

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Insecta Mundi

Center for Systematic Entomology, Gainesville,
Florida

March 1990

Neotropical Predaceous Midges of the Genus *Bezzia* (Diptera: Ceratopogonidae) Part III. The *gibbera* Group of Species

Gustavo R. Spinelli

Instituto de Limnologia, Museo de La Plata, La Plata, Argentina

Willis W. Wirth

Florida State Collection of Arthropods, Gainesville, Florida

Follow this and additional works at: <https://digitalcommons.unl.edu/insectamundi>



Part of the [Entomology Commons](#)

Spinelli, Gustavo R. and Wirth, Willis W., "Neotropical Predaceous Midges of the Genus *Bezzia* (Diptera: Ceratopogonidae) Part III. The *gibbera* Group of Species" (1990). *Insecta Mundi*. 397.

<https://digitalcommons.unl.edu/insectamundi/397>

This Article is brought to you for free and open access by the Center for Systematic Entomology, Gainesville, Florida at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Insecta Mundi by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

Neotropical Predaceous Midges of the Genus *Bezzia*
(Diptera: Ceratopogonidae) Part III.
The *gibbera* Group of Species

Gustavo R. Spinelli

Instituto de Limnologia, Museo de La Plata, La Plata, Argentina

and

Willis W. Wirth

Research Associate, Florida State Collection of Arthropods,
Gainesville, Florida, U.S.A.

Abstract

The *gibbera* Group of the genus *Bezzia* Kieffer, subgenus *Bezzia*, is comprised in the Neotropical Region of at least 16 species, of which the following 11 species are described as new: *araucana* from Argentina; *catarinensis* from Brazil; *globulosa* from Puerto Rico; *grogani* from Colombia, Mexico and Panama; *hondurensis* from Mexico and Central America; *jubata*, *leei* and *megatheca* from Colombia; *mesotibialis* from Belize and Trinidad; *pseudogibbera* from Honduras and Panama; and *setigera* from Colombia and El Salvador. A key is presented for subgenera and species groups, and for the Neotropical species of the *gibbera* Group.

Introduction

This is the third in a series of papers revising the Neotropical species of the predaceous midge genus *Bezzia* Kieffer. In our first paper (Spinelli and Wirth 1989a) we gave a brief summary of previously published work, a diagnosis of the genus *Bezzia* and subgenus *Homo-bezzia* Macfie, a key to the subgenera and Neotropical species groups, and revisions of the *glabra* and *brevicornis* species groups. In the second paper (Spinelli and Wirth, 1989b) we gave a slightly revised version of our subgeneric and species group key, and treated the six Neotropical species of the *nobilis* and *punctipennis* species groups of the subgenus *Bezzia* s. str.,

including four new species. In the present paper we will repeat the key to the subgenera and species groups of *Bezzia*, and revise the 16 Neotropical species of the *gibbera* group, including 11 new species. In a fourth and final paper we will revise the two remaining groups of Neotropical *Bezzia*, the *venustula* Group and Group A, unnamed here because all three included species are undescribed.

Explanation of our terminology can be found in papers by Wirth (1952), Forattini (1957), Dow and Turner (1976), Wirth et al. (1977), and Downes and Wirth (1981). Holotypes of our new species are deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D. C. (USNM) except as noted. Paratypes, as available, will be deposited in the Florida State Collection of Arthropods, Gainesville, Florida (FSCA); Museo de La Plata, La Plata, Argentina (MLP); and the Museu de Zoologia, Universidade de Sao Paulo, Sao Paulo, Brazil (MZB).

Key to Subgenera and Species Groups of Neotropical *Bezzia*

1. Antennal segment 12 of male longest, plume well developed, extending at least to apex of 11th segment; scutum black, shiny or dull or with silvery hairs; if scutum grayish brown with dark vitta, the hind tibia is yellow in midportion,

- apex broadly black, and all femora bear spines; tibiae often black; fore femur with spines slender when present; female abdomen with 1-2 pairs of gland rods; males about same size as females; male aedeagus variable (Subgenus *Bezzia*) 2
- Antennal segment 12 of male no longer than 13, antennal plume only weakly developed; scutum dull, occasionally weakly shiny, brownish or grayish with or without vittae; tibiae pale or with a dark medial or basal dark ring; spines of fore femur stout when present; female with 0-5 pairs of gland rods; males considerably smaller than females; male aedeagus triangular with minute spinules or hairs (subgenus *Homobezzia* Macfie) 4

Subgenus *Bezzia*

2. Fore femur usually unarmed ventrally; legs brown to black; femora and tibiae usually with narrow pale rings, rarely femora pale at bases or tibiae pale *gibbera* Group
- Fore femur armed ventrally with one or more slender black spines; legs unbanded brown to black, or if banded the pale bands broad 3
3. Male ninth sternum without sublateral, heavily sclerotized lobes; aedeagus broad; legs broadly yellow or with broad yellow median bands on fore femur and tibia *nobilis* Group
- Male ninth sternum with sublateral, heavily sclerotized lobes; aedeagus Y-shaped; legs primarily dark brown to black, at most one pair of legs with broad yellowish bands *punctipennis* Group

Subgenus *Homobezzia* Macfie

- 4(1). Usually large species (wing length 1.3-3.4 mm); scutum without bristly setae on disc; fore femur without spines or

- with 1-9 stout to slender spines of similar lengths, with or without strong basal tubercles; pupal respiratory horn with numerous (30-35) spiracular openings, apex more or less flared, abdominal tubercles of pupa well developed . . . 5
- Usually small species (wing length 1.2-2.0 mm); scutum with two rows of strong bristly setae on disc; fore femur with 5-10 stout ventral spines of alternating uneven lengths arising from distinct elevations; pupal respiratory horn with only 4-12 spiracular openings, pupal abdominal tubercles small Group A
5. Fore femur armed ventrally with one or more short black spines 6
- Fore femur unarmed ventrally *glabra* Group
6. Two spermathecae . . . *venustula* Group
- One spermatheca . . . *brevicornis* Group

Bezzia gibbera Group

Diagnosis. Small, more or less black species, wing length 1.0-1.4 mm. Interocular space with median seta weak. Legs usually black, narrow pale rings usually present subapically on some femora and tibiae and subbasally on some tibiae; hind femur and tibia usually without pale rings. Fore femur usually without ventral spines (2 in *leei*). Two spermathecae with short necks. Male aedeagus lacking ventral setulae and usually with a more or less hyaline, smooth, rounded tip. Distal process of parameres and basal arch of aedeagus variously shaped, affording good specific characters.

Discussion. The *gibbera* species group is the Neotropical counterpart of the Nearctic *bivittata* species group, with the same diagnostic characters. One character which Wirth and Grogan (1983) gave for the *bivittata* Group, "segment 13 of male antenna with long black basal seta," is not diagnostic, but is present throughout the genus *Bezzia*, and appears to be diagnostic for the genus.

The widespread Nearctic species *Bezzia bivittata* (Coquillett) apparently ranges through Central America to Panama. The Central American species *B. capitata* Wirth and Grogan ranges north to southern Arizona. *Bezzia gibbera* (Coquillett), originally described from Cuba, occurs throughout the Caribbean and Central America, and into the southern United States as far as Florida, Texas, and southern Arizona.

Key to Species of the *Bezzia gibbera* Group

1. Female tarsal claws without internal basal tooth; male genitalia with latero-caudal margins of ninth sternum and ninth tergum heavily sclerotized; dististyle stout, broad caudally with blunt tip; parameres implanted beyond end of aedeagus *araucana* new species
- Female tarsal claws with internal basal tooth; male genitalia not as above ... 2
2. Scutal vestiture with setae arising from raised tubercles 3
- Scutal vestiture with setae not arising from raised tubercles, only fine pubescence 9
3. Mid tibia pale 4
- Mid tibia dark brown 5
4. Fore leg brown with narrow pale rings; 8 strong prealar setae; one pair of slender gland rods *mesotibialis* new species
- Fore leg pale; 15 strong prealar setae; no gland rods *catarinensis* new species
5. One pair of slender gland rods; spermathecae elongated 6
- No gland rods; spermathecae stout, ovoid *grogani* new species
6. Spermathecae large, the largest 0.155 mm long 7
- Spermathecae moderate size, the largest at most 0.095 mm long 8
7. Antenna yellowish, distal portion of flagellar segments 11-15 brownish; stout spinelike setae at apices of femora and mid tibia; strong bristly setae dorsally on hind tibia; tarsi yellowish including fifth tarsomere *megatheca* new species
- Antenna brown, bases of flagellar segments pale; no spinelike setae at apices of femora and mid tibia; hind tibia without strong bristly setae dorsally; fifth tarsomeres dark *hondurensis* new species
8. Fourth palpal segment brown; fore and mid legs dark brown, without definite pale bands; 17 strong prealar setae *pseudogibbera* new species
- Fourth palpal segment pale; fore femur and fore and mid tibiae with pale bands; 7-8 strong prealar setae *gibbera* (Coquillett)
- 9(2). Mid leg entirely dark brown *albuquerquei* Lane
- At least mid tibia with pale rings ... 10
10. Mid femur entirely dark brown ... 11
- Mid femur with pale rings 12
11. Aedeagus with basal arch absent and main body ending in a narrow pointed tip; parameres ending in a broad, truncate, capitate tip; basistyle without strong setae directed mesad (males only) *capitata* Wirth and Grogan
- Aedeagus with basal arch low but present; parameres rounded caudally; basistyle with numerous strong setae which are directed mesad *setigera* new species
12. Hind tibia dark brown, with narrow sub-basal pale rings 13
- Hind tibia yellowish except distal one-fifth dark brown *carioca* Lane
13. Spermathecae elongated; hind tibia entirely dark brown *globulosa* new species

- Spermathecae subspherical; hind femur at least with a faint subapical pale ring 14
- 14. Fore femur armed with 2-3 ventral spines; hind tibia with strong bristly setae dorsally; a single stout seta on interocular space *leei* new species
- Fore femur unarmed; hind tibia without strong bristly setae dorsally; without strong seta on interocular space .. 15
- 15. Eyes contiguous; antenna pale, distal portion of flagellar segments 2-10 pale brown; tarsi whitish including fifth tarsomere; male ninth tergum short *jubata* new species
- Eyes forming a V-shape where they contact; antenna brown, narrow bases of flagellar segments pale; tarsi pale brown, fifth tarsomere dark; male ninth tergum ending near end of basistyles *bivittata* (Coquillett)

Bezzia albuquerquei Lane

Bezzia albuquerquei Lane, 1961: 43 (female; Brazil); Wirth, 1974: 52 (in catalog).

Diagnostic Characters (from original description). A dark brown species; scutum subshining blackish with two pairs of whitish pollinose spots. Legs dark brown, fore femur with subapical, and fore tibia with sub-basal and apical, narrow pale rings. Halter with white stem and brown knob.

Distribution. Known only from the holotype and two paratype females from Brazil, Brasilia, D.F., v.1957, Barros & Albuquerque coll.

Bezzia araucana Spinelli and Wirth, new species
Figures 1-8

Female. Wing length 1.08 (1.04-1.12, $n = 5$) mm; breadth 0.42 (0.30-0.43, $n = 5$) mm.

Head: Dark brown. Eyes separated by a distance equal to diameter of 2.5 ommatidial facets, one stout seta on interocular space. Antenna (Fig. 2) short, uniformly dark brown; lengths of flagellar segments in proportion of 25-15-14-14-13-13-13-13-14-14-17-19-20; antennal ratio 0.83 (0.77-0.88, $n = 5$). Palpus (Fig. 5) dark brown; lengths of segments in proportion of 8-20-25-18-26; palpal ratio 2.60 (2.25-3.20, $n = 5$). Mandible with 10-11 teeth, and three basal spinules.

Thorax: Blackish brown. Scutum with fine setae; two prealar setae, one postalar; scutellum with four similar setae. Legs (Fig. 3) dark brown; fore and mid tibiae with narrow, faint, subbasal pale rings; hind tibial comb with six spines. Tarsi dark brown; basitarsus of fore leg with broad pale band in middle, tarsomere two of fore leg pale at base; ventral palisade setae absent on fore tarsus, in one row on basitarsus of mid leg and tarsomere two of hind leg, in two rows on basitarsus of hind leg; hind tarsal ratio 2.20 (2.10-2.30, $n = 5$); claws small and curved, without internal basal tooth. Wing (Fig. 6) with costa extending to 0.67 (0.65-0.69, $n = 5$) of total length; membrane hyaline, anterior veins brownish; venation as figured. Halter dark brown.

Abdomen: Dark brown; ninth sternum strongly sclerotized. One pair of slender and well-sclerotized gland rods. Spermathecae two (Fig. 4), no trace of a vestigial spermatheca; pyriform without necks; unequal, measuring 0.083 by 0.050 mm and 0.066 by 0.046 mm.

Male. Wing length 1.12 mm; breadth 0.34 mm; costal ratio 0.60. Similar to female with usual sexual differences. Antenna (Fig. 1) entirely dark brown; lengths of flagellar segments in proportion of 40-20-18-18-18-18-20-24-32-72-24-24-26; plume well developed. Lengths of palpal segments in proportion of 9-20-28-20-24; palpal ratio 3.10. Hind tarsal ratio 2.25.

Genitalia (Fig. 8): Ninth sternum 2.5 times as broad as long, laterocaudal margins strongly sclerotized, with a short, rounded, indistinct, caudomedian excavation, caudal membrane spiculate; ninth tergum with laterocaudal margins heavily sclerotized and truncate, with a

slender, distomedian membranous portion and two lateral lobes, each one with a short, banana-shaped sclerotization. Basistyle stout, mesal and caudal margins straight, oblique; dististyle stout, paddle-shaped, broad caudally with blunt tip. Aedeagus short, triangular, basal arch low, anterolateral arms strongly sclerotized with rounded tip. Parameres (Fig. 7) implanted beyond end of aedeagus; anterolateral plates short and strongly sclerotized, as well as lateral margins of distal portion; distal portion ending in a broad, bifid tip.

Distribution. Argentina (western Rio Negro and Neuquen Provinces).

Types. Holotype female, allotype male, Argentina, Rio Negro, Arroyo Blanco on rte. to Tronador, 31.i.1986, G. R. Spinelli, sweeping (MLP). Paratypes, 15 females, 17 males, as follows: Same data as types, 13 females, 17 males (MLP, USNM); Argentina, Rio Negro, 6 km e. Lago Mascaradi. 28.xi.1984, Spinelli, 1 female, sweeping (MLP); Argentina, Neuquen, Rio Malleo in primary pine, 7.ii.1986, Spinelli, 1 female, sweeping (MLP)

Discussion. The species takes its name from the Araucanian Indians, early inhabitants of the area of the type locality.

We place *Bezzia araucana* provisionally in the *gibbera* group. The peculiar male genitalia and the absence of internal basal tooth on the female tarsal claws are the most important characters to separate *araucana* from other species of the genus *Bezzia*. This species may require a new subgenus, but extensive revisionary studies, especially in the regions derived from the ancient Gondwanaland, and also of the *expolita* group and allied groups of the Northern Hemisphere, will be necessary before taking such action.

Bezzia bivittata (Coquillett)
Figures 9-16.

Bezzia bivittatus Coquillett, 1905: 60 (female; California).

Bezzia bivittata (Coquillett); Kieffer, 1906: 58 (combination); Wirth, 1952: 238 (California; male, female described; figs.); Wirth, 1965: 141 (catalog reference); Wirth and Grogan, 1983: 499 (redescribed; figs.; distribution).

Probezzia bivittata (Coquillett); Johannsen, 1908: 267 (combination); Malloch, 1914: 138 (in key); Malloch, 1915: 357 (listed); Johannsen, 1943: 785 (listed).

Bezzia (Aspinabezzia) bivittata (Coquillett); Dow and Turner, 1976: 126 (redescribed; status; figs.; distribution).

Note. The following description is based on specimens reported below from Panama.

Female. Wing length 1.05 mm; breadth 0.40 mm.

Head: Dark brown. Eyes nearly contiguous, forming a V-shape where they contact. Antenna (Fig. 10) brown, narrow bases of flagellar segments pale; lengths of flagellar segments in proportion of 22-16-15-15-15-16-15-17-22-22-22-24-32; antennal ratio 0.93. Palpus (Fig. 13) brown, short; lengths of segments in proportion of 7-11-15-10-12; palpal ratio 2.00. Mandible with 10 teeth and three basal spinules.

Thorax: Dark brown, scutum with fine pubescence and small setae; three prealar setae, one postalar; scutellum with four similar setae. Legs (Fig. 11) dark brown, narrow pale rings subbasally on tibiae, subapically on femora and fore and mid tibiae; hind tibial comb with six spines. Tarsi pale brown, fifth tarsomeres dark; tarsal claws small and slightly curved, each with internal basal tooth. Wing (Fig. 14) with costa extending to 0.74 of total length; membrane hyaline, anterior veins pale; venation as figured. Halter dark brown.

Abdomen: Brown, slightly paler than thorax. One pair of long slender, well sclerotized gland rods. Spermathecae (Fig. 12) two, no trace of vestigial third; subspherical with short necks; unequal, measuring 0.035 mm and 0.028 mm in diameter.

Male. Wing length 1.02 mm; breadth 0.31 mm; costal ratio 0.70. Similar to female with usual sexual differences. Antenna (Fig. 9) yellowish,

apex of flagellar segment 12 and distal portions of segments 13-15 brown; lengths of flagellar segments in proportion of 24-18-18-18-18-18-25-39-54-20-26-38; Palpus with lengths of segments in proportion of 7-10-13-10-12; palpal ratio 2.00. Hind tarsal ratio 2.00.

Genitalia (Fig. 16): Ninth sternum two times as broad as long, without caudomedian excavation; ninth tergum rounded caudally, ending near end of basistyles, with two large apicolateral lobes. Basistyle 1.5 times as long as basal breadth, somewhat slender distally; dististyle stout, nearly straight, ending in a sharp point. Aedeagus slightly longer than broad; basal arch well-sclerotized and extending to about a third of total length; distomedian process tapering to moderately slender tip, sides concave in outline. Parameres (Fig. 15) heavily sclerotized; basal arm bilobed; distal portion slender, sides subparallel, tip rounded, hyaline.

Distribution. North America from Alaska to California, east to Ontario and Florida; Panama.

New Record. PANAMA: Canal Zone, Barro Colorado Island, vii.1967, W. W. Wirth, light trap, 1 male, 1 female.

Discussion. The Panama specimens agree well in all respects with North American specimens of *Bezzia bivittata*. *Bezzia bivittata* is very similar to *B. leei* and *B. jubata*. From *B. leei* it is easily distinguished by the unarmed fore femur, hind tibia without bristly dorsal setae, and by the absence of a stout seta on the interocular space. From *B. jubata* it can be distinguished by the separated eyes with a V-shaped interocular space (eyes contiguous in *jubata*), antenna mainly brown, dark fifth tarsomeres, and the longer male ninth tergum.

Bezzia capitata Wirth and Grogan

Bezzia capitata Wirth and Grogan, 1983: 503 (male; Arizona, Costa Rica, Honduras).

Diagnosis. A small species with banded legs and dark halter, closely related to *Bezzia setigera* new species, but differing from that species by the absence of a basal arch on the aedeagus, which also has the main body ending in a narrow pointed tip; by the parameres, ending in a broad, truncate, capitate tip; and by the basistyle, without strong setae directed mesad. A full description and figures of the male (only known sex) are given by Wirth and Grogan (1983: 503).

Distribution. Extreme southern Arizona south to Costa Rica.

Neotropical Records. COSTA RICA: Puntarenas, Palmar Sur, 5.viii.1964, F. S. Blanton. HONDURAS: Comayagua, Rancho Chiquito, 7.vi.1964, F. S. Blanton (holotype male in USNM).

Bezzia carioca Lane

Bezzia carioca Lane, 1958: 30 (female; Brazil); Wirth, 1974: 52 (in catalog).

Diagnostic Characters (from original description). Wing length 2.2 mm. Brown species; scutum dull blackish with pattern of four grayish pollinose spots. Legs brown; fore tibia with basal pale ring, mid and hind femur and mid tibia each with pale band in midportion, hind tibia pale on proximal 2/3; tarsi pale, fourth tarsomeres brown; fore femur with stout black ventral spine.

Distribution. Known only from the type locality: Brazil, Rio de Janeiro, Itaguaí.

Note. The holotype female (pinned) was examined and is badly damaged and unrecognizable; missing are one antenna, one wing, abdomen, all of legs except one entire mid leg, one mid femur, one hind femur and tibia; one antenna is mounted on a slip attached to the pin by a card mount.

Bezzia catarinensis Spinelli and Wirth,
new species
Figures 17-24

Female. Wing length 1.80 mm; breadth 0.59 mm.

Head: Dark brown. Eyes narrowly separated, by a distance equal to diameter of two ommatidial facets. Antennal scape and pedicel dark brown; flagellum (Fig. 17) yellow on first flagellar segment and proximal 1/2-2/3 of antennal segments 4-10 and basal 1/4 of distal five segments, distal portions of segments 4-10 pale brown and 11-15 dark brown; lengths of flagellar segments in proportion of 30-25-22-22-22-22-22-40-40-40-45-54; antennal ratio 1.17. Palpus (Fig. 21) pale brown, slender; lengths of segments in proportion of 12-16-32-22-25; palpal ratio 3.55. Mandible with 12 teeth and three basal spinules.

Thorax: Dark brown, scutum with fine setae arising from raised tubercles; 15 prealar, one postalar strong setae, also arising from raised tubercles; scutellum with four similar setae, one on postscutellum. Legs (Fig. 19) with fore femur unarmed ventrally; fore and mid legs yellow, narrow bases of femora pale brown; hind leg dark brown, hind tibia with broad yellow band in midportion; mid tibia with ventral spine at apex; hind tibial comb with seven spines. Tarsi pale, distal two tarsomeres brown; fourth tarsomeres strongly cordiform; a pair of ventral spines at apices of tarsomeres 1-3 on mid leg, smaller and paler on fore and hind legs; hind tarsal ratio 2.00; tarsal claws small and curved, each with internal basal tooth. Wing (Fig. 22) with costa extending to 0.69 of total length; membrane slightly infuscated, anterior veins brownish; venation as figured. Halter dark brown.

Abdomen: Brown; ninth sternum strongly sclerotized. No gland rods. Spermathecae (Fig. 20) two plus vestigial third; elongated with short necks; unequal, measuring 0.122 by 0.065 mm and 0.092 by 0.058 mm.

Male. Wing length 1.70 (1.58-1.77, $n = 3$) mm; breadth 0.46 (0.40-0.48, $n = 3$) mm; costal ratio 0.59 (0.58-0.60, $n = 3$). Similar to female with

usual sexual differences. Antenna with flagellum dark brown (Fig. 18) narrow bases of last three segments pale; flagellar segments distinctly separated, lengths in proportion of 40-23-24-25-25-26-29-38-64-78-43-45-48. Palpus with lengths of segments in proportion of 11-17-34-21-24; palpal ratio 4.10 (3.75-4.35, $n = 3$). Hind tarsal ratio 2.00 ($n = 3$).

Genitalia (Fig. 24): Ninth sternum 2.4 times as broad as long, with a deep, broad, caudomedian excavation; ninth tergum short with two slender lobes not produced beyond basistyles. Basistyle stout, slightly longer than basal breadth, with a blunt mesal protuberance and with stout setae on anterior 1/2; dististyle short, very curved, spoon-shaped distally. Aedeagus not typical of genus *Bezzia*, H-shaped, basal arms well sclerotized. Parameres as in Fig. 23.

Distribution. Brazil, restricted to type-locality.

Types. Holotype female, allotype male, Brazil, Santa Catarina, Nova Teutonia, viii.1945, F. Plaumann (USNM). Paratypes, 2 males, same data as types (USNM, MLP).

Discussion. This species is very similar to *Bezzia mesotibialis* new species, from which it can be distinguished by the stout postscutellar setae, the pale fore leg, 15 strong prealar setae (8 in *mesotibialis*), and the absence of gland rods.

Bezzia gibbera (Coquillett)

Ceratopogon gibber Coquillett, 1905: 60 (female; Cuba).

Probezzia gibber (Coquillett); Johannsen, 1908: 267 (combination); Malloch, 1914: 138 (in table); Malloch, 1915: 357 (noted); Johannsen, 1943: 785 (in list).

Bezzia gibber (Coquillett); Kieffer, 1917: 330 (combination).

Bezzia gibbera (Coquillett); Wirth, 1965: 141 (in catalog; distribution); Wirth, 1974: 53 (in Neotropical catalog); Dow and Turner, 1976: 142 (misident. in part; female redescribed; figs.; distribution).

Diagnosis. A small species distinguished by its bright yellow antennal scape; fourth palpal segment pale, other segments brown; halter stem whitish, knob dark brown; fine setae on scutum arising from raised tubercles; spermathecae large, elongated, ovoid, subequal; male genitalia with setose lobe on venteromedian base of basistyle. A full description and figures are given by Wirth and Grogan (1983: 506).

Distribution. Southern Arizona, Texas and Florida south to Panama and throughout the islands of the Caribbean.

New Neotropical Records. BELIZE: Nattieville, Western Highway, 7-8.vii.1968, W. L. Haase, light trap, 1 female. JAMAICA: Clarendon Parish, Milk River Bath, 19.xi.1968, R. E. Woodruff, light trap, 1 female. St. Catherine Parish, Twickenham Park, 28: iv.1970, E. G. Farnworth, light trap, 2 females. Westmoreland Parish, Negril, Crystal Waters, 20.xi.1968, Woodruff, light trap, 2 females; Negril, 10.xii.1969, 22.vi.1970, Farnworth, light trap; Savannah Lamar, Hendon House, 22.ii.1970, Woodruff, light trap, 2 females. Runaway Bay, 16-28.1960, W. W. Wirth, light trap, 2 females. MEXICO: Yucatan, Merida, 31.vii.1964, P. J. Spangler, light trap, 1 female. PANAMA: Barro Colorado Island, Canal Zone, vii.1967, Wirth, light trap, 2 females.

Bezzia globulosa Spinelli and Wirth,
new species
Figures 25-32

Female. Wing length 1.20 (1.15-1.24, $n = 2$) mm; breadth 0.45 (0.43-0.47, $n = 2$) mm.

Head: Dark brown. Eyes nearly contiguous, forming a V-shape where they contact. Antenna (Fig. 25) brown, narrow bases of flagellar segments slightly pale; lengths of flagellar segments in proportion of 25-15-14-15-15-15-14-19-19-20-24-27; antennal ratio 0.87 (0.85-0.89, $n = 2$). Palpus (Fig. 29) short, brown; lengths of segments in proportion of 8-12-21-14-15; palpal ratio 2.80 (2.60-3.00, $n = 2$) Mandible with 12 teeth.

Thorax: Dark brown, scutum with vestiture of numerous setae and fine pubescence; three stout prealar setae, one postalar; scutellum with four similar setae. Legs (Fig. 27) dark brown; narrow pale rings subbasally on tibiae, subapically on femora and tibiae of fore and mid legs; a stout, spinelike seta at apex of mid tibia; hind tibial comb with eight spines. Tarsi brownish, fifth tarsomeres dark brown; ventral palisade setae absent on fore tarsus, in one row on proximal 1/2 of basitarsus of mid leg and tarsomere 2 of hind leg, in two rows on basitarsus of hind leg; a pair of strong ventral spines at apices of tarsomeres 1-3 of mid leg, smaller and paler on fore and hind legs; hind tarsal ratio 2.00 ($n = 2$). Wing (Fig. 30) with costa extending to 0.73 of total length; membrane slightly infuscated, anterior veins brown; venation as figured. Halter dark brown.

Abdomen: Dark brown. One pair of slender gland rods. Spermathecae (Fig. 28) two plus vestigial third; elongated with short and slender necks; unequal, measuring 0.088 by 0.046 mm and 0.076 by 0.044 mm.

Male. Wing length 1.05 mm; breadth 0.32 mm; costal ratio 0.62. Similar to female with usual sexual differences. Antenna (Fig. 26) with flagellar segments distinctly separated; lengths of flagellar segments in proportion of 22-16-16-17-16-16-18-22-32-44-23-23-25; lengths of palpal segments in proportion of 6-11-14-11-14. Hind tarsal ratio 2.00.

Genitalia (Fig. 32): Ninth sternum short with deep caudomedian excavation; ninth tergum short, ending in two slender lobes not produced beyond basistyles. Basistyle stout, globose, about as long as broad; dististyle broad at base, strongly curved, ending in a sharp point. Aedeagus triangular; basal arch very low, basal arms well sclerotized, reduced anteriorly and blunt, curved laterocaudad. Parameres (Fig. 31) with bilobed anterolateral plates, distal process slightly swollen in middle, rounded caudally.

Distribution. Puerto Rico.

Types. Holotype female, Puerto Rico, Bosque de Luquillo, Rt. 930, 19.i.1969, Walker & Drummond, light trap (USNM). Allotype male, Puerto Rico, Mayaguez, UPR campus, 9.i.1969, Walker & Drummond, light trap (USNM). Paratype female, same data as holotype (MLP).

Discussion. This species is similar to *Bezzia sandersoni* Wirth and Grogan, from which it can be distinguished by the elongated five distal antennal segments of the female, by the reduced blunt basal arms of the aedeagus, and by the distal portion of the parameres slightly swollen in middle, rounded distally (with bulbous tip in *sandersoni*).

Bezzia grogani Spinelli and Wirth,
new species
Figures 33-39

Female. Wing length 0.96 mm; breadth 0.35 mm.

Head: Dark brown. Eyes separated by a distance equal to diameter of two ommatidial facets. Antenna (Fig. 36) brownish, narrow bases of flagellar segments pale; lengths of flagellar segments in proportion of 23-16-15-15-16-16-16-17-23-23-23-30-x (15 missing). Palpus (Fig. 35) brownish; lengths of segments in proportion of 8-11-17-13-15; palpal ratio 2.70. Mandible with 11 teeth.

Thorax: Dark brown, scutum with fine setae arising from raised tubercles; six strong prealar setae arising from raised tubercles, one postalar; scutellum bearing four similar setae. Legs (Fig. 33) dark brown, faint pale rings subapically on fore femure, sub-basally and apically on fore tibia; femora and tibiae with numerous erect long fine hairs; hind tibial comb with five spines. Tarsi whitish including fifth tarsomere; a pair of strong ventral spines at apices of tarsomeres 1-3 on mid leg, smaller and paler on fore and hind legs; hind tarsal ratio 2.25; claws small and slightly curved, each with internal basal tooth. Wing (Fig. 37) with costa extending to 0.74 of total length; membrane hyaline, anterior veins brown; venation as

figured. Halter stem pale brown, knob dark brown.

Abdomen: Brown, slightly paler than thorax. One pair of short gland rods. Spermathecae (Fig. 34) two plus vestigial third; short, ovoid with short necks; unequal, measuring 0.080 by 0.055 mm and 0.069 by 0.046 mm.

Male. Wing length 1.27 mm; breadth 0.37 mm; costal ratio 0.68. Similar to female with usual sexual differences. Antenna yellowish, distal portion of segments 13-14 brown; proximal 10 flagellar segments indistinctly separated; lengths of flagellar segments in proportion of 30-20-20-20-22-24-26-42-58-34-36-41. Palpal segments in proportion of 9-12-20-15-17. Hind tarsal ratio 2.60.

Genitalia (Fig. 39): Ninth sternum stout, short, with deep, rounded, caudomedian excavation; ninth tergum short, with two conspicuous terminal median lobes. Basistyle stout, globose, 1.35 times as long as greatest breadth, with a low, angular, setose, dorsomesal lobe; dististyle stout, nearly straight, tapering distally. Aedeagus long, slender, triangular; basal arch very low; basal arms slender and heavily sclerotized anteriorly; distal portion ending in a fine point. Parameres (Fig. 38) long, produced beyond basistyles and aedeagus; anterolateral plates poorly developed; distal portion slender.

Distribution. Colombia, Mexico, Panama.

Types. Holotype female, allotype male, Panama, Canal Zone, Fort Davis, 28.viii.1952, F. S. Blanton (USNM). Paratypes, 6 males, 2 females, as follows: PANAMA: 1 male, same data as types; Canal Zone, Fort Sherman, Mojinga Swamp, 15.viii.1951, xi.1951, F. S. Blanton, light trap, 2 males, 2 females. COLOMBIA: Meta, Finca Barbascal, 27-30.ix.1964, V. H. Lee, 1 male; Valle, Rio Raposo, xii.1964, V. H. Lee, light trap, 1 male. MEXICO: Morelos, El Salto Falls, 17.vi.1969, W. & D. Haase, light trap, 1 male.

Discussion. This species is dedicated to William L. Grogan, Jr. of Salisbury, Maryland, in recognition of his important contributions to

ceratopogonid taxonomy. *Bezzia grogani* can be distinguished from the other Neotropical *Bezzia* by the following combination of characters: Fine setae on scutum arising from raised tubercles; mid tibia dark brown; one pair of short gland rods; spermathecae short, ovoid; anterolateral plates of parameres poorly developed.

Bezzia hondurensis Spinelli and Wirth,
new species
Figures 40-46

Female. Wing length 1.27 (1.10-1.49, $n = 5$) mm; breadth 0.47 (0.40-0.53, $n = 5$) mm.

Head: Dark brown. Eyes separated by a distance equal to diameter of one ommatidial facet. Antenna (Fig. 40) brown, proximal 2/3 of segments 3-10 and proximal 1/3 of segments 11-15 pale; lengths of flagellar segments in proportion of 22-17-16-16-16-16-17-18-23-24-22-22-25; antennal ratio 0.92 (0.84-1.05, $n = 5$). Palpus (Fig. 41) brown, lengths of segments in proportion of 9-12-20-13-13; palpal ratio 2.35 (2.00-3.00, $n = 5$). Mandible with 8-10 teeth and three basal spinules.

Thorax: Dark brown, scutum with fine setae arising from raised tubercles; 8-10 strong prealar setae arising from raised tubercles, one postalar; scutellum bearing four similar setae. Legs (Fig. 42) dark brown, narrow pale rings (faint in some specimens) subapically on fore femur, subbasally on fore tibia; hind tibial comb with seven spines. Tarsi yellowish, fifth tarsomere dark; hind tarsal ratio 2.30 (2.20-2.40, $n = 5$); tarsal claws small and curved, each with internal basal tooth. Wing (Fig. 44) with costa extending to 0.72 (0.70-0.75, $n = 5$) of total length; membrane slightly infuscated, anterior veins brownish; venation as figured. Halter stem pale, knob dark brown.

Abdomen: Dark brown. One pair of long, slender, and well-sclerotized gland rods. Spermathecae (Fig. 43) two, no trace of a vestigial third; elongated with short necks; unequal, very large, measuring 0.155 by 0.050 mm and 0.130 by 0.042 mm.

Male. Wing length 1.22 mm; costal ratio 0.65. Similar to female with usual sexual differences.

Antenna missing. Palpus with lengths of segments in proportion of 4-7-10-8-8. Hind tarsal ratio 2.1.

Genitalia (Fig. 46): Ninth sternum 2.1 times as broad as long, with a deep caudomedian excavation; ninth tergum short, with two median lobes not produced beyond basistyles. Basistyle stout, 1.2 times as long as greatest breadth, greatly expanded mesally at base, a few stout spinules on distomesal angle of the expansion; dististyle stout, 0.6 as long as basistyle, moderately curved. Aedeagus 1.4 times as long as basal breadth, basal arch extending to 1/3 of total length, lateral arms well sclerotized, with lateral expansions; distal portion ending in a sharp tip. Parameres (Fig. 45) with short anterolateral lobes; distal portion slightly swollen toward base, slender distally, with pointed tip.

Distribution. El Salvador, Honduras, Mexico, Panama.

Types. Holotype female, Honduras, Francisco Morazan, Zamorano, ii.1965, F. S. Blanton (USNM). Allotype male, Panama, Panama Prov., Tocumen, i.1953, F. S. Blanton, light trap (USNM). Paratypes, 1 male, 12 females, as follows: EL SALVADOR: Sonsonata, Armenia, xi.1966, Blanton, 1 female; Comayagua, Comayagua, xii.1964, ix.1966, Blanton, 2 females; Comayagua, Siquetepeque, ii.1965, Blanton, 1 female; Copan, Santa Rosa, iii-iv.1964, x.1966, Blanton, 2 females. MEXICO: Veracruz, Fortin, vi.1964, Blanton, 1 female; Chiapas, Puerto Macalapa, 22.v.1964, Blanton, 2 females.

Discussion. The very large spermatheca (the larger 0.155 mm long) distinguish *Bezzia hondurensis* and *B. megatheca* from the other Neotropical *Bezzia* of the *gibbera* group. Characters for separating these two species can be found in the key and in the discussion under the latter species.

Bezzia jubata Spinelli and Wirth,
new species
Figures 47-54

Female. Wing length 0.93 (0.87-1.06, $n = 5$) mm; breadth 0.37 (0.35-0.49, $n = 5$) mm.

Head: Dark brown. Eyes contiguous for a distance equal to diameter of two ommatidial facets. Antenna (Fig. 47) pale, distal portions of segments 3-10 pale brown (11-15 brown); lengths of flagellar segments in proportion of 22-19-19-19-19-19-21-27-28-24-27-33; antennal ratio 0.89 (0.83-0.94, $n = 5$). Palpus (Fig. 51) brownish, short; lengths of segments in proportion of 7-10-12-10-13; palpal ratio 1.65 (1.45-2.00, $n = 5$). Mandible with nine teeth and three basal spinules.

Thorax: Dark brown, scutum with fine pubescence; three prealar setae, one postalar; scutellum with four similar setae. Legs (Fig. 49) dark brown; fore and mid legs with definite narrow pale rings subbasally on tibiae, subapically on femora and tibiae; hind leg with faint, narrow pale rings subbasally on tibia, subapically on femur; a stout spinelike seta at apex of mid tibia; hind tibial comb with five spines. Tarsi whitish including fifth tarsomere; ventral palisade setae absent on fore tarsus, in one row on tarsomeres 1-2 of mid leg and tarsomeres 1-3 of hind leg; hind tarsal ratio 2.40 (2.27-2.50, $n = 5$); claws small, slightly curved, each with internal basal tooth. Wing (Fig. 52) with costa extending to 0.77 (0.76-0.80, $n = 5$) of total length; membrane infuscated, anterior veins brownish; venation as figured. Halter dark brown.

Abdomen: Dark brown. One pair of slender gland rods. Spermathecae (Fig. 50) two plus vestigial third; subspherical with short necks; subequal, measuring 0.047 mm in diameter.

Male. Wing length 0.93 (0.87-0.96, $n = 5$) mm; breadth 0.31 (0.29-0.32, $n = 5$) mm; costal ratio 0.71 (0.70-0.74, $n = 5$). Similar to female with usual sexual differences. Antenna (Fig. 48) yellowish, distal portions of segments 13-15 infuscated; eight proximal flagellar segments indistinctly separated; lengths of flagellar segments in proportion of 22-19-20-19-19-19-21-33-50-29-31-43. Palpal segments with lengths in proportion 6-9-13-10-13; palpal ratio 1.70 (1.60-2.00, $n = 5$). Hind tarsal ratio 2.20 (2.12-2.32, $n = 5$).

Genitalia (Fig. 54): Ninth sternum three times as broad as long, without caudomedian excavation; ninth tergum short, with two latero-caudal lobes, not produced beyond basistyles. Basistyle short, 1.5 times as long as broad; dististyle about the same length as basistyle, nearly straight. Aedeagus triangular, basal arch 1/3 of total length, basal arms well sclerotized, distal portion slender. Parameres (Fig. 53) with bilobed anterolateral plates, distal portion slender in middle.

Distribution. Colombia.

Types. Holotype female, allotype male, Colombia, Valle, Rio Raposo, ii.1965, V. H. Lee, light trap (USNM). Paratypes, 20 males, 18 females, as follows: COLOMBIA: Same data as types, 8 males, 4 females; same data except dates iv.1963, ii-viii.1964, iii.1965, 11 males, 12 females; Dept. Antioquia, near Rio Anori, tropic rain forest, ix.1970, D. G. Young, UV light trap, 1 male; Bahia Buenaventura, Bella Vista, 16.xi.1964, V. H. Lee, margin of mangrove, 1 female.

Discussion. Characters for separation *Bezzia jubata* from *B. bivittata* can be found in the key and in the discussion under the latter species.

Bezzia leei Spinelli and Wirth,
new species
Figures 55-61

Female. Wing length 1.08 (1.02-1.12, $n = 5$) mm; breadth 0.39 (0.37-0.40, $n = 5$) mm.

Head: Dark brown. Eyes contiguous by a distance equal to diameter of two ommatidial facets; a single stout seta on interocular space. Antenna (Fig. 55) brown, narrow bases of flagellar segments pale; lengths of flagellar segments in proportion of 30-20-17-17-18-18-18-19-25-25-25-26-35; antennal ratio 0.81 (0.78-0.86, $n = 5$). Palpus (Fig. 58) short, brown; lengths of segments in proportion of 6-13-18-12-14; palpal ratio 2.15 (2.00-2.50, $n = 5$). Mandible with 11-13 teeth.

Thorax: Dark brown, scutum covered with fine pubescence; three strong prealar setae, one postalar, several in prescutellar area; scutellum with four similar setae. Legs (Fig. 56) dark brown, with pale bands subapically on femora and tibiae and subbasally on tibiae (faint on hind leg); fore femur armed with 2-3 ventral spines, mid tibia with apical stout spinelike setae, hind tibia with strong bristly setae dorsally; hind tibial comb with six spines. Tarsi pale brown including fifth tarsomere; a pair of strong black ventral spines at apices of tarsomeres 1-3 on mid leg, smaller and paler on fore and hind legs; hind tarsal ratio 2.16 (2.10-2.23, $n = 5$); claws small and curved, each with internal basal tooth. Wing (Fig. 59) with costa extending to 0.75 (0.73-0.77, $n = 5$) of total length; membrane infuscated, anterior veins brown; venation as figured. Halter stem pale, knob dark brown.

Abdomen: Dark brown. One pair of gland rods. Spermathecae (Fig. 57) two, no trace of a vestigial third; subspherical with short necks; subequal, measuring 0.035 mm in diameter.

Male. Wing length 1.06 mm; breadth 0.32 mm; costal ratio 0.74. Similar to female with usual sexual differences. Antenna missing; lengths of palpal segments in proportion of 7-10-16-12-15; palpal ratio 2.10. Hind tarsal ratio 2.15.

Genitalia (Fig. 61): Ninth sternum three times as broad as long, without caudomedian excavation; ninth tergum very short, ending in two median lobes not produced beyond basistyles. Basistyle 1.5 times as long as broad, distal portion oblique; dististyle stout, slightly shorter than basistyle, slightly curved, tapering distally. Aedeagus about same length as basal breadth; basal arch to 2/3 of total length; with slender and well-sclerotized basal arms, slender distally and tapering to blunt tip. Parameres (Fig. 60) with well-developed anterolateral plates; distal portion slender in middle, swollen distally.

Distribution. Colombia.

Types. Holotype female, Colombia, Valle, Rio Raposo, 28.vii.1964, V. H. Lee, light trap

(USNM). Allotype male, same data but x.1964 (USNM). Paratypes, 8 females, same data but dates v.1963, vi, vii, xii.1964, ii.1965.

Discussion. This species is named for Vernon H. Lee, who while assigned to the Rockefeller Foundation arbovirus program in Cali, Colombia, made a magnificent collection of Colombian Ceratopogonidae. *Bezzia leei* is very similar to *B. bivittata* and *B. jubata*. Characters for separating these three species are given in the key.

Bezzia megatheca Spinelli and Wirth,
new species
Figures 62-66

Female. Wing length 1.50 mm; breadth 0.53 mm.

Head: Dark brown. Eyes nearly contiguous, forming a V-shape where they contact. Antenna (Fig. 62) yellowish, midportion of segments 11-14 brownish, segment 15 brown; lengths of flagellar segments in proportion of 28-22-24-22-24-25-26-29-39-40-35-40-42; antennal ratio 0.98. Palpus (Fig. 63) short, brownish; lengths of segments in proportion of 10-13-20-15-17; palpal ratio 2.20. Mandible with eight teeth and four basal spinules.

Thorax: Dark brown, scutum with numerous stout setae arising from raised tubercles; seven stout prealar setae, two postalars. Legs (Fig. 66) dark brown; fore leg and bases of mid and hind femora slightly paler; stout spinelike setae at apices of femora and mid tibia; strong bristly setae dorsally on hind tibia; hind tibial comb with seven spines. Tarsi yellowish including fifth tarsomeres; claws moderately long, curved, each with internal basal tooth. Wing (Fig. 64) with costa extending to 0.75 of total length; membrane infuscated, anterior veins brownish; venation as figured. Halter dark brown.

Abdomen: Dark brown. One pair of short, slender gland rods, extending for one abdominal segment. Spermathecae (Fig. 65) two, no trace of vestigial third; elongated with short necks; subequal, very large, measuring 0.155 by 0.075 mm.

Male. Unknown.

Distribution. Colombia.

Type. Holotype female, Colombia, Valle, Rio Raposo, 28.vii.1964, V. H. Lee, light trap (USNM).

Discussion. *Bezzia megatheca* can be distinguished from *B. hondurensis* by the short gland rods extending for one abdominal segment, antenna yellowish (brown in *hondurensis*), presence of stout spinelike setae at apices of femora and mid tibia, presence of strong bristly setae dorsally on hind tibia, and tarsi yellowish including fifth tarsomere (fifth tarsomere dark in *hondurensis*).

Bezzia mesotibialis Spinelli and Wirth,
new species
Figures 67-71

Female. Wing length 1.21 (1.15-1.30, $n = 2$) mm; breadth 0.42 (0.40-0.44, $n = 2$) mm.

Head: Dark brown. Eyes separated by a distance equal to diameter of one ommatidial facet. Antenna (Fig. 67) pale, segments 11-15 pale brown distally; lengths of flagellar segments in proportion of 23-17-17-17-17-17-18-20-28-30-26-30-32; antennal ratio 1.01 (1.00-1.02, $n = 2$). Palpus (Fig. 68) brown; lengths of segments in proportion of 7-11-16-12-15; palpal ratio 1.85 (1.70-2.00, $n = 2$). Mandible with 9-10 teeth and three basal spinules.

Thorax: Dark brown, scutum with fine setae arising from raised tubercles; eight strong prealar setae, one postalar; scutellum with four similar setae. Legs (Fig. 71) dark brown on hind femur and tibia, light brown on fore femur, fore tibia and basal 4/5 of mid femur; pale rings subapically on fore femur, subbasally on fore tibia, apically on fore tibia and mid femur; mid tibia pale; hind tibial comb with seven spines. Tarsi pale including fifth tarsomeres; hind tarsal ratio 2.43 (2.34-2.52, $n = 2$); claws small and curved, each with internal basal tooth. Wing (Fig. 69) with costa extending to 0.72 (0.70-0.74, $n = 2$) of total length; membrane

hyaline, anterior veins brownish; venation as figured., Halter stem pale brown, knob dark brown.

Abdomen: Dark brown. One pair of slender gland rods. Spermathecae (Fig. 70) two, no trace of vestigial third; elongated with short necks; subequal, measuring 0.122 by 0.053 mm.

Male. Unknown.

Distribution. Belize, Trinidad.

Types. Holotype female, Belize, Mile 68 Western Highway, 27.vii.1968, W. L. Haase, UV light trap (USNM). Paratype, 1 female: TRINIDAD: U. S. Navy Base, xii.1955, T. H. G. Aitken, light trap.

Discussion. The entirely pale mid tibia distinguishes *Bezzia catarinensis* and *B. mesotibialis* from the other Neotropical species of this group. Characters for separating these two species can be found in the key and in the discussion under *catarinensis*.

Bezzia pseudogibbera Spinelli and Wirth,
new species
Figures 72-78

Female. Wing length 1.56 (1.50-1.62, $n = 2$) mm; breadth 0.84 (0.81-0.87, $n = 2$) mm.

Head: Dark brown. Eyes separated by a distance equal to diameter of 1.5 ommatidial facets. Antenna (Fig. 72) pale, distal portions of segments 11-15 pale brown; lengths of flagellar segments in proportion of 30-27-27-27-29-31-29-29-34-32-30-34-36; antennal ratio 0.83 (0.72-0.94, $n = 2$). Palpus (Fig. 74) brownish; lengths of segments in proportion of 9-14-20-16-17; palpal ratio 2.45 (2.25-2.65, $n = 2$). Mandible with 9-10 teeth and several basal spinules.

Thorax: Dark brown, scutum with fine setae arising from somewhat raised tubercles; 17 strong prealar setae arising from raised tubercles, one postalar; scutellum with four similar setae. Legs (Fig. 78) dark brown, slightly paler on bases of femora and base and apex of fore tibia; hind tibial comb with six pale

spines. Tarsi whitish including fifth tarsomeres; hind tarsal ratio 2.54 (2.48-2.60, $n = 2$); tarsal claws small and curved, each with internal basal tooth. Wing (Fig. 73) with costa extending to 0.73 (0.71-0.75, $n = 2$) of total length; membrane hyaline, anterior veins brownish; venation as figured. Halter stem pale, knob brown.

Abdomen: Dark brown. One pair of long slender gland rods. Spermathecae (Fig. 75) two, no trace of vestigial third; elongated with short necks; unequal, the larger measuring 0.095 by 0.052 mm (the smaller collapsed in the holotype).

Male. Wing length 1.43 (1.40-1.46, $n = 2$) mm; breadth 0.42 (0.41-0.43, $n = 2$) mm. Similar to female with usual sexual differences. Antenna and palpus not well enough preserved to study, but antennal segment 12 longer than 13. Hind tarsal ratio 2.34 (2.30-2.38, $n = 2$).

Genitalia (Fig. 77): Ninth sternum 2.3 times as broad as long, with moderately deep caudomedian excavation; ninth tergum progressively tapering distally, not produced beyond basistyles. Basistyle stout, 1.2 times as long as broad; dististyle slightly longer than basistyle, strongly curved, tapering distally. Aedeagus with basal arch $2/3$ of total length, basal arms well sclerotized, with lateral expansions; distal portion ending in sharp tip. Parameres as in Fig. 76.

Distribution. Belize, Honduras, Panama.

Types. Holotype female, allotype male, Panama, Chiriqui Prov., El Volcan, 9.xii.1952, F. S. Blanton (USNM). Paratypes, 2 males, 2 females, as follows: BELIZE: 3 km w Punta Gorda, 31.vii.1968, W. L. Haase, UV light trap, 1 female. HONDURAS: Copan, Santa Rosa, x.1966, F. S. Blanton, 1 female. PANAMA: Same data as types, 2 males.

Discussion. *Bezzia pseudogibbera* is readily distinguished from *Bezzia gibbera* by the presence of 17 strong prealar setae (7-8 in *gibbera*), fore and mid legs dark brown with indefinite pale band on fore leg, and fourth palpal segment brown (pale in *gibbera*).

Bezzia setigera Spinelli and Wirth,
new species
Figures 79-86

Female. Wing length 1.08 (1.05-1.11, $n = 2$) mm; breadth 0.45 (0.43-0.47, $n = 2$) mm.

Head: Dark brown. Eyes nearly contiguous, forming a V-shape where they contact. Antenna (Fig. 79) brown, narrow bases of flagellar segments pale; lengths of flagellar segments in proportion of 22-15-15-15-14-15-15-14-19-19-21-25-27; antennal ratio 0.86 (0.84-0.88, $n = 2$). Palpus (Fig. 83) brown; lengths of segments in proportion of 8-13-17-13-14; palpal ratio 2.20 (2.00-2.40, $n = 2$). Mandible with eight teeth and 4-5 basal spinules.

Thorax: Dark brown, scutum with fine pubescence and setae, the latter more numerous and longer and erect on midportion; three prealar setae, one postalar; scutellum with four similar setae and numerous erect hairs. Legs (Fig. 81) intensely dark brown; narrow pale rings subbasally on tibiae (faint on hind tibia), subapically on fore femur and fore and mid tibiae; hind tibial comb with six spines. Tarsi pale brown, 4th and 5th tarsomeres dark, basitarsus infuscated at apex; a pair of black ventral spines at apices of tarsomeres 1-3 on mid leg, smaller and paler on fore and hind legs; hind tarsal ratio 2.33 (2.30-2.36, $n = 2$); claws small, slightly curved, each with internal basal tooth. Wing (Fig. 84) with costa extending to 0.73 (0.72-0.74, $n = 2$) of total length; membrane hyaline, anterior veins pale; venation as figured. Halter stem pale, knob dark brown.

Abdomen: Brown, slightly paler than thorax. One pair of slender gland rods. Spermathecae (Fig. 82); subspherical with moderately long necks; unequal, measuring 0.043 by 0.038 mm, 0.009 mm neck, and 0.038 by 0.032 mm, 0.009 mm neck.

Male. Wing length 0.90 mm; breadth 0.31 mm; costal ratio 0.59. Similar to female with usual sexual differences. Antenna (Fig. 80) brown, narrow bases of segments 3-12 pale; flagellar segments distinctly separated; lengths in proportion of 20-14-14-14-14-16-19-23-30-23-25-29. Palpal segments with lengths in proportion

of 6-12-15-14-14; palpal ratio 2.50. Hind tarsal ratio 2.00.

Genitalia (Fig. 86): Ninth sternum 2.4 times as broad as long, with moderately deep caudomedian excavation; ninth tergum short, somewhat rounded distally. Basistyle stout, 1.6 times as long as broad, with numerous strong setae which are directed mesad; dististyle slender, nearly straight, slightly shorter than basistyle, tapering distally. Aedeagus with low basal arch, distal portion slender with blunt tip. Parameres (Fig. 85) with bilobed anterolateral plates; distal process slender, rounded caudally, produced beyond aedeagus and basistyles.

Distribution. Colombia, El Salvador.

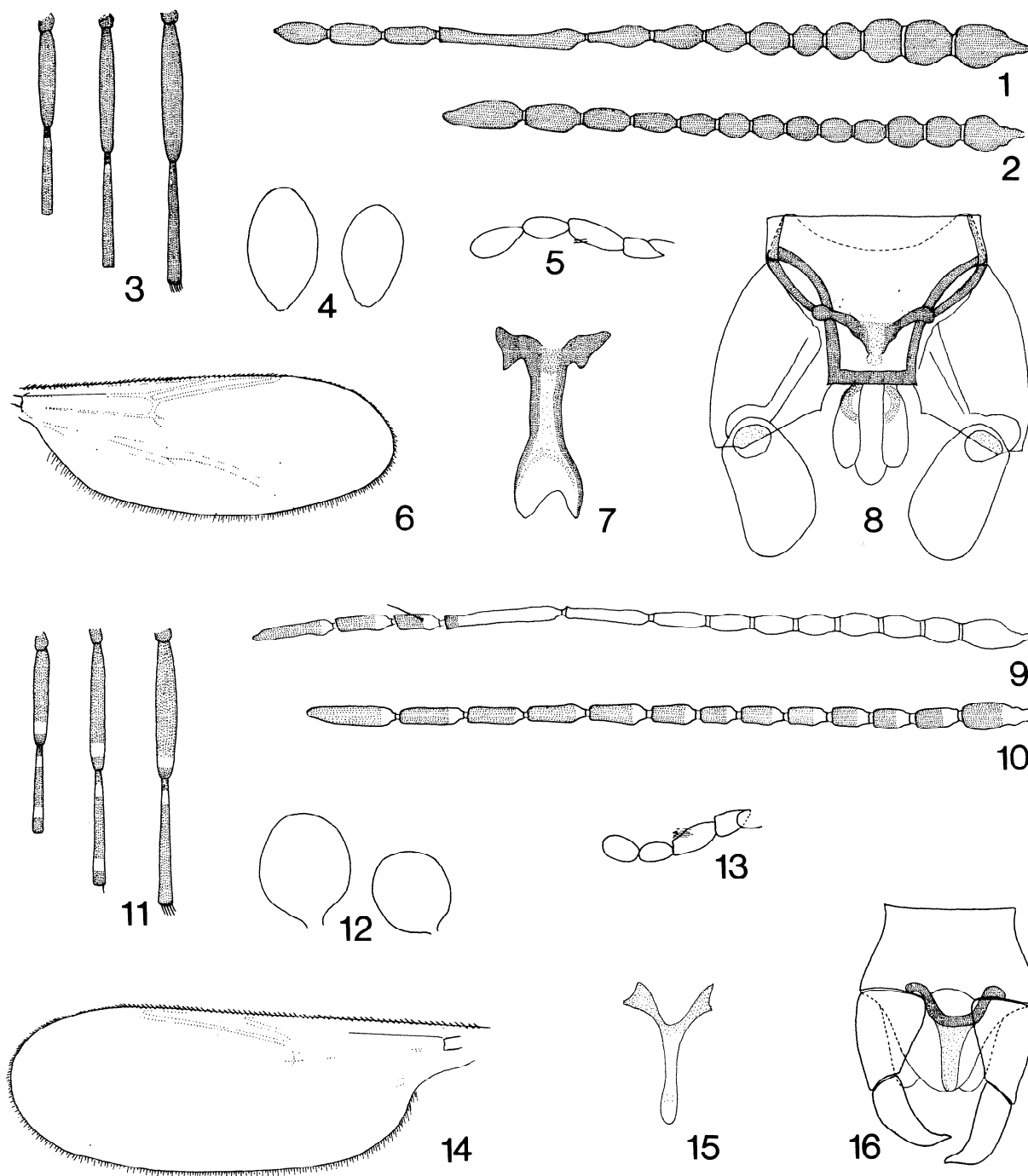
Types. Holotype female, Colombia, Oleoducto Pacifico, 10 km NW Dagua, 27.ii.1969, R. E. Woodruff (USNM). Allotype male, El Salvador, San Vicente, Santo Domingo, ix.1966, F. S. Blanton (USNM). Paratypes, 3 females, as follows: COLOMBIA: Rio Raposo, Valle, 28.vii.1964, V. H. Lee, light trap, 1 female; Dept. Antioquia near Rio Anori, tropical rain forest, ix.1970, D. G. Young, UV light trap, 2 females (USNM, FSCA).

Discussion. *Bezzia setigera* is very similar to *B. capitata*. The characters of the male genitalia used for separating these two species can be found in the key.

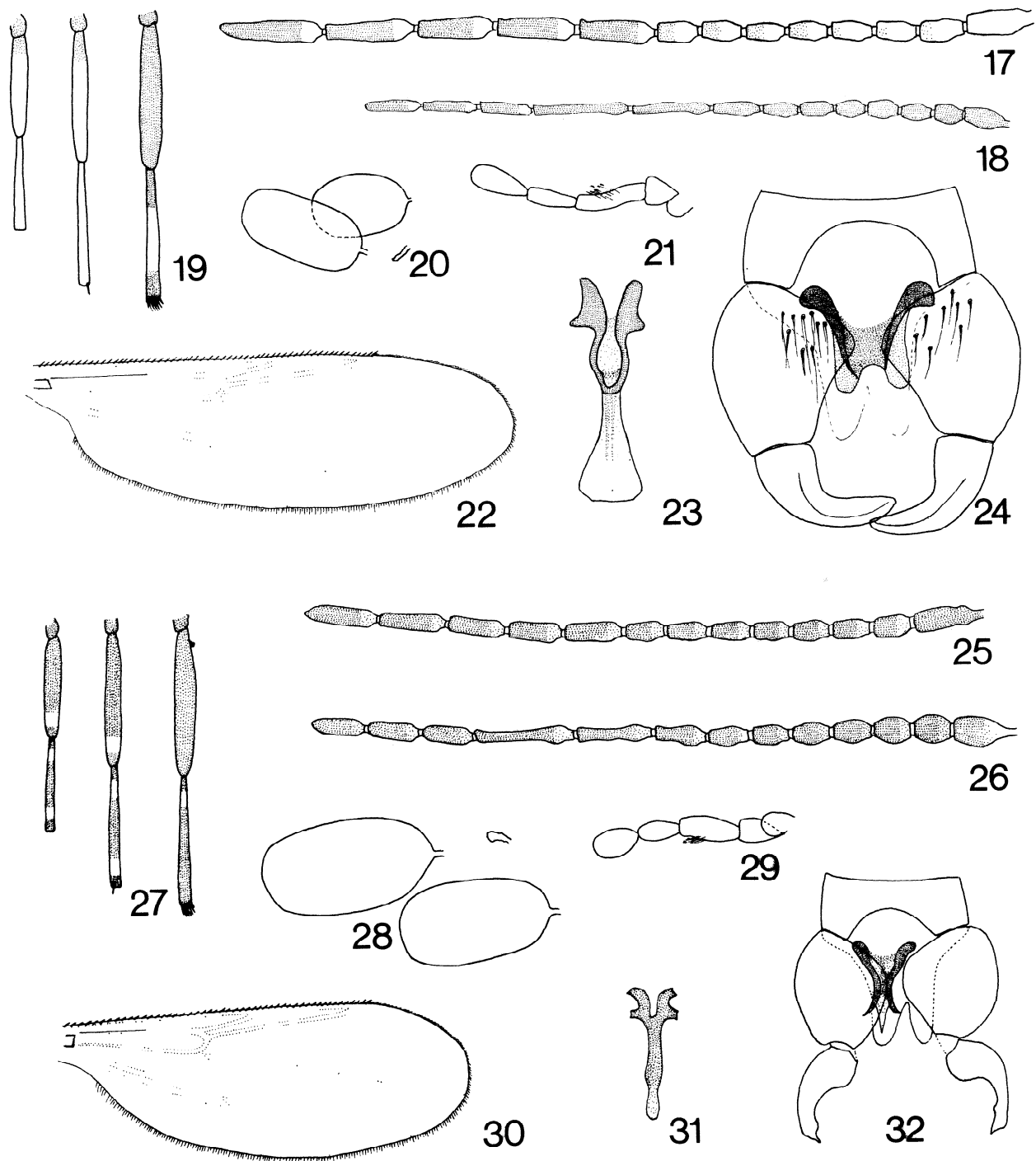
Literature Cited

- Coquillett, D. W.** 1905. New nematoceros Diptera from North America. J. New York Entomol. Soc. 13: 56-69.
- Dow, M. I., and E. C. Turner.** 1976. A revision of the Nearctic species of the genus *Bezzia* (Diptera: Ceratopogonidae). Virginia Polytech. Inst. Res. Div. Bull. 103: 1-162.
- Downes, J. A., and W. W. Wirth.** 1981. Ceratopogonidae. pp. 393-421, In: J. F. McAlpine et al., Eds. Manual of Nearctic Diptera, vol. 1, 674 pp. Agric. Canada, Ottawa.
- Forattini, O. P.** 1957. *Culicoides* da Regiao Neotropical (Diptera. Ceratopogonidae). Arq. Fac. Hig. Saude Publ. Univ. Sao Paulo 11: 161-526.
- Johannsen, O. A.** 1908. New North American Chironomidae. Bull. N. Y. St. Mus. 124: 264-285.
- Johannsen, O. A.** 1943. Two new species of American Ceratopogonidae (Diptera). Ann. Entomol. Soc. Am. 36: 763-791, 3 plates.
- Kieffer, J. J.** 1906. Diptera, Fam. Chironomidae. In: P. Wytsman (ed.), Genera Insectorum. Fasc. 42: 1078, 4 plates.
- Kieffer, J. J.** 1917. Chironomides d'Amerique conservees au Musee National Hongrois de Budapest. Annls. Hist. Nat. Mus. Natl. Hungarici 15: 81-121.
- Lane, J.** 1958. On Neotropical *Bezzia*. Revta. Entomol. 8: 25-26.
- Lane, J.** 1961. Further notes on Neotropical Ceratopogonidae (Diptera). Revta. Brasil. Biol. 21: 37-44.
- Malloch, J. R.** 1914. Synopsis of the genus *Probezzia*, with description of a new species (Diptera). Proc. Biol. Soc. Washington 27: 137-139.
- Malloch, J. R.** 1915. The Chironomidae, or midges, of Illinois, with particular reference to the species occurring in the Illinois River. Bull. Illinois St. Lab. Nat. Hist. 10: 275-543, 23 plates.
- Spinelli, G. R., and W. W. Wirth.** 1989a. The Neotropical predaceous midges of the genus *Bezzia* (Diptera: Ceratopogonidae). Part I. The *glabra* and *brevicornis* Groups. Limnobiology 2: 762-778.

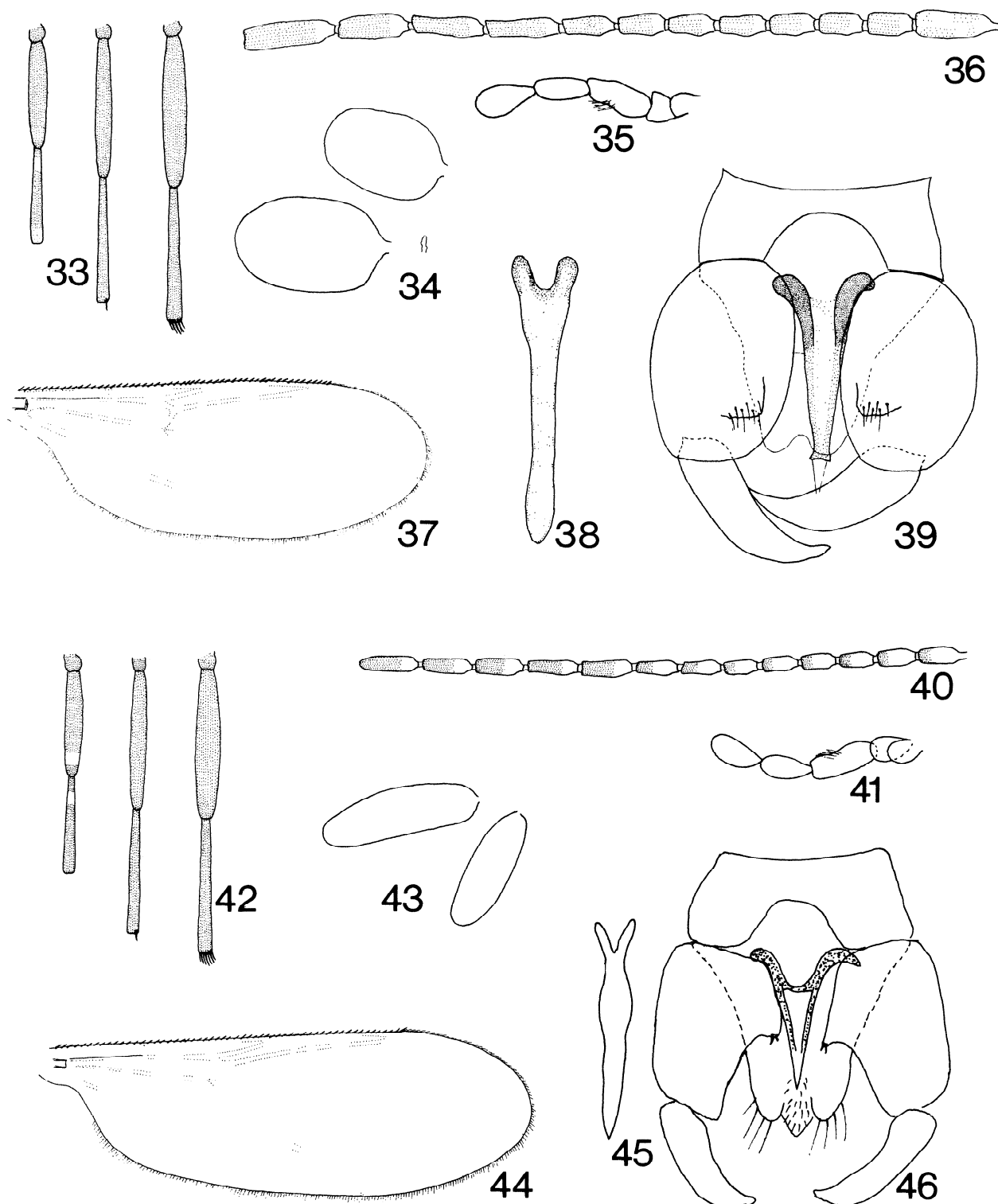
- Spinelli, G. R., and W. W. Wirth.** 1989b. Las especies Neotropicales del genero *Bezzia* (Diptera: Ceratopogonidae) II. Los grupos *nobilis* y *punctipennis*. *Revta. Soc. Entomol. Argentina* 45: 109-1989.
- Wirth, W. W.** 1952. The Heleidae of California. *Univ. California Publ. Entomol.* 9: 95-266.
- Wirth, W. W.** 1965. Family Ceratopogonidae. pp. 121-142, *In*: A. Stone *et al.*, eds. A Catalog of the Diptera of America North of Mexico. U. S. Dept. Agric., Agric. Hdbk. 276: 1-1696.
- Wirth, W. W.** 1974. A catalogue of the Diptera of the Americas south of the United States. 14. Ceratopogonidae. *Mus. Zool. Univ. Sao Paulo.* 89 pp.
- Wirth, W. W., and W. L. Grogan, Jr.** 1983. The Nearctic species of the *Bezzia bivittata* group (Diptera: Ceratopogonidae). *Proc. Biol. Soc. Washington* 96: 489-523.
- Wirth, W. W., N. C. Ratanaworabhan, and D. H. Messersmith.** 1977. Natural History of Plummers Island, Maryland. XXII. Biting midges (Diptera: Ceratopogonidae). 1. Introduction and key to genera. *Proc. Biol. Soc. Washington* 90: 615-647.



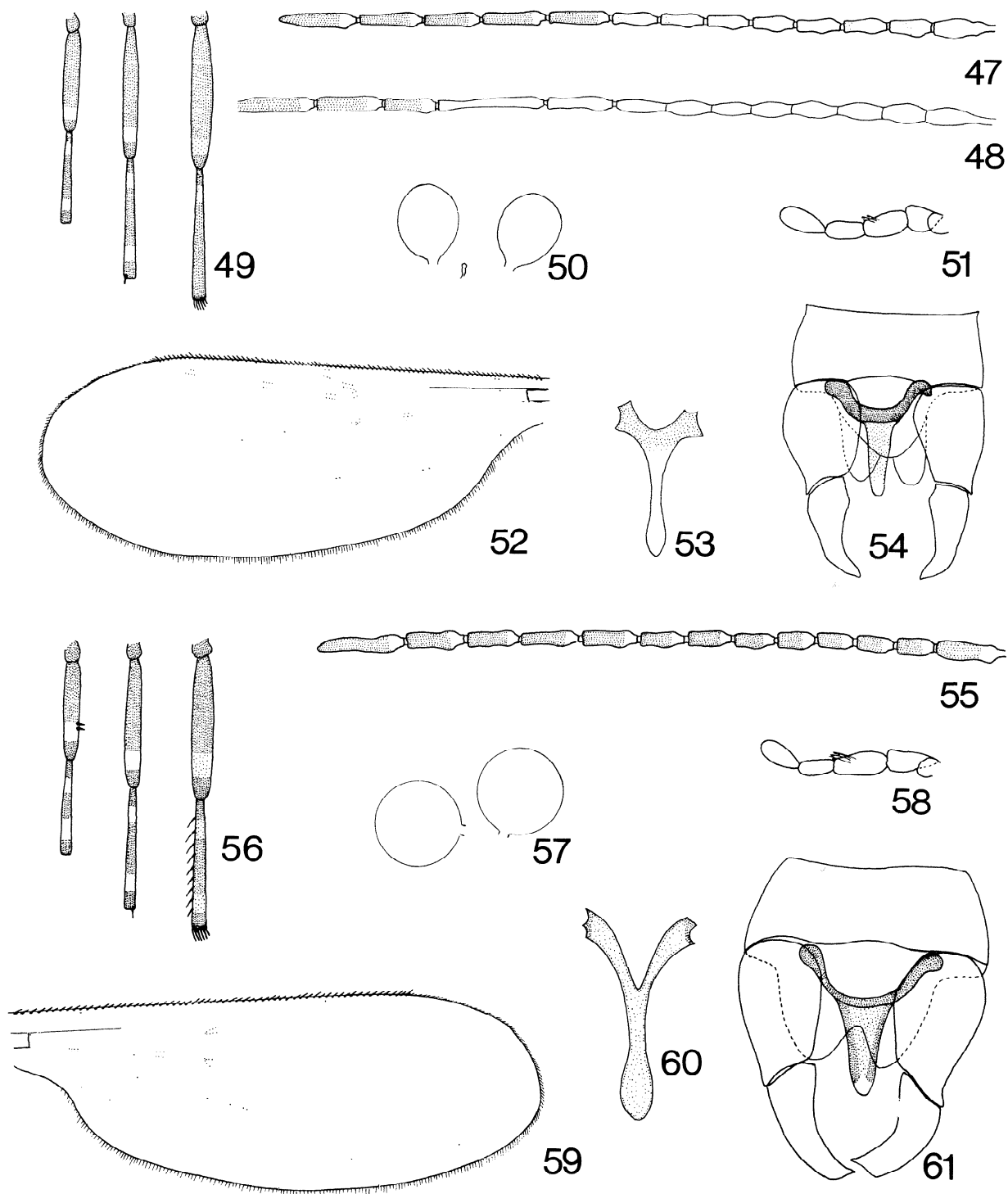
Figures 1-16. 1-8, *Bezzia araucana*; 9-16, *B. bilineata*: 1, 9, male antenna; 2, 10, female antenna; 3, 11, femora and tibiae of (left to right) fore, mid and hind legs; 4, 12, spermathecae; 5, 13, female palpus; 6, 14, female wing; 7, 15, male parameres; 8, 16, male genitalia, parameres omitted.



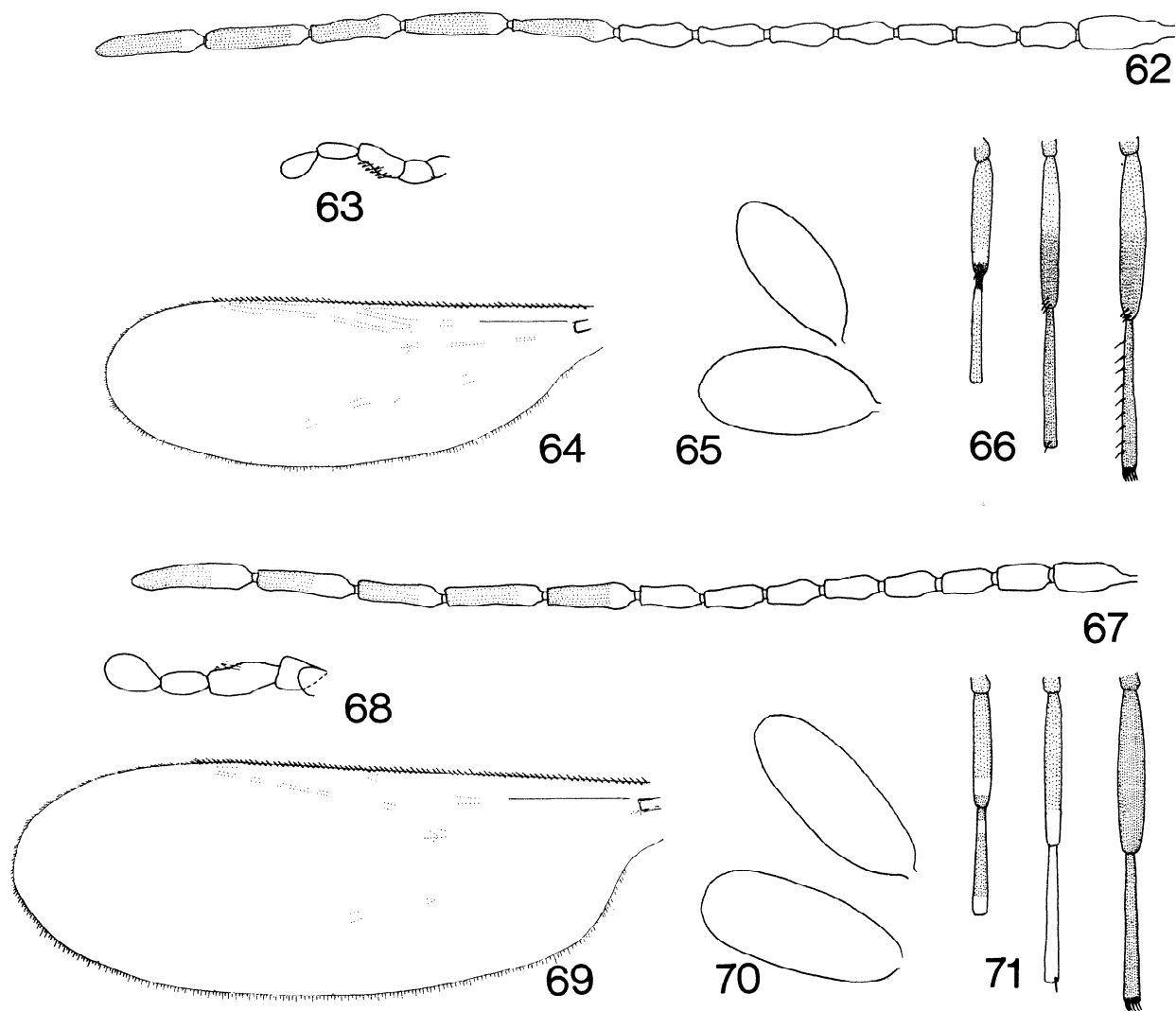
Figures 17-32. 17-24, *Bezzia catarinensis*; 25-32, *B. globulosa*: 17, 25, female antenna; 18, 26, male antenna; 19, 27, femora and tibiae of (left to right) fore, mid and hind legs; 20, 28, spermathecae; 21, 29, female palpus; 22, 30, female wing; 23, 31, male parameres; 24, 32, male genitalia, parameres omitted.



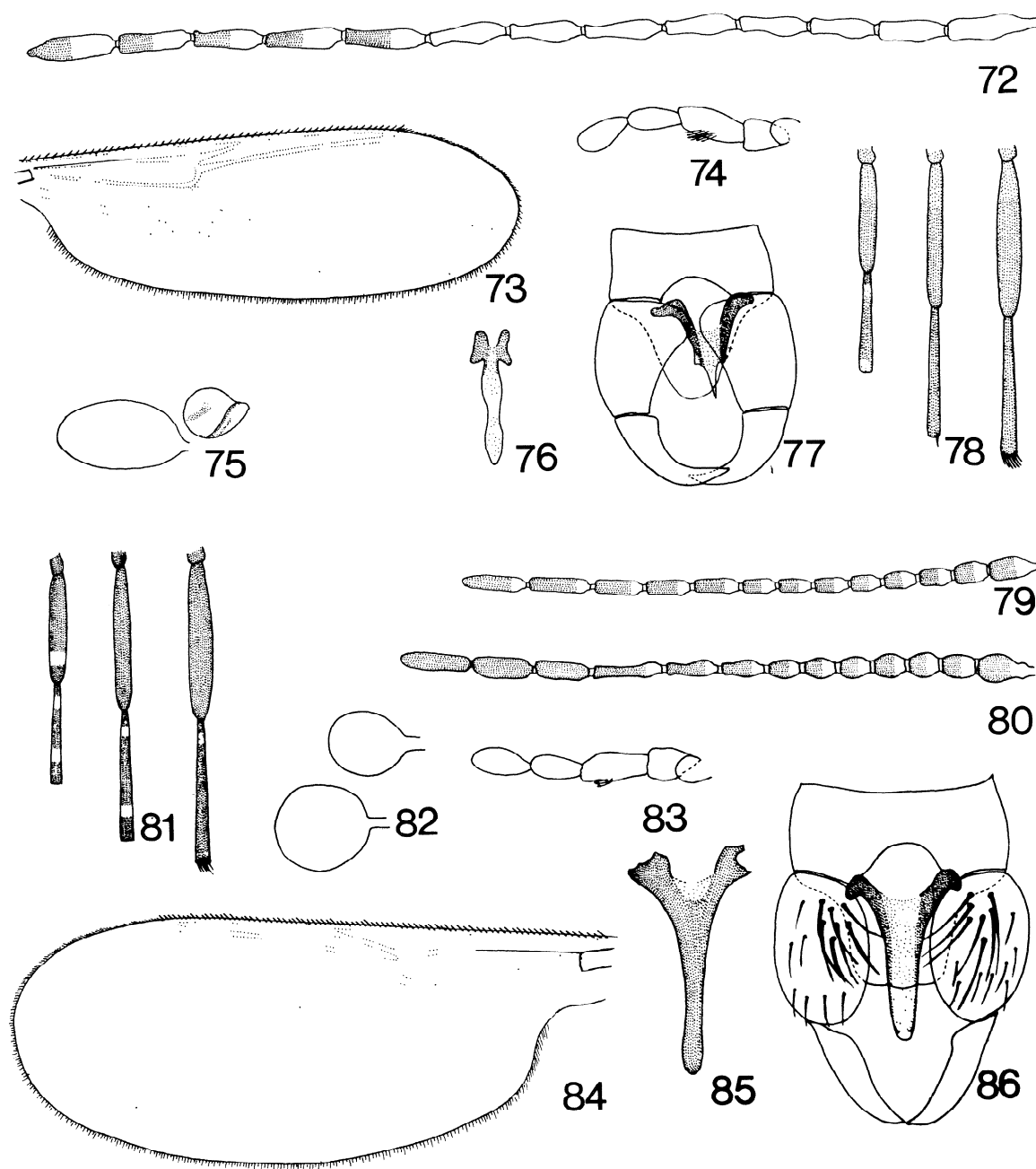
Figures 33-46. 33-39, *Bezzia grogani*; 40-46, *B. hondurensis*: 33, 42, femora and tibiae of (left to right) fore, mid and hind legs; 34, 43, spermathecae; 35, 41, female palpus; 36, 40, female antenna; 37, 44, female wing; 38, 45, male parameres; 39, 46, male genitalia, parameres omitted.



Figures 47-61. 47-54, *Bezzia jubata*; 55-61, *B. leei*: 47, 55, female antenna; 48, male antenna; 49, 56, femora and tibiae of (left to right), fore, mid and hind legs; 50, 57, spermathecae; 51, 58, female palpus; 52, 59, female wing; 53, 60, male parameres; 54, 61, male genitalia, parameres omitted.



Figures 62-71. 62-66, *Bezzia megatheca*; 67-71, *B. mesotibialis* females: 62, 67, antenna; 63, 68, palpus; 64, 69, wing; 65, 70, spermathecae; 66, 71, femora and tibiae of (left to right), fore, mid and hind legs.



Figures 72-86. 72-78, *Bezzia pseudogibbera*; 81-86, *B. setigera*: 72, 79, female antenna; 73, 84, female wing; 74, 83, female palpus; 75, 82, spermathecae; 76, 85, male parameres; 77, 86, male genitalia, parameres omitted; 78, 81, femora and tibiae of (left to right) fore, mid and hind legs.