

REVIEW OF *WILCOXIUS* MARTIN (DIPTERA: ASILIDAE) AND DESCRIPTION OF FIVE NEW SPECIES

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Abstract: The genus *Wilcoxius* Martin is reviewed with the addition of five new species, *W. planus*, **sp. nov.** and *W. tumidus*, **sp. nov.** from the Dominican Republic, and *W. caputitis*, **sp. nov.** and *W. similis*, **sp. nov.** from Central America, and *W. juvenis*, **sp. nov.** from Cuba. *Asilus bullatus* Bromley, *A. loewi* Bromley, and *A. ramsdeni* Bromley from Cuba are transferred to *Wilcoxius* (**new combinations**). Illustrations of the new species, a key to the eleven species, and a checklist of the species of *Wilcoxius* are included.

Key words: Diptera, Asilidae, *Wilcoxius*, new specie.

Revisión de *Wilcoxius* Martin (Diptera: Asilidae) y descripción de cinco nuevas especies

Resumen: Se revisa el género *Wilcoxius* Martin con la adición de cinco especies, *W. planus* **sp. nov.**, y *W. tumidus* **sp. nov.** de la República Dominicana, *W. caputitis* **sp. nov.** y *W. similis* **sp. nov.** de América Central, y *W. juvenis* **sp. nov.** de Cuba. *Asilus bullatus* Bromley, *A. loewi* Bromley, and *A. ramsdeni* Bromley de Cuba, son transferidos a *Wilcoxius* (**combinaciones nuevas**). Se incluyen ilustraciones de las nuevas especies, una clave para las 11 especies y una lista de chequeo de las especies de *Wilcoxius*.

Palabras clave: Diptera, Asilidae, *Wilcoxius*, nueva especie.

Wilcoxius Martin (1975) was erected to accommodate four asilid species, formally placed in *Erax* Coquillett, from Mexico southward to Costa Rica. *Wilcoxius lestes* (Williston) was later transferred to *Martinella* Artigas and Papavero (1995). The genus is recognized by a weak gibbous face, absence of a cluster of metanotal setae or bristles, 1-3 erect, stout bristles on the apical corners of the abdominal segments, a wide epanthium, trifold aedeagus, and female ovipositor moderately compressed, and about as long as abdominal segments 6 and 7. We report five new species of *Wilcoxius* of which two are from the Dominican Republic, two from Central America, and one is from Cuba. Additionally, *Asilus bullatus* Bromley, *A. loewi* Bromley, and *A. ramsdeni* Bromley (1929) from Cuba are briefly discussed and transferred to *Wilcoxius* (**new combinations**), increasing the number of species to eleven. Illustrations of the new species, a key to all species, and a species list are also included.

Methods and Materials

The following acronyms were used in the text: California Academy of Sciences, San Francisco (CASC); Carnegie Museum of Natural History (CMNH); Museum of Comparative Zoology, Cambridge (MCZC); United States National Museum, Washington, D. C. (USNM); Florida State Collection of Arthropods (FSCA); and Museo Nacional de Historia Natural, Santo Domingo, Dominican Republic (MHND). Terminalia were treated in warm KOH, washed in 70% ETOH with a drop of acetic acid, transferred to glycerin, and subsequently illustrated. Later, terminalia were placed in microvials with glycerin for permanent storage and attached to the specimen pin. Pencil illustrations were scanned at 600 DPI and enhanced in Adobe Photoshop

software. Illustrations were made from single specimen preparation although slightly modified to include consistent differences in the specimen series. In illustrations, only patterns of setae and bristles are included. Descriptions are composite, based on all available specimens. Morphological terminology follows McAlpine (1981). Measurements of structures were made using an ocular micrometer inserted in the eyepiece of an Olympus SZH10 dissecting microscope and followed the methodology in Bullington and Lavigne (1984). Body length was measured as from the foremost protrusion of the face to the apex of the eighth abdominal segment in the male and to the apex of the seventh abdominal segment of the female. Wing length was measured from the articulated base to its apex. Data were recorded in a standard format with each line denoted by a forward slash [/] and a second label by an ~ symbol. Dates were recorded as Roman numerals and the country was listed in bolded, capital letters. Brackets [] were used to denote useful additional information not found on labels.

Key to the species of *Wilcoxius* Martin

1. Hind femur entirely black.....2
– Hind femur at least partly reddish, brownish-yellow, or yellow.....5
2. Scutellum with yellowish marginal bristles; abdominal tergites 2-6 with a stout bristle in each apical corner; sternites 2-5 with stout bristles.....3
– Scutellum with black marginal bristles only; abdominal tergites 3-4 only with stout bristles in apical corners; sternites 2-5 with only setae, bristles absent.....4
3. Style about as long as flagellum; apical margin of epanthium with broad sharp tooth medially; tergites with

- reddish-brown tomentose spots dorsally, yellowish-gray apically and laterally; Nicaragua, El Salvador.....*acutulus* Martin
- Style shorter than flagellum; apical margin of epandrium without broad sharp tooth medially, tergites with color of tomentum changing from black to yellow at different angles; Veracruz & Oaxaca, Mexico.....*truncus* Martin
 - 4. Mystax golden yellow; epandrium with a long tuft of dense white setae apically; Cuba.....*bullatus* (Bromley)
 - Mystax white; epandrium with tuft of black setae apically; Cuba.....*ramsdeni* (Bromley)
 - 5. Hind femur partly to entirely black anteriorly.....7
 - Hind femur partly brownish-yellow to reddish-brown anteriorly, narrow apex and basal half usually brownish, often as a narrow streak anteriorly and posteriorly; apical corner of abdominal tergites 3-4 with two stout whitish bristles, those on tergite 3 as long as segment, those on 4 slightly shorter and thinner.....6
 - 6. Fore and middle femora with only narrow apex brown, otherwise brownish-yellow to yellow; epandrium yellowish with mostly short brown setae, scattered long white setae present ventrally; membranous apical margin whitish, ventral lobe yellow, setae sparse, whitish; Cuba.....*loewi* (Bromley)
 - Fore and middle femora with narrow apex and basal half brown, otherwise yellow to dark brownish-yellow; epandrium (Figs 4-7) brown with short brown setae dorsally, ventral half with scattered long white setae mixed with sparse brown setae, membranous apical margin brown, ventral lobe with tuft of wavy brown setae; Cuba, Isla de la Juventud.....*juventus*, **sp. nov.**
 - 7. Abdominal tergites 2-5, sometimes 6, with an atomentose spot laterally; palpus mostly black setose.....8
 - Abdominal tergites entirely tomentose, atomentose spots absent; palpus mostly yellow or white setose, sparse black setae present apically.....9
 - 8. Head entirely, antenna, scutellum, and legs white setose; head and mesonotum grayish to yellowish-gray; fore and middle tibiae with fringe of abundant, long setae ventrally; tergites with small atomentose spots laterally, stout bristles present only in corners anteriorly, none as long as segments; male terminalia (Figs 8-11) compressed laterally, epandrium with broad membranous margin present apically, brownish dorsally, yellow laterally with only white vestiture; Dominican Republic.....*planus*, **sp. nov.**
 - Head, antenna, scutellum, and legs mostly black setose; tomentum of head and mesonotum dark brownish-yellow; fore and middle tibiae with fringe of sparse long white setae only; tergites 2-4 with large atomentose spots laterally, each spot including wide triangular corner of tergite, tergites 4-5 with stout bristles, each about as long as segment; male terminalia (Figs 15-17) strongly inflated, epandrium with lobed membranous flange apically, black dorsally, yellow ventrally with mostly black vestiture, sparse long black setae present apically; Dominican Republic.....*tumidus*, **sp. nov.**
 - 9. Hypandrium long and narrow, bifurcate with deep cleft, apex at or well beyond apical margin of gonocoxite; hy-

- pandrial cleft margined with long, white setae; epandrium wide apically, as wide as middle diameter, apex angular; most sternites with a few stout bristles.....10
- Hypandrium short and wide, apex at middle of gonocoxite, shallow cleft margined with abundant, short, reddish setae; epandrium abruptly narrowed apically, much less than middle diameter, apical margin rounded (Figs 1-3); sternites 1 and 2 with long thin bristles, stout bristles absent; Honduras.....*caputitis*, **sp. nov.**
- 10. Wing hyaline; apical margin of epandrium somewhat angular dorsoapically, round ventroapically with short reddish setae (Figs 12-14); Guatemala.....*similis*, **sp. nov.**
- Wing yellowish-brown; apical margin of epandrium truncate with long black setae ventroapically; Chiapas, Mexico.....*crenus* Martin

Taxa

Wilcoxius bullatus (Bromley), New Combination

Asilus bullatus Bromley 1929: 288. Holotype M, Santiago de Las Vegas, Cuba.

REMARKS. The location of the holotype and allotype are unknown. Only one of the nine paratypes that were deposited in the MCZC can be located. However, it is in poor condition with the left style+flagellum and terminalia being absent. Further, the oily surface obscures the tomentum pattern. The long bristles on the basal half of the hind femur is suggestive of a female. The data labels are as follows: Cuba ~Paratype / *Asilus/ bullatus* Brom. ~ [red] Type / 16171 ~ *Asilus / bullatus / Bromley /det. S. W. Bromley 1929 ~ Wilcoxius / bullatus* (Bromley) N. P. Papavero 71'. Though Papavero placed labels on the pins of *A. bullatus* and *A. loewi* indicating that they belong to *Wilcoxius*, the transfer was not reported. Here we formally transfer *bullatus* to *Wilcoxius*. No new material has been located.

The species is most similar to *W. ramsdeni* (Bromley), also from Cuba, in the wholly black femora and whitish facial vestiture. It is distinguished by the flagellum being about as long as the style, the greatly swollen epandrium being much wider than segment 7 and with a tuft of long white setae ventrally (see Fig. 10, p. 288, Bromley 1929). DISTRIBUTION. Cuba.

Wilcoxius caputitis, **sp. nov.**

Figs 1-3

MALE. Measurements, body 13.6-14.4 mm, wing 9.5-10.0 mm. Head black, junction of face and proboscis yellowish-brown. Face with weak gibba, mystax with only white bristles, tomentum yellowish-gray, slightly darker yellow dorsally. Frons, ocellar tubercle, and vertex slightly brownish-yellow to yellow tomentose; frontal and ocellar setae brown, former sometimes with one to two white setae. Palpus with long, black setae apically, short, white setae basally. Antenna dark brown, segment basal lighter, brown setose, brownish-yellow tomentose; pedicel two-thirds as long as scape, latter two-thirds as long as flagellum, flagellum three-fourths as long as style; combined length of scape+pedicel slightly more than half to two-thirds as long as style+flagellum. Occiput yellowish-gray tomentose with mostly white vestiture, thicker and longer setae along eye margin yellowish; four to five thick, brown bristles present dorsally.

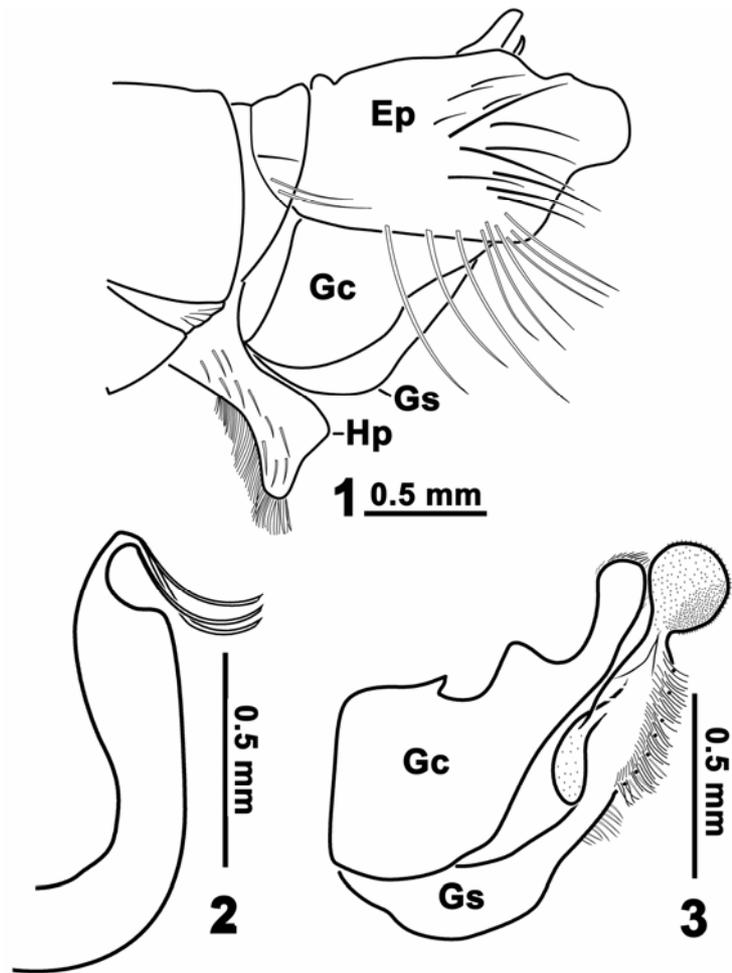


Fig. 1-3. *Wilcoxius caputitis*, sp. nov. Male terminalia, **1.** Lateral view, **2.** Aedeagus, **3.** Gonostylus. Abbr. Ep=epandrium, Gc=gonocoxite, Gs=gonostylus, Hp=hypandrium.

Thorax with mesonotum mostly dark brown to black, postpronotum and postalar callus partly brownish-yellow posteriorly; tomentum brownish-yellow to yellow, lateral margins lighter yellow; wide paramedial brown stripe present dorsally, becoming wider anteriorly and divided narrowly with brownish-yellow tomentum; two slightly darker brown-yellow to brown tomentose spots laterally; setae scattered, mostly dark brown and short, sparse yellow setae laterally and posteriorly; four lateral and three to five dorso-central bristles present, usually dark brown, sometimes one of latter yellow. Scutellum brown, yellowish tomentose, with scattered short yellow setae and two stout marginal bristles. Pleura with anepisternum, katapisternum, and meron mostly dark brown, remaining area, including laterotergite, pale reddish-yellow, mediotergite blackish; mostly yellowish-gray tomentose and pale yellow bristles present, anepisternum brown to brownish-yellow tomentum dorsally.

Wings hyaline, dense microtrichia present in dorsal four cells narrowly from apex of wing to just before base of cell r_4 . Anal and m_3 cells petiolate.

Legs mostly brownish-yellow to yellow, femora anteriorly mostly dark brown, apex of tibiae brownish; setae and bristles mostly white, femora with sparse black setae apically, hind femora with two-three black bristles apically.

Abdomen mostly brownish-yellow or reddish-yellow, basal two to three tergites partly black; setae mostly white, black on tergites medially. Most tergites with large tomentose spot dorsally, black on tergite 2-3 in dorsal view, brownish-yellow in lateral view; tergites 4-7 with brown tomentose spot, divided medially by black, spots become

brownish-yellow tomentose in lateral view; tomentum apically and laterally mostly yellowish to yellowish-gray; tergites 2-6 narrowly margined with brown or blackish tomentum. Tergites 2-5 with two-three stout bristles laterally. Sternites with sparse white tomentum and white setae, surface appears bare at some angles; sternites 2-3 with sparse long white setae medially, stout bristles absent.

Terminalia (Figs 1-3). Epandrium and gonocoxite brown basally, yellow apically, former rounded apically, scattered long yellow bristles present ventrally. Gonocoxite long, digitate apically. Gonostylus capitate, minute setae present apically. Hypandrium short and wide, apex just beyond base of gonocoxite; brownish, with scattered yellow setae and median cleft, latter margined with abundant, short, reddish-yellow setae.

FEMALE. Unknown.

SPECIMENS EXAMINED. Holotype M, **HONDURAS**, Francisco / Morazán, 25 km S. / Talanga (Hacienda / Hachado), 11.v.1993 / L. Stange & R. Miller (FSCA). Paratype, M, **HONDURAS**, Francisco / Morazán, El Zamorano / 32 km N. Tegucigalpa / 22.iv.1993 L. Stange & R. Miller (FSCA). DISTRIBUTION. Honduras.

ETYMOLOGY. Latin *caputitis* for capital in reference to Francisco Morazán which is the capital district of Honduras and type locality of the species.

REMARKS. Mystax with only white vestiture, sternites without stout bristles, mostly brownish-yellow to yellow femora, and combined characters of the male terminalia (Figs 1-3) distinguish *W. caputitis* from congeners.

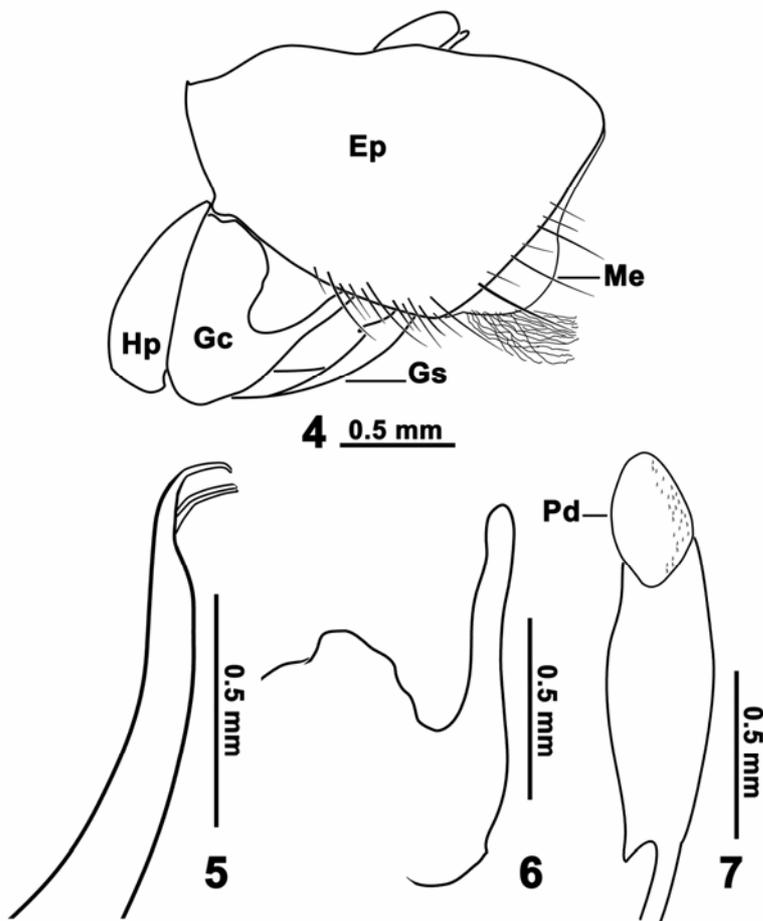


Fig. 4-7. *Wilcoxius juvenus*, sp. nov. Male terminalia, 4. Lateral view, 5. Aedeagus, 6. Gonocoxite, 7. Apical half of gonostylus stylus.

***Wilcoxius juvenus*, sp. nov.**

Figs 4-7

MALE. Measurements, body 12.0-12.1mm, wing 8.1-8.3 mm. Head dark brown with mostly yellow tomentum and pale yellow to white vestiture. Face with weak gibba, tomentum mostly dull yellow, yellowish-gray ventrally; mystax with mostly white to yellowish setae and bristles, four brown bristles present. Frons and vertex yellowish setose. Ocellar tubercle brown setose. Palpus mostly black setose, sparse white setae present basally. Antenna brown, brown setose dorsally, yellowish ventrally; pedicel half as long as scape, latter about as long as flagellum, flagellum half as long as style; combined length of scape+pedicel slightly more than half as long as style+flagellum. Occiput yellowish-gray tomentose with mostly white vestiture, thicker and longer setae along eye margin yellowish; four to five thick bristles present dorsally, two of these sometimes dark brown.

Thorax with mesonotum mostly dark brown to black, postpronotum and postalar callus partly brownish-yellow posteriorly; tomentum mostly yellow, lateral margins lighter yellow; wide paramedial brown stripe present dorsally, becoming wider anteriorly and divided narrowly with brownish-yellow tomentum; stripes and three lateral spots brown; short, brown setae present anteriorly and laterally; anterior acrostichal setae slightly shorter than scape, posterior setae as long as scape; sparse yellow setae laterally; five lateral and three dorsocentral bristles present, each dark brown. Scutellum brown, yellow tomentose, with scattered short yellow setae, sparse brown setae sometimes present,

and two stout black marginal bristles. Pleura dark brown, with mostly yellowish-gray tomentum and yellowish bristles; anepisternum with brownish-yellow tomentum dorsally.

Wings hyaline, dense microtrichia present in dorsal four cells narrowly from apex of wing to just before base of cell r_4 . Anal and m_3 cells petiolate.

Legs with coxae brown; fore and middle femora with slightly more than basal half and narrow apex brown, irregular yellow band present between brown; hind femur with similar pattern except pale brownish-yellow dorsally and ventrally, narrow brownish streak anteriorly and posteriorly and a similar spot ventrally; setae and bristles mostly white, femora with sparse black setae apically, hind femur and hind tibiae mostly yellow, narrow apex of first two and apical third of third brown, with one to two black bristles present.

Abdomen mostly brownish-yellow or reddish-yellow, lightest ventrally, basal two to three tergites partly black; tomentum dorsally brownish, light reddish on apical two or three tergites, wide apical margin, wide sides, and all sternites yellow tomentose; atomentose areas absent; setae mostly yellowish, black on tergites medially. Tergites 3-4 with two stout yellowish bristles laterally, each as long as tergite. Most sternites with short, white to yellowish, setae, except stouter longer vestiture present on sternites 7 and 8.

Terminalia (Figs 4-7). Epandrium inflated, entirely brown, with mostly yellowish vestiture, scattered long black bristles present ventrally and a small tuft of wavy black setae present on apical flange. Gonocoxite mostly yellow,

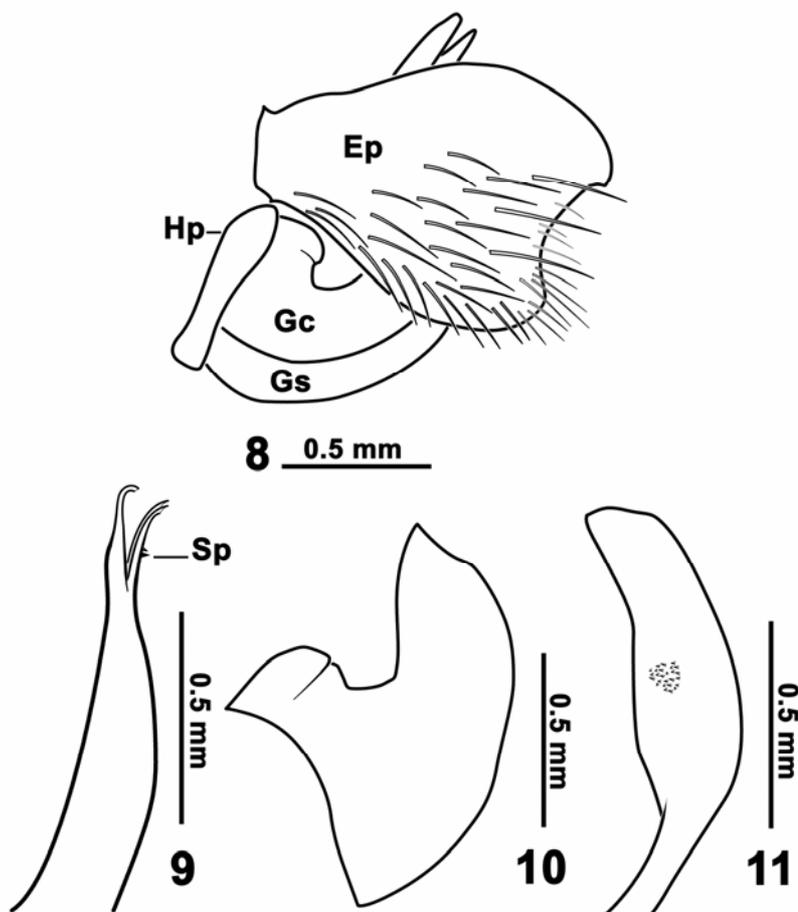


Fig. 8-11. *Wilcoxius planus*, sp. nov. Male terminalia, 8. Lateral view, 9. Aedeagus, 10. Gonocoxite, 11. Gonostylus.

narrowly brownish basally, long, slender digitate process present apically. Gonostylus abruptly wide on apical half, raised oval pad present apically, surface with minute setae. Hypandrium simple, cleft absent, apex just beyond base of gonocoxite.

SPECIMENS EXAMINED. Holotype M, allotype F, **CUBA**, Nueva Gerona, Isle of Pines [Isla de la Juventud] ~ June 1 / 1912 ~ Car. Mus. / Acc 4654 / Carnegie Museum / specimen number / CMNH 306683, 302144 (CMNH). Paratypes, 1 M, 1 F, same data as holotype except CMNH numbers 305861, 307478 (CMNH).

DISTRIBUTION. Cuba.

ETYMOLOGY. Latin *juventus* for youth, referring to island where the species was collected, Isla de la Juventud [previously the Isle of Pines], the Island of Youth.

REMARKS. *Wilcoxius juvenis* is distinguished from congeners by the characters in the key and combined characters of the male terminalia (Figs 4-7).

***Wilcoxius loewi* (Bromley), New Combination**

Asilus loewi Bromley 1929: 289. Holotype M, type locality Poey, Cuba, MCZC.

REMARKS. The holotype is in good condition with only the antennae missing. The data labels are as follows: Cuba / Poey ~ 96 ~ *Asilus loewi* / Bromley / det. S. W. Bromley ~ [red label] Type / 16167 ~ [red label] Holotype / ♂ / *Asilus loewi* / Bromley ~ *Wilcoxius loewi* (Broml.) / N. Papavero det: 71 ~ Jan-July 2003 / MCZ Image / Database. Here we formally transfer *loewi* to *Wilcoxius*.

The combination of the white vestiture of the face and frons, brownish-yellow to yellow femora and epandria, and

epandrium with a large membranous lobe and an absence of a tuft of ventral setae distinguish it from congeners. Also, sternites 3 to 5 entirely and the narrow lateral margins of tergites 3 and 4 are atomentose.

DISTRIBUTION. Cuba.

***Wilcoxius planus*, sp. nov.**

Figs 8-11

MALE. Measurements, body, 12.0 mm; wing 10.0 mm. Head black, wholly white tomentose with white setae except palpus black setose. Face weakly gibbose; mystax with dense white thin, slightly drooping bristles, bristles extending to apex of proboscis. Antennal lengths as *W. tumidus*; style round in cross-section. Occiput with five black postocular bristles, setae entirely white.

Thorax black except postpronotum partly yellow; tomentum mostly yellowish-gray, paired median stripes and lateral spots dull brown tomentose; setae along margins mostly white, those dorsally including anterior acrostichal setae blackish; bristles black. Scutellum grayish tomentose dorsally, yellowish-gray along margins, white setose with two black marginal bristles. Pleuron mostly black, narrow posterior yellowish; tomentum yellowish anteriorly, yellowish-gray to gray posteriorly; vestiture white. Halter white.

Wing wholly hyaline including costal cell. Vein r_4 evenly arched basally.

Fore coxa black, middle and hind coxae yellowish tomentum yellowish with white vestiture. Trochanters yellow. Fore femur mostly reddish-yellow to yellow, black on basal half ventrally which extends onto lower half anteriorly and narrow apex, producing wide preapical reddish-yellow

band anteriorly; middle and hind femora entirely or mostly black anteriorly, yellow posteriorly, middle femur with a red preapical spot ventrally, hind femur with narrow base reddish; setae and bristles entirely white; ventral bristles stout, those in posteroventral row thinner and long, with one to two about half as long as hind femur. Fore and middle tibiae mostly brownish-yellow to reddish, anteriorly and apically brownish to black; hind tibiae mostly black basal third posteriorly reddish; setae long, abundant, and entirely white; fore tibiae with dense fringe of long white setae; bristles mostly black. Tarsi blackish with mostly black bristles and setae, sparse white bristles and white setae present laterally on basal two tarsomeres of fore and middle tibiae.

Abdomen with tergites mostly black including lateral margin narrowly, sides between black margin and dorsum reddish-yellow to yellow with small atomentose spots; sternites mostly reddish-yellow. Tomentum mostly yellowish-gray with mostly whitish setae; each tergite with large yellowish-brown atomentose spot and mostly black setae. Tergites with white bristles along apical margins laterally, usually one to three, none unusually long or stout and absent in atomentose areas.

Terminalia (Figs 8-11) mostly yellowish, brownish dorsally, long ventrally; unusually flat, somewhat triangular with wide apical notch; setae and bristles whitish ventrally. Gonocoxite stout, short. Gonostylus feather-like with numerous minute setae. Hypandrium simple, cleft absent, apex just beyond base of gonocoxite.

FEMALE. Measurements, body mm, wing mm. Mystax less dense; scape and pedicel brownish-yellow to yellow medially. Fore femur usually with wide preapical reddish-yellow band. Middle femur usually with preapical reddish-yellow to red preapical spot ventrally, sometimes present on hind femur; basal fourth to third of hind femur yellow to reddish-yellow ventrally. Femora and fore tibiae with thick ventral or lateral bristles. Fore tibia and fore tarsus with lateral fringe present but of moderate length, less dense setae. Lateral margins of abdominal tergites 2-5 with small translucent, atomentose spots; bristles thin and short. Terminalia somewhat rounded, as long as segments 6+7 combined.

SPECIMENS EXAMINED. Holotype M, allotype F, **DOMINICAN REPUBLIC** / RD-229 ~2 km road to San / Juan, near bridge on Viajama / river, Azua prov., 294 m, 18° / 35.245'N 70°58.085'W, 20.iv. / 2004, S. Perez, B. Hierro, R. / Bastardo (d) [day] (USNM). Paratypes: 2 F, same data as Holotype (USNM), 1 F same data as holotype, (MHND).

DISTRIBUTION. Dominican Republic.

ETYMOLOGY. Latin *planus* for flat, referring to the laterally compressed terminalia of the male.

REMARKS. *Wilcoxius planus* is distinguished from congeners by the characters in the key and male terminalia (Figs 8-11).

***Wilcoxius ramsdeni* (Bromley), New Combination**

Asilus ramsdeni Bromley 1929: 289. Type M, type locality Tiguabos, Guantanamo, Cuba.

REMARKS. The location of the holotype is unknown, and an abdomenless specimen in the Loew collection at MCZC cannot be located. We transfer the species to *Wilcoxius* which is based upon Bromley's (1929) comparative description of *ramsdeni* with *bullatus* [' Similar to the preceding

[*bullatus*], but the mystax is white, the legs are all black, and the genitalia has a tuft of black, not white hairs, below']. Furthermore, *Asilus* Linnaeus is an Old World genus, not occurring in North America, and most North American species formally placed in this genus have been reassigned to other genera (Martin 1975).

Wilcoxius ramsdeni is most similar to *W. bullatus* but is distinguished by the presence of a tuft of black setae along the ventral margin of the epandrium (Bromley 1929). Both species share the entirely black femora and white facial vestiture. However, we have four females from Cuba that is probably *ramsdeni*. They have the latter characters, but differ in that the flagellum is much longer than the style. The long flagellum readily distinguishes this species from *W. bullatus* with its much shorter flagellum [flagellum and style are about the same length]. However, we cannot confirm the identify of the females with certainty without the type material.

DISTRIBUTION. Cuba.

***Wilcoxius similis*, sp. nov.**

Figs 12-14

MALE. Differs from *W. caputitis* as follows. Measurements body 13.2-14.2 mm, wing 8.6-9.0 mm. Face ventrolaterally with sparse black setae and bristles. Frons, ocellar tubercle and antenna black setose. Antenna black. Occiput with dorsal bristles yellow, one sometimes black.

Mesonotum with one to three lateral bristles yellow; laterotergite black except callus reddish.

Abdominal tergites with one to four stout yellowish bristles laterally; tergite 2 with four bristles; most sternites with 4 stout bristles, those on sternites 2-5 longest.

Terminalia (Figs 12-14) with dorsal margin of epandrium slightly angular apically, ventral margin round with short reddish-yellow setae; much longer, thicker setae present ventrally. Gonocoxite and gonostylus elongate and slender. Hypandrium long, projection well beyond base of gonocoxite, with a deep cleft and abundant, long, yellow setae.

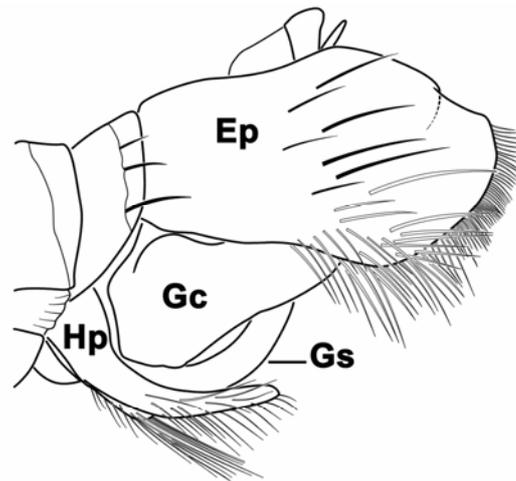
FEMALE. Differs as follows: Measurements body 17.2-18.6 mm, wing 10.4-11.2 mm. Mystax sometimes with sparse black bristles; dorsal postocular bristles variable, all yellow to mostly black. Mesonotum with two yellow bristles laterally. Abdomen entirely tomentose. Tergites 2-5 and sternites 2-5 with stout bristles, longest and most numerous on basal segments.

SPECIMENS EXAMINED: Holotype M, allotype F, **GUATEMALA**: Dept. Zacapa / NW of Teculután, Rd. to San / Lorenzo Marmal Mines, thorns / scrub 500m el. 29.v.2003 / light R. Woodruff, J. Monzón (FSCA). Paratypes, 1 M, 1 F, same data as holotype (FSCA); 1 F, **GUATEMALA**: Dept. Izabel / E. of Morales, Sierra del Mer- / endon, Finca Firmeza, 1 km / west of Honduras 1250 m ele. / 27-28.v.2003, at light, cloud / forest, R. Woodruff, J. Monzón (FSCA).

DISTRIBUTION. Guatemala.

ETYMOLOGY. Latin *similis*, referring to the similarity or likeness of the species with all species within the genus.

REMARKS. *Wilcoxius similis* distinguished from congeners by the characters in the key and the those of the male terminalia (Figs 12-14).



12 0.5 mm

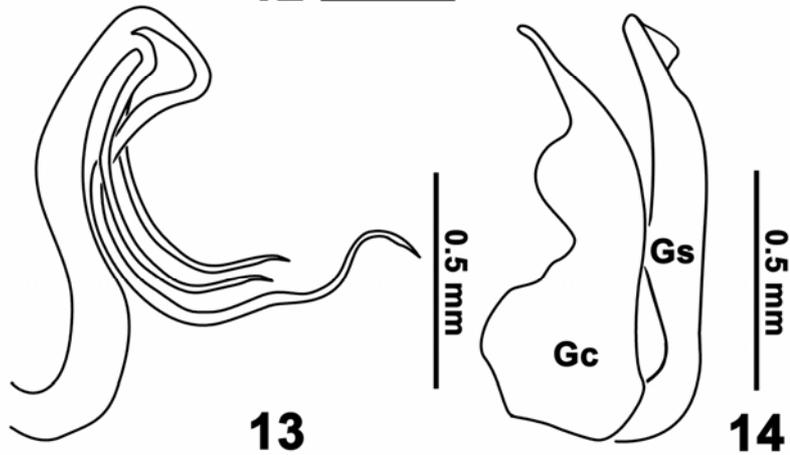


Fig. 12-14. *Wilcoxius similis*, sp. nov. Male terminalia, 12. Lateral view, 13. Aedeagus, 14. Gonostylus.

***Wilcoxius tumidus*, sp. nov.**

Figs 15-17

MALE. Measurements, body 15.0 mm, wing 10.8 mm. Head black. Face weakly gibbose, dull yellowish-gray to golden yellow tomentose, sparse, long, white setae present below antenna; mystax mostly white setose, abundant on lower two-thirds, scattered black bristles dorsally and along episomal margin laterally. Palpus mostly black setose, narrow base white setose ventrally. Antenna black, brownish-yellow to yellowish-gray tomentose, mostly to entirely black setose; pedicel short, about two-thirds as long as scape, flagellum subequal to slightly longer than combined length of scape and pedicel; style longer than pedicel and scape, slightly flattened with uniform margins, not swollen apically, narrowed to pointed apex. Frons, ocellar tubercle, and vertex mostly or entirely brownish-yellow tomentose, frons and vertex lighter medially; setae mostly black, frons with sparse white setae. Occiput mostly yellowish-gray to gray tomentose with white setae, light brownish-yellow dorsally with five to eight black bristles and scattered black setae.

Thorax mostly black, postpronotal corner and postalar callus usually yellow; tomentum brownish-yellow, wide median stripe and three lateral spots dark brown, median stripe divided with brownish-yellow tomentum, transverse groove and lines between lateral spots and median stripe with yellowish-gray tomentum, postpronotum gray to yellowish gray; setae and bristles dark brown to blackish, pos-

terior three dorsocentral and lateral bristles contrastingly long. Scutellum brownish-yellow tomentose, black setose, with two black bristles. Mediotergite black, laterotergite yellow. Pleuron mostly reddish-yellow to yellow, anepisternum entirely, katapisternum ventrally, and meron mostly black, these areas with dark brown to blackish tomentum; tomentum mostly brownish-yellow to yellow with white setae; anepisternum sometimes with sparse black setae, katatergite with few to several black bristles. Halter base pale yellow, knob and stalk creamy white.

Wing hyaline, costal cell with abundant brown microtrichia. Vein r_4 basally with weak angle.

Coxa black, yellow tomentose, with yellowish vestiture. Trochanters brownish-yellow, margins narrowly black.

Femora mostly black anteriorly, brownish-yellow posteriorly; fore femur with preapical brownish-yellow band, middle and hind femora sometimes with preapical brownish-yellow spot; vestiture mostly black and short, that ventrally black and pale yellow; hind femur with ventral bristles mostly pale yellow, one to five black anteroventral bristles present; several posteroventral bristles unusually thin and long, about half as long as hind femur. Tibiae yellowish-brown to blackish anteriorly, hind tibiae darkest, much lighter posteriorly; fore tibia with fringe of mostly pale yellowish setae laterally, setae unusually long and thin, about half as long as fore tibiae. Tarsi brownish-yellow, tarsomeres with blackish apices with mostly black setae; fore and middle tarsi with mostly black bristles, one to five

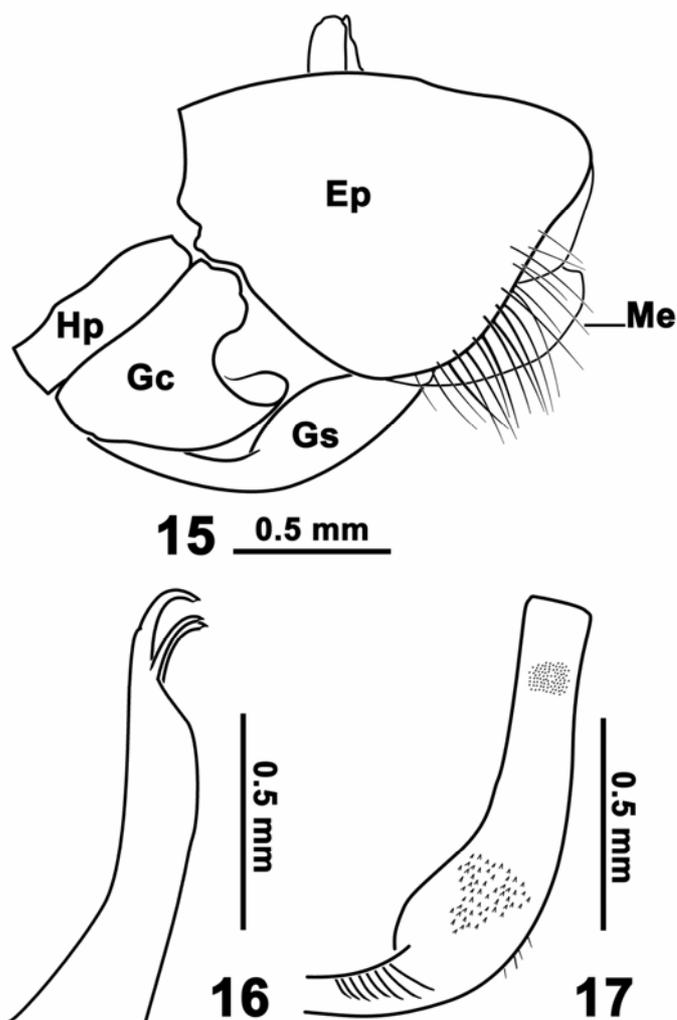


Fig. 15-17. *Wilcoxius tumidus*, sp. nov. Male terminalia, 15. Lateral view, 16. Aedeagus, 17. Gonostylus.

yellow bristles present, former with numerous thin, long yellowish setae laterally; hind tarsi with only black bristles, dense ventral dark brownish-yellow setae.

Abdominal tergites dorsally black with grayish tomentum surrounding large brown tomentose spots dorsally, wide sides of tergites and sternites entirely light reddish-yellow with mostly yellow tomentum laterally; tergites 2-5 laterally and sternites 3-4 medially with atomentose spots, surface of latter translucent. Setae whitish, bristles sparse, creamy white to yellow; bristles present on tergites 4-5 with one on tergite 4 slightly longer than combined length of tergites 5+6; tergite 5 with row of four much shorter, thinner bristles laterally.

Terminalia (Figs 15-17) strongly inflated. Epandrium blackish dorsally, brownish-yellow to yellow laterally; setae mostly pale yellowish, apical margin with scattered long, thin black setae; whitish membranous margin present apically. Gonocoxite short, stout. Gonostylus flat, blade-like, apex truncate. Hypandrium simple, cleft absent, apex just beyond base of gonocoxite.

FEMALE. Measurements, body 15.0-16.4 mm, wing 10.6-12.4 mm. Facial setae immediate below antenna sometimes black. Mystax less dense, bristles thick, often yellow; scape sometimes with numerous yellowish setae ventrally. Fore femur usually with yellow preapical spot that extends upon anterior surface, one specimen with preapical band. Femora

and fore tibiae with ventral or lateral bristles thick, somewhat shorter than in males. Lateral margin of abdominal tergites 2-7 and sternites 3-5 or 6 medially with translucent, atomentose spots; bristles very thin and short. Terminalia somewhat rounded apically, as long as segments 6+7 combined.

SPECIMENS EXAMINED. Holotype M, allotype F, **DOMINICAN REPUBLIC** / RD-237 2 km road Balneario / Ingenito, Presa de Sabaneta, / San Juan Prov., 22.iv.2004, / D. Perez, B. Hierro (d)[day] (USNM). Paratypes: 1 M, 1 F, same data as holotype (MHND), 1 F same data as holotype (USNM); 1 F, **DOMINICAN REPUBLIC** / Palero, Padre Las Casas, / Azua Prov., 6iv.2003, D. / Perez, B. Hierro, D. Veloz, / S. Medrano (day) (USNM); 1 M, **DOMINICAN REPUBLIC** / RD-219 Sierra Prieta, Villa / Mella, Santo Domingo Prov., / 142 m, 18°38.925'N69°58. / 303'W, 12.iv.2004, D. Perez, / B. Hierro, R. Bastardo (n) [night] (USNM); 4 M, 1 F, **DOMINICAN REPUBLIC**: / Pedernales [Province], Sierra de / Baoruco, Aceitillar, / 23.6 km NE Pedernales / 18-09-23N, 71-34-09W [18° 09.23N' 71 ° 34.09W] / 1560 m. 14 June 2003 ~ C. Young, J. Rawlings, C. / Nunez, R. Davidson, P. / Acevedo, M. de la Cruz / open pine forest with grassland, / yellow pan trap. Sample 42192 (CMNH); 1 F, **DOMINICAN REPUBLIC**: / Pedernales [Province] Sierra de / Baoruco, Aceitillar, / 23.6 km NE Pedernales / 18-09-23N, 71-34-09W [18° 09.23N' 71°

34.09W] / 1560 m 14 June 2003 / ~ C. Young, J. Rawlings, C. / Nunez, R. Davidson, P. / Acevedo, M. de la Cruz / open pine forest with / grassland, yellow / pan trap Sample 42162 (CMNH); 1 F, **DOMINICAN REPUBLIC**: / Pedernales [Province] Sierra de / Baoruco, Aceitillar, / 25.2 km ENE Pedernales / 18-05-29N, 71-31-16W [18° 05.29N 71° 31.16W / 1272 m 14 June 2003 ~ C. Young, J. Rawlings, C. / Nunez, R. Davidson, P. / Acevedo, M. de la Cruz / dense broadleaf forest, / pine. hand collected / Sample 42242 (CMNH); 1 F, **DOMINICAN REPUBLIC**: / Azua [Province] 8 km NE Padre Las / Casas, Rio Las Cuevas, / 580 m 18-46N, 70-53W [18° 46'N 70° 53'W] / 3-4 October 1991 / ~ C. Young, R. Davidson, / S. Thompson, J. Rawlings / Riparian growth in / arid thornscrub (CMNH). ETYMOLOGY. Latin *tumidus*, for inflated, referring to the terminalia.

REMARKS. *Wilcoxius tumidus* is distinguished by the characters in the key and those of the male terminalia (Figs 13-16).

Species List

- acutulus* Martin 1975: 73. Holotype M (CASC), Fig. 47, (M terminalia), type locality: Nicaragua, Condega; El Salvador.
- bullatus* (Bromley) 1929: 288. Holotype M, (*Asilus*), fig. 10 (M terminalia) pl. 1 Fig. 14 (pinned specimen). Type locality: Cuba, Santiago de las Vegas. **NEW COMB.**
- caputitis* Scarbrough & Perez-Gelabert, **sp. nov.** Holotype M. Type locality: Honduras, Francisco Morazán (FSCA).
- crenus* Martin 1975: 74. Holotype M (CASC). Figs 49, 67 (M terminalia, aedeagal sheath). Type locality Mexico, Chiapas, Nachis.
- juventus* Scarbrough & Perez-Gelabert. Holotype M, type locality, Cuba, Isle of Pines [Isla de la Juventud] Nueva Gerona (CMNH).
- loewi* (Bromley) 1929: 289, (*Asilus*). Holotype M, type locality: Cuba (MCZC). **NEW COMB.**
- planus* Scarbrough and Perez-Gelabert, **sp. nov.** Holotype M, Dominican Republic, Azua Province, Viajama river (USNM).
- ramsdeni* (Bromley) 1929: 289, (*Asilus*). Holotype M. Type locality: Cuba, Guantánamo, Tiguabos. **NEW COMB.**
- similis* Scarbrough and Perez-Gelabert, **sp. nov.** Holotype M. Type locality: Guatemala, NW of Teculután, Rd. to San Lorenzo mines (FSCA).
- truncus* Martin 1975: 75. Holotype M, Figs 46, 76 (M terminalia, aedeagal sheath). Type locality: Mexico, Vera Cruz, Vera Cruz; Oaxaca, Tehuantepec (CASC).
- tumidus* Scarbrough and Perez-Gelabert, **sp. nov.** Holotype M, Dominican Republic, San Juan Province, Presa de Sabaneta (USNM).

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Literature Cited

- ARTIGAS, J. N. & N. PAPAVERO 1995. The American genera of Asilidae (Diptera): Keys for identification with an atlas of female spermathecae and other morphological details. IX.9. Subfamily Asilinae Learch - *Myaptex*-group, with the proposal of two new genera and a catalog of the neotropical species. *Revista Chilena de Entomología*, **22**: 55-73.
- BROMLEY, S. W. 1929. The Asilidae of Cuba (Diptera). *Annals of the Entomological Society of America*, **22**: 272-294.
- BULLINGTON, S. W. & R. J. LAVIGNE 1984. Description and habitat of *Efferia kondratieffi* spec. nov. with notes on *Efferia aestuans* (L.) (Diptera: Asilidae). *Annals of the Entomological Society of America*, **77**: 404-413.
- MARTIN, C. H. 1975. The generic and specific characters of four old and six new Asilini genera in the western United States and Central America (Diptera: Asilidae). *Occasional papers of the California Academy of Sciences*, **119**: 1-107.
- MCALPINE, J. F. 1981. Morphology and terminology - adults. Pp. 9-63. In McAlpine, J. F., B. V. Peterson, G. E. Shewell, H. J. Teskey, J. R. Vockeroth, and D. M. Wood. *Manual of Nearctic Diptera*. Vol. 1. Agriculture Canada. Monograph 27. Ottawa.
- WILLISTON, S. W. 1901. In *Biologia Centrali-Americana*. London. (Diptera). Supplement, pp. 298-332.