

*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 (Ceriogaster) auricaudatus** (Williston)

*Ceriogaster 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 sterna orange, with apical quarter of third and all of fourth and fifth sterna 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.



1950, J. Lane, 2 ♂ 1 ♀ (MZUSP); Santa Catarina, Nova Teutonia, Sept.–May, 191 ♂ ♀ (AMNH, CNC, FCT, MCZ, MZUSP, Hull, BM(NH)); holotype male, allotype female, both Nov. 1971, in FCT; other paratypes). ARGENTINA: Córdoba, Dept. San Javier, La Paz, 15–31 Dec. 1928, C. Bruch, 1 ♂ (USNM).

DISCUSSION: *S. shannoni* is quite easily separated from all other species of *Sterphus* by its golden tomentose pile bands on the tip of the abdomen. For discussion of the other differences between *shannoni*, *plagiatus* and the *genuinus* complex, see the discussion under those species.

*S. shannoni* is named for Raymond Corbet Shannon, who needs no introduction to syrphids workers.

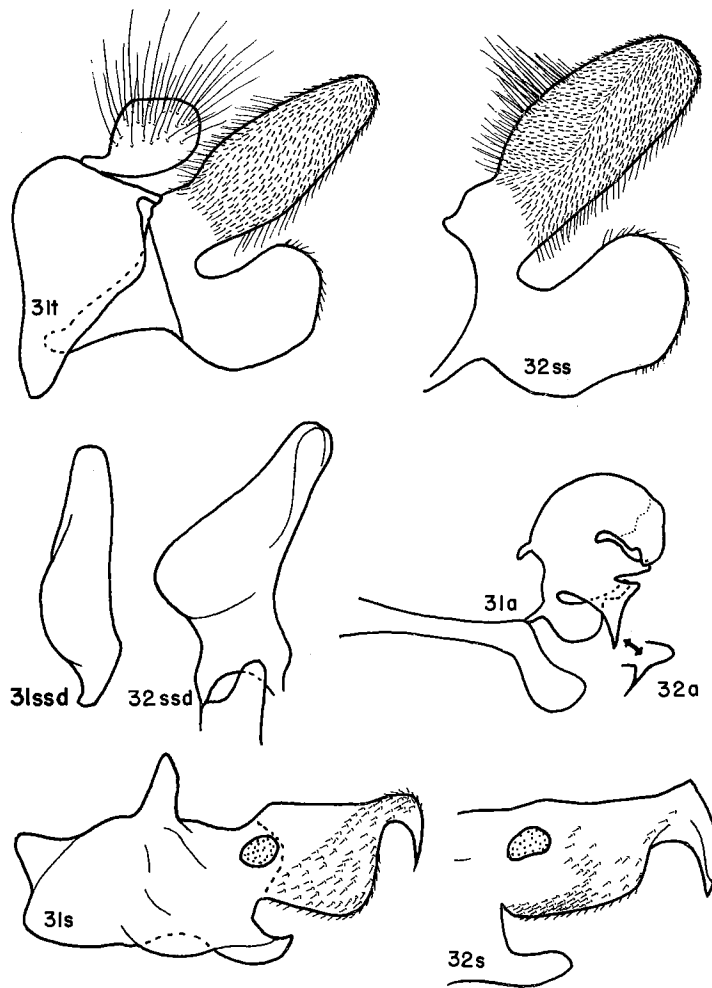
#### *genuinus* complex

*S. genuinus* (Williston) and *tricrepis* (Shannon) are very closely related and apparently only distinguishable by a few characteristics of the male genitalia. These genitalic differences are as follows: 1) the apical hook of the superior lobe is rounded dorsally and is sharp and simple apically in *genuinus* (fig. 31s) but in *tricrepis* it is angulate dorsally and is blunter and notched apically (fig. 32s); 2) the distribution of setae on the superior lobe is more uniform in *genuinus* (fig. 31s) but in *tricrepis* it is reduced (fig. 32s); 3) the ventral portion of medial lobe of aedeagus is broad and perpendicular in *genuinus* (fig. 31a) but in *tricrepis* it is thin and recurved (fig. 32a); 4) the lower lobe of the surstyle is short and somewhat angulate posteriorly in *genuinus* (fig. 31t) but in *tricrepis* it is longer and more curved posteriorly (fig. 32ss); and 5) the left surstyle is only produced slightly on the lateral side (fig. 31ssd), but in *tricrepis* it is greatly produced laterally (fig. 32ssd).

The following description and discussion applies to both species.

*Head*: black; face shiny medially, white to silvery yellow pollinose laterally in female, golden pollinose laterally in male; cheeks shiny anteriorly, silvery white pollinose posteriorly, white pilose; frontal lunule orange; front of female shiny on lower half, white pollinose and yellow pilose on upper half; frontal triangle of male golden pollinose; occiput silvery white pollinose, white pilose below becoming yellower above with some black hairs intermixed on upper third. Antennae shorter than face, brownish black except yellow arista, black pilose; third segment obtusely pointed, about 1½ times as long as broad; arista about twice as long as antenna.

*Thorax*: black; pleurae sparse silvery pollinose, short white pilose except for a few long black hairs on apical posterior tip of mesoan-



FIGS. 31-32. Male genitalia of *Sterphus*, lateral view except ssd dorsal view; 31. *genuinus* (Williston), 32. *tricrepis* (Shannon). a = aedeagus and base of apodeme (32a is only ventral prolongation of lateral lobe). s = 9th sternum, ss = surstyle, ssd = surstyle dorsal view, t = 9th tergum.

episterna; mesonotum mainly brownish pollinose with faint medial and two sublateral grayish pollinose vittae, with transverse sutures and mesial sides on humeri golden pollinose, appressed black pilose except for long white pilose on notopleurae, with black spine-like hairs above wings; scutellum brownish pollinose, short appressed black pilose, with very indistinct apical emarginate rim, with long white ventral fringe, with six to eight short strong marginal spines. Squamae white with brown margin and fringe; plumulae brown; halteres yellow. *Wings*: very light brownish black, microtrichose except bare in front of Rs and behind spurious vein on basal half of first basal cell. *Legs*: black; mainly black pilose, white pilose as follows: on coxae, on basal two-thirds of anterior and all posterior side of front and middle femora, on basal half of both anterior and posterior sides of hind femora, dorsal half of front and middle tibiae; hind trochanter with short apical spur in female and longer one in male.

*Abdomen*: (fig. 18), black, mainly dull grayish black pollinose, shiny on sides of first thru third terga and medially on first and third sterna and on all of second sternum; second tergum frequently with pair of small lateral orange spots in male; long white pilose on shiny areas including all of first and third sterna, short yellow subappressed pilose on apical half of fourth tergum, appressed black pilose elsewhere on dorsum and long black pilose on fourth sterna; male genitalia with yellow pile. *Male genitalia*: (figs. 31-32), cerci quadrate with basal portion flattened, with dorsal margin evenly rounded. Surstyli: dorsal lobe elongate, broad, straight, not curved ventrally or medially, with blunt apex, on left side slightly to greatly produced basolaterally, with some long marginal pile on dorsal edge; ventral lobe broad, short, either with angulate or rounded apex. Ninth sternum with small dorsolateral membranous opening; lingula short, broadly triangular, with apex rounded; superior lobe with dorsoapical margin either angulate or rounded, densely or sparsely pilose, with apical portion hook-like, with either single sharp point or bifid point. Aedeagus: dorsal lobe large, arched produced dorsally; lateral lobes divided into short posteriorly directed process and large ventrally directed process, with posteriorly directed process with blunt tip and ventrally directed process extending into sharp point; ventral lobe produced ventrally on basal portion. Ejaculatory apodome umbrella-shaped.

DISCUSSION: *S. genuinus* and *tricrepis* are very similar to *shannoni* and *plagiatus* but can be separated from both species by their 1) lack of longitudinal stripes of appressed golden pile on the posterior mesonotum; 2) shorter and blunt tipped third antennal

segment; 3) black pile on the upper posterior corner of the mesopleurae; 4) spurs on the hind trochanter in the female, and 5) lack of well developed spurs on the hind tibiae. The *S. genuinus* complex further differs from *shannoni* in its 1) lack of golden tomentose pile on the abdomen, 2) black hind femora, and 3) hyaline wings. Other differences between *genuinus* and *plagiatus* are listed in the discussion of the latter species.

#### **Sterphus (Ceriogaster) tricrepis** (Shannon)

*Crepidomyia tricrepis* Shannon, 1926, p. 47. Type locality: Peru, Río Charape. Type ♂ USNM. Subsequent references: Fluke, 1950, p. 453 (synonymy under *genuinus* Williston).

*Crepidomyia darlingtoni* Hull, 1944, p. 40. Type locality: Cuba, Eastern Oriente, Mounts north of Imias, 3-4000 ft. Type ♂ MCZ. Subsequent reference: Fluke, 1957, p. 106 (cat. citation). **New synonymy.**

?*Crepidomyia dion* Hull, 1951, p. 183. Type locality: Peru, Chanchamayo. Type ♀ Hull. Subsequent reference: Fluke, 1957, p. 106 (cat. citation).

**DISCUSSION:** When Hull described *darlingtoni* he stated that it was "related to *tricrepis* Shannon but very distinct in the smoky wing apex." I have examined the holotype of *darlingtoni* including the male genitalia and can find no other differences between it and *tricrepis*. Thus, I feel the slight difference in the intensity of the color of the wing apex, *tricrepis* having light brownish black wings, is only of trivial importance. I have also examined the type of *dion* Hull and can find no differences between it and the females of the *genuinus* complex. Since the females of the *genuinus* are indistinguishable, I have tentatively synonymized *dion* under *tricrepis* on the basis of geographical distribution, that is, all the males of the *genuinus* complex examined from Peru, the type locality of *dion*, have been *tricrepis*.

**MATERIAL EXAMINED:** CUBA: Pico Turquino, Cumbre, 22 July 1922, S. C. Bruner & C. H. Ballou, 1 ♀ (AMNH); Eastern Oriente, Mounts north of Imias, 3-4000 ft., 25-28 July 1936, P. J. Darlington, 1 ♂ (holotype of *darlingtoni*, MCZ). DOMINICA: Pont Casse, April 1965, 12 Oct.-30 Nov. 1964, P. J. Spangler & R. Davis, 8 ♀ (USNM), 27-30 Nov. 1964, P. J. Spangler, 1 ♂ (USNM). PERU: Río Charape, 14 Sept. C. H. T. Townsend, 1 ♂ (holotype of *tricrepis*, USNM); Piches & Perene Valleys, 2000-3000 ft., 1 ♂ 2 ♀ (paratypes of *tricrepis*, USNM). BOLIVIA: Cochabamba, Oct. 1965, Steinbach, 1 ♂ (CNC); El Limbo, 65°36'W 17°07'S, 2200 m, Nov. 1963, F. Steinbach, 1 ♂ (CNC).

***Sterphus* (*Ceriogaster*) *genuinus* (Williston)**

*Xylota genuina* Williston, 1888, p. 284. Type locality: Brazil, Rio de Janeiro. Type ♀ AMNH. Subsequent references: Kertész, 1910, p. 301 (cat. citation).—Shannon, 1926, p. 50 (suggested placement in *Crepidomyia*).

*Zelima genuina*: Sack, 1941, p. 116 (also, 1951, p. 112) (distr. rec.—Peru [= *tricrepis*?]).

*Crepidomyia genuina*: Fluke, 1950, p. 453, fig. 19 (male genitalia) (synonymy of *tricrepis*; distr. recs.—Brazil, Argentina); 1957, p. 106 (cat. citation).

MATERIAL EXAMINED: COSTA RICA: Cartago, Turrialba, La Suiza, 1 Oct., 13 Nov., P. Schild, 2 ♂ (USNM). VENEZUELA: Mt. Duida, 28 Dec. 1928, 16 Jan. 1929, Tate, 2 ♀ (AMNH). BRAZIL: Minas Gerais, Passa Quatro, 30 March 1916, 1 ♂ (USNM); Rio de Janeiro, Itatiaya, 1200 m, Feb. 1941, R. C. Shannon, 7 ♂ 5 ♀ (USNM); Rio de Janeiro, Itatiaya, Maromba, 23 Dec. 1935, 11 April 1940, J. F. Zikan, 2 ♂ (MZUSP & FCT); Rio de Janeiro, Dist. Federal, Jan. 1938, 1 ♂ (USNM); São Paulo, C. Jordão, Jan. 1954, J. Lane, 1 ♂ (MZUSP); Santa Catarina, Nova Teutonia, March 1966, Sept. 1966, 1 ♂ 1 ♀ (CNC). ARGENTINA: Tucumán, Villa Nogués, 13 Jan. 1929, Jan. 1929, R. A. Jaynes, 3 (USNM).

*fascithorax* group

Face with medial carina slightly concave below antennal pits and slightly convex below that concavity; cheeks narrow; frontal triangle of male about two-thirds as long as vertical triangle; vertical triangle of male long, more than twice as long as broad at occiput; occiput with transverse row of short strong spines on upper half; eyes with an oblique transverse impressed groove at level of antennal pits, narrowly dichoptic in male; third antennal segment always elongate, two or more times as long as broad; anterior edge of mesonotum with transverse row of short strong spines; postmetacoxal bridge complete; metathoracic spiracle small; scutellum without ventral pile fringe; abdomen slightly petiolate.

DISCUSSION: The species of this group will be reviewed in a separate paper. The group as a whole is quite distinctive, with its 1) complete postmetacoxal bridge, 2) lack of a scutellar fringe, 3) row of spines on the occiput and the mesonotum, and 4) modified medial facial keel. It is hardly likely that the species of the *fascithorax* group will be confused with any other *Sterphus* species.

*tinctus* group

The *tinctus* group is readily distinguished by its abdominal shape (fig. 19) and the lack of hind tibial spurs. Other diagnostic characters for the group have been listed in Table II.

**Sterphus (Ceriogaster) *tinctus* (Fluke)**

*Crepidomyia tincta* Fluke, 1950, p. 453, fig. 20 (head), 21 (wing). Type locality: Brazil, Santa Catarina, Nova Teutonia. Type ♀ AMNH. Subsequent reference: Fluke, 1957, p. 106 (cat. citation).

*Head*: black; face shiny medially and broadly golden pollinose laterally in male, almost completely shiny in female, with only very narrow stripe of pollinosity on border of cheek in female; cheek shiny, linear, white pilose; frontal lunule orange; frontal triangle of male golden pollinose; front of female with lower half shiny, with upper half dark brownish pollinose, with pollinosity lighter at junction of shiny area, yellow pilose; vertex brownish pollinose, yellow pilose; occiput sparsely yellowish brown pollinose, white pilose below becoming yellower above. Antennae brownish orange, black pilose, longer than face in female, about as long as face in male; third segment about 1½ times as long as broad in female, slightly longer than broad in male; arista orange, more than twice as long as antenna.

*Thorax*: brownish black; mesonotum mostly dull brownish pollinose, with transverse sutures black velvety pollinose, with faint grayish medial pollinose vitta, grayish pollinose on mesial sides of humeri, short appressed brownish yellow pilose except black pilose medially on posterior half; without black spine-like pile above wings; pleurae brownish yellow pollinose, short yellow pilose; scutellum appressed yellow pilose, with indistinct apical emarginate rim, with yellow ventral fringe, without spines; squamae and halteres orange; plumulae reddish brown. *Wings*: light yellowish brown, dark brown on anterior half; microtrichose except bare anterior third of anal cell. *Legs*: mainly orange, slightly darker on anterior legs of male, yellowish to orange pilose, front coxae brownish black on basal four-fifths; middle and hind coxae brownish basally, front tarsi with apical four segments brownish black, middle and hind tarsi with apical two segments dark; tarsi with dark pile on dark segments, hind trochanter with very short stubbly papilla.

*Abdomen*: elongate, slightly constricted on second segment, minimal width about two-thirds of maximal width (two-thirds in female; three-fifths in male); dark brownish black, dull brownish black pollinose, mainly short yellow to golden pilose, slightly longer

pile basolaterally. *Male Genitalia*: (fig. 29) cerci quadrate, with dorsal margin slightly rounded; dorsal lobe of surstyli elongate, broad, angulate, with broad apex, apparently without long marginal pile; ventral lobe of surstyli greatly reduced, completely bare; ninth sternum with small dorsolateral membranous opening; lingula short, very broad, with apex broadly truncate; superior lobe with dorso-apical margin rounded, sparsely pilose, without apical hook-like process, with large lateral excavation extending up from ventral margin; aedeagus with dorsal lobe produced posterodorsally, and arched, with long and wide cleft between dorsal and lateral lobes, with lateral lobes broad and tapering to long sharp apex, with ventral lobe flattened; ejaculatory apodeme umbrella-shaped.

**MATERIAL EXAMINED:** BRAZIL: Santa Catarina, Nova Teutonia, August–January, F. Plaumann, 21 ♂ ♀, (FCT, BM(NH), & AMNH (including holotype)).

**DISCUSSION:** *S. tinctus* is quite similar to *S. auricaudatus* in overall appearance, both species have slightly petiolate abdomens, general brownish black color, brown anterior edge of the wing, and simple legs. However, *S. tinctus* can be easily separated by its straight black face and lack of golden tomentose-like pile on the abdomen. Also, the possession of the apomorphic black and straight face character states clearly demonstrates that the similarities between *S. auricaudatus* and *tinctus* are due to convergence.

#### *coarctatus* group

The *coarctatus* group can be easily separated from all other species groups by its abdominal shape (fig. 20) and single hind tibial spur. Other diagnostic characters for the group have been listed in Table II.

#### ***Sterphus* (*Ceriogaster*) *coarctatus* (Wiedemann)**

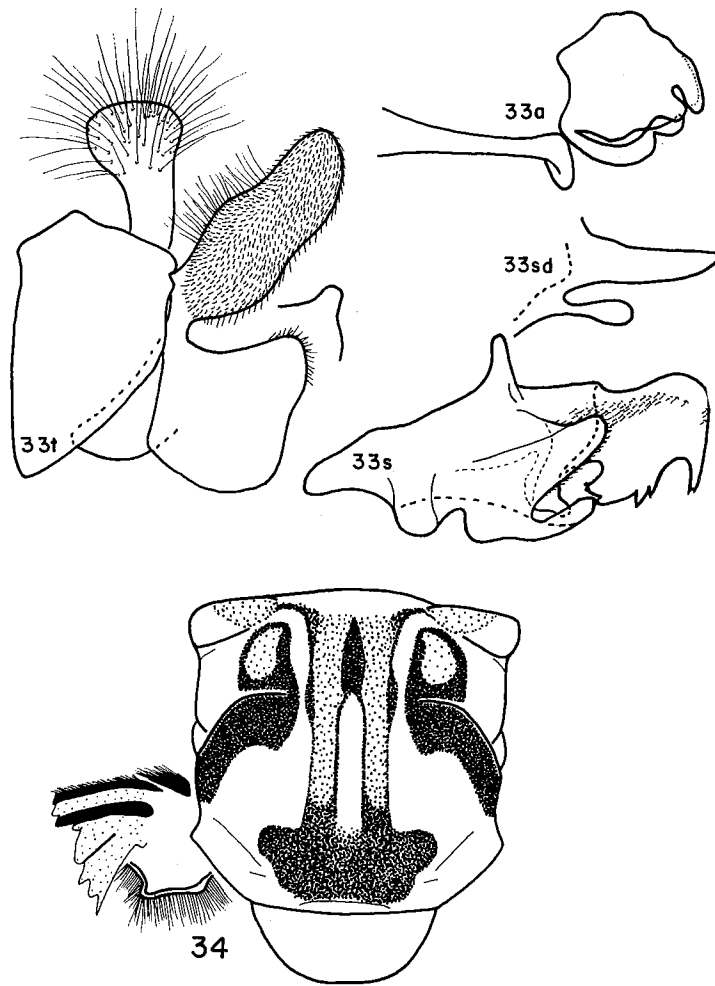
*Xylota coarctata* Wiedemann, 1830, p. 100. Type locality: Brazil. Type ♀ SMF. Subsequent reference: Kertész, 1910, p. 298 (cat. citation).

*Tatuomyia coarctata*: Shannon, 1926, p. 49 (differential diagnosis from *batesi*).—Fluke, 1957, p. 105 (cat. citation).

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

*Senoceria spinifemoratas* Hull, 1930, p. 145. Type locality: Brazil. Type ♂ ANSP.

*Head*: face black, shiny medially, golden pollinose laterally; cheeks black, shiny, white pilose; frontal lunule orange; frontal triangle of male golden pollinose, with a few marginal yellow hairs;



FIGS. 33-34. Fig. 33. Male genitalia of *Sterphus coarctatus* (Wiedemann), lateral view except sd dorsal view; 34. Mesonotal pollinose pattern of *Sterphus telus* Thompson. a = aedeagus, s = 9th sternum, t = 9th tergum and associated structures (with outline of tip of lower lobe of left surstyle).



front of female shiny on lower half, silvery pollinose and white pilose on upper half; vertex black, silvery pollinose in front of ocellar triangle, brown pollinose on ocellar triangle, yellow pilose; occiput black, white pollinose, white pilose below becoming yellower above; antennae tawny, except dark third segment, with white pile on medial surface and black pile on lateral surface, slightly longer than face; third segment elongate, with blunt tip, twice as long as broad; arista orange, about three-fourths longer than face.

*Thorax*: black; pleurae lightly silvery pollinose, short yellow pilose; mesonotum dark grayish pollinose except as follows: golden pollinose on transverse sutures and mesial sides of humeri, dark brown pollinose behind the areas of golden pollinosity, sparsely light golden pollinose in form of medial longitudinal stripe with splits into two stripes behind the transverse suture and two broad sub-medial longitudinal stripes starting behind transverse sutures; mesonotal pile short appressed golden in front of transverse sutures, short appressed golden in form of anteriorly pointed triangular patch on postalar and adjacent mesonotum; scutellum black, dark grayish pollinose, appressed yellow pilose, subcutellar fringe golden yellow; squamae white, with brown margin and fringe; halteres dark reddish brown with yellow stalk; plumulae light brownish yellow. *Legs*: dark reddish brown, white pilose except black pilose on dorsal edge on apical quarter of hind femora; hind tibiae with single short spur; hind trochanter of male with short spur. *Wings*: (fig. 14), with anterior portion metallic purplish black, hyaline behind; with dark color extending back to spurious vein, second basal cell light yellowish brown; microtrichose except bare narrowly along anterior edge of anal cell, apical three-fourths of alula, behind and in small spot in front of Ax.

*Abdomen*: (fig. 20), black, except red petiole, dark grayish pollinose except shiny first segment and petiole; pile long white on first segment and lateral margin of second tergum, long black on third and fourth sterna, short appressed black with a few scattered yellow hairs on second and third terga, short appressed yellow with a few scattered black hairs on fourth tergum; fifth tergum of female with short appressed black pile. *Male genitalia*: (fig. 33), cerci slightly expanded dorsally, with dorsal margin rounded. Surstyli: dorsal lobe elongate, straight except dorsal and ventral margins slightly sinuous, with some long marginal pile on dorsal edge, with apex broadly rounded; ventral lobe broad, almost square, with posteroapical corner of left ventral lobe slightly produced; ninth sternum without dorsolateral opening, with large lateral lobe, with

medial side of this lobe short pilose; lingula short, broadly triangular, with apex rounded; superior lobe with dorsoapical margin rounded, with apical hook-shaped process, with four large teeth on ventral margin; aedeagus with dorsal lobe produced posterodorsally, with lateral lobes small and broadly rounded apically, with ventral lobe long; ejaculatory apodeme umbrella-shaped.

MATERIAL EXAMINED: PANAMA: Chorrera, 6 June 1948, 1 ♂ 1 ♀ (MCZ). GUYANA: Essequibo River, Moraballi Creek, 8 Sept. 1929, Oxford University Expedition, 1 ♀ (BM(NH)). BRAZIL: Amazonas, Rio Tucano, Serra da Neblina, 230 m, 4 Dec. 1965, E. Dente, 2 ♀ (MZUSP); 24 July 1936, Lange de Morretes, 1 ♀ (MZUSP); "Freireiss" [=G. W. Freyreiss], 1 ♀ (holotype of *coarctatus*, SMF); H. B. Merrill, 1 ♂ (holotype of *spinifemorata*, ANSP).

DISCUSSION: *S. coarctatus* is easily separated from all other described *Sterphus* by its abdominal shape and other species group characters as discussed above. I have examined a pair of *coarctatus* from Panama which differs from all the other material studied in that 1) the wings are bordered with dark brown, not metallic purplish black and 2) the anal cell is extensively bare (fig. 15). Since I can find no other differences (including genitalic differences) between these panamanian specimens and the others I am attributing the above mentioned differences to geographic variation.

#### *batesi* group

The synapomorphic character states of the *batesi* group are the long abdominal petiole and the presence of two apical spurs on the hind tibiae.

#### ***Sterphus* (*Cerogaster*) *batesi* (Shannon)**

*Tatuomyia batesi* Shannon, 1926, p. 48. Type locality: Brazil, Ega. Type ♂ BM(NH). Subsequent reference: Fluke, 1957, p. 105 (cat. citation).

*Head*: black; face silvery pollinose except for small medial triangular spot on facial carina under antennal base; cheeks shiny, white pilose; frontal triangle shiny, bare; frontal lunule dark brownish orange; vertical triangle silvery pollinose below ocellar triangle, shiny above ocellar triangle, with a few short yellowish hairs on ocellar triangle; occiput silvery pollinose, white pilose below becoming yellower above, with a few black hairs intermixed on upper third. Antennae dark brown, as long as face, black pilose; third

segment about three times as long as broad, with tip blunt; arista yellowish, almost twice as long as antennae.

*Thorax*: black; dorsum shiny except silvery pollinose on mesial side of humeri and dark brownish pollinose between humeri, black pilose except white pilose on notopleurae, with pile greatly reduced and appressed; pleurae silvery pollinose, white pilose; metathoracic spiracle about half as large as third antennal segment is long; halteres white with brown head; squamae white with brown margin and fringe; scutellum shiny, black pilose except yellowish subscutellar fringe. *Legs*: mainly black, except yellowish brown on apical third of hind femora and basal three middle tarsal segments. *Wings*: (fig. 16), bicolored, brownish black anteriorly, hyaline posteriorly; black area extending to anal cell, to discal cell before anterior crossvein and to diagonal line from anterior crossvein to apex of apical cell; almost completely microtrichose, except bare narrowly on both sides of basal half of anal vein, on apical corner of anal cell, and on spot in front of and behind vein and on alula.

*Abdomen*: (fig. 21), black except reddish brown petiole; shiny except brownish black pollinose on apical third of second segment, black pilose except white pilose on first segment and petiole of second segment, with dorsal pile greatly reduced and appressed. *Male genitalia*: (fig. 22), cerci broadly expanded and flattened dorsally, with narrow basal neck; dorsal lobe of surstyli elongate, broad, with dorsal margin angulate, apical margin truncate; ventral lobe of surstyli broad, broader than long, with rounded apical margin; ninth sternum with large dorsolateral membranous opening; lingula short, blunt apically; superior lobe with dorsoapical margin rounded, with anteroventrally directed process on posteroventral margin, with small basoventral lateral tooth; aedeagus with dorsal lobe posterodorsally produced and arched, with lateral lobes divided into long thin and ventrally produced basolateral process and broader curved anteriorly directed process, with ventral lobe long and produced on basal half; ejaculatory apodeme umbrella-shaped.

MATERIAL EXAMINED: BRAZIL: Amazons, Saunders Collection, 1 ♂ (OXF).

DISCUSSION: The specimen on which the above description was based agrees with Shannon's original description of *batesi* in all particulars except that the basal three segments of the middle tarsi are dark orangish brown, not black. However, Dr. Hipps has compared the above specimen with the holotype of *batesi* and states that the two are conspecific. For a discussion of the differences between *batesi* and *fulvus* check under the latter.

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

Type locality: Brazil, São Paulo, Salesopolis, Boracea. Holotype ♀  
MZUSP.

*Head*: (fig. 3), face black medially, reddish brown laterally, shiny medially, white pollinose laterally; cheeks dark reddish brown, with a few white hairs posteriorly; frontal lunule orange; front dark reddish brown, shiny and bare on lower half, brownish black pollinose and yellow pilose on upper half except white pollinose along eye margins; vertex dark reddish brown, dark brownish black pollinose, yellow pilose; occiput black, white pollinose, white pilose below becoming yellow above. Antennae elongate, almost as long as face, dark orange, orange pilose except for a few black bristle-like hairs on dorsal and ventral margins of first two segments; third segment rectangular, twice as long as broad; arista orange on basal third, dark apically slightly longer than antennae.

*Thorax*: dark brown, except slightly reddish on humeri and postalar calli, uniformly brownish pollinose except white pollinose on mesial side of humeri and indistinct light brownish pollinose medial and two submedial vittae, short yellow pilose, without short black spine-like pile above wings. *Legs*: coxae dark brown except orange on ventral portion of hind coxae, yellow pilose; trochanters dark reddish brown, yellow pilose; femora tawny, yellow pilose; anterior tibiae and tarsi dark brownish black, black pilose except with yellow pile intermixed on dorsal surface; middle tibiae tawny except with brown, broad, apical band, yellow pilose; middle tarsi tawny except dark brownish apical two segments, yellow pilose; hind tibiae and tarsi tawny except dark brownish apical two segments, yellow pilose. Halteres tawny, head not dark; squamae brownish. *Wings*: (fig. 17), brownish anteriorly, hyaline posteriorly, with extent of brown area same as in *batesi*, microtrichose except mostly of anal cell and behind anal cell bare and alula bare.

*Abdomen*: dark brown except tawny petiole, yellow pilose except black pilose on fifth segment and intermixed black pile on sterna.

**MATERIAL EXAMINED**: BRAZIL: São Paulo, Salesopolis, Boracea, 24–30 January 1953, Collectors—Carrera, Vanzolini, Oiticica, Pearson; 1 ♀ (holotype, MZUSP).

**DISCUSSION**: *S. fulvus* is very similar to *batesi* Shannon but as its name implies it is a dull brownish fly whereas *batesi* is a shiny black fly. The principal differences between *fulvus* and *batesi* are as follows: 1) the antennae are dark orange, not black; 2) the mesonotum is pollinose and brownish, not shiny black; 3) the postalar calli are golden pilose, not black; 4) the pile above wings

is orange and long, not black and bristle-like; 5) the scutellum is golden pilose, not mainly black; 6) the head of the halteres are orange, not brownish black; and 7) abdominal terga 3 and 4 are pollinose, brownish and with golden pile, not shiny black with black pile. *S. fulvus* can also be separated from *batesi* by its more extensively bare anal cell (fig. 17) and less swollen hind femora.

**"*Xylota*" ventralis Walker**

*Xylota ventralis* Walker, 1858, p. 96. Type locality: Aru Islands. Type ♀ BM(NH). Subsequent references: Kertész, 1910, p. 307 (cat. citation).—Shannon, 1926, p. 50 ("apparently belongs to . . . *Crepidomyia*").

**Head:** (fig. 8), black; face bare, carinate, with slight concavity, black with metallic bluish lustre, white pollinose except shiny V-shaped medial area; cheeks shiny; front shiny except with broad pollinose band across medial half, light yellow pilose; vertex shiny, light yellow pilose; ocellar triangle slightly anterior to posterior margin of eyes; occiput completely white pollinose, yellow pilose. Antennae black; third segment elongate, twice as long as second.

**Thorax:** black, with metallic bluish luster except orange postalar calli and scutellum; pleurae lightly white pollinose and short yellow pilose, anterior mesoanepisterna bare; posterior mesoanepimera bare; barrette and hypopleurae bare; metathoracic pleurae bare; metasterna pilose and developed; postmetacoxal bridge incomplete; scutellum with distinct emarginate rim, with ventral pile fringe (single row); mesonotum without pollinose markings except white pollinose along anterior margin, short appressed black pilose except yellow pilose as follows: on notopleurae, humeri, along transverse suture, on and in front of postalar calli and scutellum, and in medial area in front of and between transverse sutures; squamae white with black border and fringe; plumula brownish. **Wings:** with slight brownish tinge; stigma brown; marginal cell open; apical cell petiolate, with petiole longer than humeral crossvein; anterior crossvein slightly before middle of discal cell, slanted; anal cell petiole straight, slightly longer than petiole of apical cell; marginal crossveins disjunctive, not continuous, with external spurs at their bases; microtrichose except bare as follows: basal quarter of costal cell, area between Rs and R1, anterior half and basal quarters of second basal cell, narrowly along anterior edge of anal cell, along posterior edge of anal cell and in front Ax. **Legs:** anterior four legs light orange except darker reddish orange on trochanters and apical tarsal segments, yellowish pilose, with coxae thickly white pollinose; hind coxae dark reddish brown with

metallic bluish luster, sparsely white pollinose, white pilose; hind trochanters dark reddish brown; hind femora (fig. 9) evenly swollen, orange on basal and apical quarter, darker reddish orange medially, yellow pilose; hind tibiae orange on basal half darker reddish orange apically, yellow pilose; hind tarsi brownish orange, black pilose above, orange below.

*Abdomen*: metallic bluish black, appressed white pilose laterally on first three terga (color of pile on medial area cannot be seen because wings are folded on the area), fourth tergum appressed white pilose on basal half and black pilose apically; fifth tergum all black pilose.

**MATERIAL EXAMINED**: Aru Island, A. R. Wallace, 1 ♀ (holotype, BM(NH)).

**DISCUSSION**: When Shannon described his genus *Crepidomyia* he referred "*Xylota*" *ventralis* Walker to it. I have examined the type of *ventralis* and find that it definitely does not belong to *Sterphus*. "*Xylota*" *ventralis* probably deserves separate generic status. However, without a study of the characters of the male genitalia of *ventralis*, it is difficult to properly place *ventralis* within the present classification of the *Xylota* group. "*Xylota*" *ventralis* appears similar to *Hardimyia* Ferguson. It differs from *elongata* (Hardy), the unique species of *Hardimyia*, as follows: 1) the second antennal segment is not elongate, but about half as long as the third segment, not longer than the third segment; 2) the face has a shiny V-shaped area, not completely pollinose; 3) the scutellum is orange, not black; and 4) the hind femora are completely reddish, not black apically. This species will key to *Neplas* in my key (Thompson, 1971) to syrphid genera with carinate faces. *Xylota ventralis* differs from *Neplas* as follows: 1) the face is nearly straight, not concave; 2) the pleurotergum is not carinate; 3) the abdominal sterna are normal, not greatly narrowed; and 4) the hind femora are not as strongly swollen as in *Neplas* nor are the hind tibiae strongly arcuate.

#### ABBREVIATIONS

##### *Museums and Private Collections*

- AMNH —American Museum of Natural History, New York  
ANSP —Academy of Natural Sciences, Philadelphia  
BM(NH) —British Museum (Natural History), London  
CNC —Canadian National Collection, Ottawa

FCT	—F. Christian Thompson Collection
Hull	—Frank M. Hull Collection, Oxford, Mississippi
MCZ	—Museum of Comparative Zoology, Cambridge
MNHN	—Museo Nacional de Historia Natural, Santiago
MZUSP	—Museu de Zoologia, Universidade de São Paulo
SMF	—Senckenbergisches Museum, Frankfurt am Main
USNM	—United States National Museum, Washington
VMNH	—Naturhistorisches Museum, Vienna

*Used in synonymy*

cat. citation	—catalog citation
descrip. note	—descriptive note
descript.	—description (full)
distr. data	—distribution data
distr. rec. (s)	—distribution record(s)
key ref.	—placement in a key

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