



Figs. 124–127. *Toxomerus* spp., male genitalia. 124, *T. politus*. 125, *T. aeolus*. 126, *T. aurulentus*. 127, *T. pulchellus*. a, 9th tergum and associated structures, lateral. b, 9th sternum and aedeagus, lateral, with outline of ligula. c, Same as a, dorsal. d, Aedeagus, ventral oblique (126b, also with posterior view of superior lobe).

from it by the presence of a yellow supraprocoxal spot. Macquart's original description clearly indicates that his *pulchellus* lacks such a spot. *Toxomerus aeolus* is very similar to *politus* (Say) and is undoubtedly its sister-species. Besides the characters mentioned in the above key, the principal differences between the two are in the shape of the superior lobe and the aedeagus. In *aeolus* the tooth on the dorsal edge of the superior lobe is

narrow and acute, not broad and obtuse; the apex of superior lobe is rounded, not angulate; and the lower lateral lobes of the aedeagus are turned dorsally, not downward.

*Toxomerus arcifer* (Loew)

Figs. 75, 96, 103, 111

*Mesogramma arcifera* Loew, 1866a: 160. Type-loc.: Cuba. Lectotype ♂ MCZ\*, see Appendix B. subsequent references: Coquillett, 1900: 253 (Puerto Rico); Johnson, 1908: 74 (Bahamas); Gowdey, 1926: 80 (Jamaica); Curran, 1928b: 41 (Puerto Rico); Wolcott, 1936: 348, 1948: 464 (Puerto Rico, biol. notes); Hull, 1943b: 8, figs. 67–68 (abdomen).

*Mesograptia arcifera*: Loew, 1872: 120; Wulp, 1883: 5, pl. 1, fig. 6 (abdomen) (Guadeloupe; descript. notes); Johnson, 1894: 276 (Jamaica); Miskimen and Bond, 1970: 66 (St. Croix); Telford, 1973: 222 (Puerto Rico).

*Toxomerus arcifer*: Kertész, 1910: 144; Johnson, 1919: 434 (Jamaica); Wolcott, 1923: 218 (Puerto Rico); Boyes et al., 1971: 119, pl. 31, fig. 1 (karyotype), pl. 32, fig. 1 (idiogram) (chromosomes described, based on Puerto Rican material).

*Mesograptia ornithoglypha* of Doesburg, 1970: 93, 96, 98, 99 (Dominica, descript. notes).

Distribution.—USA (Florida); Bahamas, Cuba\*, Grand Cayman\*, Jamaica\*, Hispaniola\*, Puerto Rico\*, Lesser Antilles (St. Croix, Montserrat\*, Guadeloupe\*, Dominica\*, St. Vincent\*).

*Toxomerus arcifer* is a widespread and common species in the Antilles. It has also been recorded in Ecuador and Peru, but these records may be based on misidentifications. I have not seen specimens of *arcifer* from outside the Antilles. *Toxomerus arcifer* (especially males) frequently have the abdominal pattern reduced by the expansion of the pale areas. Also the arcuate spots on the second tergum of the male are variable, strongly arcuate and widely separated in the typical populations (Fig. 75a) to slightly arcuate and broadly joined in the populations in the Lesser Antilles (Fig. 75b). *Toxomerus ornithoglyphus* (Hull) may be a geographic variant of *arcifer* (*q.v.*).

*Toxomerus aurulentus* (Williston)

Figs. 88, 126

*Mesograptia aurulenta* Williston, 1887: 102. Type-loc.: San Domingo. Lectotype ♂ USNM\*. Subsequent reference: Telford, 1973: 222 (Puerto Rico; synonymy, color variation).

*Toxomerus aurulentus*: Kertész, 1910: 144; Wolcott, 1923: 218 (Puerto Rico); Boyes et al., 1971: 119, pl. 31, fig. 2 (karyotype), pl. 32, fig. 2 (idiogram) (chromosomes, based on Puerto Rican material).

*Mesogramma aurulenta*: Aldrich, 1905: 370; Wolcott, 1936: 349, 1948: 465 (Puerto Rico; distr. note); Enderlein, 1938: 232 (Puerto Rico); Hull, 1943b: 5, 16, fig. 12 (abdomen) (key ref.).

*Mesogramma rufocincta* Curran, 1927: 7. Type-loc.: Puerto Rico, Mayaguez. Holotype ♂ AMNH. Subsequent reference: Hull, 1943b: 16, fig. 83 (abdomen). Synonymy by Telford, 1973: 222.

*Mesograptia rufocincta*: Maldonado and Navarro, 1967: 59 (Puerto Rico); Telford, 1973: 225 (Puerto Rico, as a valid species!).

Distribution.—Hispaniola\*, Puerto Rico\*.

Williston described his species from two males and two females. Hull (1943b) used the expression "From the type" to identify his figure of a male of *aurulentus* Williston. The syntypes of *aurulentus* are in the U.S. National Museum and, as a matter of curatorial practice, one specimen, a male bearing Williston's determination label, was labeled with a USNM type label and given a type number by Coquillett. Perhaps it is this specimen that Hull figured. In any case, this specimen is designated LECTOTYPE.

Hull labeled many of the figures in his papers on *Mesogramma* and *Baccha* (1943b, 1943d, 1949a) with phrases such as "From the type" (the most common one), "From type," "From a paratype," "male type," "From type series" (once), "In part from type" (once), "From Holotype" (in 1949a), and "from cotype" (once in 1949a). In the cases where the phrase "From the type" or "From type" was used for a species described without a holotype, some worker may construe this to be a lectotype designation for these species. I emphatically do not consider that to be. I rigidly interpret the *Code*, which states that "each designation . . . must have as its object the definition of that species." (Art. 74(c), Stoll et al., 1964), and the word "designation" is defined as the act of *marking out* and making known. In the case of *aurulentus*, Hull was merely identifying the basis of a figure and did not himself mark a specimen. In general, the mere published reference to a specimen as the type, even when a single valid syntype has been previously labeled as "Type," is not in my opinion a valid lectotype designation. In these cases it is usually clear that the author was neither aware of the fact that that species was published without a holotype nor aware that he was studying only one of the syntypes.

*Toxomerus buscki* Thompson, NEW SPECIES

Fig. 100

Male.—*Head*: Face yellow, very sparsely white pollinose and pilose laterally; cheek black; frontal lunule yellow; frontal triangle black except narrowly whitish yellow along eye margins, sparsely black pilose laterad to antennal bases; vertical triangle black, black pilose, silvery pollinose in front of ocellar triangle, more brownish-grey pollinose behind ocellar triangle;

occiput black, silvery-gray pollinose, white pilose below becoming yellow pilose above, with an anterior row of few short black hairs on upper  $\frac{1}{4}$ . Antenna yellow, black pilose.

*Thorax*: Yellow pilose except for black pile intermixed on mesonotum, bluish black except yellow as follows: Humerus, sides of mesonotum continuously from humerus to scutellum, above front coxa (i.e. supraprocoxal spot), posterior mesopleuron, upper sternopleuron, anterior and posterior triangular portion of pteropleuron, metasternum, and metathoracic pleuron. Mesonotum dull bluish-gray pollinose except for 2 broad greenish-bronze submedial vittae; scutellum dull yellowish orange, black pilose; halter and squama dirty yellow; plumula yellow. *Legs*: Front and middle coxae bluish black except for yellow apices, yellow pilose; rest of anterior 4 legs yellow, yellow pilose except black pilose posteriorly on apical  $\frac{1}{3}$  of femora; hind-coxa yellow, yellow pilose; hindtrochanter brown; hindfemur yellow except for black subapical annulus, yellow pilose on basal  $\frac{1}{2}$ , black pilose apically; hindtibia brown, except yellow on medial  $\frac{1}{3}$ , black pilose; hindtarsus brownish black, black pilose. *Wing*: Hyaline, distribution of microtrichiae as figured.

*Abdomen*: Sterna yellow, yellow pilose; terga black pilose except yellow pilose on 1st and basal  $\frac{1}{2}$  of 2nd, yellowish orange except black as follows: Apical  $\frac{1}{2}$  on 1st, basal  $\frac{1}{4}$  of 2nd except laterally, apical  $\frac{1}{4}$  of 2nd, narrow subapical and medially interrupted fasciae on 3rd and 4th, basomedial spot on 5th.

Holotype.—♂, DOMINICAN REPUBLIC [as St. Domingo], San Francisco Mountains [as SFrnscs Mts.], 15 September 1905, August Busck; deposited in USNM.

Discussion.—*Toxomerus buscki* belongs to the *duplicatus* Wiedemann group and is very closely related to *watsoni* Curran, differing by the characters given in the above key and the structure of the male genitalia. The species is named after August Busck, a noted microlepidopterist, who collected most of the earlier West Indian material now in the USNM. He visited Puerto Rico in 1898–1899, Cuba in 1901, and many of the islands between Santo Domingo and Trinidad in 1905.

*Toxomerus corbis* (Walker)

*Syrphus corbis* Walker, 1852: 236. Type-loc.: "United States." Type ♂ BM (NH).

*Mesograptus corbis*: Osten Sacken, 1878: 125 (suggest may be *boscii* Macquart).

*Mesogramma corbis*: Aldrich, 1905: 370; Hull, 1943b: 9, 36, fig. 59 (abdomen) (key ref.).

*Toxomerus corbis*: Kertész, 1910: 145 (2 references).

*Mesogramma planiventris* Loew, 1866a: 158. Type-loc.: USA, Florida. Syn-types 2 ♀ MCZ. Subsequent reference: Hull, 1943b: 6-7, 32, fig. 29 (abdomen) (key ref.). Synonymy by Vockeroth (*in litt.*).

Distribution.—USA (North Carolina to Florida); Bahamas?.

I have seen a single female from the Bahamas labeled as follows: South Bimini Isl., Bahamas, B.W.I., May 1951, Cazier and Gertsch / *Mesogramma planiventris* Lw [a Johnson determination label written in his own hand]. Inasmuch as C. W. Johnson died in 1932, it is obvious that someone has tampered with the determination label, which makes one suspect the locality label also. Cazier and Gertsch were both curators at the American Museum of Natural History and did a lot of insect collecting on Bimini in 1951. The unique specimen is in the private collection of H. V. Weems, Jr. *Toxomerus corbis* is known only from the extreme southeastern portion of the United States; Curran's record from Guyana (1934: 402, as *planiventris*) is based on specimens of *pulchellus* (Macquart).

*Toxomerus difficilis* (Curran)

Figs. 87, 105, 112

*Mesogramma difficilis* Curran, 1930b: 6, fig. 2 (♂ genitalia). Type-loc.: Puerto Rico, Coamo Springs. Holotype ♂ AMNH\*. Subsequent reference: Hull, 1943b: 28, fig. 11 (abdomen) (key ref.); Wolcott, 1948: 465 (Puerto Rico; descript. notes).

*Mesograptia difficilis*: Fluke, 1956: 221; Telford, 1973: 223 (Puerto Rico).

*Toxomerus difficilis*: Thompson et al., 1976: 49.

?*Toxomerus polygonastyla* Wolcott, 1923: 219 (*nomen nudum*). Type-loc.: Puerto Rico. Type ♂ location unknown. Subsequent reference: Wolcott, 1936: 350 (Puerto Rico).

?*Mesograptia polygonastyla*: Wolcott, 1948: 466 (Puerto Rico).

*Mesograptia floralis* of Telford, 1973: 223 (in part; Puerto Rico).

*Toxomerus* sp. 10, Boyes et al., 1971: 121, pl. 31, fig. 14 (karyotype), pl. 32, fig. 14 (idiogram) (Puerto Rico).

Distribution.—Costa Rica; Cuba\*, Jamaica\*, Puerto Rico\*.

I have studied few specimens (12 ♂, 4 ♀, including the types) of this species. The species is readily separated from all other members of the *duplicatus* group by the genitalia as noted in the above key. All the material I examined has the postalar callus yellow pilose, whereas *watsoni* Curran has extensive black pile on the callus. Whether this character will prove true for these species I cannot say.

Wolcott listed a species, *polygonastyla* "a ms name of C. P. Metcalf," in his various editions of the catalog of Puerto Rican insects. He noted the name was derived from "the peculiar shape of the styles of the male." This

is all the information that is associated with the name *polygonastyla*, which must be considered a *nomen nudum*. I suspect the name applies to *difficilis* which also has very distinctive male styles.

*Toxomerus dispar* (Fabricius)

Figs. 23, 91, 95, 116, 119

*Syrphus dispar* Fabricius, 1794: 309. Type-loc.: "Americae meridionalis"; here restricted to the West Indies, St. Croix (see below). Syntypes 1 ♂ 1 ♀ KIEL (lost, Zimsen, 1964: 481). Subsequent references: Wiedemann, 1830: 141 (redescription from type ♂); Kertész, 1910: 113 (cat. citation).

*Scaeva dispar*: Fabricius, 1805: 253.

*Syrphus basilaris* Wiedemann, 1830: 143. Type-loc.: Brazil. Type ♂ SMF.  
NEW SYNONYMY.

*Toxomerus basilaris*: Kertész, 1910: 144 (5 references); Wolcott, 1923: 219, 1936: 349 (Puerto Rico); Boyes et al., 1971: 120, pl. 31, fig. 3 (karyotype), pl. 32, fig. 3 (idiogram) (chromosomes based on Mexican material).

*Mesograptia basilaris*: Wulp, 1883: 6, pl. 1, fig. 8 (abdomen) (Guadeloupe; key ref., descript. note); Doesburg, 1970: 92, 98, 100 (Lesser Antilles; notes); Telford, 1973: 222 (Puerto Rico, suggests that it and *floralis* are conspecific).

*Mesogramma basilaris*: Schiner, 1868: 347; Hine, 1914: 337 (Cuba); Curran, 1925: 307 (synonymy, variation), 1934: 401 (key ref., diff. *florale*, synonymy), 1939d: 173 (Martinique); Gowdey, 1926: 80 (Jamaica); Hull, 1943b: 25 (key ref., variation, distr., synonymy); Wolcott, 1948: 465 (Puerto Rico).

*Mesogramma basilare*, var. ? of Williston, 1896: 349 (St. Vincent; in part, mixed with *floralis*).

*Mesograptia variabilis* Wulp, 1883: 6, pl. 1, fig. 9 (abdomen). Type-loc.: Guadeloupe. Syntypes ♂ MRHNB. Subsequent reference: Doesburg, 1970: 95 (synonymy). Synonymy by Curran, 1925: 307.

*Toxomerus variabilis*: Kertész, 1910: 150.

*Mesogramma variabilis*: Hull, 1943b: 9 (key ref.).

*Mesogramma imperialis* Curran, 1926b: 103. Type-loc.: Jamaica, Blue Castle. Holotype ♀ BM(NH)\*. Subsequent references: Gowdey, 1926: 80 (Jamaica); Hull, 1943b: 10, fig. 45 (abdomen) (not *imperialis*) (key ref.).

NEW SYNONYMY.

——— *subannulatus* of authors, in part (see under *floralis* Fabricius).

*Toxomerus floralis* of Boyes et al., 1971: 120, pl. 31, fig. 4 (karyotype), pl. 32, fig. 4 (idiogram) (chromosomes, based on Puerto Rican material).

*Mesograptia floralis* of Telford, 1973: 223 (in part; Puerto Rico).

Distribution.—USA (Texas, Florida), south to Chile and Argentina; Cuba\*, Grand Cayman\*, Jamaica\*, Hispaniola\*, Puerto Rico\*, Lesser Antilles (Antigua, Monserrat\*, Guadeloupe\*, Dominica\*, Martinique, St. Vincent, Grenada\*).

*Toxomerus dispar* and *floralis*, both highly variable species, are the two most abundant *Toxomerus* species in the West Indies and Mesoamerica. As a result there has been considerable confusion as to the correct identity of these species and their associated names. The range of abdominal pattern variation in the males of *dispar* is shown in Figs. 91a, b. The females are never as pale as some of the males and frequently are much darker (Fig. 91c). The abdominal pattern of *floralis* is also variable but *floralis* is never as dark as *dispar* (Fig. 92). The males of both *dispar* and *floralis* have completely yellow faces, whereas the females usually have broad black median vittae. The color of the sides of the mesonotum is quite variable only in *dispar*; usually the sides are all dark except for the yellow humerus and only rarely are the sides all yellow as in *floralis*. The presence or absence of a yellow supraprocoxal spot is also variable and appears to be correlated with the color of the lateral mesonotal vitta. As a result of this great variability of color pattern, some specimens of *dispar* are almost identical to *floralis* in overall appearance. Despite the color overlap in *dispar* and *floralis*, these species are readily separated on the basis of their genitalia as noted in key couplet 14.

The types of *Syrphus dispar* Fabricius are apparently destroyed because only a name label remains in the Fabrician Collection (Zimsen, 1964: 481). Despite the loss of the types, there can be no doubt as to the identity of *dispar*. Fabricius described a male and female collected in copulo that were very different. Only *Toxomerus floralis* Fabricius and *basilaris* Wiedemann fit this requirement. As noted above these two species are variable and can be difficult to separate due to the fact that some individuals have similar color patterns. While *basilaris* is frequently pale and similar to *floralis*, *floralis* is never dark like the typical members of *basilaris*. *Toxomerus floralis* always has lateral yellow mesonotal vittae, which are usually lacking in *basilaris*. The Fabrician description of the male mentioned lateral yellow vittae, but it is not clear whether they are the ones on the pleura (i.e. on posterior mesopleuron and upper sternopleura and present in both species) or those on the sides of the mesonotum. Wiedemann, however, clearly identified the yellow vittae as those on the pleura. The lack of mesonotal yellow vittae in *dispar* identifies this name as applying to the species now known as *basilaris*. Also, the Fabrician description of the female can only fit a dark *basilaris* specimen, not *floralis*. I have never seen a female *floralis* dark enough to agree with Fabrician description of the abdomen, but I have seen a number of females of *basilaris* which do.

While *dispar* is clearly the senior synonym for *basilaris* Wiedemann, I dislike displacing such a well-known and established name as *basilaris* with one that has never been used as a valid senior synonym. However, the species concept associated with the name *basilaris* has been confused, some authors restricting it to only the darkest forms of *dispar* and other authors considering it to include all the forms of *dispar* and *floralis*. This confusion

makes all the data now associated with the name *basilaris* suspect. Thus I prefer to use a virtually unknown name for my revised concept of this species.

The types of *dispar* were collected by Dr. Pflug, who collected in the West Indies, especially on St. Croix (Papavero, 1971: 22). Accordingly I have restricted the type-locality of *dispar*.

The type of *Mesogramma imperialis* Curran is in very poor condition. It is missing the head, two legs, the abdomen, and most of one wing, but even so it is clearly identifiable as *dispar* Fabricius. Curran's description of the missing parts also agrees with those of a light colored female *dispar*. Hull figured the abdomen of the "type," but his figure can not be of the type because there are a number of serious discrepancies between his figure and Curran's description. The abdominal pattern figured by Hull is almost identical to that of a female of *geminatus* (Say).

*Toxomerus elinorae* Thompson, NEW SPECIES

Fig. 113

Female.—*Head*: Face yellow except for narrow brownish-black submedial vittae, white pollinose and pilose laterally; cheek black, shiny anteriorly, sparsely white pollinose and pilose posteriorly; frontal lunule yellow; front mainly bluish black, narrowly yellow on sides on lower  $\frac{3}{4}$ , shiny on lower  $\frac{3}{4}$ , black pollinose on upper  $\frac{1}{4}$ , black pilose, with distinct transverse carinae on lower  $\frac{3}{4}$ ; vertex black, black pollinose and pilose; occiput bluish black, silvery-white pollinose on lower  $\frac{3}{4}$  becoming more brownish on upper  $\frac{1}{4}$ , with white scalelike pile on lower  $\frac{2}{3}$ , yellow pilose on upper  $\frac{1}{3}$ . Antenna yellowish brown, with 3rd segment almost all brownish black, black pilose; arista black.

*Thorax*: Humerus yellow; mesonotum mainly bluish black, steel-gray pollinose except for silvery-white medial vitta, with continuous yellow lateral vitta, with this vitta sublateral on notopleuron; scutellum yellow, with black medial fascia, black pilose. Pleuron yellow pilose, shiny bluish black except yellow as follows: On propleuron above procoxa, posterior mesopleuron, upper sternopleuron, posterior triangular portion of pteropleuron, and metathoracic pleuron. Metasternum, plumula, squama, and halter yellow. *Legs*: Front and middle legs mainly yellow, yellow pilose on basal  $\frac{1}{2}$  of femora, black pilose elsewhere; front and middle coxae bluish black, sparsely white pollinose, yellow pilose; hindcoxa and trochanter yellow, yellow pilose; hindfemur yellow with medial and subapical black annuli, yellow pilose on basal  $\frac{1}{3}$ , black pilose on apical  $\frac{2}{3}$ ; hindtibia black except narrowly yellow on base and apex and broadly yellow medially, black pilose; hindtarsus yellow, black pilose. *Wing*: Hyaline, microtrichose except bare as follows, both costal cells, marginal cell to level of end of stigma (R1), basal  $\frac{1}{3}$  or more of submarginal cell, basoanterior corner of apical cell, all of both basal cells, almost all of anal cell (only a few scattered microtrichia at apex of

anal cell), basal  $\frac{1}{5}$  of and along anterior and posterior margins of cubital cell on basal  $\frac{2}{3}$ , and on anal lobe around 2nd A. Alula microtrichose, narrow, distinctly narrower than 2nd basal cell.

*Abdomen*: First tergum yellow and yellow pilose broadly on basal margin, black and black pilose posteriorly; 2nd through 4th terga bluish black, each with a complete yellow fascia, black pollinose narrowly in front and broadly behind fasciae, shiny elsewhere, short black pilose except long yellow pilose on basolateral corners of 2nd tergum; 5th tergum similar to preceding ones but with fascia narrowly interrupted medially; 6th tergum all bluish black, black pilose; sterna yellow, yellow pilose; genitalia black, black pilose on terga, yellow pilose on sterna; 9th sternum swollen, convex, with a median cleft border on each side by a submedial stout tooth.

Holotype.—♀, JAMAICA, St. Catherine Parish, Worthy Park, 2.2 miles north on Camperdown Road, 9–19 November 1968, Malaise trap, R. E. Woodruff; from the personal collection of H. V. Weems, Jr., and to be deposited in the USNM.

Discussion.—*Toxomerus elinorae* is very closely related to *verticalis* (Curran) and is readily distinguished from that species by a strongly carinate front, yellow basal margin of scutellum, and enlarged female genitalia. I have named this species in honor of my mother.

*Toxomerus ferroxida* (Hull)

Fig. 115

*Mesogramma ferroxida* Hull, 1942b: 21. Type-loc. St. Vincent. Holotype ♂ MCZ. Subsequent reference: Hull, 1943b: 13, fig. 66 (abdomen).

*Mesogramma* sp. of Williston, 1896: 350 (St. Vincent).

*Mesograptus ferroxida*: Doesburg, 1970: 98 (synonymy, suggests it is the same as *multipunctatus*).

Distribution.—Lesser Antilles (Guadeloupe?, St. Vincent\*, Grenada\*).

*Toxomerus ferroxida* (Hull) is quite similar to *arcifer* and *multipunctatus*, and these species together with *boscii* Macquart are considered to be a monophyletic group, the *arcifer* group. The male genitalia of *ferroxida* and *luna* Hull are very similar. This similarity is considered synapomorphic, demonstrating the sister-group relationships between the *arcifer* and *confusus* groups. The form of the male genitalia of *ferroxida* and the dark abdominal pattern of the male *arcifer* are considered to be plesiomorphic for the group. The *arcifer* group is then characterized by the in-group trends of the expansion of the medial pale areas on the abdomen and the reduction of the lateral lobe on the superior lobe of the male genitalia.

*Toxomerus floralis* (Fabricius)

Figs. 92, 99, 117, 118

*Syrphus floralis* Fabricius, 1798: 563. Type-loc.: "Cajennae." Types ?KIEL

- (Zimsen, 1964:481). Subsequent references: Wiedemann, 1830: 145 (re-description based on types); Kertész, 1910: 114 (4 references).
- Mesogramma floralis*: Schiner, 1868: 347; Curran, 1925: 307 (synonymy), 1928b: 39 (Puerto Rico, Virgin Is.), 1934: 401 (key ref., variation, synonymy); Wolcott, 1936: 349, 1948: 465 (Puerto Rico); Hull, 1943b: 24, figs. 37, 38, 40 (abdomen) (key ref., variation and relationship to *basilaris*).
- Mesograptus floralis*: Fluke, 1956: 223; Doesburg, 1970: 93, 96. (Lesser Antilles); Miskimen and Bond, 1970: 66 (St. Croix); Telford, 1973: 223 (Puerto Rico; in part, *difficilis* and *dispar* mixed in).
- Toxomerus floralis*: Thompson et al., 1976: 50.
- Syrphus quadrifasciatus* Bigot, 1857: 337, pl. 20, fig. 5 (habitus). Type-loc.: Cuba. Lectotype ♀ MNHN\*, see Appendix B. NEW SYNONYMY.
- Mesogramma subannulata* Loew, 1866a: 157. Type-loc.: Cuba. Lectotype ♂ MCZ by present designation (*v.i.*). Subsequent references: Coquillett, 1900: 253 (Puerto Rico; gives *cuprina* Bigot as synonym); Johnson, 1908: 74 (Bahamas); Hine, 1914: 337 (Cuba); Gowdey, 1926: 80 (Jamaica); Hull, 1943b: 25, figs. 34–35 (abdomen) (notes on type); Wolcott, 1948: 466 (Puerto Rico, biol. notes). Synonymy by Curran, 1925: 307.
- Mesograptus subannulata*: Loew, 1872: 120; Johnson, 1894: 276 (Jamaica); Miskimen and Bond, 1970: 66 (St. Croix, biol. note); Telford, 1973: 225 (Puerto Rico, discusses status).
- Toxomerus subannulatus*: Kertész, 1910: 150 (4 references); Johnson, 1919: 434 (Jamaica); Wolcott, 1923: 219, 1936: 350 (Puerto Rico, prey records).
- Syrphus boscii* of Bigot, 1857: 338 (Cuba, descript.).
- Syrphus minutus* of Bigot, 1857: 338 (Cuba, descript.).

Distribution.—USA (Florida), south to Chile and Argentina; Bahamas\*, Cuba\*, Grand Cayman\*, Jamaica\*, Hispaniola\*, Puerto Rico\*, Lesser Antilles (St. Croix\*, St. Johns\*, Antigua\*, Montserrat\*, Guadeloupe\*, Dominica\*, St. Lucia, St. Vincent, Barbados\*).

*Toxomerus floralis* is perhaps the most abundant syrphid in the West Indies. The species is somewhat variable in the color pattern of the abdomen and legs, but it always has a complete, lateral, yellow mesonotal stripe and yellow supraprocoxal spot (see discussion under *dispar*).

The identity of *subannulatus* (Loew) has always been confused. All published records of *subannulatus* refer to either *dispar* or *floralis* or both, although I have seen specimens of other species in collections misidentified as *subannulatus*. The reason for the confusion stems from the fact that Loew described his species from a mixed series of *dispar* and *floralis*. His species was based on a character common to both, the subapical brown annulus on the hindfemur. Also, as noted under *dispar*, some individuals of *dispar* are almost identical to *floralis* in color pattern. In 1925, Curran placed *subannulatus* as a junior synonym of *floralis*. I consider Curran the

first revisor. Later Hull (1943b: 25) discussed the status of *subannulatus* as follows: "This is a species about which confusion exists. I illustrate in figure 35 the species which is commonly supposed to be this form. I also illustrate the actual type [fig. 34] in the Museum of Comparative Zoology from a drawing made while studying there, type no. 13140." In the Museum of Comparative Zoology there is a series of eight syntypes associated with this name in the Loew Collection. Four females (paralectotype D-G) and one male (lectotype) of this series are *floralis*, and two females and one male (paralectotype A-C) are *dispar*. As a matter of curatorial practice one of these specimens, the one with Loew's determination label, was labeled with a type label and given a number (#13140) by Nathan Banks. This specimen is the male of *dispar* (paralectotype B). While some would consider Hull's statements, quoted above, to represent a valid lectotype designation, I do not; to me they clearly demonstrate that he was unaware a lectotype designation was necessary. His figure 35, which could well have been made from one of the syntypes of *subannulatus*, is of *floralis*, the species to which Curran had previously restricted the name. I have labeled the whole type-series, as noted above, and hereby designate the male of *floralis* as the LECTOTYPE of *subannulatus* Loew. This designation is made to conform with Curran's revision of the name.

*Toxomerus luna* (Hull)

Figs. 70, 102

*Mesogramma luna* Hull, 1943b: 21, fig. 80 (abdomen). Type-loc.: Puerto Rico, Mayaguez. Holotype ♂ USNM\*.

*Mesograptus luna*: Maldonado and Navarro, 1967: 59 (Puerto Rico); Telford, 1973: 225 (considered *luna* synonym of *violaceus*).

*Toxomerus lunus*: Thompson et al., 1976: 51.

*Toxomerus violaceus* of Boyes et al., 1971: 121, pl. 31, fig. 15 (karyotype), pl. 32, fig. 15 (idiogram) (chromosomes based on Puerto Rican material).

*Mesograptus violacea* of Telford, 1973: 225 (in part) (Puerto Rico).

Distribution.—Puerto Rico\*.

Telford synonymized this species under *violaceus* (Curran) without a discussion of the characters on which Curran and Hull based their species. Thus I do not know the basis of his synonymy. Telford apparently could not distinguish between these two species. All the material he labeled as "compared with type" of *violaceus* is *luna* Hull, and included in his series of *violaceus* are 37 ♂ 20 ♀ of *luna* Hull and only 5 ♂ 2 ♀ of *violaceus*. I have found *luna* to be quite distinct from *violaceus*. *Toxomerus luna* differs from *violaceus* by the continuous lateral yellow mesonotal vitta, not interrupted between the humerus and notopleuron; by the yellow cilia of the occiput, not black; and by the yellow anterior tibia, not black.

The male genitalia of the holotype of *luna* is also quite different from

*violaceus* in that: 1) The style is narrower, not as broad apically, and has a smaller apical tooth but a stronger and more distinct basolateral production; 2) the postanal process has the medial lobe distinctly much longer than the lateral ones; 3) the lower lobe of the superior lobe is not greatly expanded ventrally; 4) the lateral lobe of the superior lobe is much larger and more club shaped in ventral view; 5) the dorsal process of the superior lobe has a shallower apical excavation and is much more strongly produced anteriorly; and 6) the medioventral tooth of the aedeagus does not extend beyond the lateral flap.

Hull did not give the derivation of his name. I consider *luna* either to be an arbitrary combination of letters or as a noun in apposition (i.e., the name of the Roman goddess of the moon). In either case, the ending of the name is invariant. The use of the name as an adjective in our catalog (Thompson et al., 1976: 51) is an error.

*Toxomerus maculatus* (Bigot)

Figs. 77, 98, 123

*Mesograpta? maculata* Bigot, 1884: 111. Type-locs: Mexico, Cuba, Brazil. Syntypes 4 ♀ OXFORD.

*Mesogramma maculata*: Williston, 1891: 28; Hull, 1943b: 13, fig. 16 (abdomen).

*Toxomerus maculatus*: Kertész, 1910: 147.

*Mesogramma laciniosa* of Coquillett, 1900: 253 (Puerto Rico).

*Mesogramma musicus* of Curran, 1928b: 39 (Puerto Rico); Wolcott, 1936: 349, 1948: 465 (Puerto Rico).

*Mesograpta musica* of Telford, 1973: 223 (Puerto Rico).

Distribution.—Mexico to Argentina; Cuba\*, Jamaica\*, Puerto Rico\*, Lesser Antilles (St. Croix\*).

*Toxomerus multipunctatus* (Wulp)

Figs. 76, 109, 110

*Mesograpta multipunctata* Wulp, 1883: 6, pl. 1, fig. 7 (abdomen). Type-loc.: Guadeloupe. Holotype ♂ MRHNB. Subsequent reference: Doesburg, 1970: 98 (notes).

*Mesogramma multipunctata*: Aldrich, 1905: 371; Hull, 1943b: 6 (key ref.).

*Toxomerus multipunctatus*: Kertész, 1910: 148.

Distribution.—Lesser Antilles (St. Johns\*, Guadeloupe\*, Dominica\*).

*Toxomerus musicus* (Fabricius)

Figs. 29, 122

*Scaeva musica* Fabricius, 1805: 253. Type-loc.: "America meridionali." Syntypes 2 MC (Zimsen, 1964: 481).

*Syrphus musicus*: Wiedemann, 1830: 143 (redescription based on types).

*Mesogramma musicus*: Schiner, 1868: 347; Hull, 1943b: 6, fig. 21 (abdomen).

*Mesograptus musica*: Williston, 1888: 265 (Brazil).

*Toxomerus musicus*: Kertész, 1910: 148.

Distribution.—Lesser Antilles (Montserrat\*); Trinidad\*; Middle and South America.

I have studied a specimen that was compared with the types of *musicus* by J. R. Vockeroth. *Toxomerus musicus* is quite similar in appearance to *T. maculatus* but is readily separated from it by its extensive microtrichose wings and male genitalia. All the material I have seen from the Greater Antilles identified as *musicus* is *maculatus* Bigot.

*Toxomerus ornithoglyphus* (Hull)

Fig. 97

*Mesogramma ornithoglyphus* Hull, 1942b: 17. Type-loc.: Dominican Republic, Ocampo, Mount Diegode, 3000–4000 ft. Holotype ♂ MCZ (lost?, not found). Subsequent reference: Hull, 1943b: 14, fig. 69 (abdomen) (key ref.).

*Toxomens ornithoglyphus*: Thompson et al., 1976: 53.

Distribution.—Hispaniola (Dominican Republic\*).

*Toxomerus ornithoglyphus* is probably only a geographic variant of the widespread *arcifer* (Loew) in which the wings are more extensively microtrichose (see above key) and the females tend to be darker in coloration. I have studied the allotype and a series of 25 specimens of this form from the Dominican Republic. The male genitalia of these and *arcifer* are the same. The males studied display the same range and frequency of variation in abdominal markings as is found in *arcifer*. The abdominal patterns of the females tend to be much darker, the typical *ornithoglyphus* female is similar to the darker female of *arcifer*, and the darkest *ornithoglyphus* female is quite distinct from any *arcifer* female.

The holotype of *ornithoglyphus* was not found in the Museum of Comparative Zoology, nor was it found in the Hull Collection. Hull compared his species to *hieroglyphicus* Schiner, a member of the *confusus* group, rather than to *arcifer*. While the description does appear to agree well with *arcifer*, there are enough omissions or discrepancies to cause hesitation in making a formal nomenclatural change.

*Toxomerus pictus* (Macquart)

Figs. 78, 93, 121

*Syrphus pictus* Macquart, 1842: 159, pl. 16, fig. 11 (habitus), 11a (head).

Type-loc.: "Guyane." Type ♀ MNHN.

*Mesogramma picta*: Schiner, 1868: 347; Gowdey, 1926: 80 (Jamaica); Cur-

- ran, 1928b: 41 (Puerto Rico); Wolcott, 1936: 349, 1948: 466 (Puerto Rico); Hull, 1943b: 13, 14, fig. 13 (abdomen) (key ref.).
- Mesograpta picta*: Fluke, 1956: 228; Doesburg, 1970: 93, 96 (Lesser Antilles); Telford, 1973: 224 (Puerto Rico).
- Toxomerus pictus*: Kertész, 1910: 148; Johnson, 1919: 434 (Jamaica); Boyes et al., 1971: 121, pl. 31, fig. 9 (karyotype), pl. 32, fig. 9 (idiogram) (chromosomes, based on Mexican material).
- Mesogramma poecilogastra* Loew, 1866a: 159. Type-loc.: Cuba. Type ♀ MCZ\*. Synonymy by Giglio-Tos, 1893: 52.
- Mesograpta poecilogastra*: Loew, 1872: 120; Johnson, 1894: 276 (Jamaica).
- Mesogramma extrapolata* Hull, 1943b: 22, fig. 24 (abdomen). Type-loc.: Cuba, Soledad. Holotype ♀ CNC\*. NEW SYNONYMY.
- Mesograpta? cuprina* Bigot, 1884: 114. Type-loc.: Cuba. Holotype ♂ OXFORD. Synonymy by Vockeroth in Thompson et al., 1976: 53.
- Mesogramma rombica* of Hine, 1914: 337 (Cuba).

Distribution.—Mexico south to Argentina; Cuba\*, Jamaica\*, Puerto Rico\*, Lesser Antilles (Dominica\*, Martinique, St. Lucia\*).

I have studied the types of *poecilogastrus* Loew and *extrapolatus* Hull and find that they represent the same species and conform to *pictus* of authors and probably Macquart. While I have not studied the type of *pictus*, I find the above synonymy quite reasonable on the basis of Macquart's original description and figure. The type of *extrapolatus* Hull is a female, not a male as stated by Hull (1943b).

*Toxomerus politus* (Say)

Figs. 85, 124

- Scaeva polita* Say, 1823: 88. Type-loc.: United States. Types lost.
- Mesogramma polita*: Loew, 1866a: 157; Ragues, 1908: 312 (Cuba); Curran, 1928b: 38 (Puerto Rico); Hull, 1943b: 6, fig. 3 (abdomen) (key ref.); Wolcott, 1948: 466 (Puerto Rico; descript., biol. notes).
- Mesograpta polita*: Williston, 1887: 98 (descript.); Miskimen and Bond, 1970: 66 (St. Croix, economic status); Telford, 1973: 224 (Puerto Rico).
- Toxomerus politus*: Kertész, 1910: 149; Cotton, 1918: 291 (Puerto Rico; life history); Wolcott, 1923: 219, 1936: 349 (Puerto Rico; biol. notes); Beatty, 1944: 149 (St. Croix).

Distribution.—Canada (Quebec) to USA (Minnesota), south to Peru and Brazil; Cuba\*, Hispaniola\*, Puerto Rico\*, Lesser Antilles (St. Croix, Dominica\*).

*Toxomerus puella* (Hull)

Figs. 89, 120

- Mesogramma puella* Hull, 1942b: 22. Type-loc.: Cuba, Santa Clara

Province, Soledad. Holotype ♂ MCZ. Subsequent reference: Hull, 1943b: 13, fig. 64 (abdomen) (key ref.).

*Toxomerus puellus*: Thompson et al., 1976: 54.

Distribution.—Cuba\*.

Hull's figure of the abdominal pattern of this species is inaccurate. While the abdominal pattern of the holotype is clearly bleached out, it does not even approximate that of Hull's figure. From studying the indistinct pattern of the holotype and comparing it with the well-developed pattern of the allotype, I have been able to reconstruct what I believe is the typical pattern for *puella* (Fig. 89). The basic colors are a yellowish-orange ground color with black fasciae, and the apical margins of the posterior fasciae are narrowly shiny.

*Toxomerus pulchellus* (Macquart)

Figs. 74, 94, 127

*Syrphus pulchellus* Macquart, 1846: 266, pl. 11, fig. 12 (abdomen). Type-loc.: "Saint-Domingue." Type ♀ OXFORD.

*Mesogramma pulchellus*: Loew, 1866a: 157.

*Mesograptus pulchella*: Wulp, 1880: cxxi (Guadeloupe), 1883: 4, pl. 1, fig. 4 (abdomen) (Guadeloupe); Doesburg, 1970: 97 (repeats Wulp's record).

*Toxomerus pulchellus*: Kertész, 1910: 149.

*Mesogramma laciniosa* Loew, 1866a: 159. Type-loc.: Cuba. Syntypes 3 ♀ MCZ. Subsequent references: Williston, 1896: 350 (St. Vincent, descript. notes); Hine, 1914: 337 (Cuba); Curran, 1925: 307 (synonymy), 1928b: 39 (Puerto Rico), 1934: 401 (key ref., synonymy), 1939d: 173 (Martinique); Gowdey, 1926: 80 (Jamaica); Hull, 1943b: 6, fig. 47 (abdomen); Wolcott, 1948: 465 (Puerto Rico). NEW SYNONYMY.

*Mesograptus laciniosa*: Loew, 1872: 120; Roeder, 1885: 343 (Puerto Rico; descript. note [this record may not refer to *pulchellus* because Roeder says his form has a yellow spot above the coxae]); Gundlach, 1887: 188 (Puerto Rico); Johnson, 1894: 276 (Jamaica); Miskimen and Bond, 1970: 66 (St. Croix); Telford, 1973: 223 (Puerto Rico).

*Toxomerus lacinosus*: Kertész, 1910: 147; Johnson, 1919: 434 (Jamaica); Wolcott, 1923: 219, 1936: 349 (Puerto Rico, biol. notes).

Distribution.—Mexico south to Argentina (Formosa); Cuba\*, Jamaica\*, Hispaniola, Puerto Rico\*, Lesser Antilles (St. Croix, Montserrat\*, Guadeloupe\*, Dominica\*, Martinique, St. Vincent).

Macquart's description and figure of *pulchellus* can only apply to the species previously known as *lacinosus* (Loew). The abdominal pattern of *pulchellus* is very characteristic, and Macquart's figure matches it well. Macquart also mentioned the yellow face, scutellum, and sides of the mesonotum. The description of the pleuron ("cotes noirs, a bande jaune") in-

dicates that the yellow supraprocoxal spot is absent. I cannot see maintaining *lacinosus* because Macquart's figure shows transverse round spots instead of oblique and somewhat comma-shaped spots (Curran's argument). Macquart's figure is much too small and crude to reveal such subtleties.

The species figured and keyed as *pulchellus* Macquart by Hull (1943b: 9, fig. 46) is *aeolus* (Hull) (*q.v.*).

*Toxomerus rohri* Thompson, NEW SPECIES

Fig. 114

Male.—*Head*: Face yellow, white pollinose and yellow pilose laterally; cheek black, shiny anteriorly, white pollinose and pilose posteriorly; frontal lunule yellow; frontal triangle yellow, yellow pilose, sparsely yellow pollinose laterally; vertical triangle black, black pilose, brownish black pollinose; occiput black, silvery white pollinose, white pilose; eyes very narrowly separated, separated by  $\frac{1}{2}$  width of ommatidium; antenna yellow, yellow pilose; arista brownish orange.

*Thorax*: Humerus yellow; mesonotum mainly black, bronze pollinose and black pilose, with median silvery-gray pollinose vitta, with lateral yellow vitta starting on notopleuron and extending to scutellum, with sides and anterior edge narrowly yellow pilose; postalar callus yellow, yellow pilose anteriorly and black pilose posteriorly; scutellum dull yellow, slightly more brownish pollinose basomedially in some specimens, black pilose, with short yellow ventral fringe; pleuron mainly bluish black, subshiny, very sparsely white pollinose, yellow pilose; propleuron usually all black, rarely with a very indistinct yellow vitta in some specimens; mesopleuron with posterior edge narrowly yellow; sternopleuron with dorsal  $\frac{1}{2}$  densely silvery pollinose, with upper  $\frac{1}{3}$  yellow; metathoracic pleuron yellow; squama, plumula yellowish white; halter yellow. *Legs*: Mainly yellow and yellow pilose; apical 4 tarsomeres brownish yellow, black pilose; middle femur black pilose dorsoposteriorly on apical  $\frac{1}{2}$ ; hindfemur black pilose on apical  $\frac{1}{2}$ ; hindtibia mainly black pilose; hindtarsus brownish black, black pilose. *Wing*: Hyaline, microtrichose except bare as follows: 1st costal cell, basal  $\frac{1}{4}$  of 2nd costal cell, narrowly above Rs, basal  $\frac{1}{2}$  of 1st basal cell, anterobasal  $\frac{2}{3}$  of 2nd basal cell, anterobasal  $\frac{1}{8}$  of anal cell. Epaulet and basicosta yellow, black pilose.

*Abdomen*: First tergum shiny black except narrowly yellow on anterior edge, yellow pilose; 2nd tergum shiny black except for a broad yellow medial fascia (medially interrupted in 1 paratype), with fascia separated from lateral margins, yellow pilose basolaterally, black pilose apicoposteriorly; 3rd tergum mainly yellowish orange, black on sides and apicolateral corners, brownish black medially on apical margin, with dark brown submedial vittae on basal  $\frac{1}{2}$ , black pilose except for a few yellow lateral hairs; 4th tergum orange, with brown sublateral and submedial vittae, with submedial vittae on basal  $\frac{1}{3}$  and sublateral ones on basal  $\frac{3}{4}$ , black pilose except for few

yellow lateral hairs; 5th tergum orange, with brown basomedial spot black pilose except for few yellow lateral hairs; sterna yellowish orange, yellow pilose. Genitalia yellow orange, yellow pilose, white pollinose on 8th segment; surstyle oblong, acute apically, curved ventrally, postanal process short, obtuse apically, less than  $\frac{1}{3}$  as long as surstyle in dorsal view; superior lobe approximately rectangular, with acute posterodorsal apex, with long strong hairs on convex ventral margin and short hairs elsewhere; aedeagus with blunt apex, with long lateral flange on left side; lingular area evenly concave.

Female.—Similar to male except for normal sexual dimorphism and: Frontal narrowly yellow laterally on lower  $\frac{3}{4}$ , broadly black medially, grayish-white pollinose, yellow pilose on lower  $\frac{3}{4}$ , black pilose on upper  $\frac{1}{4}$ ; vertex black, brownish-gray pollinose, black pilose. Abdominal pattern similar to that of male but darker and more extensive; same on 1st and 2nd terga; 3rd tergum mainly black, narrowly yellow along lateral edges, with narrow orange medial vitta on basal  $\frac{7}{8}$ , with two large submedial orange quadrate-shaped spots, thus with overall appearance of a black tergum with a large basomedial convex orange spot on basal margin and interrupted by brown submedial vittae; 4th tergum mainly orange, narrowly yellow along lateral edges, with broad black sublateral vittae along whole length, with distinct brown submedial vittae; 5th tergum orange, with narrow brownish sublateral vittae in addition to black basomedial spot. Genitalia shiny black dorsally, yellow laterally and ventrally, yellow pilose.

Holotype.—♂, VIRGIN ISLANDS, St. Croix, south of Airport, 29 December 1967, W. H. Pierce, from the personal collection of H. V. Weems, Jr., and to be deposited in the USNM. Paratypes 2 ♂, 3 ♀ with same data as for holotype; 1 ♀, same data except collected 19 October 1967; 1 ♀, St. Croix, November 1967, W. H. Pierce.

Discussion.—*Toxomerus rohri* is very closely related to *marginatus* (Say) and is probably its vicariant sister-species, which is indicated by their very similar abdominal pattern and identical male genitalia. *Toxomerus rohri* is contrasted with *marginatus* as follows: Supraprocoxal yellow spot absent, not present; mesonotal lateral yellow vitta interrupted between humerus and notopleuron, not continuous; mesonotum and postalar callus extensively black pilose, not mainly yellow pilose; and second and third terga black laterally, not yellow. I name this species after J. P. B. von Rohr, the first man to collect insects for scientific study in the West Indies.

*Toxomerus una* (Hull)

Fig. 83

*Mesogramma una* Hull, 1943b: 23, fig. 84 (abdomen). Type-loc.: Haiti. Holotype ♀ MCZ\*.

*Toxomerus una*: Thompson et al., 1976: 55.

Distribution.—Haiti\*.

*Toxomerus valdesi* (Fluke)

Figs. 79, 86, 107

*Mesogramma valdesi* Fluke, 1950b: 448, fig. 12 (abdomen), 13 (hindleg).

Type-loc.: Cuba, Pico Joaquin to Turquino, 5300–6300 ft. Holotype ♂ AMNH\*.

*Toxomerus valdesi*: Thompson et al., 1976: 56.

Distribution.—Cuba\*.

*Toxomerus verticalis* (Curran)

Figs. 22, 73, 104

*Mesogramma verticalis* Curran, 1927: 6. Type-loc.: Puerto Rico, Cayey.

Holotype ♂ AMNH\*. Subsequent references: Curran, 1928b: 38 (Puerto Rico); Wolcott, 1936: 350, 1948: 466 (Puerto Rico; descript. note).

*Mesogramma verticallis*: Hull, 1943b: 11, fig. 76 (abdomen) (key ref.) misspelling.*Mesograptia verticalis*: Fluke, 1956: 232; Telford, 1973: 225 (Puerto Rico).*Toxomerus verticalis*: Thompson et al., 1976: 56.*Mesogramma mitis* Curran, 1930b: 13. Type-loc.: Jamaica, Montego Bay.

Holotype ♀ AMNH\*. Subsequent references: Hull, 1943b: 11, fig. 75 (abdomen) (key ref.). NEW SYNONYMY.

*Mesogramma rhodope* Hull, 1951: 13. Type-loc.: Jamaica, Manchester, Mandeville, Dunrobin District, about 2350 ft. Holotype ♀ AMNH\*. NEW SYNONYMY.

Distribution.—USA (Florida\*); Bahamas\*, Jamaica\*, Puerto Rico\*.

*Toxomerus verticalis* (Curran) is here considered a variable, widespread Antillean species. Previous authors had considered *verticalis* a species complex as the above synonymy can attest. I have examined the genitalia of males from Florida, Bahamas, and Puerto Rico and can find no significant differences among them. The color characteristics of previous authors are variable, and I can find no constant character to separate the various populations of *verticalis*. While various populations can be characterized (*v.i.*) these characterizations integrate, and not all individuals fit them. I suspect that *verticalis* will be found in Hispaniola and Cuba and that the populations from these islands will be intermediate between those now known.

Puerto Rican population.—Face of female yellow with a distinct bifurcate medial black vitta, of male mostly yellow, brownish black under antennae; mesonotal lateral yellow vitta interrupted twice, on notopleuron and above wing; hindfemur usually black biannulate; abdomen usually with broadly separated fasciate spots.

Jamaican population.—Male unknown; face of female yellow; mesonotal lateral yellow vitta usually interrupted once, above wing; hindfemur black annulate; abdomen usually with narrowly separated fasciate spots on all terga except with complete fascia on 3rd tergum.

Bahamian population.—Female unknown; face of male yellow; mesonotal yellow vitta interrupted twice, on notopleuron and above wing; hindfemur black biannulate; abdomen with narrowly separated fasciate spots.

Floridian population.—Face of female usually yellow with a faint bifurcate medial brownish vitta, of male all yellow; mesonotal lateral yellow vitta continuous in female, interrupted once above wing in male; hindfemur usually black biannulate; abdomen usually with narrowly separated fasciate spots on all terga.

*Toxomerus veve* (Hull)

Figs. 72, 108

*Mesogramma veve* Hull, 1942b: 23. Type-loc.: Haiti, La Selle Range, La Visite and Vic. 5000–6000 ft. Holotype ♂ MCZ. Subsequent reference: Hull, 1943b: 13, fig. 18 (abdomen) (key ref.).

*Toxomerus veve*: Thompson et al., 1976: 56.

Distribution.—Hispaniola\*.

*Toxomerus violaceus* (Curran)

Fig. 101

*Mesogramma violacea* Curran, 1926b: 103. Type-loc.: Jamaica, Cinchona. Holotype ♂ BM(NH). Subsequent references: Gowdey, 1926: 80 (Jamaica); Curran, 1928b: 39, figs. 5(head), 6 (abdomen) (Puerto Rico); Wolcott, 1936: 350, 1948: 466 (Puerto Rico); Hull, 1943b: 12, fig. 77 (abdomen) (key ref.).

*Mesograpta violacea*: Fluke, 1956: 233; Telford, 1973: 225 (Puerto Rico; synonymy).

*Toxomerus violaceus*: Thompson et al., 1976: 56.

*Toxomerus* n. sp. 1967, Boyes et al., 1971: 121, pl. 31, fig. 8 (karyotype), pl. 32, fig. 8 (idiogram) (Puerto Rico).

Distribution.—Jamaica\*, Puerto Rico\*.

Telford (1973) confused this species with *luna* (Hull) (*q.v.*), but the two are quite distinct as noted in the above key.

The Puerto Rican populations of *violaceus* differ from those of Jamaica in that the black basomedial triangular area on the third and fourth terga is bisected by a narrow yellow vitta.

*Toxomerus watsoni* (Curran)

Figs. 21, 90, 106

*Mesogramma watsoni* Curran, 1930b: 5, fig. 1 (♂ genitalia). Type-loc.: Haiti, Aux Cayes. Holotype ♂ AMNH. Subsequent reference: Hull, 1943b: 7, fig. 32 (abdomen) (key ref.).

*Toxomerus watsoni*: Thompson et al., 1976: 56.

*Mesogramma linearis* of Hine, 1914: 337 (Cuba).

*Mesograpta duplicata* of Telford, 1973: 223 (Puerto Rico).

Distribution.—Costa Rica; Cuba\*, Jamaica\*, Hispaniola\*, Puerto Rico\*, Lesser Antilles (Grenada\*).

*Toxomerus* species A

Fig. 71

Distribution.—Cuba\*, Hispaniola\*, Puerto Rico\*.

I have seen four males and two females of a species, here designated as species A, belonging to the *confusus* Schiner group. This group consists of 1) *confusus* (Schiner) (1868: 349; Mexico? to Argentina); 2) *hieroglyphicus* (Schiner) (1868: 348; Colombia, Ecuador); 3) *luna* (Hull) (Puerto Rico); 4) *veve* (Hull) (Hispaniola); 5) *violaceus* (Curran) (Jamaica, Puerto Rico); 6) species A (Cuba, Hispaniola, Puerto Rico); and probably 7) *portius* (Walker) (1852: 239; Brazil). These species are differentiated in the key below. The male genitalia of almost all these species are virtually the same; in respect to the others, *violaceus* has the lateral lobe slightly smaller, and *confusus* has the postanal process slightly longer. Of this group, only *luna* has male genitalia which are distinctly different as indicated under that species. The sister-group to this complex is probably the *arcifer* Loew group (v. *ferroxida* Hull). The male genitalia of *ferroxida* Hull (the most plesiotypic member of the *arcifer* group) and *luna* are very similar, differing only in the surstyle being more quadrate in *ferroxida*; I consider this similarity synapomorphic.

*Toxomerus confusus* Schiner was described from "Süd-Amerika." J. R. Vockeroth has told me that the types are labeled as "Venezuela" and "Rio de Janeiro." I hereby restrict the type-locality of *confusus* to Rio de Janeiro, Brazil (see Appendix B). The placement of *confusus* in the key is based on Brazilian material; I question the status of *confusus* in Mesoamerica.

KEY TO SPECIES OF THE *CONFUSUS* SCHINER GROUP

1. Wing extensively microtrichose, basal  $\frac{1}{5}$  or less of basal and anal cell bare; abdominal pattern greatly reduced (Fig. 72) (Hispaniola) ..... *veve* (Hull)
- Wing more extensively bare, basal  $\frac{1}{2}$  or more of 1st basal cell, antero-basal  $\frac{1}{2}$  or more 2nd basal cell, and anterior  $\frac{1}{4}$  of anal cell bare; abdominal pattern more extensive ..... 2
2. Front and middle femora black on basal  $\frac{3}{4}$  or more; wing with 2nd costal cell microtrichose on apical  $\frac{1}{2}$ ; abdomen with fasciate spots on 2nd tergum greatly reduced (Colombia, Ecuador) ..... *hieroglyphicus* (Schiner)
- Front and middle femora yellow on basal  $\frac{1}{2}$  or more; wing with 2nd costal cell almost completely bare, microtrichose on apical  $\frac{1}{5}$  or less; abdomen with fasciate spots or fascia on 2nd tergum not reduced ..... 3