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A RECLASSIFICATION OF THE SUBFAMILIES AND GENERA OF THE NORTH AMERICAN SYRPHIDAE.

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(Continued from p. 128, vol. XVI.)

MILESINAE.

Milesia is such an aberrant genus, neither closely allied to *Eristalinae* nor *Xylotinae* (formerly placed under *Milesinae*) and has such distinctive characters that it is deemed best to consider it as a separate subfamily. The head is of the *Xylota* type; the discal crossvein has the same position and slant as in *Spilomyia*; the marginal cell is closed and the third longitudinal vein has a downward loop as in *Meromacrus* and *Eristalis*.

At present it is rather a matter of opinion whether *Milesia* is more closely allied to *Meromacrus* (*Eristalinae*) or to *Spilomyia* (*Xylotinae*). *Milesia* has not the broad squamae and the resulting development of the first tergite noted for *Meromacrus* under *Volucellinae*; but the face is broadly pilose as in *Meromacrus* (although the pile is tomentose in this genus) and both of these genera have very large posterior thoracal spiracles.

Spilomyia also possesses the broadly pilose face, one of the very few genera in *Xylotinae* to have this character. The posterior thoracal spiracle, however, is, proportionately, much smaller.

Only one genus, *Milesia*, characters given in table of subfamilies.

XYLOTINAE, new subfamily.

There has always been considerable difficulty in knowing what genera should compose the *Xylotinae*, usually called *Milesinae*. Several genera which are included here in *Xylotinae* are usually placed in *Eristalinae*, while several genera placed in *Chilosinae* may eventually be considered as belonging to *Xylotinae*.

A character, seemingly of much importance, namely, the distribution of pile on the face and frons, has been used in this paper to

include *Syritta*, *Tropidia*, *Pterallastes*, and *Teuchocnemis* in Xylotinae. If this character were stressed in classifying Chilosinae, this subfamily would be further divided, making other subgroups thereby, which may more properly be considered under Xylotinae. The Xylotinae tend towards having the face and frons destitute of the pile which is characteristic of Eristalinae and Chilosinae (*sensu stricto*); and in the genera included in Xylotinae, except *Ferdinandea*, *Eumerus*, and *Spilomyia*, the males have the face and frons bare, except along the eye margins; and the females, besides having the face bare, have a bare space of greater or lesser width immediately above the antennae. The densely pubescent forms of *Crioprora*, *Criorrhina*, and *Merapioides* have the pile on the head somewhat more generously distributed.

TABLE OF GENERA.

1. Scutellum, margin of thorax and pleurae with bristles; general color bronzy aeneous; head of *Chilosia* type. (Figure 1. Probably belongs in Chilosinae) *Ferdinandea*.
- Thorax without bristles; general color not bronzy aeneous except in *Calliprobola*. 2.
2. Thorax with distinct yellow markings besides those on humeri and a single spot on the pleuras. "Wasp flies" 16.
- Thorax without distinct yellow markings of the ground color except (certain species of *Cynorrhina* and *Somula*) rarely on the humeri and a single spot on the pleurae. 3.
3. Apical crossvein with a prominent, outward directed angle, strongly recurrent where it meets third vein; face flat, slightly produced at mouth margin and covered with pile. *Eumerus*.
- Apical crossvein not outwardly angulated and recurrent. . . . 4.
4. Apical crossvein sinuate, forming a sprawling "W"; anal furrow less than one third the length of anal cell; all basal cells destitute of the usual clothing of villi, causing the wings to have a glassy appearance; hind femora a little shorter than two and one half times their width, and are held in longitudinal groove-like impressions of the abdomen during flight; chitinous parts of sternites only one third the entire width of the abdomen; head subhemispherical, the eyes composing the greater part of the head; face subcarinate *Syritta*.
- Without the above conglomeration of characters. 5.

5. Hind femora with an apical saw-tooth prominence; face subcarinate to carinate.....*Tropidia*.
 — Hind femora without a saw-tooth prominence; face not carinate6.
6. Third vein with a downward loop into discal cell; sixth vein beyond anal cell, prolonged well forward. (*Pterallastini*) .7.
 — Third vein straight or with a very gentle downward curve; sixth vein entering wing margin shortly after anal cell...8.
7. Mesonotum ochraceous; sixth vein entering wing margin; posterior antecoxal piece bare.....*Pterallastes*.
 — Mesonotum grayish, or reddish black; sixth vein evanescent some distance from wing margin; posterior antecoxal piece with distinct pile.....*Teuchocnemis*.
8. Epistoma abruptly truncate, face in profile deeply and evenly concave (*Xylotini*. Figure 4a).....9.
 — Epistoma produced either well forward or protruding downwards12.
9. "Bumble-bee flies" with dense yellow pile on anterior part of mesonotum and black on posterior part; abdomen broad; posterior antecoxal piece bare.....*Pocota*.
 — Not bumble-bee-like in appearance and without dense yellow pile; abdomen elongate and usually with parallel sides..10.
10. General color of abdomen, and usually the thorax, brassy aeneous; head broadly oval.....*Calliprobola*.
 — Abdomen and thorax not brassy aeneous.....11.
11. Pile on thorax and abdomen very short; head broadly oval; posterior antecoxal piece bare or hairy.....*Xylota*.
 — Pile rather long; head triangular; posterior antecoxal piece with distinct pile except in *B. frontosus*.....*Brachypalpus*.
12. Epistoma produced forward beyond base of antennae; long pilose species with posterior antecoxal piece bare; antennae inserted below middle of eyes.....*Crioprora*.
 — Epistoma produced downwards, or face tuberculate; antennae usually inserted well above middle of the eye (*Criorrhini*)13.
13. Long pilose species with posterior antecoxal piece hairy; bumble-bee-like in appearance (except *Merapioides*); third antennal joint greatly widened apically and with arista usually inserted half way or more from base; males dichoptic...14.
 — Pilosity of usual length; posterior antecoxal piece bare; third antennal joint obtusely quadrate and with arista near base; unlike bumble-bees in appearance.....15.

14. Pile entirely pale in color; arista placed at tip of conically produced third antennal joint.....*Merapioides*.
 — “Bumble-bee syrphids”.....*Criorrhina*.
15. Antennae inserted on prominence slightly higher than vertex of head; lateral margins of abdomen yellow.....*Somula*.
 — Antennae inserted below vertex of head; lateral margins of abdomen not entirely yellow.....*Cynorrhina*.
16. Antennae inserted near middle of head; face not longer than front.....*Temnostoma*.
 — Antennae long or short and inserted above middle of head on a conical process; face much produced downwards; sixth vein entering wing margin shortly beyond anal cell.
Sphecomyia.
 — Antennae inserted above middle of head; face not produced downwards; sixth vein prolonged obliquely outward from anal cell; hind femora with conical, tooth-like projection below near distal end.....*Spilomyia*.

CERIOIDINAE.

One genus; in this country easily divided into *three* subgenera.

- A. Antennal process very elongate, quite as long as length of antennae exclusive of style; a stigmatal crossvein, or at least a distinct thickening present.
1. Abdomen strongly constricted basally; loop in third vein without adventitious branch; ambient vein present.....*Monoceromyia*, new subgenus.
 2. Abdomen not constricted; loop in third vein with adventitious branch projecting in discal cell; ambient vein rarely present.....*Cerioides*.
- B. Antennal process shorter than first antennal joint, neither stigmatal crossvein nor a distinct thickening present at tip of auxiliary vein; abdomen constricted basally.*Sphyximorpha*.

NOTES ON SOME GENERA AND SPECIES OF SYRPHIDAE.

Calliprobola Rond. Includes *Brachypalpus pulcher*, *B. sorosis*, *Calliprobola aldrichi*, *C. crawfordi*, and *C. opacus*.

Ceria Fabr. = *Cerioides* Rond.

Cerogaster Will. Tropical; no material at hand.

Cynorrhina Will. Ranks as genus.

Doros Meig. (European.) *Xanthogramma aequalis* Lw. is placed therein.

Eumerus Meig. *E. strigata* Fall. is now well established in North

America. *Microxylota robii* Jones is synonym of this species, according to Aldrich.

Eumyiolepta Shn. Erected for *Myiolepta strigilata* Lw.

Lepidostola Mik. Tropical; no material at hand.

Microxylota Jones (Jones, Ann. Ent. Soc. Am., x, 231) is synonym of *Eumerus* (Aldrich).

Ocyptamus Macq. Subgenus of *Baccha*. Abdomen not constricted basally.

Platynochaetus Wd. Tropical; no material at hand.

Polydontomyia. Takes rank over *Triodonta* and *Polydonta*; not congeneric with *Pterallastes*, but belongs in *Helophilini*.

Rhysops Will. Subgenus of *Melanostoma*; face with transverse grooves.

Salpingogaster Schin. Tropical; probably subgenus of *Baccha*; third vein is looped downwards.

Scaeva Fabr. Probably subgenus of *Syrphus*; used for *Catabomba pyrastris*.

Senogaster Macq. = *Acrochordonodes* Big. *S. comstocki* is generally believed to be a synonym of *A. dentipes*, which is not of North American distribution.

Sphyximorpha Rond. = *Cerioides* Rond. Retained as a subgenus.

Xanthandrus Verr. Subgenus of *Melanostoma*; has flat, elliptical abdomen.

Chilosia parva Will. belongs in *Melanostoma*; probably melanic specimens.

Chilosia nigripennis Will. = *Chrysogaster nigripennis* Will.

Chilosia versipellis Will. = *Chrysogaster versipellis* Will.

Tropidia cooleyi Seamans (Seamans, Ent. News, xxviii, 342) = *Helophilus modestus* Will. (According to Aldrich.)

CHART SHOWING PRESENT ARRANGEMENT OF THE SYRPHIDAE AND THE CORRESPONDING ARRANGEMENTS OF OTHER AUTHORS.

<i>Shannon</i>	<i>Williston</i>	<i>Verrall</i>	<i>Lundbeck</i>
Syrphinae			
Paragus	see Chilosinae	Paragus	Paragus
Platychirus	{ Platychirus	Platychirus	Platychirus
Pyrophaena	{ Pyrophaena	Pyrophaena	Pyrophaena
Melanostoma	{ Melanostoma	Melanostoma	Melanostoma
Syrphus	Syrphus	Syrphus	Syrphus
Scaeva	Scaeva	Scaeva	Scaeva
Eupeodes	Eupeodes		
Didea	Didea	Didea	Didea
Chrysotoxum	see Microdontinae	see Chrysotoxini	see Chrysotoxini
Baccha	omitted by Williston	Baccha	Baccha
Leucozona	Leucozona	Leucozona	Leucozona
Xanthogramma	Xanthogramma	Xanthogramma	Xanthogramma
Doros		Doros	Doros
Toxomerus			
Mesogramma	Mesogramma		
Allograpta	Allograpta		
Sphaerophoria	Sphaerophoria	Sphaerophoria	Sphaerophoria
Nausigasterinae			
Nausigaster	included in Chilosini		
Microdontinae			
Microdon	Microdon		
Mixogaster	Mixogaster		
see Syrphinae	Chrysotoxum		
		Microdon	

Chilosinae	1. Chilosini, 2. Brachyopinae, 3. Sphegini	Syrphinae	Syrphinae
Pipiza	{ Pipiza	Pipiza	
Psilota	{ Psilota	Chrysogaster	Chrysogaster
Chrysogaster	{ Chrysogaster	Chilosia	Chilosia
Chilosia	{ Chilosia	in Xylotinae	in Milesinae
Ferdinandea	{ 1 } doubtfully located	in Chrysotoxini	
Callicera			
Eumyiolepta			
Myiolepta	{ Myiolepta	in Milesinae	in Milesinae
Chalcomyia	{ Chalcomyia		
Brachyopa	{ Brachyopa	Brachyopa	Brachyopa
Hammerschmidtia	{ Hammerschmidtia	Hammerschmidtia	
Rhingia	{ Rhingia	Rhingia	Rhingia
Sphegina	{ Sphegina	Sphegina	Sphegina
Neoascia	{ Neoascia	Neoascia	Neoascia
Pelecocera	{ Pelecocera	Pelecocera	
Chamaesyrrhus	{ Chamaesyrrhus	Chamaesyrrhus	
Sericomyiinae			
Sericomyia	Sericomyia	in Milesinae	in Milesinae
Conidea			
Arctophila	Arctophila	in Milesinae	in Milesinae
Pyritis			
Volucellinae			
Copestylum	Copestylum		
Volucella	Volucella	Volucella	Volucella
Eristalinae	Eristalini	Eristalinae	
Eristalis	Eristalis	Eristalis	Eristalis
Meromacrus	Meromacrus		
Mallota	Mallota	Mallota	Mallota
Helophilus	Helophilus	Helophilus	Helophilus
Merodon	Merodon	Merodon	Merodon

see <i>Xylotinae</i>	<i>Tropidia</i>	in <i>Milesinae</i>
see <i>Xylotinae</i>	<i>Teuchochnebris</i>	
see <i>Xylotinae</i>	<i>Pterallastes</i>	
Milesinae	Milesini	Milesinae
<i>Milesia</i>	<i>Milesia</i>	<i>Milesia</i>
see <i>Xylotinae</i>	<i>Spilomyia</i>	(remaining genera
see <i>Xylotinae</i>	<i>Sphecomyia</i>	placed under
see <i>Xylotinae</i>	<i>Temnostoma</i>	<i>Xylotinae</i>)
Xylotinae	Xylotini	Milesinae
<i>Eumerus</i>	<i>Syritta</i>	<i>Eumerus</i>
<i>Syritta</i>	<i>Tropidia</i>	<i>Syritta</i>
<i>Tropidia</i>	see <i>Eristalini</i>	<i>Tropidia</i>
<i>Pterallastes</i>	see <i>Eristalini</i>	
<i>Teuchochnebris</i>	<i>Xylota</i>	
<i>Xylota</i>	<i>Brachypalpus</i>	<i>Xylota</i>
<i>Brachypalpus</i>	<i>Calliprobola</i>	<i>Brachypalpus</i>
<i>Calliprobola</i>	<i>Pocota</i>	
<i>Pocota</i>	<i>Criopora</i>	
<i>Criopora</i>	<i>Merapioides</i>	
<i>Merapioides</i>	<i>Criorrhina</i>	<i>Criorrhina</i>
<i>Criorrhina</i>	<i>Cynorrhina</i>	<i>Cynorrhina</i>
<i>Cynorrhina</i>	<i>Somula</i>	
<i>Somula</i>	see <i>Milesini</i>	<i>Temnostoma</i>
<i>Temnostoma</i>	see <i>Milesini</i>	
<i>Sphecomyia</i>	see <i>Milesini</i>	<i>Spilomyia</i>
<i>Spilomyia</i>	see <i>Milesini</i>	<i>Arctophila</i>
		<i>Sericomyia</i>
Cerioidinae		<i>Myiolepta</i>
		<i>Ferdinandea</i>
		<i>Milesia</i>
<i>Cerioides</i>		

DESCRIPTIONS OF NEW SPECIES OF SYRPHIDAE.

Psilota thatuna n. sp.

Female.—Rather small, robust; shining bluish black. Eyes with dense, brownish pile. Frons clothed with fairly long black pile, with a slender longitudinal furrow, and a short distance above the antennae there is a shallow transverse furrow. Antennae reddish brown, darker on upper margin of third joint; first two joints together about two thirds as long as third; third joint rather broad and nearly twice as long as broad; arista as long as length of second and third joints combined and placed near base of last joint. Face in profile flat, a little swollen and retreating a little towards mouth; epistoma projecting slightly beyond base of antennae; clothed with rather pale, silky pile.

Thorax clothed with short, rather dense, black pile; edge of scutellum marginated and with longer hairs.

Abdomen broader than thorax, globose and shining; clothed with short black pile, which is somewhat longer and lighter at the anterior corners.

Legs largely black, knees and tarsi brownish yellow; posterior femora swollen.

Squamae and cilia, plumula and halteres largely brownish yellow.

Wings hyaline; typical *Psilota* venation.

Length: about 7 mm.; wing 5.75 mm.

Type locality.—Summit of Cedar Peak, Moscow Mts., Thatuna Range, Idaho. Four female specimens, July 10, 1920. R. C. Shannon, collector.

Type.—Cat. No. 24096, U. S. N. M. Two paratypes in author's collection.

Psilota buccata differs from *P. thatuna* as follows: General color greenish black; body clothed with whitish pile; third antennal joint uniformly blackish and three times as long as broad; face noticeably more inflated; color of legs more contrastingly yellow and black; abdomen less globose; wings pale yellow; fringe of cilia and bristles at base of costa yellowish (black in *thatuna*); color of squamae, halteres and plumula whitish. *P. thatuna* appears to be more nearly related to the European *Psilota anthracina*. This species differs, according to Verrall's description (British Syrphidae), in having pile on the abdomen extensively whitish, "in fact all the tip half bears whitish pubescence."

Another specimen (female from California) in the National Collection agrees with *P. thatuna* except for the absence of the longitudinal furrow on the frons and having a longer arista and shorter antennae.

***Nausigaster chrysidiformis* n. sp.** (Fig. 5 *a* and *b*).

Female.—Medium sized, with rather dull metallic reflections of various hues; all the chitinous parts punctate. General shape of head hemispherical. Post-orbital region inflated, as wide as the frons at the ocelli, thickly punctate; a distinct indentation present opposite the humeral calli. Frons rather narrow at the ocelli, but widens rapidly toward the antennae, clothed with very short, stiff, black pubescence. Ocelli placed on a distinct protuberance; another callus present a short distance below, and the region between the two calli is golden pollinose; below the second swelling there is a rather broad band of silvery pollen. First two antennal joints very short; the third very large, subquadrate, and brownish yellow; arista black. Face narrowing towards oral margin; a prominent tubercle present which is of a shining violet reflection; between the antennae and the tubercle the face is excavated and covered with silvery pollen; epistoma not projecting.

Mesonotum with violet, bronzy, greenish, blue and coppery reflections, and with three distinct longitudinal vittae of a coppery cast. Scutellum inflated, bright golden yellow, and without distinct punctures except the anterior corners which are greenish black and punctate. Pleurae bluish with a coppery reflection.

Abdomen dark greenish blue basally, becoming lighter on posterior half and with a shining golden tip. Second segment with prominent, outwardly directed horn on each anterior corner. Abdomen marginate and with a downward projecting obtuse tooth on each of the under posterior corners. Under side of abdomen excavated.

Legs greenish black, knees more or less brownish, hind tibiae on the exterior side at the tip with a broad excavation.

Wings smoky; the stigmatal spot black; a broad blackish spot below the stigma, another spot present on the crossvein connecting the discal and anal cells, and also a broad preapical spot present.¹ Plumula vestigial; squamae, cilia and halteres yellowish.

Length: about 9.5 mm.; wing 8.5 mm.

¹ The markings on the wings are not shown in the figure.

Described from four females, Rio Charape, Peru, September 16; C. H. T. Townsend, collector.

Type.—Cat. No. 24097, U. S. N. M.

This species is at once distinguished from our North American species of *Nausigaster* by its larger size, more variegated color, and the presence of the horns on the second segment.

From *N. bonariensis* Lynch (Argentina) it may be distinguished by the different color, larger horns on the second segment, and non-appendiculated apical crossvein. In one specimen of the material at hand there is an adventitious vein between the first and second veins near their tips.

See discussion under Nausigasterinae for the remarkable resemblance members of this genus bear with the Chrysididae (Hymenoptera).

***Nausigaster peruviansis* n. sp.**

Female.—Medium-sized species, general color aenescent. Ocellar callus reddish; frontal callus shining greenish black; a silvery pollinose band present between the two calli, and below there is a broad indefinite silvery pollinose band. Antennae brownish. Face narrowing towards mouth, tubercle reddish piceous; face, in profile, rather strongly retreating from the tubercle to the mouth margin.

Mesonotum of a general mahogany red, and with four pale, silvery pollinose, longitudinal vittae. Scutellum margined with a thin serrulated edge.

Anterior corners of second tergite with small conical horns; also a median triangular depression present on second tergite, the peak directed caudad. Otherwise abdomen is typical of the genus.

General color of the legs yellowish brown.

Wings: A deep brown stigmatal spot at tip of auxiliary vein; below a broad brownish spot extending to the fourth vein; a rather light spot present on crossvein connecting the discal and anal cells; a preapical spot extending from the first vein half way between the third and fourth veins.

One specimen, Santa Eulalia, Peru, Jan. 18, 1913; C. H. T. Townsend, collector.

Type.—Cat. No. 24098, U. S. N. M.

N. peruviansis is somewhat larger than our North American species of *Nausigaster*. Shape of head is very similar to *N. uni-*

maculata, and also the scutellum of each is very similar. However, the conical processes on the second tergite at once separate it from our North American species. It is distinguished from *N. chrysidiformis* by its smaller size, the smaller size of the abdominal horns, and the shape and color of the scutellum. This species may be closest related to *N. bonariensis* Lynch (Argentina). Lynch, in his description, only mentions the black stig-matical spot of wing, and it is assumed that this is the only spot on the wing. Also it is evident that his species is more piceous and rufous piceous than the present one. In his generic diagnosis, presumably based on his *bonariensis* material, Lynch states that the eyes are naked. This may hold true for his species, but in all of the species before me (five out of seven known species) the eyes are thinly pilose.

Ceriodes tricolor Lw.

The species discussed below apparently comprises another sub-genus of *Ceriodes* and the name **Monoceromyia** is here proposed.

The following are the salient characters of *C. (Monoceromyia) tricolor*: Antennae inserted on a pedicle quite as long as length of antennae exclusive of style; abdomen strongly constricted basally; loop in third vein without adventitious branch; posterior margin of wings rather strongly chitinized, appearing as an ambient vein.

Color: Ocellar region black, bordered by yellow postorbital regions; face bright yellow with three reddish-brown stripes, two of them are lateral, the third median; humeri, prealar, and postalar spots bright yellow; scutellum yellow except for central blackish spot; a large yellow spot on pleurae and another one present on hypopleura; legs yellow, becoming somewhat reddish on tarsi; a blackish spot present at middle of posterior femora; anterior margin and corners of abdomen bright yellow; a large black median spot on first segment; remainder of abdomen reddish brown except for narrow yellow stripe on posterior margin of second segment. Anterior half of wing with deep brown cloud.

Monoceromyia tricolor floridensis, new variety, differs from *tricolor* in having the yellow markings more reddish and in the complete absence of the hypopleural spot.

An unique male, bearing only the label "Fla."

Type.—Cat. No. 24117, U. S. N. M.

This species is among the most handsome and distinctive of the genus and makes a welcome addition to our fauna. *Cerioides* (*Monoceromyia*) *tricolor* Lw. was originally described from Cuba and Hine records two specimens from Holguin, Cuba. Prof. Hine has very kindly loaned me the two specimens, females, upon which the above description is based. This favor aided considerably in the identification of the species and very probably saved me from making a synonym.

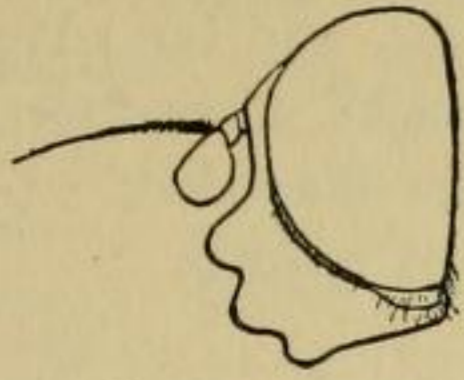
For the loan of these specimens and other material of this genus I wish to record here my sincere thanks to Prof. Hine.

Dr. J. Bequaert has also loaned me material in this group for which I wish to express my sincere appreciation.

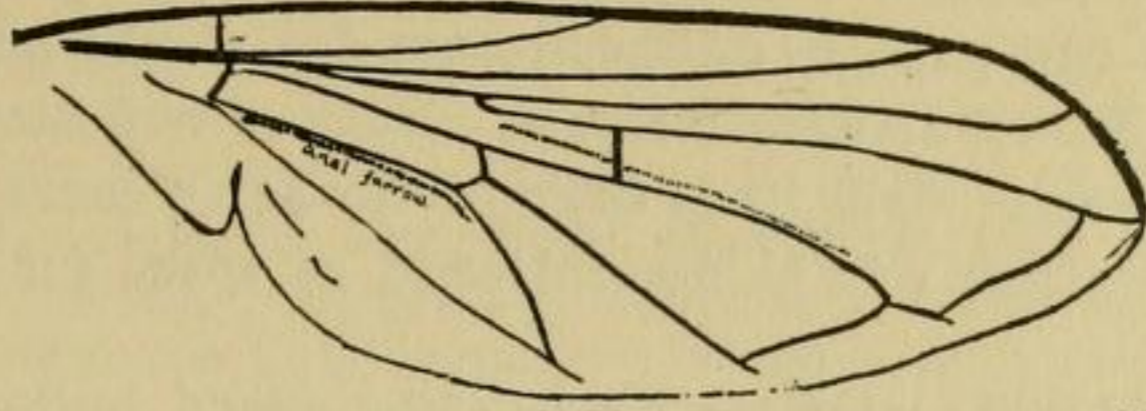
EXPLANATION OF PLATE.

FIG. 1. *Chilosia similis* Shannon, ♀: *a*, head in profile; *b*, venation of wing. FIG. 2. *Volucella pelluscens* Linnaeus (genotype): *a*, head in profile; *b*, venation of wing. FIG. 3. *Eristalis tenax* Linnaeus: *a*, head in profile; *b*, venation of wing. FIG. 4. *Xylota segnis* Linnaeus (genotype): *a*, head in profile; *b*, venation of wing. FIG. 5. *Nausigaster chrysidiformis* Shannon: *a*, head in profile; *b*, venation of wing.

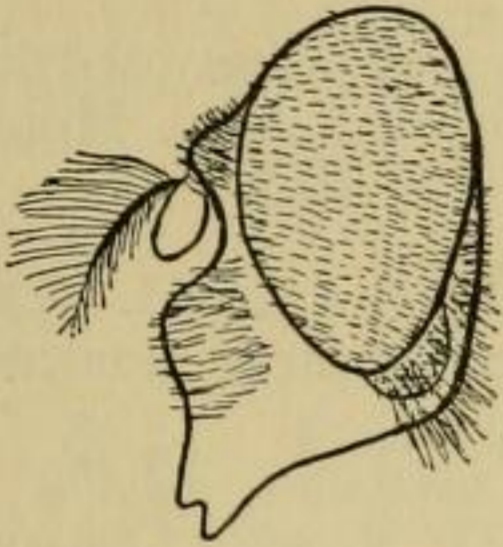
An unused taxonomic character in Syrphidae (Diptera).—In his paper on *Syrphidae*, in volume 16 of this magazine, R. C. Shannon separates *Eristaliinae* from *Chilosinae* and *Xylotinae* by a combination of characters, but omits one character which appears to be of prime importance, though unmentioned in any paper on the family, and which evidently substantiates his present assignment of the genera concerned. This character consists of a dense patch of stubby decumbent black spinules at the bases of all the femora on their anterior surfaces. These are present on *all* femora only in *Eristaliinae*, so far as our material shows, though they may be present on at least the fore femora in some genera in other subfamilies.—J. R. MALLOCH, U. S. Biological Survey.



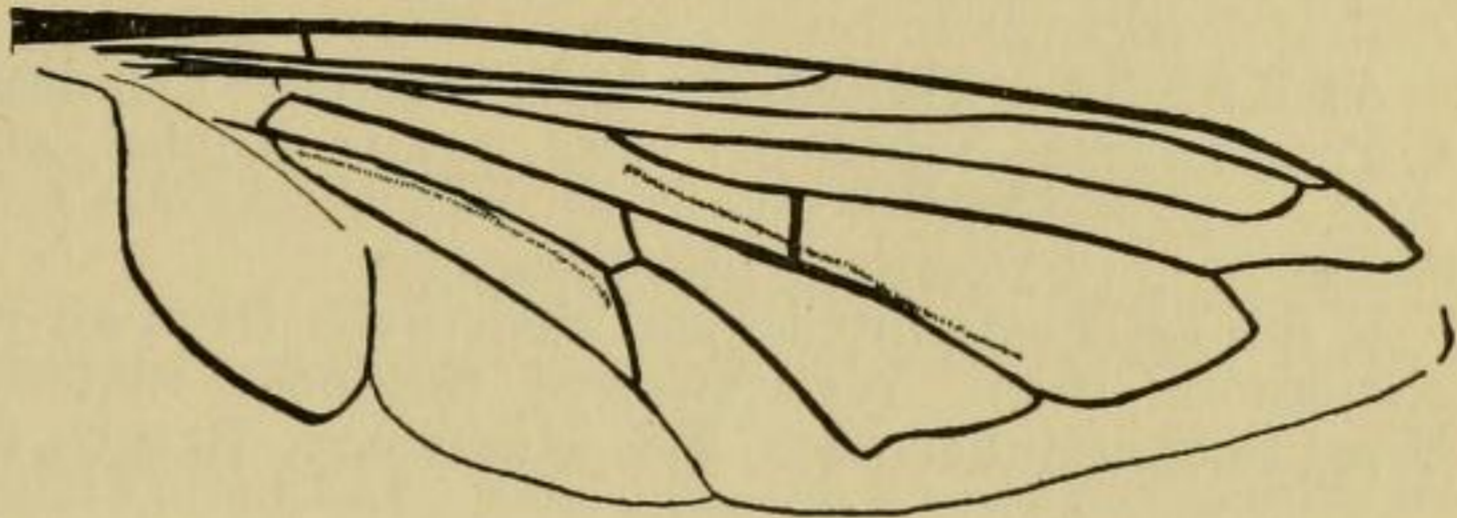
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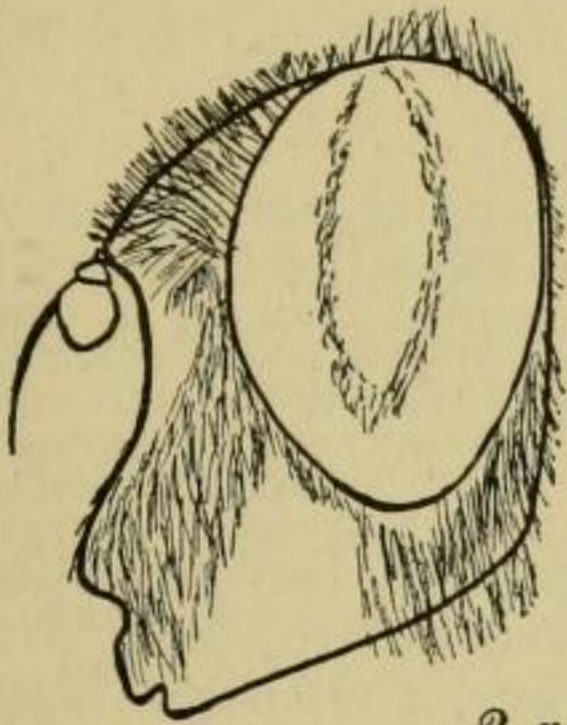
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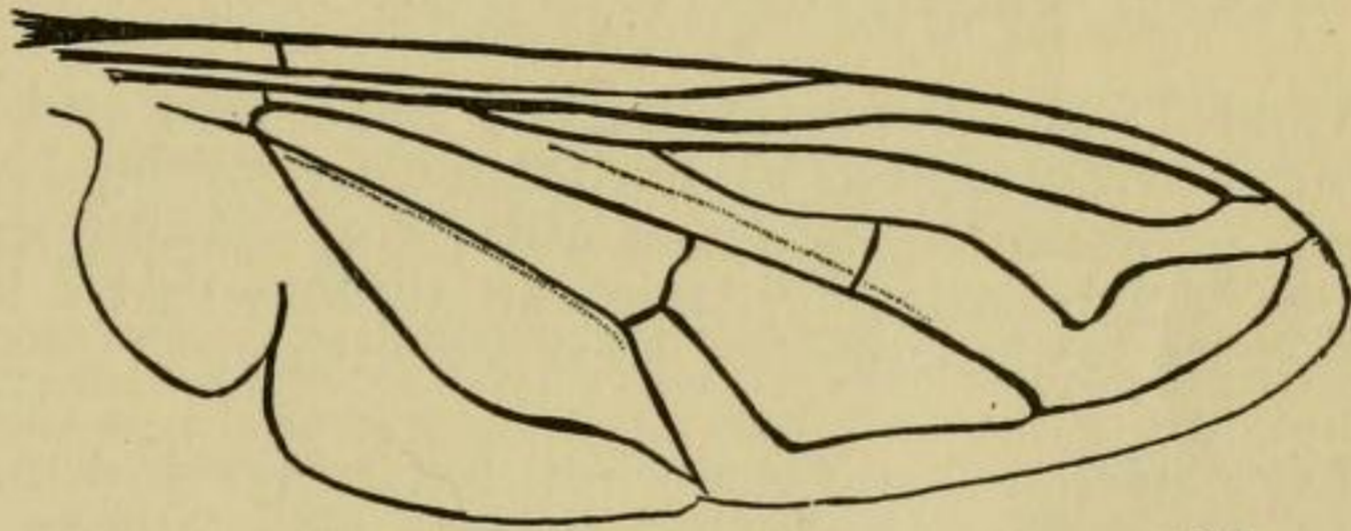
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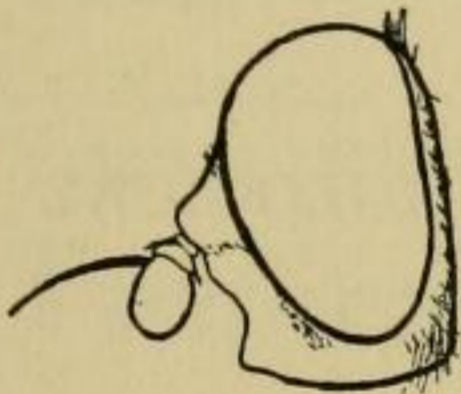
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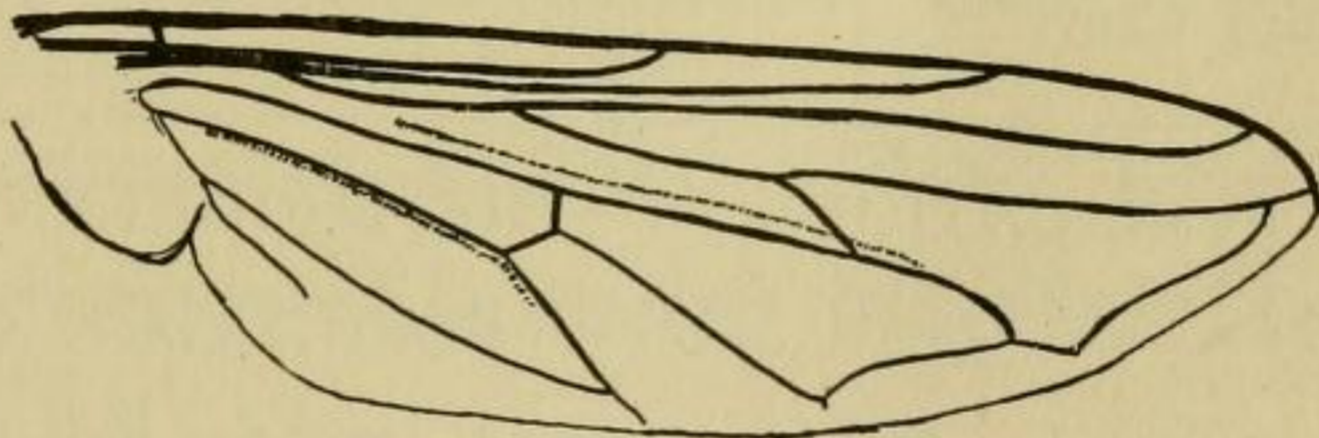
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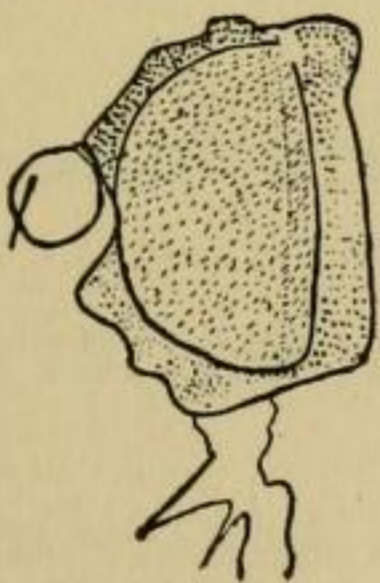
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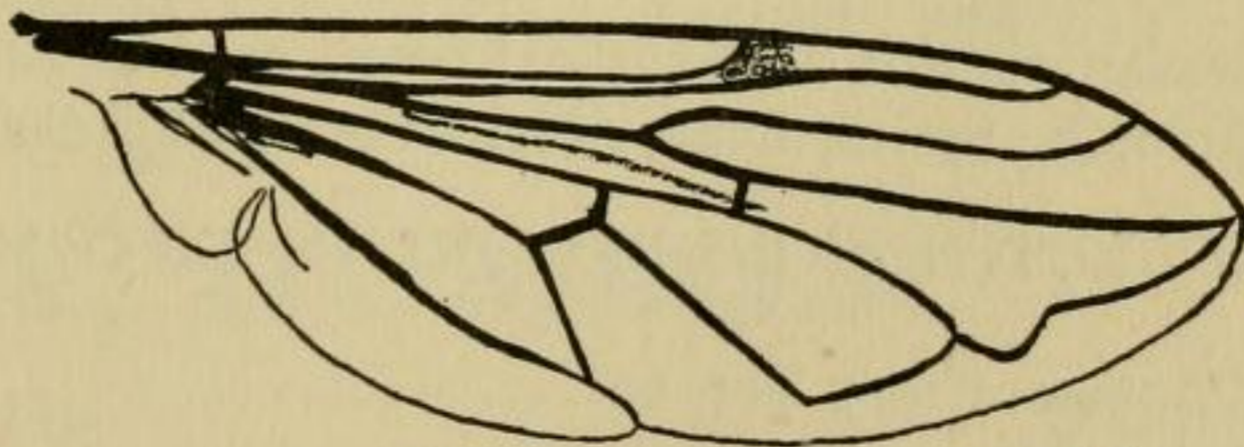
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A RECLASSIFICATION OF THE SUBFAMILIES AND GENERA OF THE NORTH AMERICAN SYRPHIDAE.

By Raymond C. Shannon, Bureau of Entomology.

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(Continued from p. 128, vol. XVI.)

MILESINAE.

Milesia is such an aberrant genus, neither closely allied to Eristalinae nor Xylotinae (formerly placed under Milesinae) and has such distinctive characters that it is deemed best to consider it as a separate subfamily. The head is of the Xyloia type; the discal crossvein has the same position and slant as in Spilomyia; the marginal cell is closed and the third longitudinal vein has a downward loop as in Meromacrus and Eristalis.

At present it is rather a matter of opinion whether Milesia is more closely allied to Meromacrus (Eristalinae) or to Spilomyia (Xylotinae). Milesia has not the broad squamae and the resulting development of the first tergite noted for Meromacrus under

Volucellinae ; but the face is broadly pilose as in *Meromacrus* (although the pile is tomentose in this genus) and both of these genera have very large posterior thoracal spiracles.

Spilomyia also possesses the broadly pilose face, one of the very few genera in Xylotinae to have this character. The posterior thoracal spiracle, however, is, proportionately, much smaller.

Only one genus, *Milesia*, characters given in table of subfamilies.

XYLOTINAE, new subfamily.

There has always been considerable difficulty in knowing what genera should compose the Xylotinae, usually called Milesinae. Several genera which are included here in Xylotinae are usually placed in Eristalinae, while several genera placed in Chilosinae may eventually be considered as belonging to Xylotinae.

A character, seemingly of much importance, namely, the distribution of pile on the face and frons, has been used in this paper to

[Begin Page: Page 31]

include *Syritta*, *Tropidia*, *Pterallastes*, and *Tsuchocnemis* in Xylotinae. If this character were stressed in classifying Chilosinae, this subfamily would be further divided, making other subgroups thereby, which may more properly be considered under Xylotinae. The Xylotinae tend towards having the face and frons destitute of the pile which is characteristic of Eristalinae and Chilosinae (sensu stricto); and in the genera included in Xylotinae, except *Ferdinanda*, *Eumerus*, and *Spilornyia*, the males have the face and frons bare, except along the eye margins; and the females, besides having the face bare, have a bare space of greater or lesser width immediately above the antennae. The densely pubescent forms of *Crioprora*, *Criorrhina*, and *Merapioides* have the pile on the head somewhat more generously distributed.

Table of Genera.

1. Scutellum, margin of thorax and pleurae with bristles; general

color bronzy aeneous; head of *Chilosia* type. (Figure 1.

Probably belongs in Chilosinae) *Ferdinanda*.

— Thorax without bristles; general color not bronzy aeneous ex-

cept in *Calliprohola* 2.

2. Thorax with distinct yellow markings besides those on humeri

and a single spot on the pleuras. " Wasp flies " 16.

— Thorax without distinct yellow markings of the ground color

except (certain species of *Cynorrhina* and *Somula*) rarely on the humeri and a single spot on the pleurae 3.

3. Apical crossvein with a prominent, outward directed angle,

strongly recurrent where it meets third vein; face flat, slightly produced at mouth margin and covered with pile.

Eumerus.

— Apical crossvein not outwardly angulated and recurrent. . . 4.

4. Apical crossvein sinuate, forming a sprawling " W " ; anal

furrow less than one third the length of anal cell ; all basal cells destitute of the usual clothing of villi, causing the wings to have a glassy appearance; hind femora a little shorter than two and one half times their width, and are held in longitudinal groove-like impressions of the abdomen during flight ; chitinous parts of sternites only one third the entire width of the abdomen; head subhemispherical, the eyes composing the greater part of the head; face subcarinate *Syritta*.

— Without the above conglomeration of characters 5-

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5. Hind femora with an apical saw-tooth prominence; face sub-
carinate to carinate Tropidia.

— Hind femora without a saw-tooth prominence; face not cari-
nate 6.

6. Third vein with a downward loop into discal cell; sixth vein
beyond anal cell, prolonged well forward. (Pterallastini) .7.

— Third vein straight or with a very gentle downward curve;
sixth vein entering wing margin shortly after anal cell ... 8.

7. Mesonotum ochraceous ; sixth vein entering wing margin ; pos-
terior antecoxal piece bare Pterallastes.

— Mesonotum grayish, or reddish black; sixth vein evanescent
some distance from wing margin ; posterior antecoxal piece

with distinct pile'. *Teuchocnemis*.

8. Epistoma abruptly truncate, face in profile deeply and evenly

concave (*Xylotini*. Figure 4a) 9.

— Epistoma produced either well forward or protruding down-

wards 12.

9. " Bumble-bee flies " with dense yellow pile on anterior part of

mesonotum and black on posterior part; abdomen broad;

posterior antecoxal piece bare *Pocota*.

— Not bumble-bee-like in appearance and without dense yellow

pile; abdomen elongate and usually with parallel sides. .10.

10. General color of abdomen, and usually the thorax, brassy

aeneous ; head broadly oval *Calliprohola*.

— Abdomen and thorax not brassy aeneous 11.

11. Pile on thorax and abdomen very short; head broadly oval;

posterior antecoxal piece bare or hairy *Xylota*.

— Pile rather long; head triangular; posterior antecoxal piece

with distinct pile except in *B. frontosus* *Brachypalpus*.

12. Epistoma produced forward beyond base of antennae; long

pilose species with posterior antecoxal piece bare; antennae inserted below middle of eyes *Crioprora*.

— Epistoma produced downwards, or face tuberculate; antennae

usually inserted well above middle of the eye (*Criorhini*) 13.

13. Long pilose species with posterior antecoxal piece hairy; bum-

ble-bee-like in appearance (except *Merapioides*) ; third antennal joint greatly widened apically and with arista usually inserted half way or more from base ; males dichoptic. . . 14.

— Pilosity of usual length; posterior antecoxal piece bare; third

antennal joint obtusely quadrate and with arista near base; unlike bumble-bees in appearance • • i5-

14. Pile entirely pale in color; arista placed at tip of conically

produced third antennal joint Merapioides.

— " Bumble-bee syrphids " Criorrhina.

15. Antennae inserted on prominence slightly higher than vertex

of head; lateral margins of abdomen yellow Somula.

— Antennae inserted below vertex of head; lateral margins of

abdomen not entirely yellow Cynorrhina.

16. Antennae inserted near middle of head; face not longer than

front Tetnostoma.

— Antennae long or short and inserted above middle of head on

a conical process; face much produced downwards; sixth

vein entering wing margin shortly beyond anal cell.

Sphecomyia.

— Antennae inserted above middle of head; face not produced

downwards; sixth vein prolonged obliquely outward from anal cell; hind femora with conical, tooth-like projection below near distal end *Spilomyia*.

Ceriodinae.

One genus ; in this country easily divided into three subgenera.

A. Antennal process very elongate, quite as long as length of

antennae exclusive of style; a stigmatical crossvein, or at least a distinct thickening present.

1 . Abdomen strongly constricted basally ; loop in third

vein without adventitious branch; ambient vein present *Monoceromyia*, new subgenus.

2. Abdomen not constricted; loop in third vein with

adventitious branch projecting in discal cell ; ambient vein rarely present *Ccrioides*.

B. Antennal process shorter than first antennal joint, neither stig-

matical crossvein nor a distinct thickening present at tip of auxiliary vein; abdomen constricted *Sphymorpha* . *Sphymorpha*.

Notes on Some Genera and Species of Syrphidae.

Calliprobola Rond. Includes *Brachypalpus pulcher*, *B. sorosis*,
Calliprobola aldrichi, *C. cra-wfordi*, and *C. opacus*.

Ceria Fabr. == *Cerioides* Rond.

Ceriogaster Will. Tropical ; no material at hand.

Cynorrhina Will. Ranks as genus.

Doros Meig. (European.) *Xanthogratmna aequalis* Lw. is placed
therein.

Humerus Meig. *E. strigata* Fall, is now well established in North

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America. *Microxylota robii* Jones is synonym of this species,

according to Aldrich.

Eumyiolepta Shn. Erected for *Myiolepta strigilata* Lw.

Lepidostola Mik. Tropical; no material at hand.

Microxylota Jones (Jones, Ann. Ent. Soc. Am., x, 231) is synonym

of *Eumerus* (Aldrich).

Ocyptamus Macq. Subgenus of *Baccha*. Abdomen not constricted basally.

Platynochaetus Wd. Tropical ; no material at hand.

Polydontomyia. Takes rank over *Triodontia* and *Polydonta*; not

congeneric with *Pterallastes*, but belongs in *Helophilini*.

Rhysops Will. Subgenus of *Melanostoma*; face with transverse

grooves.

Salpingogaster Schin. Tropical ; probably subgenus of *Baccha*;

third vein is looped downwards.

Scaeva Fabr. Probably subgenus of *Syrphus*; used for *Cata-*

bomba pyrastris.

Senogaster Mscq. =: *Acrochordonodes* Big. 5". *comstocki* is generally believed to be a synonym of *A. dentipes*, which is not

of North American distribution.

Sphyximorpha Rond. = *Ceroides* Rond. Retained as a subgenus.

Xanthandrus Verr. Subgenus of *Melanostoma*; has flat, elliptical

abdomen.

Chilosia parva Will, belongs in *Melanostoma*; probably melanic

specimens.

Chilosia nigripennis Will. = *Chrysogaster nigripennis* Will.

Chilosia versipellis Will. = Chrysogaster versipellis Will.

Tropidia cooleyi Seamans (Seamans, Ent. News, xxviii, 342) =

Helophilus modestus Will. (According to Aldrich.)

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Descriptions of New Species of Syrphioae.

Psilota thatuna n. sp.

Female. — Rather small, robust ; shining bluish black. Eyes with dense, brownish pile. Frons clothed with fairly long black pile, with a slender longitudinal furrow, and a short distance above the antennae there is a shallow transverse furrow.

Antennae reddish brown, darker on upper margin of third joint; first two joints together about two thirds as long as third; third joint rather broad and nearly twice as long as broad ; arista as long as length of second and third joints combined and placed near base of last joint. Face in profile flat, a little swollen and retreating a little towards mouth ; epistoma projecting slightly beyond base of antennae; clothed with rather pale, silky pile.

Thorax clothed with short, rather dense, black pile ; edge of scutellum marginated and with longer hairs.

Abdomen broader than thorax, globose and shining ; clothed with short black pile, which is somewhat longer and lighter at the anterior corners.

Legs largely black, knees and tarsi brownish yellow ; posterior femora swollen.

Squamae and cilia, plumula and halteres largely brownish yellow.

Wings hyaline; typical *Psilota* venation.

Length: about 7 mm.; wing 5.75 mm.

Type locality. — Summit of Cedar Peak, Moscow Mts., Thatuna Range, Idaho. Four female specimens, July 10, 1920. R. C. Shannon, collector.

Type. — Cat. No. 24096, U. S. N. M. Two paratypes in author's collection.

Psilota buccata differs from *P. thatuna* as follows : General color greenish black ; body clothed with whitish pile ; third antennal joint uniformly blackish and three times as long as broad ; face noticeably more inflated; color of legs more contrastingly yellow and black ; abdomen less globose ; wings pale yellow ; fringe of cilia and bristles at base of costa yellowish (black in *thatuna*) ; color of squamae, halteres and plumula whitish. *P. thatuna* appears to be more nearly related to the European *Psilota anthracina*. This species differs, according to Verrall's description (British Syrphidae), in having pile on the abdomen extensively whitish, "in fact all the tip half bears whitish pubescence."

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Another specimen (female from California) in the National

Collection agrees with *P. thafuna* except for the absence of the longitudinal furrow on the frons and having a longer arista and shorter antennae.

Nausigaster chrysidiformis n. sp. (Fig. 5 a and b).

Female. — Medium sized, with rather dull metallic reflections of various hues; all the chitinous parts punctate. General shape of head hemispherical. Post-orbital region inflated, as wide as the frons at the ocelli, thickly punctate; a distinct indentation present opposite the humeral calli. Frons rather narrow at the ocelli, but widens rapidly toward the antennae, clothed with very short, stiff, black pubescence. Ocelli placed on a distinct protuberance ; another callus present a short distance below, and the region between the two calli is golden pollinose; below the second swelling there is a rather broad band of silvery pollen. First two antennal joints very short; the third very large, subquadrate, and brownish yellow ; arista black. Face narrowing towards oral margin; a prominent tubercle present which is of a shining violet reflection ; between the antennae and the tubercle the face is excavated and covered with silvery pollen; epistoma not projecting.

Mesonotum with violet, bronzy, greenish, blue and coppery reflections, and with three distinct longitudinal vittae of a coppery cast. Scutellum inflated, bright golden yellow, and without distinct punctures except the anterior corners which are greenish black and punctate. Pleurae bluish with a coppery

reflection.

Abdomen dark greenish blue basally, becoming lighter on posterior half and with a shining golden tip. Second segment with prominent, outwardly directed horn on each anterior corner. Abdomen marginate and with a downward projecting obtuse tooth on each of the under posterior corners. Under side of abdomen excavated.

Legs greenish black, knees more or less brownish, hind tibiae on the exterior side at the tip with a broad excavation.

Wings smoky ; the stigmatical spot black ; a broad blackish spot below the stigma, another spot present on the crossvein connecting the discal and anal cells, and also a broad preapical spot present. ^ Plumula vestigial ; squamae, cilia and halteres yellowish.

Length : about 9.5 mm. ; wing 8.5 mm.

^ The markings on the wings are not shown in the figure.

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Described from four females, Rio Charape, Peru, September 16 ;

C. H. T. Townsend, collector.

Type.— C¹i. No. 24097, U. S. N. M.

This species is at once distinguished from our North American species of *Nausigaster* by its larger size, more variegated color, and the presence of the horns on the second segment.

From *N. bonariensis* Lynch (Argentina) it may be distinguished by the different color, larger horns on the second segment, and non-appendiculated apical crossvein. In one specimen of the material at hand there is an adventitious vein between the first and second veins near their tips.

See discussion under *Nausigasterinae* for the remarkable resemblance members of this genus bear with the *Chrysididae* (Hymenoptera) .

Nausigaster peruviansis n. sp.

Female. — Medium-sized species, general color aenescent. Ocellar callus reddish; frontal callus shining greenish black; a silvery pollinose band present between the two calli, and below there is a broad indefinite silvery pollinose band. Antennae brownish. Face narrowing towards mouth, tubercle reddish piceous; face, in profile, rather strongly retreating from the tubercle to the mouth margin.

Mesonotum of a general mahogany red, and with four pale, silvery pollinose, longitudinal vittae. Scutellum margined with

a thin serrulated edge.

Anterior corners of second tergite with small conical horns ;
also a median triangular depression present on second tergite,
the peak directed caudad. Otherwise abdomen is typical of
the genus.

General color of the legs yellowish brown.

Wings : A deep brown stigmatical spot at tip of auxiliary
vein; below a broad brownish spot extending to the fourth
vein; a rather light spot present on crossvein connecting the
discal and anal cells ; a preapical spot extending from the first
vein half way between the third and fourth veins.

One specimen, Santa Eulalia, Peru, Jan. 18, 1913; C. H. T.
Townsend, collector.

Type.— Cat. No. 24098, U. S. N. M.

N. peruviana is somewhat larger than our North American
species of *Nausigaster*. Shape of head is very similar to *N. uni-*

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maculata, and also the scutellum of each is very similar. However, the conical processes on the second tergite at once separate it from our North American species. It is distinguished from *A[^]. chrysidiformis* by its smaller size, the smaller size of the abdominal horns, and the shape and color of the scutellum. This species may be closest related to *A[^]. honariensis* Lynch (Argentina). Lynch, in his description, only mentions the black stigmatal spot of wing, and it is assumed that this is the only spot on the wing. Also it is evident that his species is more piceous and rufous piceous than the present one. In his generic diagnosis, presumably based on his *honariensis* material, Lynch states that the eyes are naked. This may hold true for his species, but in all of the species before me (five out of seven known species) the eyes are thinly pilose.

Cerioides tricolor Lw.

The species discussed below apparently comprises another subgenus of *Cerioides* and the name *Monoceromyia* is here proposed.

The following are the salient characters of *C. (Monoceromyia) tricolor*: Antennae inserted on a pedicle quite as long as length of antennae exclusive of style ; abdomen strongly constricted basally ; loop in third vein without adventitious branch; posterior margin of wings rather strongly chitinized, appearing as an ambient vein.

Color: Ocellar region black, bordered by yellow postorbital regions; face bright yellow with three reddish-brown stripes, two

of them are lateral, the third median ; humeri, prealar, and postalar spots bright yellow; scutellum yellow except for central blackish spot; a large yellow spot on pleurae and another one present on hypopleura; legs yellow, becoming somewhat reddish on tarsi; a blackish spot present at middle of posterior femora; anterior margin and corners of abdomen bright yellow ; a large black median spot on first segment ; remainder of abdomen reddish brown except for narrow yellow stripe on posterior margin of second segment. Anterior half of wing with deep brown cloud.

Monoceromyia tricolor floridensis, new variety, differs from *tricolor* in having the yellow markings more reddish and in the complete absence of the hypopleural spot.

An unique male, bearing only the label " Fla."

Type.—C2±. No. 241 17, U. S. N. M.

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This species is among the most handsome and distinctive of the genus and makes a welcome addition to our fauna. *Ceriodes* (*Monoceromyia*) *tricolor* Lw. was originally described from Cuba and Hine records two specimens from Holguin, Cuba. Prof. Hine has very kindly loaned me the two specimens, females, upon

which the above description is based. This favor aided considerably in the identification of the species and very probably saved me from making a synonym.

For the loan of these specimens and other material of this genus I wish to record here my sincere thanks to Prof. Hine.

Dr. J. Bequaert has also loaned me material in this group for which I wish to express my sincere appreciation.

Explanation of Plate,

Fig. 1. *Chilosia similis* Shannon, ♀: a, head in profile; b, venation of wing. Fig. 2. *Volucella pelluscens* Linnaeus (genotype) : a, head in profile; h, venation of wing. Fig. 3. *Eristalis tenax* Linnaeus : a, head in profile ; h, venation of wing. Fig. 4. *Xylota segnis* Linnaeus (genotype) : a, head in profile; h, venation of wing. Fig. 5. *Nausigaster chrysidiformis* Shannon: a, head in profile; b, venation of wing.

An unused taxonomic character in Syrphidae (Diptera). — In his paper on Syrphidae, in volume 16 of this magazine, R. C. Shannon separates Eristaliinae from Chilosiiinae and Xylotinae by a combination of characters, but omits one character which appears to be of prime importance, though unmentioned in any paper on the family, and which evidently substantiates his present assignment of the genera concerned. This character consists of a dense patch of stubby decumbent black spinules at the bases of all the

femora on their anterior surfaces. These are present on all femora only in Eristaliinae, so far as our material shows, though they may be present on at least the fore femora in some genera in other subfamilies. — J. R. Malloch, U. S. Biological Survey.

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