1 ♀ (AMNH). BRAZIL: Amazonas, Rio Caiary-Uaupes, 1906, H. Schmidt, 1 ♀ (AMNH); Amazonas, Rio Cauburi, Boca do Tucano, Nov 1965, E. Dente, 1 ♀ (MZUSP); Amapá, Rio Felias,

28 July 1959, J. Lane, 1 ♀ (MZUSP); Amapá, Rio Amapari, 9-10 July 1957, J. Lane, 3 ♀ (FCT & MZUSP).

DISCUSSION: *S. plagiatus* differs from all other *Sterphus* species by the presences of a few long hairs behind the metathoracic spiracle and by a diagonal dark stripe on an otherwise hyaline wing (fig. 13). *S. plagiatus* is very closely related to *shannoni* but it can be contrasted as follows: 1) the scutellum has a marginal band of thick, opaque golden pile and lacks spines, not a fine white subscutellar fringe and strong short black spines; 2) the hind femora are tawny, with an appressed black pile on the apical half, not orange with an orange pile; 3) the abdomen has a short appressed black pile, not bands of thick, golden, tomentose pile on the tip of the abdomen; 4) the abdomen has shiny metallic bands on the third tergum, rather than being completely dull black; 5) the first basal cell is bare behind the spurious vein, not microtrichose. Character states 1 and 4 can also be used to distinguish *plagiatus* from the *genuinus* complex. Also, *S. plagiatus* is unique in the *plagiatus* group because of its short row of black spines on the upper fourth of the occiput.

***Sterphus* (*Ceriogaster*) *shannoni*, new species**

Type locality: Brazil, Santa Catarina, Nova Teutonia. Holotype ♂ FCT.

*Head*: (fig. 4), black; face shiny medially, golden pollinose laterally; cheeks shiny anteriorly, silvery white pollinose posteriorly, white pilose; frontal lunule reddish brown; frontal triangle of male golden pollinose; front of female mainly shiny on lower half, with medial vitta of golden pollinosity and narrowly whitish pollinose laterally on lower half, light brownish pollinose and yellow pilose on upper half; vertex brown pollinose with some light yellowish pollinosity around anterior part of ocellar triangle, yellow pilose; occiput silvery white pollinose, yellow pilose. Antennae elongate, slightly longer than face, yellow pilose, light to dark brown on basal two segments, lighter orange brown on apical segment; third segment elongate, about twice as long as broad, with blunt tip but with dorsal margin slightly but distinctly concave before tip; arista yellow, only about as long as antenna.

*Thorax*: black; pleurae sparse silvery pollinose, short yellow pilose except for a few long golden hairs on apical posterior edge of mesoanepisterna; mesonotum mainly dark brownish pollinose and short appressed black pilose, except as follows: long yellow pilose on notopleurae, shorter yellow pilose on humeri and between them, two lateral golden pilose vittae stretching from posterior corner of

postalar calli to level of wing bases, with patch of short thick spine-like black pile above wings, golden pollinose on mesial sides of humeri and transverse suture, dark brown velvety pollinose behind golden pollinose, with faint medial and two sublateral grayish pollinose vittae. Scutellum short appressed black pilose, with sparse white ventral fringe, with indistinct apical emarginate rim, with a few very short apical spines. Squamae white with brown margin and fringe; plumulae brown; halteres orange. *Wings*: light yellowish orange on anterior basal half, elsewhere light brownish; completely microtrichose. *Legs*: yellow pilose; front legs dark brownish black; middle legs slightly more reddish brown; hind coxae and trochanter dark reddish brown; hind femora and tibiae tawny, light reddish brown; hind tarsi darker; hind trochanter of male with long spur; hind tibiae of both sexes with apical lateral spur and with subapical medial spur in male.

*Abdomen*: black; dorsum dull brownish pollinose except shiny on sides of first and second terga, long white pilose laterally on first and second terga, short yellow appressed pilose elsewhere and with thicker opaque golden pile in form of transverse bands on apex of third tergum and basal margin and apical half of fourth tergum. Venter shiny on first and second sterna, light pollinose on rest of sterna, yellow pilose. *Male genitalia*: (fig. 28), cerci broad, rounded dorsally, with small medial tuberculate swelling. Surstyli: dorsal lobe elongate, narrow, with dorsal margin angulate and ventral margin evenly curved, with apex blunt, with many long hairs medially on dorsal edge; ventral lobe broad, broader than long, with rounded apical margin. Ninth sternum without dorsolateral opening, with large lateral membranous area above base of lingula; lingula very long and narrow, ending in small upturned point. Superior lobe with dorsoapical margin rounded, without apical hook-like process, extensively pilose, with two subbasolateral and one basolateral processes, with all these blunt-tipped and extending toward lingula. Aedeagus with dorsal lobe produced posteriorly, with lateral lobes broad and short, with lateral lobes not extending between lateral flaps of dorsal lobe, with ventral lobe produced on basal section and with apical section flatten. Ejaculatory apodeme umbrella-shaped.

**MATERIAL EXAMINED:** BRAZIL: Paraná, Caviuna, Sept. 1947, A. Maller 1 ♂ (AMNH) São Paulo, Campinas, Mar. 1924, F. X. Williams, 1 ♂ (USNM); São Paulo, Villa Americana, Feb. 1924, F. X. Williams, 1 ♀ (USNM); São Paulo, Rio Claro, Adutora, Sept. 1940, 1 ♂ (USNM) São Paulo, S. Sebastião, A. A. Barbiellini, 1 ♀ (USNM); São Paulo, Sto. Amaro, 8 May 1944, Oct. 1950, Feb.



