

## A revision of the Neotropical predaceous midges of *Brachypogon* (*Brachypogon*) Kieffer (Diptera: Ceratopogonidae)

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**Abstract:** This revision of the Neotropical predaceous midges of the genus *Brachypogon* (*Brachypogon*) Kieffer, recognizes 18 extant species, including the following 12 new species: *Brachypogon* (*B.*) *apunctipennis*, *bifidus*, *bimaculatus*, *ecuadorensis*, *ethelae*, *insularis*, *monicae*, *pseudoparaensis*, *schmitzi*, *spatuliformis*, *telesfordi*, and *woodruffi*. Two species groups are recognized, the *fuscivenosus* and *impar* groups. The hitherto unknown male of *B. paraensis* Wirth & Blanton is described and illustrated, and the female of that species as well as both sexes of *B. impar* (Johannsen) and *B. fuscivenosus* (Lutz) are redescribed and illustrated. Diagnoses are provided for previously described species, as well as a key for the recognition of all Neotropical species. New records of *B. impar* are from Brazil, Colombia, and Argentina.

The small to minute predaceous midges of the genus *Brachypogon* (*Brachypogon*) Kieffer are world wide in distribution except for Antarctica. Due mostly to their small size, and because many species were often regarded as belonging to supposed subgenera of the genus *Ceratopogon* Meigen, they have remained poorly known taxonomically until recently. For example, Wirth & Grogan (1988) listed 26 species of the subgenus from all major biogeographic regions of the World, but only 3 from the Neotropics: *fuscivenosus* (Lutz), *impar* (Johannsen), and *paraensis* Wirth & Blanton. Since then, 3 new species were described from Argentina by Spinelli (1990), *bonaerensis*, *calchaqui*, and *ringueleti* and the Neotropical species of *Brachypogon* (*Isohelea*) have been addressed by Spinelli & Grogan (1994). In the most recent World catalog, Borkent & Wirth (1997) list 45 extant and 4 fossil species in the subgenus. These fossil species are from Baltic and Saxonian amber (Szadziewski 1988, 1993), but Szadziewski & Grogan (1998) describe a new fossil species from Dominican amber.

### Materials and Methods

The present study was based primarily on slide mounted specimens in the collections of the U. S. National Museum of Natural History (USNM), Washington, D. C., the Florida State Collection of Arthropods (FSCA), Gainesville, and the Museo de La Plata (MLPA), La Plata, Argentina. In this material, we discovered 12 undescribed species that belong to 2 species groups, the

*fuscivenosus* and *impar* groups. We also describe and illustrate the hitherto unknown male of *B. impar*, redescribe the female of that species and both sexes of *B. paraensis* and *B. fuscivenosus*, give diagnoses of previously described species, and present a key for all Neotropical species.

All Neotropical species of *Brachypogon* (*sensu lato*) have fused male flagellomeres 2-11, a synapomorphy that is unique for the genus within the Ceratopogonidae (Borkent 1992, Grogan & Borkent 1992). The Neotropical species of the subgenus *Brachypogon* may be distinguished from all Neotropical species in the subgenus *Isohelea* by lacking radial cells and macrotrichia on the margin of their wing membranes, lack of setae on palpal segment 4, and a single spermatheca. Because our study is based primarily on museum material, we anticipate that many more undescribed species await discovery in the Neotropics.

The following special terms and their abbreviations are used: Wing length (WL) is measured from the basal arculus to the wing tip; costal ratio (CR) was obtained by dividing the value of the costal length by the wing length. Antennal proportions (AP) are the relative lengths of flagellomeres of females; antennal ratio (AR), presented for females only, is the value of the combined lengths of flagellomeres 9-13, divided by the value of the combined lengths of 1-8. Palpal proportions (PP) are the relative lengths of the palpal segments; palpal ratio (PR) is the length of palpal segment 3 divided by its greatest breadth. Hind tarsal ratio (TR) is obtained by dividing the length of the hind tarsomere 1 by the length of hind tarsomere 2.

Claw proportions (CP) are the relative proportion of the larger and smaller claws of females, in the order of fore, mid and hind legs. In cases where a species is known from only a few specimens, the values provided are for those of the holotype and allotype. For those species with other available specimens, a range of values is presented for each measured character.

For general ceratopogonid terminology see Downes & Wirth (1981), and Spinelli & Wirth (1993) for those genera inhabiting the Neotropical Region. A diagnosis of the genus *Brachypogon* and a detailed discussion of subgeneric characters is found in Wirth & Grogan (1988). Borkent (1992), Grogan & Borkent (1992), and Borkent & Grogan (1995) discuss additional characters that distinguish *Brachypogon* from related genera in the tribe Ceratopogonini. Unless otherwise indicated, types of all new species are deposited in the USNM; when available, paratypes are deposited in the MLPA, and the Canadian National Collection of Insects (CNCI), Ottawa.

#### Key to the Neotropical species of *Brachypogon* (*Brachypogon*)

(Males of *B. bonaerensis*, and females of *B. apunctipennis*, *insularis*, *pseudoparaensis*, *schmitzi*, and *spatuliformis* are unknown)

- |  |    |
|--|----|
| 1. Females .....   | 2  |
| —Males .....   | 15 |
| 2. Wing membrane with conspicuous dark spots in cells r5, m1, and m2, and/or veins darkly infuscated with dark spot over r-m crossvein and posterior to costa; spermatheca with well developed conical to subconical neck ( <i>fuscivenosus</i> group) ..... | 3  |
| —Wing membrane without conspicuous dark spots or with single large spot above base of vein M1 or directly on stigma; spermatheca without well developed conical or subconical neck ( <i>impar</i> group) .....   | 5  |
| 3. Sensilla coeloconica present only on flagellomere 1; wing veins pale; yellowish species .....   |    |
| ..... <i>paraensis</i> Wirth & Blanton   |    |
| —Sensilla coeloconica on flagellomeres 1-3 or 1-4; wing veins darkly infuscated; brownish species .....  | 4  |
| 4. Wing membrane with one large dark spot in cell r5 posterior to stigma, veins darkly infuscated;   |    |
| claws with basal internal and external teeth; large species, WL 0.95-1.05mm .....  |    |
| ..... <i>fuscivenosus</i> (Lutz)   |    |
| —Wing membrane with three small brown spots, in cells r5, m1 and m2, veins pale; claws only with internal teeth; small species, WL 0.66 mm .....   |    |
| ..... <i>ethelae</i> n. sp.  |    |
| 5. Wing lacking vein M2 .....  | 6  |
| —Wing with vein M2 .....   | 8  |
| 6. Antenna with 12 flagellomeres, 12-13 fused; costa very short, CR 0.41-0.46 .....  |    |
| ..... <i>ecuadorensis</i> , n. sp.   |    |
| —Antenna with 13 flagellomeres; costa longer, CR 0.47-0.55 .....   | 7  |
| 7. Flagellomeres 2-4 and 12-13 broadly abutting; costa with 11 marginal setae; tibiae yellowish with broad brown bands ..  |    |
| ..... <i>bonaerensis</i> Spinelli  |    |
| —Flagellomeres 2-3 broadly abutting; costa with 19 marginal setae; tibiae uniformly dark brown .....   |    |
| ..... <i>ringueletii</i> Spinelli  |    |
| 8. Antenna with 12 flagellomeres, 12-13 fused ....   | 9  |
| —Antenna with 13 flagellomeres .....   | 12 |
| 9. Costa very short (CR 0.44-0.48), with interrupted row of 6-7 setae; vein M2 complete to base or nearly so, obsolete distally; flagellomeres 3-4 indistinctly fused .....  |    |
| ..... <i>woodruffi</i> n. sp.  |    |
| —Costa longer (CR 0.47-0.59), with row of 11-19 setae; vein M2 broadly obsolete at base; flagellomeres 3-4 not fused .....   | 10 |
| 10. Wing membrane with large dark spot above base of vein M1 and pale area distad of the dark spot below radial sector; spermatheca elongated, ovoid .....   |    |
| ..... <i>bifidus</i> , n. sp.  |    |
| —Wing membrane without large dark spot above base of vein M1, with or without pale area below radial sector; spermatheca globose to ovoid .....  | 11 |
| 11. Wing membrane deeply infuscated, veins dark brown; palpus brown .....  |    |
| ..... <i>monicae</i> , n. sp.  |    |
| —Wing membrane hyaline, most veins pale; palpus pale or whitish .....  |    |
| ..... <i>impar</i> (Johannsen) (in part)   |    |
| 12. Palpus pale or whitish .....   |    |
| ..... <i>impar</i> (Johannsen) (in part)   |    |
| —Palpus brown .....  | 13 |

13. Only distal 3 flagellomeres elongated.....  
 ..... *telesfordi* n. sp.  
 —Distal 5 flagellomeres elongated ..... 14
14. Wing with 2 spots, one proximad of r-m cross-  
 vein, other at end of costa, membrane hyaline,  
 costa with row of 10-14 setae; palpus very  
 short ..... *bimaculatus* n. sp.  
 —Wing without spots, membrane hyaline, costa  
 with row of 24-25 setae ..... *calchaqui* Spinelli
15. Wing membrane usually with small dark spots  
 in cells r5, m1, and m2, and/or wing veins dar-  
 kly infuscated with dark spot over r-m cross-  
 vein and posterior to costa (*fuscivenosus*  
 group) ..... 16  
 —Wing membrane without small dark spots in  
 cells r5, m1 and m2, or posterior to costa  
 (*impar* group) ..... 22
16. Wing lacking spots in cells m1 and m2;  
 aedeagus with extensive longitudinal wrinkles;  
 sensilla coeloconica present on flagellomeres 1-  
 3 ..... *fuscivenosus* (Lutz)  
 —Wing with spots in cells m1 and m2; aedeagus  
 without longitudinal wrinkles; sensilla coelo-  
 conica present only on flagellomere 1 ..... 17
17. Gonostylus strongly bent and constricted at  
 base, tip with broad spatulate lobe; basal arch  
 of aedeagus slightly convex .....  
 ..... *spatuliformis* n. sp.  
 —Gonostylus nearly straight at base and not con-  
 stricted, tip narrow and pointed; basal arch of  
 aedeagus concave ..... 18
18. Caudal margin of sternite 9 deeply excavated ..  
 ..... 19  
 —Caudal margin of sternite 9 nearly straight ... 20
19. Gonostylus slightly curved; parameres with  
 stout, heavily sclerotized spine arising from  
 medial portion of apical processes; aedeagus  
 with two slender apical processes .....  
 ..... *schmitzi* n. sp.  
 —Gonostylus abruptly curved distally; parameres  
 without stout, heavily sclerotized apical spine;  
 aedeagus with long stout pointed tip .....  
 ..... *apunctipennis* n. sp.
20. Aedeagus with straight basal arms; gonostylus  
 1.25 X longer than gonocoxite, nearly straight;  
 tergite 9 with subparallel lateral margins .....  
 ..... *pseudoparaensis* n. sp.
- Aedeagus with recurved basal arms; gonostylus  
 shorter than or as long as gonocoxite, greatly  
 curved at apex; tergite 9 tapering distally ... 21
21. Basal portion of parameres broader than long,  
 H-shaped; tergite 9 tapering gradually dis-  
 tally; basal arch of aedeagus very low, nearly  
 straight ..... *ethelae*, n. sp.  
 —Basal portion of parameres longer than broad,  
 triangular; tergite 9 tapering abruptly on dis-  
 tal 1/2; basal arch of aedeagus extending 0.2 of  
 total length, concave .....  
 ..... *paraensis* Wirth & Blanton
22. Parameres separate ..... *ringueleti* Spinelli  
 —Parameres fused ..... 23
23. Wing lacking vein M2; ventral membrane of  
 aedeagus with longitudinal wrinkles ..... 24  
 —Wing with vein M2; ventral membrane of  
 aedeagus without longitudinal wrinkles ..... 25
24. Parameres rhomboidal; sternite 9 with a  
 straight caudal margin ..... *insularis* n. sp.  
 —Parameres not rhomboidal, basal arch heavily  
 sclerotized, semicircular in shape; sternite 9  
 with an extended caudal margin .....  
 ..... *ecuadorensis* n. sp.
25. Sternite 9 very short, continuous distally with  
 aedeagus ..... *calchaqui* Spinelli  
 —Sternite 9 longer, separate from aedeagus .... 26
26. Parameres with bifid or bifurcate tip .....  
 ..... *bifidus* n. sp.  
 —Parameres with entire, rounded tip ..... 27
27. Caudal margin of sternite 9 deeply excavated  
 ..... *impar* (Johannsen)  
 —Caudal margin of sternite 9 straight or slightly  
 curved, not deeply excavated ..... 28
28. Wing with two spots, over r-m crossvein and at  
 end of costa; palpus very short .....  
 ..... *bimaculatus* n. sp.  
 —Wing without spots, or only one spot at end of  
 costa; palpus longer, of normal length ..... 29
29. Apicolateral processes present on tergite 9;  
 costa with only 3 marginal setae .....  
 ..... *woodruffi* n. sp.  
 —Apicolateral processes not present on tergite 9;  
 costa with 7 or more marginal setae ..... 30

30. Apex of tergite 9 broadly rounded or truncate; vein M2 very pale, barely perceptible .....  
 ..... *monicae* n. sp.  
 —Apex of tergite 9 narrowly rounded or pointed; vein M2 broadly obsolete at base .....  
 ..... *telesfordi* n. sp.

### The *fuscivenosus* group

Wing membrane with conspicuous dark spots in cells r5, m1, and m2, and/or veins darkly infuscated with dark spot over r-m crossvein and posterior to stigma; spermatheca with well developed conical to subconical neck.

#### *Brachypogon (B.) fuscivenosus* (Lutz) (Figs. 1-6)

*Palpomyia fuscivenosa* Lutz 1914:94 (male, female; Brazil); Floch & Abonnenc, 1942:4 (Guyana; fig. wing, palpus).

*Parabazzia fuscivenosa* (Lutz); Lane 1945:370 (types redescribed; Brazil; fig. male genitalia).

*Brachypogon fuscivenosus* (Lutz); Wirth & Blanton 1970:101 (comb.; reductio ad unum; distrib.).

*Brachypogon (B.) fuscivenosus* (Lutz): Wirth & Grogan 1988:29 (in list); Spinelli 1990:744 (in key).

**Diagnosis:** Female: only Neotropical species with sensilla coeloconica on flagellomeres 1-3 or 1-4; wing with large dark spot just posterior of costa, veins darkly infuscated, and WL 0.95-1.05 mm. Male: only Neotropical species with sensilla coeloconica on flagellomeres 1-3; and ventral surface of aedeagus with extensive longitudinal wrinkles.

**Female:** WL 0.95-1.05 mm. Eyes contiguous the length of 2 ommatidia. Antenna with sensilla coeloconica on flagellomeres 1-3 or 1-4 (Fig. 1); AP 30-20-20-20-20-20-20-20-30-32-38-40-40; AR 1.06. Palpus (Fig. 2) slender; PP 10-25-31-23-25; segment 3 moderately swollen with deep pit; PR 1.70. Femora brownish except bases pale, knees blackish, tibiae yellowish; femora and tibiae covered with stout bristle-like setae; 4th tarsomeres cordiform; female claws unequal with internal and external basal teeth, CP 16:12, 16:12, 21:16. Wing (Fig. 3) membrane slightly infuscated with darkly infuscated veins and two large dark brown spots, one at base of r-m crossvein, other just beyond end of costa, extending caudad about 1/3 across cell r5; r-m crossvein unusually long, nearly perpendicular; vein M2 obsolete at base; CR 0.61-0.63. Halter pale. Spermatheca (Fig. 4) large, round to ovoid with moderately long conical neck.

**Male:** WL 0.90-0.97 mm; CR 0.57-0.59. Similar to female with the following notable differences. Eyes separated the space of 2 ommatidia. Sensilla coeloconica on flagellomeres 1-3. Genitalia as in Fig. 5-6. Sternite 9 produced caudomedially; tergite 9 gradually tapering distally, apex truncated, proctiger large, quadrate, heavily sclerotized, with anterior margin notched to fit the tip of the parameres. Gonocoxite moderately long, straight; gonostylus slightly curved, with ventral subapical swelling, tip pointed. Aedeagus with short basal arms; main portion tapering to a bluntly rounded point, ventral surface with extensive longitudinal wrinkles, dorsal side with a semi-hyaline sheath with pointed apex extending beyond tip of aedeagus proper. Parameres fused, lyre-shaped; basal apodeme nearly straight; distal portion with pointed tip.

**Distribution:** Florida south to Brazil and Jamaica and the Virgin Islands.

**Types:** The original description by Lutz (1914) was based on a male and female mounted on microscope slides, captured by light trap in Manginhos, Brazil, which are housed in the collection of the Instituto Oswaldo Cruz, Rio de Janeiro.

**Remarks:** The illustrations of this species provided by Wirth & Blanton (1970) are reproduced herein for comparison purposes with the following new species.

#### *Brachypogon (B.) ethelae*, new species (Figs. 7-12)

*Brachypogon fuscivenosus* Wirth & Blanton, 1970:101 (in part, female from Panama, Almirante, Bocas del Toro).

**Diagnosis:** A very small species of the *fuscivenosus* group, most closely resembling *B. fuscivenosus* in having well defined, darkly infuscated wing veins. Female: only Neotropical species with sensilla coeloconica on flagellomeres 1-3; wing with small spots in cells r5, m1 and m2, veins darkly infuscated with dark spots on r-m crossvein and end of costa, and WL 0.66 mm. Male: only Neotropical species having a wing with spots in cells r5, m1 and m2, veins infuscated with spots on r-m crossvein and end of costa; parameres with H-shaped proximal portion, distal portion with pair of long apical processes; apicolateral processes absent on tergite 9.

**Allotype female:** WL 0.66. Head: Dark brown. Eyes barely contiguous. Antennal scape with 2 setae; flagellum (Fig. 7) brown; flagellomeres 1-3 with sensilla coeloconica; AP 16-11-10-

10-10-11-13-13-21-23-28-27-33; AR 1.40. Palpus (Fig. 8) pale; PP 6-11-21-7-19; segment 3 with rounded deep pit; PR 1.40. Mandible with 8 coarse teeth. Thorax: Dark brown. Legs brown, tibiae with subbasal and apical pale bands, tarsi pale brown; hind tibial comb with 6 setae; TR 2.30; claws slightly unequal with short internal basal teeth (not measurable for CP). Wing (Fig. 9) membrane infuscated, with small spots in cells r5, m1 and m2; veins darkly infuscated with dark spots on r-m crossvein and end of costa; costa with row of 20 marginal setae; radius with 1 seta at intersection with r-m crossvein and at base of junction with costa; CR 0.58. Halter stem brown, knob white. Abdomen: Golden brown, pleurae brown. Spermatheca (Fig. 10) ovoid, with subconical neck, measuring 0.057 X 0.045 mm.

**Holotype male:** Similar to female with the following notable differences: Antennal flagella missing. Wing wrinkled due to mounting, unmeasurable; membrane lightly infuscated, small spots in cells r5, m1, and m2 barely perceptible; costa with row of 15 marginal setae. Genitalia as in Figs. 11-12. Sternite 9 with nearly straight caudal margin; tergite 9 tapering gradually distally to broadly rounded apex and a distal hyaline projection bearing the cerci, apicolateral processes apparently absent. Gonocoxite stout, nearly twice as long as broad with mesobasal projection; gonostylus slender, as long as gonocoxite, straight proximally, distal 1/4 abruptly curved, tip pointed. Aedeagus triangular, basal arch very low; basal arm heavily sclerotized, recurved 45°; distal portion lightly sclerotized, tapering abruptly distally to slender pointed tip. Parameres fused, heavily sclerotized; proximal portion H-shaped which are poorly articulated at bases with gonocoxites; distal portion with pair of long apical processes.

**Distribution:** Panama, known only from the type-locality.

**Types:** Holotype male, allotype female, Panama, Almirante, Bocas del Toro Prov., April 1953, F. S. Blanton, LT (USNM).

**Etymology:** Named for Ethel Liddle Grogan, the wife of the second author.

**Discussion:** The only other Neotropical species with females having sensilla coeloconica on flagellomeres 1-3 (or 1-4) and a similar appearing wing is *B. fuscivenosus*. But females of that species are much larger (WL 0.95-1.05 mm) and their wing lacks 3 small spots in cells r5, m1, and m2, and instead, has only a single spot on the wing membrane in cell r5 just posterior to end of the costa. In addition, the female claws of this new species

only have basal inner teeth, and lack the basal outer teeth that are present on female claws of *B. fuscivenosus*.

Despite the fact that females of *B. ethelae* closely resemble those of *B. fuscivenosus*, the male genitalia of this new species are quite unlike those of *B. fuscivenosus*, which has an aedeagus with longitudinal wrinkles on its ventral membrane and distinctive lyre-shaped parameres. Instead, the male genitalia of *B. ethelae*, more closely resemble those species of the *paraensis* complex, most notably *B. pseudoparaensis*, in that they are quite small. However, males of *B. pseudoparaensis* differ from this new species in having an aedeagus with straight basal arms and a basal arch that extends 1/2 of its total length, the parameres are not H-shaped on the proximal portion, and tergite 9 has well defined apicolateral processes.

The holotype male is missing its antennal flagella, and therefore, we could not determine whether it, like the female, possesses sensilla coeloconica on flagellomeres 1-3. However, we suspect that these sensilla may be present in males of this species, as they are present in males of *B. fuscivenosus*. If so, this would be further evidence that we have correctly associated the holotype and allotype, and that this species is indeed a close relative of *B. fuscivenosus*.

***Brachypogon (B.) paraensis* Wirth & Blanton**  
(Figs. 13-23)

*Brachypogon paraensis* Wirth & Blanton 1970:99 (female, male; Brazil).

*Brachypogon (B.) paraensis* Wirth & Blanton: Wirth & Grogan 1988:29 (in list); Spinelli 1990:744 (in key).

**Diagnosis:** Female: only Neotropical species having a wing with a large quadrate or H-shaped spot in the center of cell r5 and pale veins; yellowish body; and an obliquely ovoid spermatheca with short broad conical neck. Males: only Neotropical species having a wing with spots in cells r5, m1, and m2; tergite 9 tapering abruptly at midlength; aedeagus triangular with low concave basal arch and long pointed tip; and parameres with long broad basal portion, and a pair of subapical slender heavily sclerotized submedian processes.

**Female:** WL 0.90-0.95 mm. Head: Eyes contiguous. Antennal flagellum (Fig. 13) slender, AP 23-15-15-15-16-18-20-20-30-35-40-35-35; AR 1.23. Palpus (Fig. 14) slender; PP 10-15-30-15-25; seg-

ment 3 with small deep sensory pit; PR 2.50. Legs (Fig. 15) pale yellow, knees brownish, tibiae with or without light brown median bands, tarsi (Fig. 16) pale; hind tibial comb with 6 setae; 4th tarsomeres subcylindrical, claws (Fig. 17) unequal, with internal and external basal teeth, CP 20:15, 20:15, 20:15. Wing (Fig. 18) hyaline with 3 prominent small spots, on r-m crossvein, on the end of costa and radius, and in middle of cell r5, and brown streaks in cells m1 and m2 directly behind the spot in cell r5; r-m crossvein long, perpendicular; vein M2 obsolete at base; CR 0.57-0.60. Halter pale. Spermatheca (Fig. 19) obliquely ovoid with short, very broad conical neck.

**Male:** WL 0.77-0.79 mm; CR 0.55-0.56. Antennal flagellum (Fig. 20) with plume extending nearly to apex of flagellomere 12. Claws (Fig. 21) small, without basal teeth, tips slightly bifid. Genitalia as in Figs. 22-23. Sternite 9 with very shallow caudomedian excavation; tergite 9 tapering abruptly on distal half, proctiger well developed, quadrate, apicolateral processes large with single apical seta, cerci small, setose. Gonocoxite straight, with mesobasal tubercle; gonostylus slender with slender tip abruptly curved 90°, apex pointed. Aedeagus triangular; basal arch low, concave; basal arm heavily sclerotized, recurved; distal portion lightly sclerotized, tapering distally to slender, pointed tip. Parameres fused; main portion short, heavily sclerotized, with a slender median point extending caudally between the slender submedian dorsal processes; a pair of heavily sclerotized processes arise from base of main portion and articulate with mesobasal tubercle of gonocoxites.

**Distribution:** Brazil.

**Types:** Holotype female, allotype male, Brazil, Para, Rio Paru, Mission Tiriyos, 14-III-1962, E. J. Fittkau, at light (in USNM).

**Remarks:** The illustrations of this species provided by Wirth & Blanton (1970) are reproduced herein with modifications to the male genitalia, and for comparison purposes with the following 4 new species, which are known only from males.

***Brachypogon (B.) apunctipennis*, new species**  
(Figs. 26-27)

**Diagnosis.** A small species of the *fuscivenosus* group and member of the *paraensis* complex. Male: only Neotropical species with a wing lacking a spot in cell r5 but with small spots in cells m1 and m2; male genitalia large, greatly elongated; aedeagus

with a shallow, straight basal arch and very long slender tip; caudal margin of sternite 9 with deep excavation; and distal processes of parameres greatly elongated, nearly twice as long as main body of parameres. Female unknown.

**Male:** Holotype. Similar to *B. paraensis*, with the following notable differences. Eyes slightly separated. Body dark golden brown; legs pale brown, unbanded. WL 0.64 mm; CR 0.56; no dark spot in cell r5. Genitalia as in Figs. 26-27. Sternite 9 with broad, deep caudomedian excavation; tergite 9 greatly elongated, tapering abruptly past base and parallel sided on distal 3/4, apex broadly rounded, apicolateral processes short, triangular, cerci large, roundly conical, setose. Gonocoxite elongated, 2.3 X times longer than broad, mesobasal projection elongate with mesally curving tip; gonostylus slender, nearly straight on proximal 3/4, distal 1/4 curved abruptly nearly 90°, with slender pointed tip. Aedeagus triangular; basal arm short, heavily sclerotized, recurved 120°; basal arch shallow, straight; main portion lightly sclerotized with slender, elongated, distal portion with sharply pointed tip. Parameres fused; proximal portion heavily sclerotized, broadly H-shaped, poorly articulated with mesobasal projections of gonocoxites; distal portion lightly sclerotized with pair of dorsally directed, greatly elongated processes.

**Female:** Unknown.

**Distribution:** Known only from the type-locality in Rondonia, Brazil.

**Type:** Holotype male, Brazil, Rondonia, 62 km SW Ariquemes, vic. Rancho Grande, 25-IX-1992, U. Schmitz, UVLT, deposited in FSCA.

**Etymology:** The specific name refers to the lack of a spot in cell r5 in this species, which is present in all other species in the *paraensis* complex.

**Discussion:** This species has the most elongated male genitalia of any species of the *paraensis* complex. In overall appearance, its genitalia most closely resemble those of *B. schmitzi* n. sp., but that species differs in having an even deeper caudomedian excavation on sternite 9, the elongated tip on its aedeagus is divided into 2 slender processes, the gonostylus is nearly straight distally, and the distal processes of its parameres have a median sharply pointed heavily sclerotized spine.

***Brachypogon (B.) pseudoparaensis*,**  
**new species**  
(Figs. 24-25)

*Brachypogon paraensis* Wirth & Blanton 1970:99

(in part; male; Brazil).

**Diagnosis:** A small species of the *fuscivenosus* group and member of the *paraensis* complex. Male: only Neotropical species having a wing with spots in cells r5, m1 and m2; aedeagus with straight basal arms; gonostylus 1.25X longer than gonocoxite; and tergite 9 with subparallel lateral margins. Female unknown.

**Male holotype:** Similar to *B. paraensis*, with the following notable differences. Body, including legs light brown; tibiae with pale subbasal and subapical pale bands. WL 0.71 mm; CR 0.54. Genitalia as in Figs. 24-25. Sternite 9 short, caudomedian margin nearly straight; tergite 9 short, tapering abruptly after base to subparallel-sided on distal 3/4 with broadly rounded apex, apicolateral processes short, triangular bearing 2 small apical setae, cerci slender and setose. Gonocoxite twice as long as broad with slender basomesal projection; gonostylus slender, nearly straight, 1.25X longer than gonocoxite, apex curved with pointed tip. Aedeagus triangular; basal arm straight, heavily sclerotized; basal arch high, extending 0.4 of total length; distal portion more lightly sclerotized, extending beyond parameres, with slender pointed tip. Parameres fused; proximal portion shield-shaped, heavily sclerotized, articulating at base with inner corners of gonocoxite, apex narrow and sharply pointed; distal processes very heavily sclerotized, subparallel.

**Female:** Unknown.

**Distribution:** Known only from the type-locality in Para, Brazil.

**Type:** Holotype male, Brazil, Para, Rio Paru, 14-II/22-IV-1962, E. J. Fittkau, at light (a paratype of *Brachypogon paraensis* Wirth & Blanton), deposited in FSCA.

**Etymology:** The specific name is a reference to the resemblance of this species to *B. paraensis*, and also to the fact that it was discovered amongst the original paratypes of that species.

**Discussion:** This new species most closely resembles *B. paraensis*, but that species has an aedeagus with a much lower basal arch with short curved basal arms, the gonostylus is shorter than the gonocoxite and its tip is abruptly curved 90°, and tergite 9 is much longer and narrowed distally.

***Brachypogon (B.) schmitzi*, new species**  
(Figs. 28-29)

**Diagnosis.** A small species of the *fuscivenosus* group and member of the *paraensis* complex. Male:

only Neotropical species with an aedeagus bearing an elongate, slender, bifurcate apical portion and large recurved basal arms; distal processes of parameres with stout, very heavily sclerotized, sharply pointed spine; and sternite 9 with broad deep caudomedian excavation. Female unknown.

**Male holotype:** Similar to *B. paraensis*, with the following notable differences. Body dark brown; legs light brown, tibiae with broad subbasal and subapical pale bands, pale bands widest on hind legs. WL 0.67 mm; CR 0.56. Genitalia as in Figs. 28-29. Sternite 9 with broad, deep caudomedian excavation; tergite 9 tapering on distal 2/3 to a bluntly rounded apex, apicolateral processes well developed, broadly triangular, cerci moderately short, setose. Gonocoxite twice as long as broad with mesobasal protuberance, dorsal root well developed; gonostylus slender, slightly curved, with pointed tip. Aedeagus with very heavily sclerotized, long basal arms that are recurved more than 120°; basal arch low, extending 1/5 of total length; main portion broadly subtriangular, lightly sclerotized except for lateral margins; distal portion very slender, elongate, deeply bifurcate. Parameres fused; proximal portion heavily sclerotized, roughly H-shaped, with a very heavily sclerotized sharply pointed distal section; distal processes very long, very slender apically and extending nearly to tip of aedeagus, with a sharply pointed ventrally directed spine arising at midlength.

**Female:** Unknown.

**Distribution:** Known only from the type-locality in Rondonia, Brazil.

**Type:** Holotype male, paratype male, Brazil, Rondonia. 62 km SW Ariquemes, vic. Rancho Grande, 25-IX-1992, U. Schmitz, UVLT, deposited in FSCA.

**Etymology;** The specific name is a patronym in honor of the collector of the holotype.

**Discussion:** This species differs from all other members of the *paraensis* complex in having an aedeagus with an elongated tip that is divided into two slender processes and a heavily sclerotized sharply pointed spine arising from the distal processes of its parameres.

***Brachypogon (B.) spatuliformis*, new species**  
(Figs. 30-31)

**Diagnosis:** A very small species of the *fuscivenosus* group and member of the *paraensis* complex. Male: only Neotropical species with a gonostylus that is greatly curved proximally with a

spatulate subapical lobe, and a shield-shaped aedeagus with convex basal arch, well developed recurved basal arms and a bifid tip. Female unknown.

**Male holotype:** Similar to *B. paraensis* with the following notable differences. Body dark brown; legs brown, tibiae with pale subbasal and subapical bands. WL 0.58 mm; CR 0.56. Genitalia as in Figs. 30-31. Sternite 9 short, with shallow caudomedian excavation; tergite 9 tapering gradually distally to broadly pointed apex, proctiger with pair of subapical, hornlike, ventrally directed processes, apicolateral processes minute with single apical seta, cerci moderately short, setose. Gonocoxite moderately stout, broadest proximally, slightly curved; gonostylus pale, 0.85 the length of gonocoxite, narrow and greatly curved proximally, broadening distally to subapically spatulate lobe, tip roundly pointed. Aedeagus broad, shield-shaped; basal arms long, heavily sclerotized, recurved, basal arch convex; main portion lightly sclerotized with bifid tip. Parameres fused, articulating at base with mesal corners of gonocoxites; main portion elongate, triangular, tapering distally to pointed tip; distal processes arising dorsally, tips sharply pointed.

**Female:** Unknown.

**Distribution:** Known only from the type-locality in Rondonia, Brazil.

**Type:** Holotype male, Brazil, Rondonia, 62 km SW Ariquemenes, Vic. Rancho Grande, 25-IX-1992, U. Schmitz, UVLT, deposited in FSCA.

**Etymology:** The specific name is a reference to the broad, spatulate aedeagus.

**Discussion.** Among the species of the *paraensis* complex, the only other species that could possibly be mistaken for this one is *B. schmitzi* n. sp. That species differs in having a distinct sharply pointed spine that arises from the distal processes of its parameres, an aedeagus with an elongated tip that is divided into two slender processes, and a nearly straight gonostylus.

### The *impar* group

Species typically with unadorned wings and spermatheca with slender neck.

#### *Brachypogon (B.) bifidus*, new species (Figs. 32-37)

**Diagnosis:** A small (female WL 0.52-0.65 mm), dark brown species of the *impar* group. Female: only Neotropical species with 12 flagel-

lomes; wing with large dark spot on membrane above base of vein M1 and pale spot distal to radial sector; and an elongated ovoid spermatheca with short neck. Males: only Neotropical species having fused parameres with bifid tip and gonostylus longer than gonocoxite.

**Female:** WL 0.51-0.65 mm. Head: Brown, proboscis slightly paler. Antennal scape with 2 setae; flagellum (Fig. 32) brown, pale on extreme bases of flagellomeres, with 12 flagellomeres (distal 2 fused); AP 20-12-12-12-13-14-14-15-23-23-28-46; AR 1.07-1.14; flagellomere 1 with 2 apical sensilla coeloconica. Palpus (Fig. 33) brown, distal 2 segments paler; PP 9-20-26-10-20; segment 3 with a rounded, deep sensory pit; PR 1.35-1.70. Mandible with 8 coarse teeth. Thorax: Uniformly dark brown. Legs brown, tibiae with subbasal and apical pale bands, tarsi whitish; hind tibial comb with 6 setae; TR 2.60; 4th tarsomeres subcylindrical; claws unequal, with short internal and external basal teeth, CP 14:10, 16:12, 16:12. Wing (Fig. 34) membrane slightly infuscated, a large dark spot above base of vein M1, stigma and r-m crossvein dark brown, other veins pale brown; r-m crossvein slightly oblique; M2 obsolete at base; M1, M2, M3+4 and Cu1 obsolete at wing margin; costa with 2 basal setae, and row of 13-18 marginal setae; radius with 1 seta at extreme base and at tip of stigma; CR 0.52-0.56. Halter whitish. Abdomen: Dark brown. Sternite 10 with one pair of setae. Spermatheca (Fig. 35) elongated, ovoid with short neck, measuring 0.071 X 0.038 mm.

**Male:** Similar to female with the following notable sexual differences. WL 0.45-0.61; CR 0.48-0.51; antenna with 13 flagellomeres, flagellomeres 1-10 light brown, 11-13 darker brown; palpus entirely brown. Genitalia as in Figs. 36-37. Sternite 9 broad, with straight caudal margin; tergite 9 tapering gradually distally to broad, truncate apex, apicolateral processes small, triangular with single apical seta, cerci short, rounded, setose. Gonocoxite slightly elongated, with short mesobasal tubercle; gonostylus slightly longer than gonocoxite, curved, with slender sharply pointed tip. Aedeagus with heavily sclerotized, subparallel basal arms; basal arch extending 0.6 of total length; distal portion lightly sclerotized, apex truncate with blunt medial tip. Parameres fused; basal arms straight, very heavily sclerotized; basal arch extending to 0.4 of total length; distal portion heavily sclerotized, apex bifid.

**Distribution:** Dominica, El Salvador.

**Types:** Holotype male, Dominica, 3 mi E Pont Casse, 6-V-1964, O.S. Flint, at light; allotype fe-