

REVISION OF THE *STERPHUS CYBELE* SPECIES GROUP
(DIPTERA: SYRPHIDAE)

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Abstract.—The *Sterphus cybele* species group is revised and four new species are described: *janzeni* Thompson (Costa Rica & Panama); *calypso* Hippa (Bolivia); *cydippe* Hippa (Columbia); and *venezuelaensis* Thompson (Venezuela). The phylogenetic relationships among these are *venezuelaensis* + ((*cybele* + *janzeni*) + (*calypso* + *cydippe*)). A new key to the species of *Sterphus* is given.

Key Words: Neotropics, key

Flower flies of the genus *Sterphus* are found throughout the New World tropics. They breed in dead wood, aiding in the nutrient recycling, and are pollinators. Due to their diverse life cycle, the group is a good indicator of the health of tropical forests. The relationships among a group of species of *Sterphus* are here documented and four species previously unknown to science are described. This information, along with the included identification key, will be useful to scientists studying flies, and to action agency personnel charged with identifying flies.

Sterphus philippi was revised by Thompson (1973). At that time, he was uncertain as to the placement of the species *S. cybele* Hull as that species was known from only two females. Hippa (1978) revised the tribe Xylotini, intrageneric classification of *Sterphus*, and described 8 new species of *Sterphus*. Since our work, males of new species closely related to *S. cybele* have been discovered. The characters of these species confirm our placement of *S. cybele* in *Sterphus*. *Sterphus cybele* and related species are here revised. A new key to all species of *Sterphus* is given. The classification of *Ster-*

phus used here is that of the senior author (Hippa 1978). This usage should not be construed as a change in view of the junior author (Thompson 1973).

Sterphus cybele species group

Description.—*Head:* Face tricarinate, practically straight in profile; basoflagellomere elongate, not more than twice as long as broad, with lateral sensory pit on mesial surface sexually dimorphic, being more dorsoapical and circular in female and more basoventral and elongate in male; male holoptic; frontal triangle bare except rarely with a few marginal hairs, shiny anteriorly, pollinose posteriorly; front with broad pollinose fascia divided into differently reflective areas.

Thorax: Mesonotum dull due to both shagreening and pollinosity, with pollinose pattern composed of posteriorly furcate medial vitta and postsutural submedial vittae, without pollinose transverse sutural fasciae, with long appressed pale pile laterally; without strong spinose hairs above wing base; metasternum well developed, pilose; scutellum with apical marginal sulcus, without

strong marginal hairs or bristles, with well-developed subscutellar fringe. *Legs*: Hind trochanter simple or at most with small tubercle, without a distinct spur; hind femur moderately thickened, ventrally with anterior and posterior rows of spinose hairs, in male with a basal patch of black setulae; hind tibia with well-developed basoventral median carina although apical end not strongly raised, with erect ventral hairs, with both apicoventral corners produced, with apical patch of pale pile on posterior surface; front and middle tibiae yellow. *Wing*: Slightly to moderately darkened, without conspicuous color pattern; without stigmatic crossveins.

Abdomen: Parallel-sided, dark, with shiny areas laterally and dull areas medially on each tergum, without conspicuous pilose pattern.

Geographic distribution.—Species of the *S. cybele* group are found only in the Neotropical Region, and range from Costa Rica to Peru.

Phylogenetic relationships.—The *S. cybele* species group is distinguished within *Sterphus* by the pilose metasternum (autapomorphy). The group has retained the following plesiomorphic character states (the corresponding apomorphic states are in parentheses) of *Sterphus* as a whole (ground-plan; *Macrometopia*, the probable sister to *Sterphus* (Thompson 1975), used as an outgroup): 1) pollinose, pale face (largely dark and shiny face with only oblique lateral pollinose vittae overlying the paler integument color); 2) short basoflagellomere (elongate basoflagellomere); 3) simple base for thoracic pile (tuberculate base for pile); 4) hind trochanter spur absent (developed); 5) unmodified abdomen (petiolate abdomen); and 6) unmodified hind femur (incrassate hind femur). The group has the following important apomorphic character states (respective plesiomorphic states in parentheses): 7) strongly developed metasternum (weakly developed metasternum); 8) both

retro- and pro- and pro- and pro- lateral apicoventral spur on hind tibia (only retrolateral spur); 9) pilose metasternum (bare metasternum); and 10) long pro- and retrolateral spine rows on hind femur (hind femur only with subapical spine rows). Of these character states, 9 defines the group. Other apparent synapomorphies are 11) the sexually dimorphic antenna in which the sensory pit on the inner lateral side of the basoflagellomere is slit-like in the male and normal (oval) in the female and 12) the male hind femur with a subbasal pro- lateral patch of black setulae. The importance of the last character (12) is uncertain as males are not known for many species of *Sterphus*.

Characters 2, 3, and 6 exclude the derivation of the *S. cybele* group from within *Sterphus* (*Crepidomyia*); 2, 5 and 6 from *Sterphus* (*Tatuomyia*); and 6 from *Sterphus* (*Telus*). Characters 7 and 8 may demonstrate the common origin of the *S. cybele* group with *Crepidomyia*, *Tatuomyia* and *Telus*, and exclude it from belonging within *Sterphus* (*Sterphus*). Hence, we suspect the *S. cybele* group to be an early derivative of the clade leading to *Crepidomyia*, *Tatuomyia* and *Telus*. As there is still considerable uncertainty regarding the monophyly of the *Sterphus* complex (Hippra 1978), the final status of the *cybele* group cannot be resolved here.

The relationships and cladogenesis in the *S. cybele* group are easily traced (Fig. 26). The probable outgroup for *S. cybele* group is the *S. chloropygus* group (see Thompson 1973). *S. venezuelaensis* derived first: it retained a dark face with oblique pollinose stripes, the short basoflagellomere, the hind trochanteral spur and largely dark front and middle femora. *S. cybele* and *S. janzeni* are the second derivatives; they developed an almost completely yellow and almost completely pollinose face, elongate oval basoflagellomere 3, lost the hind trochanteral spur and developed the totally pale anterior and middle femora. *S. calypso* and *S. cy-*

dippe are the last derivatives; they further developed a totally yellow and pollinose face and elongate rectangular basoflagellomere.

***Sterphus calypso* Hippa,
NEW SPECIES**

Diagnosis.—A moderately slender species with pale face, yellow gena and yellow anterior and middle legs.

Description.—*Male*: Length 16 mm, wing length 14 mm.

Differs from the description of *S. cydippe* as follows: Gena anteriorly to the level of facial grooves shining yellowish orange; basoflagellomere missing; frontal triangle with distinct hair rows along eye margins; postocellar orbits only dorsolaterally with few tiny black bristles; scutellum on disc pale pilose but mixed with few longer black hairs; a short narrow bare stripe at base of 2nd basal cell; halter orange; front and middle trochanter yellow, hind trochanter pale brown; hind femur and tibia structure (Fig. 1); hind femur except about basal fifth and actual apex brown, the shifting from yellow to brown very gradual; hind tibia basally with only a few pale hairs; hind tarsus with 3 basal segments brownish; abdomen (Figs. 21, 25); all sterna dark to blackish brown except sternum 2 on apical half and sternum 3 on basal half obscurely paler brown; posterior part of sternum 4 with black hairs; genitalia (Figs. 10, 19).

Female: Length 17 mm, wing length 15 mm.

Like male except for usual sexual dimorphism and: antenna (Fig. 12) with basoflagellomere brown, arista paler brown; frons with a broad brownish pollinose transverse band and \pm coinciding band of short pale and few mixed dark hairs; dorsal part of postocellar orbits with mixed pale and black hairs; pale thoracic hairs golden yellow; wing orange gray; bare stripe on 2nd basal cell very small and inconspicuous; front and middle coxae yellowish, hind coxa yellowish brown, ventrally brown; hind trochanter orange brown, hind femur orange brown but

apical third especially dorsally darker; basal third of hind tibia pale yellowish brown, mostly pale haired; hind tarsus wholly yellow; abdomen (Fig. 25) with shining areas of terga 2 and 3 with strong violet reflections, with very obscure paler underlying coloration; the pale lateral hairs on terga 2 and 3 partly depressed, appearing as pale oblique spots to naked eye; tergum 5 dark, shining, black pilose except yellow pilose anterolaterally; posterior margin of sternum 1, sternum 2 and sternum 3 except the posterior margin brown; basal two thirds of sternum 5 shining black, apical part brown and paler pollinose, hairs black except basolaterally pale.

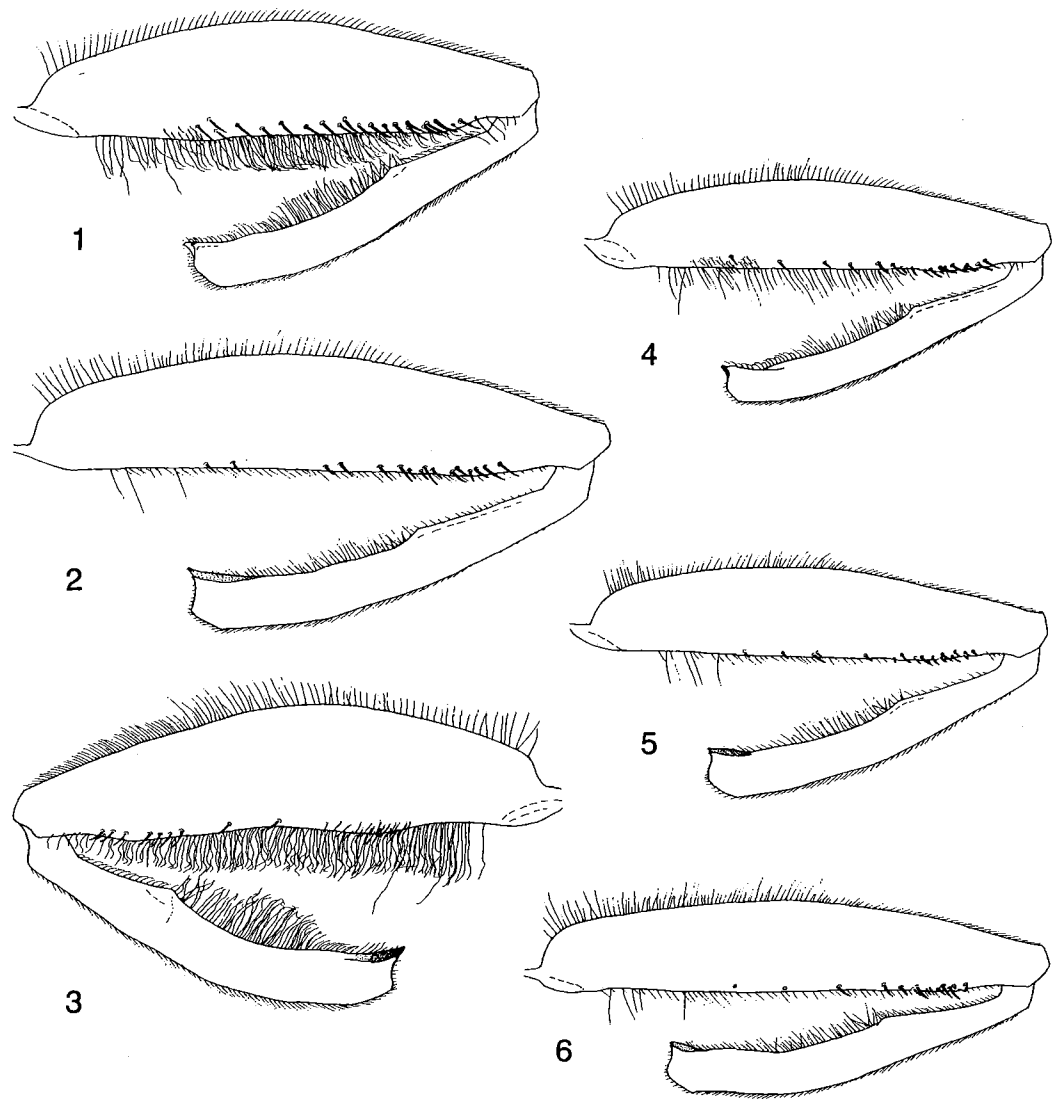
Holotype δ .—BOLIVIA, 1000 m, Yungas, J. I. P, deposited in Senckenbergische Museum, Frankfurt.

Paratype σ .—BOLIVIA, Coroico, 1200 m, Coll. Fassl (BMNH).

Discussion.—Although the two described specimens differ considerably in the coloration of hind leg and wing and in the shiny dull and pilose pattern of the abdomen, we consider them conspecific.

S. calypso is very similar to *S. cydippe* from which it can be distinguished by the extensively yellow gena, not entirely black as in *S. cydippe*, by the thicker and more ventrally spinose and pilose hind femur (Figs. 1, 2), by darker coloration of hind femur; by the presence of black hairs on sternum 4, wholly pale pilose in *S. cydippe*; by shape of the surstylus (in lateral view the basal width of the surstylus equalling the width at apical third, not much broader basally as in *cydippe*), by structure of the apical part of superior lobe (this lobe not exposed, in *cydippe* exposed) and by the shape of the lateroventral lobes of the basal part of aedeagus (with one pointed projections, not two as in *cydippe*) (Figs. 17, 19).

Also, *S. cybele* is closely similar to both *S. cydippe* and *calypso*, but is distinguished from them by the dorsomedially darkened face and ovate, not rectangular basoflagellomere (Figs. 12, 14); and from *S. cydippe*



Figs. 1-6. Hind femur, lateral view. 1, *S. calypso* Hipps, male. 2, *S. calypso* Hipps, female. 3, *S. venezuelaensis* Thompson, male. 4, *S. cydippe* Hipps, male. 5, *S. janzeni* Thompson, female. 6, *S. cybele* Hull, female.

also by having black hairs on sternum 4 and from *S. calypso* by black gena.

Sterphus cybele Hull

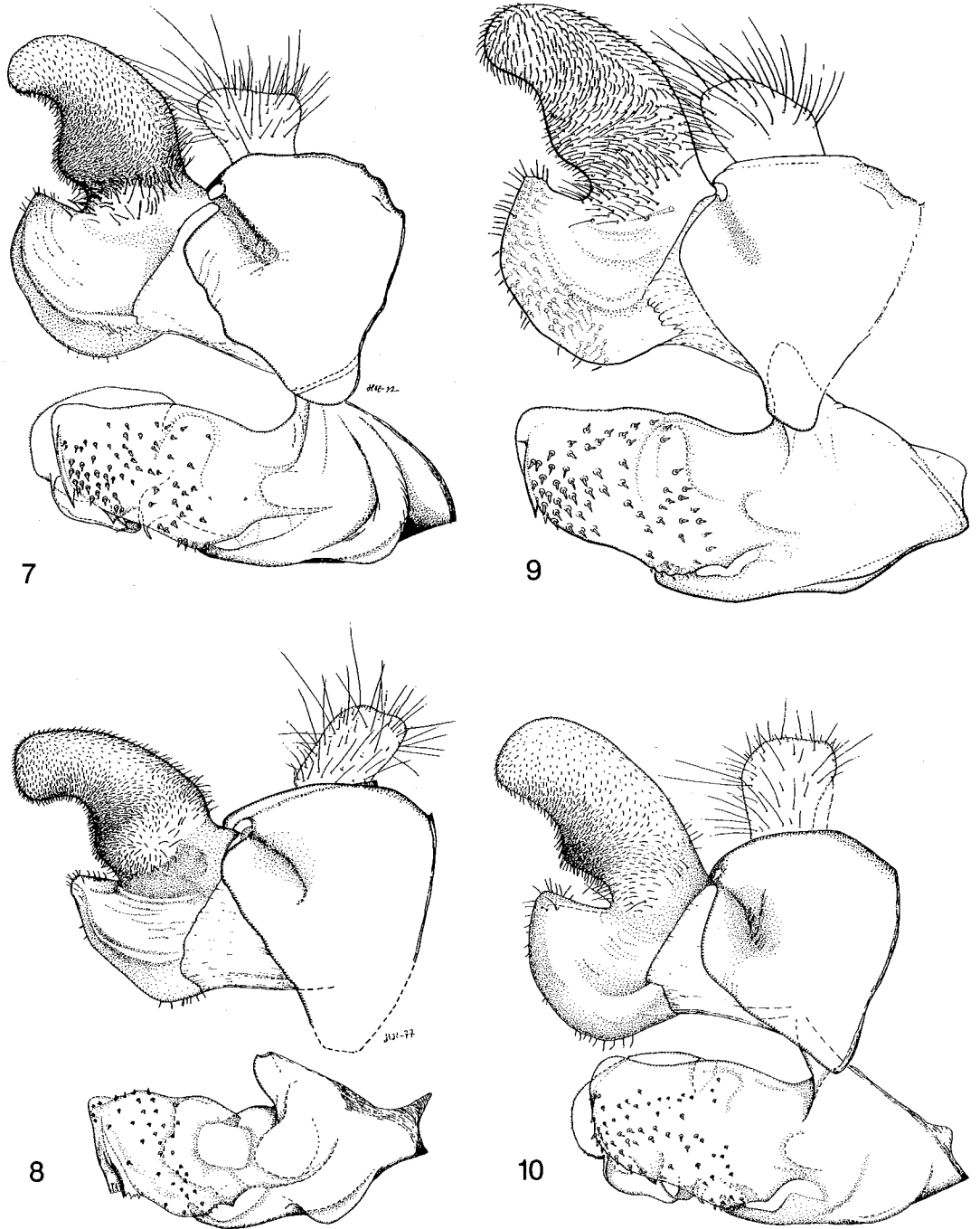
Crepidomyia cybele Hull, 1951: 184.

Sterphus cybele: Thompson, 1973: 216.

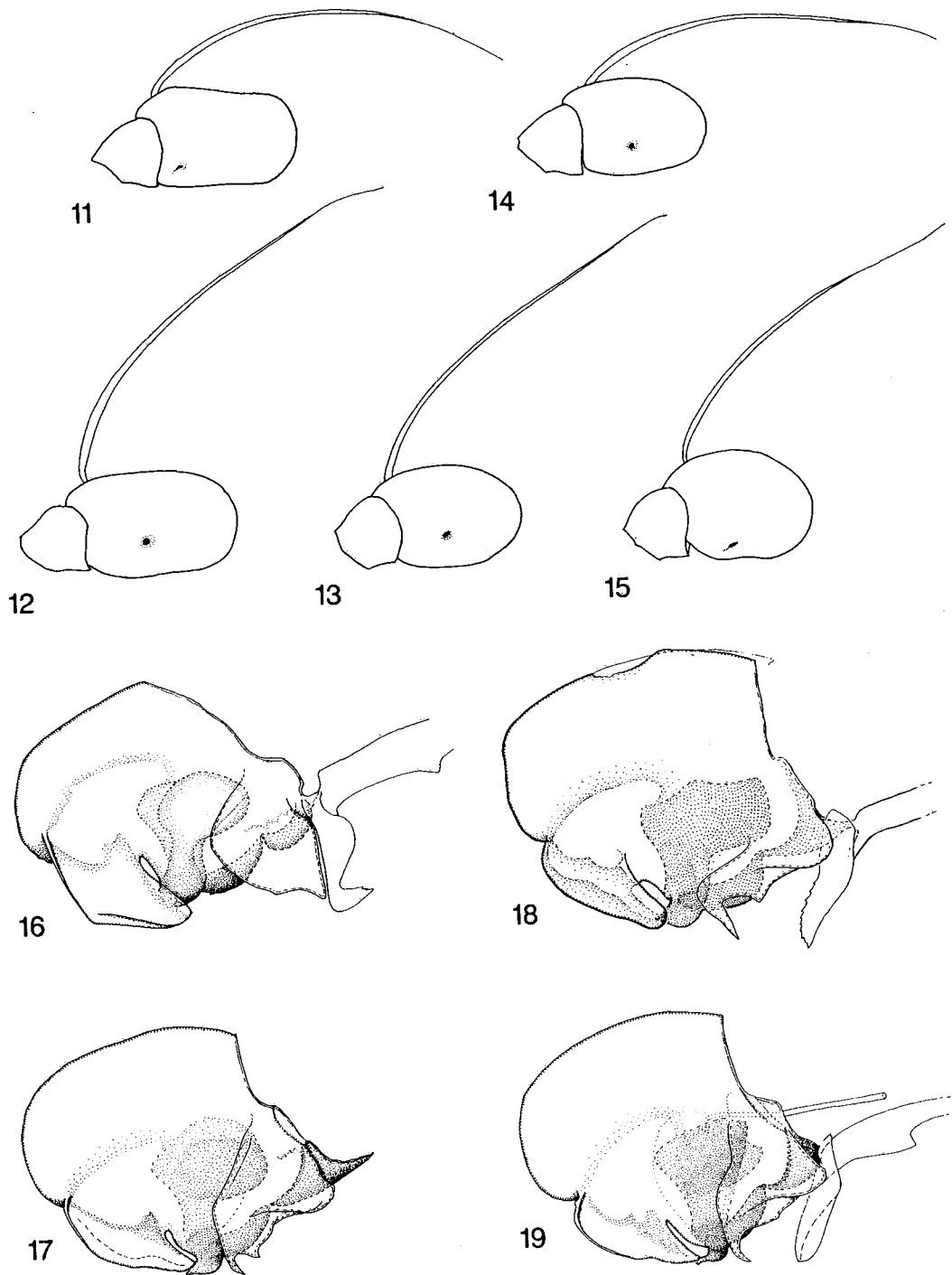
Material studied.—PERU, Chanchamayo, Jan. 20, 1949, J. Schunk (holotype

♀, CNC). COLOMBIA, Monteredondo, Cundinamarca, 19 Jan. 1951 (1 ♀, CU).

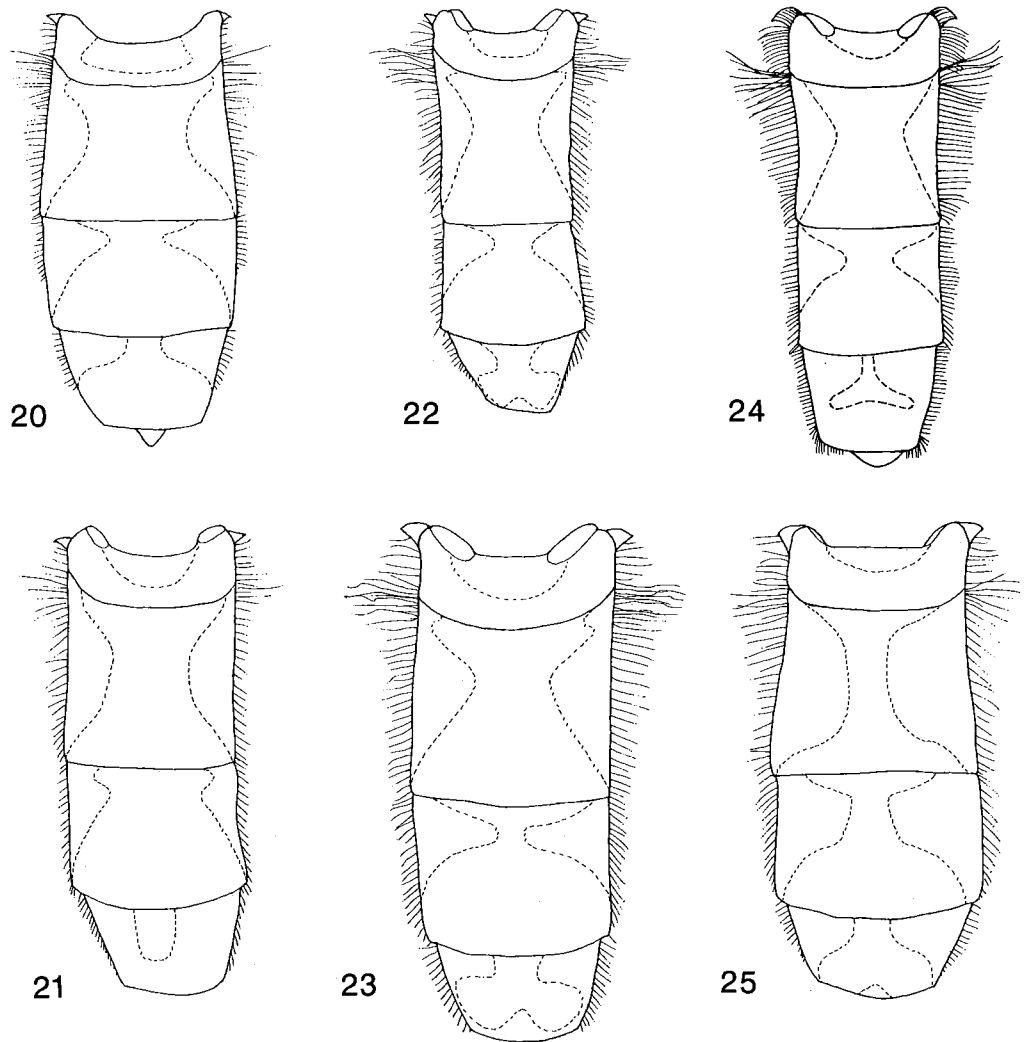
Discussion.—*S. cybele*, of which only the female sex is known, was fully described by Hull (1951) and Thompson (1973). Only one correction is necessary: the face is not actually wholly pale, but distinctly dorso-medially darkened. For antenna and hind femur and tibia, see Figs. 14 and 6, respectively.



Figs. 7-10. Male genitalia, lateral view. 7, *S. cydippe* Hippa. 8, *S. venezuelaensis* Thompson. 9, *S. janzeni* Thompson. 10, *S. calypso* Hippa.



Figs. 11-19. Features, lateral view. 11-15. Antenna. 11, *S. cydippe* Hippa, male. 12, *S. calypso* Hippa, female. 13, *S. janzeni* Thompson, female. 14, *S. cybele* Hull, female. 15, *S. venezuelaensis* Thompson, male. 16-19. Aedeagus. 16, *S. venezuelaensis* Thompson. 17, *S. cydippe* Hippa. 18, *S. janzeni* Thompson. 19, *S. calypso* Hippa.



Figs. 20–25. Abdomen, dorsal view. 20, *S. janzeni* Thompson, female. 21, *S. calypso* Hippa, male. 22, *S. cydippe* Hippa, male. 23, *S. venezuelaensis* Thompson, male. 24, *S. janzeni* Thompson, male. 25, *S. calypso* Hippa, female.

***Sterphus cydippe* Hippa,
NEW SPECIES**

Diagnosis.—A slender species with pale face, black gena, pale anterior and middle legs and without striking metallic abdominal markings.

Description.—Male: Length 14 mm, wing length 12 mm.

Head: Face yellow, pale pollinose; gena black, anteriorly shiny, posteriorly very

slightly pale pollinose and with a few pale hairs. Antenna (Fig. 11): all segments dark brown, arista pale brown, apically darker. Frontal lunule brown; frontal triangle blackish brown, anterior half semishining, posterior half grayish pollinose and with only a few hairs along eye margins. Vertical triangle black, apically heavily pollinose, hairs few, dark brown. Postocellar orbits black, dorsally weakly and laterally more heavily

of vein 1 A. Calypter whitish, with slightly darker border and fringe. Halter yellowish white. Coxae blackish brown to black, trochanter brown, hind trochanter with a slight indication of a tubercle, all pale haired. Hind femur and tibia (Fig. 4). All femora, front and middle tibiae and tarsi yellow to orange yellow, hind tibia brown with slightly paler basal part and apex, hind tarsus yellow except metatarsus darker brownish, hairs of all yellowish except a dorsal retrolateral stripe on apical $\frac{2}{3}$ and broad apicodorsal part of hind femur and whole of hind tibia except the prolateral basal third and a smaller prolateral and larger retrolateral apical patch with black hair.

Abdomen (Fig. 22): Tergum 1 shining black except an anterior median dull blackish brown patch, terga 2 and 3 dull blackish brown with paler brown shining lateral patches, tergum 4 shining brown with a median Y-shaped dull patch (the shining-dull pattern marked with broken lines in Fig. 22); hairs on tergum 1, at anterior margin of tergum 2, on shining areas of terga 2-4, except the posterior part of tergum 4, pale, otherwise black. Sternum 1 shining blackish brown except laterally gray pollinose, sternum 2 shining pale brown, sternum 3 shining with anterior third pale brown, posterior two thirds dark brown, sternum 4 shining except slight posterolateral pollinosity, brown, all with pale hairs.

Genitalia (Figs. 7, 17).

Female: Unknown.

Holotype ♂.—COLOMBIA, West. Cord., Monte Socorro, 3800 m, Coll. Fassel, deposited in the British Museum (Natural History), London.

Discussion.—For discussion, see under *S. calypso*.

***Sterphus janzeni* Thompson,
NEW SPECIES**

Diagnosis.—A moderately slender species with dorsomedially darkened pale face, black gena, yellow front and middle legs, and black pilose hind tarsus.

Description.—Male: Length 14 mm, wing, 12 mm.

Head: Face yellow except narrowly dark brown dorsally, with pale pollen; gena blackish, shiny anteriorly, with sparse pale pollen and pile posteriorly; frontal lunule brown; frontal triangle blackish brown, anterior $\frac{1}{3}$ shiny, posterior $\frac{2}{3}$ grayish pollinose, with only a few pale hairs along eye margins; vertical triangle black, anteriorly densely pollinose, dark brown pilose; occiput black, with dense pale pollen ventrally but becoming sparser dorsally, with pale pile except with a few intermixed black hairs dorsally; antenna dark brown except pale brown basoventrally on basoflagellomere, with basoflagellomere about $1\frac{1}{3}$ times as long as wide; antenna same shape as female, but with sensory pit more elongate and basoventral as in *cydippe* (Fig. 11); arista pale brown, apically darker.

Thorax: Mesonotum black, with brown pollen, with a narrow medial pollinose vitta pale gray and extending from anterior margin to posterior $\frac{1}{4}$, with postsutural submedial vittae indistinct and pale brownish, generally with black pile, with yellow pile narrowly on anterior margin and medial vitta, with long appressed yellow pile laterally; scutellum black, shiny, with erect yellow pile with a few longer dark hairs, with subscutellar fringe grayish yellow; pleura dark brown to black, with sutures paler, with sparse pale pollen, with pile yellow to yellowish white; anterior spiracular fringe brown; posterior spiracular fringe pale brown; metasternum black, with yellow pile; calypter whitish with darker yellow to brownish margin and fringe; halter orange to yellow. *Legs*: Front and middle coxae brown to black, gray pollinose, pale pilose; front and middle trochanters brown, with pale pile; hind coxa black, with pale pile; hind trochanter blackish brown, apically paler, with pale pile; front and middle femora, tibiae and tarsi yellow, with pale pile; hind femur as in *cydippe* (Fig. 4) reddish brown, with pale pile except for dark pile

on apex and apicodorsal $\frac{1}{3}$, with ventral spinose pile black; hind tibia dark blackish brown, with dark pile except for pale pile apicoposterolaterally; hind tarsus blackish brown, with dark pile. *Wing*: Slightly grayish brown, with stigma pale brown, microtrichose except bare as follows: anterobasal $\frac{1}{2}$ of 2nd basal cell, posterobasal $\frac{1}{2}$ of anal cell.

Abdomen (Fig. 20): 1st tergum shiny black, with anteromedial areas dull; 2nd through 4th tergum dull black brown on medial pollinose areas, with lateral shiny areas on 2nd and 3rd terga dark brownish orange and on 4th tergum brownish black; genitalic segments black, shiny, black pilose; dorsal pile dark and depressed on dull areas, pale and erect on shiny areas; 1st, 3rd and 4th sterna dark brown, shiny except dull pollinose on laterally on 1st and apically on 3rd and 4th, with pale pile except for a few intermixed dark hairs on 4th; 2nd sternum pale brown, shiny, with pale pile.

Female: Like male except for usual sexual dimorphism and: face yellow, with dorso-medial brown area triangular; front shiny black except for broad transverse pollinose fascia, with fascia gray anteriorly and brownish posteriorly, with pale pile anteriorly becoming gradually darker posteriorly; vertex shiny black, with dark pile; hind femur (Fig. 5); abdomen with lateral shiny areas slightly steel blue.

Holotype δ .—COSTA RICA, Puntarenas Prov., Monteverde, 1400 m, 30 IV 1989, P. Hanson, Malaise Trap, deposited in Instituto Nacional de Biodiversidad, San José.

Paratypes.—COSTA RICA, Cariblanco, 25 March 1916, Janson (1 φ , BMNH); San José Prov., P. N. Braulio Carrillo, 9 km NE Tunnel, 1100 m, 15 IV 1989, P. Hanson (1 φ UCR); Guanacaste Prov., Estac. Pitilla, 9 km south Santa Cecilia, UTM 330200 380200, May 1989, GNP Biodiversity Survey, INBIOCRI000008935 (1 δ , INBIO); Guanacaste Prov., Lado suroeste del Volcan Cacao, Est. Cacao, 1000-1400 m, LN 323300 375700, June 1990, II Curso Parataxon. INBIOCRI0000248098, INBIO-

CRI000247969 (2 φ , INBIO, USNM), 21-29 May 1992, M. A. Zumbado INBIOCRI-000410973 (1 δ , INBIO); Guanacaste Prov., Derrumbe, Est. Cacao, lado oeste del Volcan Cacao, 1400 m, LN 323700 376700, 21-29 May 1992, III Curso Parataxon. INBIOCRI000409775-409778 (4 δ , INBIO); San José Prov., Zurqui de Moravia, 1600 m, IV 1991, P. Hanson (1 φ , UCR); San José Prov., San Gerado de Dota, near Finca Zacatles, 26 Feb 92, F. C. Thompson (1 δ , 1 φ USNM); Puntarenas Prov., Coto Brus, Est. Biol. Las Alturas, 1500 m, LS 3222500 591300, Ene 1992, M. Zumbado INBIOCRI000401865 (1 δ , INBIO); Puntarenas Prov., Golfo Dulce, 3 km SW Rincon, 10 m, III 1991, P. Hanson (1 φ , USNM); PANAMA, Chiriqui Province, 2 km west of Cerro Punta, 1700 m, 19 May to 8 June 1977, Peck and Howden (1 φ , CNC).

Discussion.—*S. janzeni* is closely similar to *S. cybele*, but the two species can be distinguished by the following characters: in *S. cybele* the wings are distinctly orange brown with a rather sharply contrasting long paler area in the marginal cell at fork of R2 + 3-R4 + 5 and the 2nd basal cell is wholly microtrichose, in *S. janzeni* the wings are only slightly darkened grayish brown, with smaller and inconspicuous paler area in marginal cell and the basal anterior half of the 2nd basal cell with the microtrichia reduced; the hind femur is less darkened in *S. janzeni* than in *S. cybele*; the hind tarsus is blackish brown and black haired in *S. janzeni*, hind metatarsus pale brown, other hind tarsal segments yellowish, all with pale hairs in *S. cybele*; the shining markings on terga are more metallic, with brassy and purple reflections and without traces of paler underlying coloration in *S. cybele*, less metallic, with slight steel blue reflections and especially those on terga 2 and 3 with the integument at them distinctly paler; sternum 2 is pale brown in *S. janzeni*, black in *S. cybele*, all sterna are also more metallic in latter; sterna 3-4 are medially largely dark haired in *S. cybele*, a few distinct dark hairs only apicomediaally on sternum 4 in *S. jan-*

zeni. *S. cybele* is also slightly more robust than *S. janzeni*.

This beautiful species is dedicated to Dr. Daniel H. Janzen in recognition of all he has done to insure the survival of this species and a vast number of other Central American taxa.

***Sterphus venezuelaensis* Thompson,
NEW SPECIES**

Diagnosis.—A dark robust species with medially dark face, dark anterior and middle femora and conspicuous metallic abdominal spots.

Description.—Male: Length 17 mm, wing length 15 mm.

Head: Face blackish brown on median carina but gradually fading to pale yellowish white laterally, medially shining, laterally with oblique pale pollinose bands; gena black, anteriorly shiny and bare, posteriorly faintly pale pollinose, pale pilose. Antenna (Fig. 15): all segments blackish brown, arista on basal half brown on apical half blackish brown. Frontal lunule blackish brown, frontal triangle black, anterior half shiny, posterior half gray pollinose and with a row of pale hairs along eye margin. Vertical triangle black, apically heavily and behind posterior ocelli very faintly pale pollinose, blackish brown pilose. Postocellar orbits black, dorsally very slightly paler pollinose and mainly with dark hairs, otherwise heavily pale pollinose and with pale hairs.

Thorax: Mesonotum black, brown pollinose, with paler grayish posteriorly furcate median vitta extending from anterior margin to about posterior fourth, and with post-sutural sublateral longitudinal stripes with more reddish brown pollinosity when seen from behind; anteriorly with mixed yellow and black hairs, posteriorly black haired, the long lateral hairs yellowish, golden. Scutellum black, practically nonpollinose, more shiny than mesonotum, golden yellowish haired except mixed with a few long black hairs especially toward margins, subscutellar fringe yellowish. Pleurae, including metasternum, black with partly paler

brownish sutures, faintly pale pollinose except more heavily on posterior part of meso- and dorsal part of katepisternum, the hairs golden yellow; spiracles brown. Wing pale grayish brown, stigma pale orange brown; microtrichose except bare posteriorly along vein 1 A. Calypter whitish with darker yellowish brown border and fringe on upper and brownish border and fringe on lower lobe. Halter orange. Coxae blackish, trochanters brown to blackish, hind trochanter with a distinct tubercle, all pale yellowish haired. For hind femur and tibia, see Fig. 3. Femora blackish, partly metallic except front and middle femora becoming through brown yellowish at about apical fourth, more widely prolaterally and ventrally than retro-laterally and dorsally, and about apical fourth of hind femur brownish; front and middle tibiae and tarsi orange yellow; hind legs dark brown except tibia slightly paler at basal third; hairs pale yellowish except partly apically and ventrally on anterior and middle femur, on apical fourth of hind femur, on hind tibia except a distinct triangular apical retrolateral patch, and on hind tarsus dark.

Abdomen (Fig. 23): Tergum 1 mostly shining steel-blue, terga 2 and 3 dull blackish brown with conspicuous shining steel colored lateral patches at which the integument appears slightly paler brown, tergum 4 shining brown, basolaterally metallic, with a median Y-shaped dull blackish brown patch (the shining/dull pattern of terga is marked with broken lines in Fig. 23); hairs on terga black except on tergum 1, at anterior margin and on shining areas of terga 2 and 3 and anteriorly and laterally on tergum 4 pale, those on terga 3 and 4 partly depressed appearing as oblique pale patches by naked eye. Sternum 1 black, laterally pale pollinose, sternum 2 and $\frac{3}{4}$ of sternum 3 pale brown, the rest brown, all with long pale hairs except with a few mixed dark ones on apical part of sternum 4.

Genitalia (Figs. 8, 15).

Female: Unknown.

Holotype ♂.—VENEZUELA, Rancho

Grande, nr. Maracay, 26.IV.1946, deposited in the American Museum of Natural History, New York. Paratype, Venezuela, 1857, Alte Sammlung (1 ♂, NMW).

Discussion.—*S. venezuelaensis* is easily distinguished from the other species of the *S. cybele* group by the following characters: Face medially dark and with oblique lateral pollinose vittae, not uniformly yellow and pollinose; front and middle femora mostly dark, not yellow; hind trochanter with a distinct tubercle, not only with an indication of such; characteristic shape of hind femur (Figs. 1–6); more strongly metallic abdominal maculae and very different genitalia.

KEY TO THE SPECIES OF *STERPHUS PHILIPPI*

1. Abdomen petiolate, minimal width usually less than $\frac{1}{3}$ maximal width 2
 - Abdomen not petiolate, if slightly constricted, then minimal width never less than $\frac{3}{4}$ maximal 7
2. Hind tibia with apical spur 5
 - Hind tibia without apical spur 3
3. Hind leg orange except brownish coxa and apical 2 tarsomeres, face straight (Brazil) *tinctus* (Fluke)
 - Hind leg bicolored; hind coxa, trochanter, femur and apical tarsomeres black; hind tibia and basitarsomere orange; face with tuberculate swelling below 4
4. Tibia unicolorous orange; wing entirely microtrichose (Venezuela) *incertus* Thompson
 - Tibiae bicolored, orange brown basally and dark brown apically; microtrichose except bare in front of anal vein (Colombia) *nitidicollis* Hippa
5. Hind tibia with 2 apical spurs; abdominal petiole long, about $\frac{3}{4}$ as long as second segment 6
 - Hind tibia with 1 apical spur; abdominal petiole short, about $\frac{1}{4}$ as long as second segment (Panama to Brazil) *coarctatus* (Wiedemann)
6. Anal cell bare except microtrichose apical $\frac{1}{4}$; middle leg orange (Brazil) *fulvus* Thompson
 - Anal cell almost completely microtrichose; middle leg black (Brazil) *batesi* (Shannon)
7. Abdomen red; wing completely dark except for light apical fascia (Ecuador) *telus* Thompson
 - Abdomen dark; wing hyaline or almost completely hyaline 8
8. Metasternum pilose 26
 - Metasternum bare 9
9. Face shiny medially, pollinose laterally, mostly black, never completely yellow or orange 14
 - Face completely pollinose, orange, yellow or black in ground color 10
10. Gena and most of frons orange, all of frontal triangle of male and lower $\frac{1}{3}$ of frons in female orange 11
 - Gena and frons black 21
11. Legs orange 13
 - Legs dark 12
12. Thoracic pile reddish brown; tibial bases reddish brown (Juan Fernandez Is.) *aurifrons* Shannon
 - Thoracic pile white and black; tibiae completely black (Chile) *coeruleus* (Rondani)
13. Mesonotum entirely short yellow pilose; basal cells microtrichose; hind trochanter with a well developed broad spur; hind femur long pilose, with hairs longer than tibial width; 4th tergum entirely shiny (Columbia) *aureus* Hippa
 - Mesonotum short yellow pilose with longer black pile intermixed on posterior $\frac{1}{2}$; basal cells partially bare basomedially; hind trochanter without a spur; hind femur short pilose, with hairs shorter than tibial width; 4th tergum dull pollinose medially (Colombia) *ochripes* Hippa
14. Mesonotum with longitudinal vittae of golden appressed pile on posterior half 15
 - Mesonotum without longitudinal vitta of golden pile 16
15. Abdomen with fasciae of golden tomentose pile on 3rd thru 4th (males) or 5th (female) terga; wing diffusely yellowish brown (Brazil) *shannoni* Thompson
 - Abdominal terga without apical golden pilose fasciae; wing with distinct diagonal brown vitta (Mexico to Brazil) *plagiatus* (Wiedemann)
16. Hind trochanter and tibia without spurs or process 3
 - Hind trochanter and/or tibia with distinct spurs or processes 17
17. Transverse suture golden pollinose; hind tibia without apical spur (Costa Rica to Argentina) *genuinus* Complex
 - Transverse suture without golden pollinosity, hind tibia usually with long apical spur 18
18. Front and middle tibiae and tarsi orange (Colombia) *fassli* Hippa
 - Front and middle legs more extensively dark, at least with apical tarsomeres black 19
19. Mesonotum with thick, opaque silvery gold pile on anterior and lateral margins; frontal triangle of male shiny black. Hind trochanter of male with simple spur (Venezuela) *woodorum* Thompson
 - Mesonotum black and yellow pilose anteriorly and laterally, completely black pilose

- above wing; frontal triangle of male golden pollinose 20
20. Basoflagellomere circular; mesonotum shiny on disc; hind trochanter with a simple spur; hind tibia without a long apical spur nor apicoventral carina (Colombia to Ecuador) ...
..... *nitidicollis* Hippa
- Basoflagellomere trapezoidal; mesonotum entirely dull pollinose; hind trochanter of male with a bilobed spur; hind tibia with a long apical spur and an apicoventral carina (Bolivia) 21
21. Front and middle femora dark on basal $\frac{1}{4}$ or more 22
- Front and middle femora dark on basal $\frac{1}{2}$ only, orange apically (Bolivia) ... *andicus* Hippa
22. Face orange 24
- Face dark, brown to black 23
23. Mesonotum with tufts of long appressed golden hairs above wing and on postalar callus; scutellum partly yellow pilose; front and middle tibiae orange brown on basal $\frac{1}{2}$; femora extensively pale pilose (Bolivia) ... *incaram* Hippa
- Mesonotum and scutellum entirely black pilose; tibiae black; femora black pilose (Venezuela) *chloropygus* (Schiner)
24. Legs black (Bolivia) *stimulans* Thompson
- Front and middle tibiae and tarsi orange ... 25
25. Terga 4 and 5 with pile similar to that of other terga; terga 2 and 3 more extensively shiny, with transverse metallic bluish maculae (Colombia) *sapphirifer* Hippa
- Terga 4 and 5 with conspicuous thick opaque yellowish-white pile, strongly contrasting with that of other terga; terga 2 and 3 dull, shiny only narrowly laterally (Colombia) *pilifer* Hippa
26. Anterior 4 femora black on basal $\frac{3}{4}$; face shiny medially, only with oblique pollinose lateral vitta, with median carina broadly darkened through the whole length (Venezuela)
..... *venezuelaensis* Thompson, n. sp.
- Anterior 4 femora yellow, face entirely pollinose, entirely pale or with a triangular dorsomedian darkened patch not reaching the upper mouth edge 27
27. Gena yellow anteriorly (Bolivia)
..... *calypso* Hippa, n. sp.
- Gena entirely black 28
28. Hind tarsus pale, with pale pile; 2nd basal cell microtrichose 29
- Hind tarsus dark, with dark pile; 2nd basal cell bare on basal anterior half (Costa Rica, Panama) *janzeni* Thompson, n. sp.
29. Sternum 4 partially black pilose; basoflagellomere ovate (Fig. 14) (Colombia, Peru) ...
..... *cybele* (Hull)

- Sternum 4 entirely yellow pilose; basoflagellomere rectangular (Fig. 11) (Colombia) ...
..... *cydippe* Hippa, n. sp.

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