

THE TWO-WINGED FLIES BELONGING TO SIPHOSTURMIA AND ALLIED GENERA, WITH DESCRIPTIONS OF TWO NEW SPECIES

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In the preparation of this paper I have examined all the type species concerned in the United States National Museum. I am greatly indebted to Dr. J. M. Aldrich, associate curator of the Division of Insects, not only for this privilege, but also for his encouragement and liberality in permitting the use of unpublished notes on the type of *Masicera normula* van der Wulp.

The muscoid tribe Siphosturmiini includes three known genera and seven species, of which two species are herein described as new. The peculiar or distinguishing characters of the group as a whole are: Face very flat with the front edge of the mouth protuberant; palpi normal in size, bowed upward near the apex; ocellars present; proboscis at least moderately slender and closely approximating or exceeding the height of head. The genus *Masiphya* exhibits about the same combination of characters, but the palpi are noticeably smaller and the genitalia are of a different type. Very little is known concerning the habits and biology of the siphosturmine flies. According to Coquillett's host list, two species, *rostrata* and *phycidis*, are parasites of lepidopterous larvae. Throughout the group the ovipositor is apparently subchitinous but blunt-tipped and not adapted for piercing.

The genera here considered may be separated by the characters mentioned in the following key:

KEY TO GENERA OF SIPHOSTURMIINI

1. First vein of wing bare; second antennal joint one-half or more the length of third; vibrissae far above the lower margin of head.....2
- First vein setulose near base; second antennal joint one-fourth the length of third; vibrissae close to the lower margin of head.....**Microsillus** Aldrich

2. Proboscis distinctly exceeding the height of head, the apical joint very slender, tapering from base to tip; labella leathery, hardly wider than proboscis-----*Siphosturmia* Coquillett
- Proboscis not longer than the height of head, the apical joint moderately stout and uniform in thickness from base to tip; labella soft or fleshy and distinctly wider than proboscis-----*Siphosturmiopsis* Townsend

Genus *MICROSILLUS* Aldrich

Microsillus ALDRICH, Proc. U. S. Nat. Mus., vol. 69, art. 22, p. 20, 1926. Female only; type, *Houghia baccharis* REINHARD.

The description of *H. baccharis*¹ was based on a single female specimen from Texas, and hitherto the male has been unknown. The accumulation of four additional specimens, including the male sex, makes it possible to add a number of essential items. The genus was described in the form of a comparison with *Siphosturmia* to which it is related. The resemblance, however, is confined largely to the female, and the male shows a number of striking and important differences. With these discoveries it appears desirable to redescribe the genus fully and to amend the specific characterization of the type species from the additional material now at hand.

Generic characters (from the type species).—Face in profile very flat and concave below, with the mouth jutting forward between the vibrissae; the latter on level with oral margin. Occiput on lower part bulging backward, so that the lower edge of the head is long, rather straight, and about equal to the axis at antennae. Proboscis when fully extended not much exceeding the height of head; palpi present. Front rather broad in both sexes, with orbitals, ocellars, and both pairs of verticals well developed. Frontals about six, diverging toward the eye below antennae, the uppermost two in each row rather stout and reclinate. Antennae in both sexes almost reaching the oral margin, second joint about one-fourth the length of third; arista hardly as long as antennae, penultimate joint only slightly longer than wide. Sides of face narrowed below, bare. Cheeks flattened, about one-fourth the eye height. Eyes bare.

Thoracic chaetotaxy: Acrostichal, 3, 3; dorsocentral, 3, 4; humeral, 4; posthumeral, 2; presutural, 2; notopleural, 2; intraalar, 3; supraalar, 3; postalar, 2; pteropleural, 1 (small); sternopleural, 2, 2; scutellum with one discal, three lateral, and a smaller decussate apical pair. Postscutellum normal; postnotum at side beneath calypter bare.

Abdomen varying with sex, in female the fourth segment somewhat elongate, noticeably deflexed, and tapering to a rather sharp

¹ Ann. Ent. Soc. Amer., vol. 14, p. 332, figs. 5, 6, 1921.

tip; ordinary in male. No discals on intermediate segments and without a marginal row on fourth in female. Venation of wings normal, first and third veins setulose near base; first posterior cell open well before apex of wing; no costal spine. Claws and pulvilli minute in both sexes.

MICROSILLUS BACCHARIS Reinhard

Houghia baccharis REINHARD, Ann. Ent. Soc. Amer., vol. 14, p. 332, figs. 5, 6, 1921.

Male.—Front at vertex 0.375 of head width in the one specimen, hardly widening downward; parafrontals gray pollinose with a yellow tinge, the latter becoming more pronounced toward the vertex extending on the upper part of the occiput and posterior orbits; elsewhere on head the pollen is wholly whitish, almost silvery; median stripe uniform in width to triangle, distinctly narrower than one parafrontal, reddish-brown; inner verticals long, directed backward, the outer ones about three-fourths as large, diverging posteriorly; ocellars and orbitals of equal size, proclinate; lowermost frontal at middle of parafacial on level with apex of second antennal joint, only the two pairs immediately above antennae decussate; facial ridges hardly higher than middle of face, bare except a few hairs next to vibrissae; the latter of good size and situated near edge of mouth; basal joints of antennae yellow, third black, four times length of second and fully twice width of parafacial below; arista of normal length, thickened to middle, black, basal joints distinct but not elongate; proboscis rather slender, labella apparently fleshy but rather small; palpi yellow, not much thickened apically, bowed upward; cheeks sparsely covered with short hairs; occipital fringe rather long on either side of vertex; beard moderately long, wholly pale or whitish.

Thorax gray pollinose, mesonotum when viewed from behind with an apparent yellowish tinge and showing four black stripes; the outer ones triangular in front, constricted and slightly interrupted at suture widening behind, thence tapering and stopping shortly in front of postalar callus; the inner pair narrow, complete at suture, extending about halfway to base of scutellum; pleura and humeri cinereous; scutellum reddish on apical half, disk with changeable gray pollen, entirely covered with short erect hairs; calypters opaque, white.

Abdomen black in ground color, the sides and narrow apex reddish; first segment black, the three following broadly gray pollinose with the hind margins shining in certain lights and subpollinose in a flat rear view except on fourth; venter reddish, with gray pollen on first three segments; first and second segments with one pair of median marginals (small on first); third with a marginal row of

10 or 12, stout; fourth with a row of discals and longer marginals, the latter situated well before the hind border of segment; genital segments small, retracted, reddish.

Legs black; mid tibia with two or more bristles on outer front side near middle; hind tibia with an irregular row on outer hind side; claws and pulvilli very small.

Wings faintly brownish; fourth vein with an abrupt stumpless bend, arcuate beyond and reaching costa far before wing tip; first posterior cell open; hind crossvein oblique to fourth, which it joins nearer to bend than to small crossvein; first vein setulose near base, the third more than halfway to small crossvein; costal spine vestigial.

Female.—This sex has been characterized (loc. cit.), but the three additional specimens show some variations that should be mentioned. Front at vertex 0.37, 0.35, and 0.38 of head width; parafrontals only faintly yellow in one, distinctly so in the other two, which have the region of the vertex almost golden. Very similar to male otherwise, but with the third antennal joint narrower; the intermediate abdominal segments shining black on posterior third; fourth segment wholly yellow, longer, more pointed, bearing an arcuate row of rather short spiny discals, with numerous weaker bristles behind which become almost hairlike at the apex. First genital segment tubular with a groove on either side behind, pale yellow; apical segment shining brownish, retracted, flattened behind and sloping forward to tip, not fitted for piercing.

Length, 7 mm. to 8.5 mm.

Redescribed from one male and four females, including type, from College Station, Tex., April, 1924 and 1929, and May 4, 1930 (H. J. Reinhard). The type specimen (female) is in the United States National Museum collection, which also contains a second specimen of the same sex from Ancon, Canal Zone, April 20, 1926 (C. T. Greene).

MICROSILLUS POLLINOSUS Townsend

Siphosturmia sp. TOWNSEND, Ann. Ent. Soc. Amer., vol. 4, p. 135, 1911.

Siphosturmia pollinosa TOWNSEND, Proc. U. S. Nat. Mus., vol. 43, p. 321, 1912.

I have seen the type series, including one male and four females from Peru, in the United States National Museum collection. The male has short claws and pulvilli, orbital bristles, and the same uncommonly wide front as in *H. baccharis*. Aldrich,² in comparing the present species with the single type specimen of *baccharis*, considered them distinct but expressed some doubt in the absence of sufficient material of the latter species for study. There are now

² Proc. U. S. Nat. Mus., vol. 69, art. 22, p. 20, 1926.

four specimens of *baccharis*, including both sexes, in my collection, besides the type female and one additional specimen, also a female, in the National Museum.

M. pollinosus differs from *H. baccharis*, the genotype, in having the last three abdominal segments covered with dull thick brassy-gray pollen, which on the intermediate segments extends nearly to the hind border, leaving only a very narrow blackish margin behind; cheeks and face grayish-white pollinose; parafrontals only faintly tinged with yellow. There appear to be no structural differences, except the apical joint of the proboscis in male is noticeably longer and the first abdominal segment has no median marginal bristles.

Genus SIPHOSTURMIA Coquillett

Siphosturmia COQUILLETT, Revis. Tachin., p. 83, 1897.

Coquillett erected the genus *Siphosturmia* with *Argyrophylax rostrata* Coquillett as the type and sole species. He did not give any description of the generic characters other than stating that the principal ones were mentioned in his accompanying analytical key.

I have examined the type specimens now in the United States National Museum and give a brief description of the genus as follows:

Generic characters (from the type species).—Proboscis very slender, tapering apically, and distinctly exceeding the height of head; palpi present. Eyes bare. Front rather broad in both sexes; male without orbitals, female with two pairs; ocellars present, proclinate; the two uppermost frontal bristles reclinate, lower ones divergent, extending to level of apex of second antennal joint. Antennae inserted slightly above middle of eye, the second joint three-fourths the length of third; arista shorter than antennae, penultimate joint more than twice as long as wide. Face flat and projecting below, its lateral ridges also flattened and bearing only a few bristles above vibrissae, which are distinctly above the lower margin of head; parafacials bare. Oral cavity elongated by the head bulging behind so that the proboscis may be completely folded within.

Thoracic chaetotaxy: Humeral, 4; posthumeral, 3 (anterior one small); presutural, 2; notopleural, 2; sternopleural, 2, 2; pteropleural, 1 (small); acrostichal, 3, 3; dorsocentral, 3, 4; intraalar, 3; supraalar, 3; postalar, 2; scutellum with three lateral, one smaller decussate apical, and one discal pair. Postscutellum well developed; no infrascapular hairs present.

Abdomen without discal bristles on intermediate segments; one pair of median marginals on first and second segments; third with a marginal row of about eight; fourth segment in female noticeably deflexed, rather long and pointed, bearing numerous spiny bristles

on upper surface; in male the fourth segment is shorter than the third, ordinary in shape, with several irregular rows of bristles on apical half. Ovipositor blunt, not fitted for piercing.

Hind tibia ciliate. Wing with a rectangular bend in fourth vein, which ends far before the apex; veins bare except third; no costal spine.

SIPHOSTURMIA ROSTRATA Coquillett

Argyrophylax rostrata COQUILLET, Journ. New York Ent. Soc., vol. 3, p. 106, 1895.

Siphosturmia rostrata COQUILLET, Revis. Tachin., p. 83, 1897.

The long tapering proboscis, projecting mouth, and elongated second antennal joint make the species easily recognizable. It is a well-known form, and Coquillett's description supplies most of the essential specific details. In the male genitalia the inner forceps are blackish, narrow, and united at base, divided beyond middle but not divergent, tips blunt, in profile rather straight on posterior side and almost uniform in thickness from base to tip; outer forceps yellow, triangular, hardly shorter than inner, tips rounded, beset with minute black hairs; basal segment of penis slender, shining black, the distal one shorter and a little thickened, the apex with a pale expanding membrane.

The species ranges from Ohio to Florida and westward to Texas.

SIPHOSTURMIA CONFUSA, new species

Coquillett determined the present species as *Sturmia normula* van der Wulp, and although clearly misplaced in this genus, it has been passing under this name for many years. In 1929, Dr. J. M. Aldrich examined Wulp's type series now in the British Museum and kindly permitted me to study his notes. In brief these show that Wulp had two species involved, one of which is *Sturmia albifrons*, and the other, to be taken as the true *S. normula*, is a form closely allied to *S. albifrons*. A comparison of the species here considered with *albifrons* readily shows them to be distinct and members of different tribes.

Male.—Front at narrowest point (before ocelli) 0.34 of the head width (average of six: 0.32, 0.34, 0.34, 0.33, 0.36, 0.35); front and face covered with thick, rather dull-gray pollen; parafrontal clothed with black hairs, some extending close to eye; median stripe reddish, broad to triangle extending on either side to vertex; frontals about nine in number, uppermost two largest, reclinate, the lower one close to eye at level with base of third antennal joint; inner verticals strong, suberect, and curving backward, the outer pair usually vestigial but sometimes developed to half the size of inner ones and strongly divaricate; ocellars large, proclinate; no orbitals; para-

facial bare, at narrowest about as wide as third antennal joint; face not much receding, rather shallow or flat, with the lower edge moderately protruberant, the ridges bare except a few bristly hairs next to vibrissae; the latter somewhat approximated and situated near the oral margin; antennae fully three-fourths the length of face, third joint black, two and one-half to three times as long as second, basal joints faintly reddish; arista shorter than antennae, thickened on proximal two-fifths, penultimate joint at least twice as long as wide; cheek in profile one-sixth the eye height, gray pollinose on red ground color, bearing numerous fine black hairs; proboscis moderately slender, about equal the height of head; palpi yellow, slender, the tips bowed upward bearing a few black hairs beneath; posterior surface of head bulging backward at middle below, wholly gray pollinose and clothed with pale hairs; eyes practically bare.

Thorax gray pollinose, dorsum with four shining black stripes in front and five behind suture; scutellum broadly reddish, with thinner gray pollen on disk which bears numerous erect bristly hairs. Chaetotaxy: Acrostichal, 3, 3; dorsocentral, 3, 4; humeral, 4; posthumeral, 2; notopleural, 2; presutural, 2; intraalar, 3; supraalar, 3; postalar, 2; sternopleural, 2, 2; scutellum with three pairs of laterals, one smaller decussate apical pair, and one pair of discals; postscutellum well developed, thinly gray pollinose; calypters opaque, white, the rims faintly yellowish.

Abdomen black with a reddish tinge along the sides; intermediate segments gray pollinose on basal two-thirds, the hind margins shining; apical half of fourth also shining, black, the basal pollinose cross band widest at middle above, becoming narrower outward and stopping at side; a median black stripe visible in some angles, not very conspicuous; first segment with one pair of weak median marginals; second also with one pair, larger; third bearing a marginal row of about eight; fourth with several irregular rows on apical half; genitalia small, retracted; inner forceps blackish, long and slender, divided on apical half or more, the tips blunt, not divergent, in profile very straight and almost uniform in thickness from apex to base; outer forceps about three-fourths the length of inner ones, with a broad yellow base, tapering from middle to blunt or rounded tips, which are blackish and beset with very minute black hairs; penis hardly at all thickened apically; fifth sternite with a broad U-shaped incision.

Legs black; middle tibia with two large bristles on outer front side near middle; hind tibia subciliate, the median bristle much stouter and longer; claws and pulvilli exceeding length of apical tarsal joint.

Wings subhyaline, tinged faintly with yellow on costa near base; fourth vein with a sudden rounded bend, concave shortly beyond,

thence continuing diagonally to costa; first posterior cell narrowly open about two-thirds the length of hind crossvein before wing tip; third vein with two or three hairs at base; hind crossvein sinuous, strongly oblique to fourth, which it joins much nearer bend than small crossvein; costal spine inconspicuous.

Female.—Front 0.387 of head width (average of six: 0.38, 0.39, 0.40, 0.38, 0.37, 0.40); the usual orbitals present and the outer verticals three-fourths as long as inner; fourth abdominal segment somewhat deflexed, longer and more pointed than in male, sometimes tinged with red at apex, the pollinose cross band is a little wider at sides than at middle above; claws and pulvilli short; genital segments retracted, first one yellow, consisting of a thin-walled tube rather wide in diameter into which the blackish blunt-tipped ovipositor is retracted.

Length, 6 mm. to 8.5 mm.

Described from 143 specimens of both sexes collected at College Station, Tex., April to November, 1917–1930 (H. J. Reinhard); one male from Dilley, Tex., June 6, 1924 (H. J. Reinhard); and one male and two females from Bexar County, Tex., March 8 and April 14, 1929 (H. B. Parks).

Type.—Male, U.S.N.M. No. 43270, from College Station, Tex.

Genus SIPHOSTURMIOPSIS Townsend

Siphosturmiopsis TOWNSEND, Ins. Insc. Menst., vol. 3, p. 91, 1915.

The type and sole original species is *S. rafaeli* Townsend. It was described from one male and two female specimens, which Coquillett had previously determined as *Atacta ruficauda* van der Wulp, although this fact was not mentioned by Townsend. The question of the oldest valid name is left open and can be settled only by examination of Wulp's type in the British Museum.

I have examined Townsend's type series in the National Museum. Briefly, the genus has the same characters throughout as *Siphosturmia* with one important exception. The apical joint of the proboscis is short, hardly equaling one-half the height of head, it is rather thick to the tip, and the labella is distinctly enlarged, soft or almost fleshy in texture. These characters seem sufficient to validate the genus, and two additional species, *melampyga*, new, and *Sturmia phyciodis* Coquillett, are included here. The latter does not possess the peculiar conical and depressed fourth abdominal segment common to the female of the siphosturmine group. In other details, however, the characters agree better with those common to the tribe Siphosturmiini than with *Sturmia*, where it is obviously misplaced.

KEY TO SPECIES OF SIPHOSTURMIOPSIS

1. With four sternopleurals; mid tibia bearing two bristles near middle on front side; palpi yellow; fourth abdominal segment in female longer than third, depressed, apex pointed-----2
 With three sternopleurals; mid tibia bearing one bristle near middle on front side; palpi usually black; fourth abdominal segment in female ordinary, apex truncate--(*Sturmia*) *phyciodis* Coquillett
2. Apex of abdomen black; parafacial at narrowest one-third width of face below; ocellars strong (female only)-----*melampyga*, new species
 Apex of abdomen yellow; parafacial at narrowest nearly one-half the width of face below; ocellars small in female, hair-like in male-----*rafaeli* Townsend

SIPHOSTURMIOPSIS RAFAELI Townsend

Siphosturmiopsis rafaeli TOWNSEND, Ins. Insc. Menst., vol. 3, p. 91, 1915.

A rather robust species like *S. melampyga*, from which it differs most obviously in having the apex of the abdomen reddish-yellow. The parafacials are wider; the second antennal joint is one-half as long as the third in the female; and the ocellar bristles, in both sexes, are poorly developed, almost hairlike in male. These items with the description appear sufficient to distinguish the species.

Type locality.—San Rafael, Vera Cruz, Mexico.

SIPHOSTURMIOPSIS MELAMPYGA, new species

Female.—Front at vertex 0.35 of head width in both specimens, widening only slightly below, with gray pollen more or less tinged with yellow toward vertex; median stripe reddish, not narrowed before triangle, where the width slightly exceeds that of the parafacial; the latter with numerous fine hairs, which extend close to the border of the eye; inner verticals strong, reclinate, the outer about three-fourths as long, curving backward and outward; frontal bristles about eight in a row, the uppermost one largest, reclinate, the lowest one at middle of parafacial and on level with apex of second antennal joint; a secondary irregular row of three or four frontals outside of the main row on lower part; ocellar triangle bearing a pair strong proclinate bristles and numerous erect hairs, postocellars well developed; orbital bristles present; parafacials distinctly narrowed downward but at narrowest point much wider than third antennal joint, densely gray pollinose, with a weak bristle and several pale hairs beneath lowermost frontal, bare below; face covered with thick gray pollen, very flat with the lower border protuberant; ridges bare except a few bristles and hairs near base; vibrissae somewhat approximated and situated well above the oral margin; first and second joints of antennae reddish-yellow, third black, one and one-half times the length of second joint;

arista black, of moderate length, a little thickened to or slightly beyond middle, length of penultimate joint about twice its width; proboscis hardly equaling the height of head, distal joint moderately stout; labella somewhat fleshy but not very large; palpi yellow, thickened and strongly bowed upward on apical half, bearing long black hairs on the lower edge; cheeks gray pollinose, clothed with short fine hairs, about one-fifth the eye height; beard dense, whitish; eyes bare.

Thorax black with gray pollen; when viewed from behind five dorsal black stripes apparent, the median one becoming indistinct anteriorly, the outer pair broadest, interrupted at suture, and the intermediate ones obsolete shortly behind suture; scutellum wholly reddish, covered with changeable grayish-white pollen appearing denser and almost silvery in a very flat rear view. Chaetotaxy: Acrostichal, 3, 3; dorsocentral, 3, 4; humeral, 4; posthumeral, 3 (anterior one small); presutural, 2; notopleural, 2; intraalar, 3 (none near suture); supraalar, 3; postalar, 2; pteropleural, 1; sternopleural, 2, 2; scutellum with one discal, three marginal, and a rather long decussate apical pair, disk covered with erect short bristly hairs becoming spiny toward apex; postscutellum normal, gray pollinose; sides of postnotum below calypters bare; calypters opaque, white with yellow rims.

Abdomen black in ground color, the sides of first three segments reddish, fourth entirely black, conical, pointed, and noticeably deflexed; with gray pollen on bases of last three segments extending on the venter, the posterior third of intermediate segments and apical half of fourth shining black; first segment with a pair of smallish median marginals, second with a larger pair, third with a marginal row of about 12 bristles, fourth with numerous erect spiny bristles over most of its surface, the basal ones longest, becoming shorter and weaker toward apex; genitalia retracted but evidently without a piercing organ.

Legs stout, black; middle tibia with three or four large bristles on outer front side; hind tibia ciliated on outer posterior edge with one long bristle beyond middle; claws and pulvilli not elongate.

Wings subhyaline; costal spine inconspicuous; veins bare except third, which has two to four setules near base; fourth vein with a right-angular bend curving outward shortly beyond and continuing almost straight to costa, leaving the first posterior cell rather broadly open far before the wing tip; hind crossvein joining fourth much nearer to bend than small crossvein.

Length, 10 mm.

Described from two females collected at College Station, Tex., October 9 and 20, 1919 (H. J. Reinhard).

Type.—Female, U.S.N.M. No. 43271.

SIPHOSTURMIOPSIS PHYCIODIS Coquillett

Sturmia phyciodis COQUILLET, Revis. Tachin., p. 109, 1897.

Coquillett's description fits the species very well, except that the estimate given of the frontal width, especially that for the male sex, is too narrow. Several additional items not mentioned in the original description are included below:

Front in male 0.274, in female 0.306, of the head width (10 specimens measured in both); parafrontals yellow to golden pollinose, sides of face and cheeks paler in color. Thoracic chaetotaxy: Acrostichal, 3, 3; dorsocentral, 3, 4; intraalar, 3; supraalar, 3; postalar, 2; notopleural, 2; presutural, 2; posthumeral, 2; humeral, 4; pteropleural, 1 (small); sternopleural, 2, 1. Abdomen with a pair of median marginals on first and second segments (small on first); third bearing a marginal row of 10 to 12; fourth with a discal row and numerous irregularly placed smaller bristles behind. In the male genitalia the inner forceps are united at the base, divided but not divergent at apex, on the hind side with a large brownish pad thickly covered with soft short pale hairs, rather striking; outer forceps nearly as long as inner pair, yellow at base, moderately slender beyond middle, tips black, acute, curving forward more abruptly than inner ones; fifth sternite reddish, with a broad U-shaped incision, the lobes bearing a few fine black hairs.

The species ranges from Texas to Ohio and Massachusetts. In my collection there are 86 specimens from College Station, Tex., taken from April to November. The palpi are usually black but sometimes entirely yellow, and there is an occasional specimen with the front wholly gray.



Reinhard, H J. 1931. "The two-winged flies belonging to Siphosturmia and allied genera, with descriptions of two new species." *Proceedings of the United States National Museum* 79(2877), 1–11.

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