

KEY TO SPECIES OF *TONNOIRA*

- 1 Radial and medial forks on same level or radial basad of medial by about 1 cell width; ♂ surstylus with 1 large tenaculum and 6-8 short rods 2
 Radial fork basad of medial by 2 cell widths; ♂ surstylus with 1 apical and 1 subapical tenacula, large and equal size 40. *bitenacula*
- 2(1) Radial and medial forks on same level; tenaculum fringed at tip 42. *moragai*
 Radial fork basad of medial by about 1 cell width; tenaculum feathered at tip 41. *plumaria*

40. *Tonnoira bitenacula* Quate, n.sp.
 Fig. 13 a-c

Large species with unpatterned wings
 Male. Antenna very long, longer than wing (broken, presumed 14 flagellomeres); flagellomeres elongate fusiform to cylindrical, progressively smaller and thinner; (ascoids not visible). Eye bridges with 4 facet rows, narrowly separated by less than 1/2 facet diameter; interocular suture with posterior spur. Hair patch on frons quadrate, undivided. Palpus extends to flagellomere 3, formula = 6:12:17:19.

Wing clear, unpatterned. Sc very short, extends only to tip of costal node; R₂₊₃ very short, about 1/10X R₂; radial fork basad of medial by about 2 cell widths.

Gonocoxal apodemes small, meeting on midline. Aedeagus symmetrical, base broad and paddle-shaped, tip saggitate, paramere lacking. Surstylus with 1 apical and 1 subapical tenacula. Tergite 10 broadly triangular with rounded apex; tergite 9 without pseudospiracular opening.

Measurements: Antenna 2.97-3.40 mm (extrapolated from incomplete antennae). Wing length 2.17-2.41 mm., width 0.82-0.89 mm.

Female. Unknown

Holotype ♂, COSTA RICA, Heredia, Estación Biol. La Selva, 22-26/VII/93 (INBio). Paratypes, 4 ♂, same (USNM, LACM, MNH, LWQ).

Etymology: 'bis' L, two; refers to the two tenacula on the male surstylus.

41. *Tonnoira plumaria* Quate, n.sp.
 Fig. 13 d-e

Large species with patterned wings
 Male. Antenna very long, about same length as wing; flagellomeres elongate fusiform to cylin-

dric, nodes progressively smaller; ascoids large, simple, unidigitate, 2X length of flagellomere. Eye bridges with 4 facet rows, sometimes contiguous on upper margin, narrowly separated by less than 1/2 facet diameter anteriorly; interocular suture lacking posterior spur. Hair patch on frons with rounded dorsal margin, undivided. Palpus extends to flagellomere 5, formula = 10:18:18:20.

Wing with brown spots at apices of veins, at radial and medial forks and base of R₅. Sc well developed, extends halfway between costal node and base of R₅, subcostal-radial crossvein usually present, but weak; R₂₊₃ very short and weak; bases of R₃ and M₂ lacking, radial and medial forks on same level; tip of CuA₂ lacking.

Gonocoxal apodemes small. Gonostylus slender. Aedeagus symmetrical, base circular, paramere stout with blunt apex. Surstylus short, with 1 apical tenacula, feathered at tip, and about 6-8 small, short rods on distal half of ventral surface, with dark, compact bases. Tergite 10 broadly triangular with rounded apex; pseudospiracular opening large, single.

Measurements: Antenna 2.75-? mm. Wing length 2.41-2.95 mm., width 0.94-1.13 mm.

Female. Unknown.

Holotype ♂, COSTA RICA, Heredia, Estación Biol. La Selva, 22-25/VII/93 (INBio). Paratypes, 5 ♂, same but 12/II/93 (USNM, LACM, MNH, BBM, LWQ).

Etymology: 'plumaris' L, of feathers; refers to feather-like tenaculum on the male surstylus.

42. *Tonnoira moragai* Quate, n.sp.
 Fig. 13. f-j

Large species with broad, patterned wings
 Male. Antenna very long, little shorter than

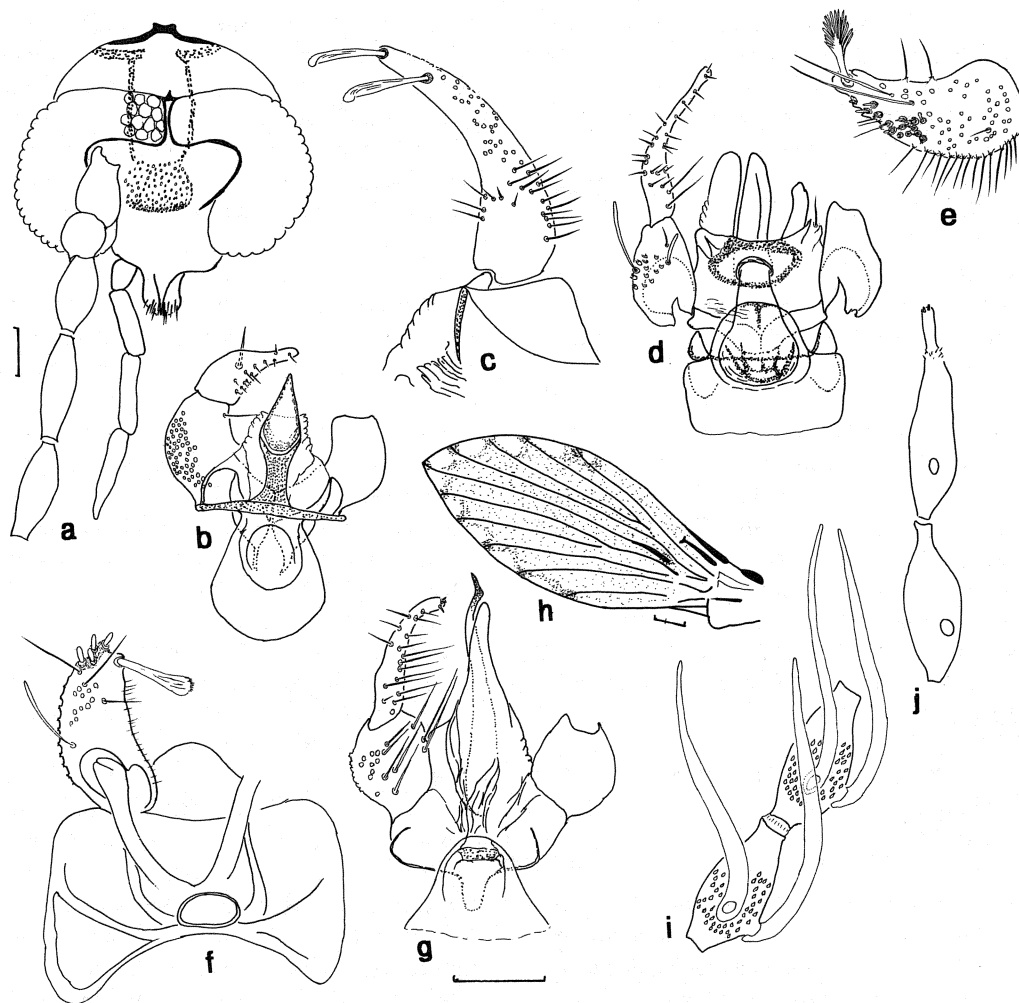


Fig. 13. a-c. *Tonnoira bitenacula*. a. Head; b. ♂ gonopods and aedeagus, dorsal, right gonostylus not shown; c. ♂ surstylus. d-e. *T. plumaria*. d. ♂ gonopods and aedeagus, dorsal, right gonostylus not shown; e. ♂ surstylus. f-j. *T. moragai*. f. ♂ tergite 9, 10, surstylus; g. ♂ gonopods and aedeagus, dorsal, right gonostylus not shown; h. wing; i. flagellomeres 4,5; j. flagellomeres 13, 14. Scale line = 0.1 mm.

wing; 14 flagellomeres elongate fusiform to cylindrical, progressively smaller; ascoids large, unidigitate, 2X length of flagellomere. Eye bridges with 4 facet rows, narrowly separated by less than 1/2 facet diameter; interocular suture lacking posterior spur. Hair patch on frons quadrate, undivided. Palpus extends to flagellomere 5, formula = 10:16:16:22.

Wing infuscate around margins, little lighter in central part, white spots between apices of veins. Sc well developed, extends to base of R_5 , clearly beyond tip of costal node, subcostal-radial cross-vein present, but weak; R_{2+3} very short and weak; radial fork basad of medial by only 1 cell width; base of M_2 lacking; CuA_2 apex beyond medial fork.

Gonocoxal apodemes small. Aedeagus symmetrical, paramere tapering to shoe-like apex beyond apex of aedeagus. Surstylus short, with 1 apical tenacula and about 6 subapical, short rods arising from compact group of dark bases. Tergite 10 broadly triangular with rounded apex; pseudospiracular opening large, single.

Measurements: Antenna 2.72-2.82 mm. Wing length 2.77-3.01 mm., width 1.16-1.21 mm.

Female. Unknown

Holotype ♂, COSTA RICA, Guanacaste, Estación Pitilla, 9 km So. of Santa Cecilia, 10-14/VII/93 (INBio). Paratypes, 3 ♂, same (USNM, MNH, LWQ).

Etymology: named to recognize Calixto Moraga, a paratonomist with INBio, who generously assisted me while working at Estación Pitilla.

This species differs from other *Tonnoira* in the unusual structure of the male surstylus with its cluster of rods a little in front of the tenaculum. However, head, antennal, and wing structures seem to indicate a relationship to other *Tonnoira* and, at least for the time being, is assigned to this genus.

Tribe TELMATOSCOPIINI

Telmatoscopini Vaillant, 971:46; Vaillant, 1990:149.

Duckhouse (1987:268) synonymizes part of Telmatoscopini Vaillant with Paramormiini Enderlein. Presumably, he included that part of the tribe which contains the following species. However, I will retain Vaillant's tribal designation for these species until a more thorough classification of Neotropical Psychodidae has been made.

Genus *Duckhousiella* Vaillant

Duckhousiella Vaillant, 1971:54.

Type species: *Psychoda ustulata* Walker. (By original designation.)

Head. Eye bridges with 4 facet rows, contiguous on midline in male and separated in female; vertex only 1.5X width of eye bridge; labellum bulbous, without teeth; occipital foramen slender,

sides moderately curved, converging anteriorly, with pair of posterior pockets; male with lobed allurement organs at end of membranous stalk plus additional unlobed stalk. Antenna with 14 flagellomeres; scape and pedicel normal, flagellomeres nodiform, internode of flagellomere 1 little shorter than following, terminal segments not reduced; ascoids multiple, single, forming circle around each node in male; palmate and paired in female.

Thorax without allurement organs; central band of anepisternite and laterotergite with hair scars. Fore femur with irregular double row of spines. Wing with forks near center; Rs not pectinate; radial fork little distad of medial; Sc ending at level of base of R_{@+3}, which is in basal cell, R₅ ends beyond wing apex; CuA₂ apex near level of medial fork.

♂ gonocoxal apodemes joined on midline; aedeagus symmetrical, base broad, flattened aedeagus symmetrical, base broad, flattened dorsoventrally, lacking keel attachment of gonocoxal apodeme; surstylus very short, compact, with 8-10 feathered tenacula.

♀ genitalia lacking genital digit; setal sclerite present; spermatheca with indistinct, amorphous lobes.

Duckhouse (1978:348) synonymized *Duckhousiella* Vaillant with *Paramormia* Enderlein. However, *D. furcatus* is so similar to *Duckhousiella ustulatus* (Walker), the type species of the genus, that they appear to differ only in minor features. The share in common the shape of the male and female ascoids, the spines on the male fore femur, the banded wing veins, the compact male surstylus and female genitalia. I think this justifies recognition as a genus separate from *Paramormia* as characterized by *P. fratercula* (Eaton), the type species, which does not possess any of the above characters.

43. *Duckhousiella furcatus* (Kincaid)

Pericoma furcata Kincaid, 1899:34.

Telmatoscopus furcatus, Quate, 1955:169 (descr. illust.)

Duckhousiella furcatus, Vaillant, 1973:349.

Specimens examined. COSTA RICA, San José, 19 km S, 3 km W of Empalme, II-III/93,

2600 m., P. Hanson; Cartago, 30 km N of San Isidro, 21-24/VI/95, 2640 m.; Heredia, Heredia, III/93; Vara Blanca, 26/VII/93, 1800 m. Guanacaste, Parque Nac. Santa Rosa, 9/VII/93, sea level; Puntarenas, Estación Pittier, 22 km N of San Vito, 12/VI/95, 1700 m.

A widespread species recognized by the distinctly marked wings with alternate light and dark markings on the veins, visible in slide-mounts as well as pinned specimens, and the circle of single ascoids around each node of the male and pair of palmate-shaped ascoids in the female. The male with contiguous eyes and genitalia with its short, peculiar surstylus and the female genitalia with the amorphous spermatheca lacking hemispherical lobes are also distinctive.

Genus *Telmatoscopus* Eaton

Telmatoscopus Eaton, 1904:58.

Type species: *Trichoptera trifasciata* Meigen. By subsequent designation, Coquillett, 1910:587.

Head. Eye bridges usually with 4 facet rows, separated on midline; vertex 2X width of eye bridge, apex of vertex extended and bilobed; labellum bulbous, without teeth; occipital foramen slender, sides curving and converging anteriorly, with pair of posterior pockets; lacking allurement organs. Antenna with 14 flagellomeres; scape and pedicel normal, flagellomeres

nodiform, internode of flagellomere 1 very short, terminal segments not reduced; ascoids a pair of simple, undigitate structures on each node.

Thorax without allurement organs; central band of anepisternite and laterotergite with hair scars. Fore femur of male without spines. Wing with forks near center; Rs not pectinate; radial fork usually distad of medial; Sc long, extends beyond base of R₂₊₃, enlarged apically; base of R₂₊₃ in basal cell, R₅ usually ends beyond wing apex; CuA₂ apex near level of medial fork.

♂ gonocoxal apodemes joined on midline; aedeagus symmetrical, base slender, lacking keel attachment to gonocoxal apodeme; surstylus of normal length, with multiple tenacula.

♀ genitalia lacking genital digit; setal sclerite present; spermatheca with distinct hemispherical lobes.

This genus is distinguished by the nodiform flagellar segments in which neither the basal nor apical segments are reduced in size, the bulbous labellum, the radial fork being on the same level as or distad of the medial and both near of distad of the wing center, R₅ ending beyond rounded wing tip, the rather simple male genitalia in which the aedeagus has a simple, linear base without a ventral keel connecting it to the gonocoxal apodeme and in the Costa Rican species the male surstylus bears multiple tenacula. There is a band of hairs in the center of the anepisternite but the anterior and posterior part is bare; hairs are also on the laterotergite.

KEY TO SPECIES OF *TELMATOSCOPIUS*

- 1 Internode of at least flagellomere 1 absent or very short, much shorter than internodes of flagellomeres 3-14 2
- Internode of flagellomeres 1-3 well developed, as long as or nearly as long as following internodes 46. *congruus*
- 2(1) Internodes of flagellomeres 1-3 shorter than following internodes; ♂ aedeagus spade-shaped 45. *clavatus*
- Internode of flagellomere 1 absent, but of 2 and 3 nearly as long as following internodes; ♂ internode shaped like 2-pronged fork 44. *mergacolis*

44. *Telmatoscopus mergacolis* Quate, n.sp.

Fig. 14 a-d

Wing lightly infuscate with brown spots at tips

of all veins, center of CuA₁, and base of R₅.

Male. Antenna with 14 flagellomeres, 1 with very short internode, 2 with longer internode, but shorter than 3 and following, all of which are

about same length; apiculis little longer than internode of flagellomere 13; ascoids lacking (presumably same as *congruus*). Eye bridge with 4 rows of facets, separated by 2 facet diameters; interocular suture present, lacking median spur. Hair patch of frons undivided, with irregular double row extending to upper eye margin nearly to suture. Palpus extends to flagellomere 4, formula = 6:11:11:15.

Sc enlarged apically, extends far beyond base of R_5 ; radial and medial forks on same level, near center of wing; R_{2+3} about 0.6X R_2 ; CuA_2 enlarged near center, tip little distad of medial fork.

Gonopods rather slender, gonostylus about 1.5X length of gonocoxite, gonocoxal apodemes large and broadly fused; aedeagus has superficial appearance of 2-pronged fork, but apical prongs enclosed in membranous sac. Surstylus with 5 simple tenacula.

Measurements: antenna 1.37 mm. Wing length 2.07 mm., width 0.8 mm.

Female. Unknown.

Holotype ♂, COSTA RICA, Heredia, Estación Biol. La Selva, 1/VII/93 (INBio).

Etymology: 'merga', L, 2-pronged pitchfork; 'colis' L, penis; referring to shape of male aedeagus.

45. *Telmatoscopus clavatus* Quate, n.sp.

Fig. 14 e-g

Wing lightly infuscate with faint brown spots at

tips of all veins and base of R_5 .

Male. Antenna with 14 flagellomere, 1 lacking internode, internodes of 2 & 3 very short, following internodes normal; apiculis little longer than internode of flagellomere 13; pair of unidigitate ascoids on each flagellomere, except 14. Eye bridge with 4 rows of facets, separated by 2 facet diameters; interocular suture present, interrupted in center, lacking median spur. Hair patch of frons undivided, with irregular double row extending to upper eye margin nearly to suture. Palpus extends to flagellomere 4, formula = 7:11:12:16.

Sc enlarged apically, extends far beyond base of R_5 ; radial fork little distad of medial, near

center of wing; R_{2+3} about 0.8-0.9X R_2 ; CuA_2 enlarged near center, tip little distad of medial fork.

Gonopods rather slender, gonostylus about 1.5X length of gonocoxite, gonocoxal apodemes small, extend posteriorly to midline and attached to apical part of aedeagus; cluster of 4 non-deciduous spines on mesobasal angle and additional 2 further distad. Aedeagus enlarged apically as membranous sac. Surstylus with 5 simple tenacula.

Measurements: Antenna 1.21-1.26 mm. Wing length 1.93-2.1 mm., width 0.77-0.82 mm.

Female. Similar to ♂, eyes separated by 2.5 facet diameters. Subgenital plate with lobes separated by deep concavity; spermatheca with cluster of granules at base on each side of midline.

Measurements: Wing length 2.48 mm., width 0.96 mm.

Holotype ♂, Allotype ♀, COSTA RICA, Heredia, Estación Biol. La Selva, 18/II/92, fluorescent lights in lab (INBio). Paratype, 1 ♂, same (INBio).

Etymology: 'claviger' L, club-bearing; referring to shape of male aedeagus.

46. *Telmatoscopus congruus* Quate, n.sp.

Fig. 14 h-i

Wing lightly infuscate with faint brown spots at tips of all veins, apex of Sc and base of R_5 .

Male. Antenna with 14 flagellomeres, 1 with very short internode, following internodes normal; pair of unidigitate ascoids on each flagellomere, except 14. Eye bridge with 4 rows of facets, separated by 1.5 facet diameters; interocular suture present, lacking median spur. Hair patch of frons undivided, with 4 irregular rows extending to upper eye margin nearly to suture. Palpus extends to flagellomere 4, formula = 10:12:13:15.

Sc enlarged apically, extends far beyond base of R_5 ; radial fork little distad of medial, near center of wing; R_{2+3} about 0.9X R_2 ; CuA_2 not enlarged near center, tip at same level as medial fork.

Gonopods long and slender, gonostylus about 1.5X length of gonocoxite, gonocoxal apodemes

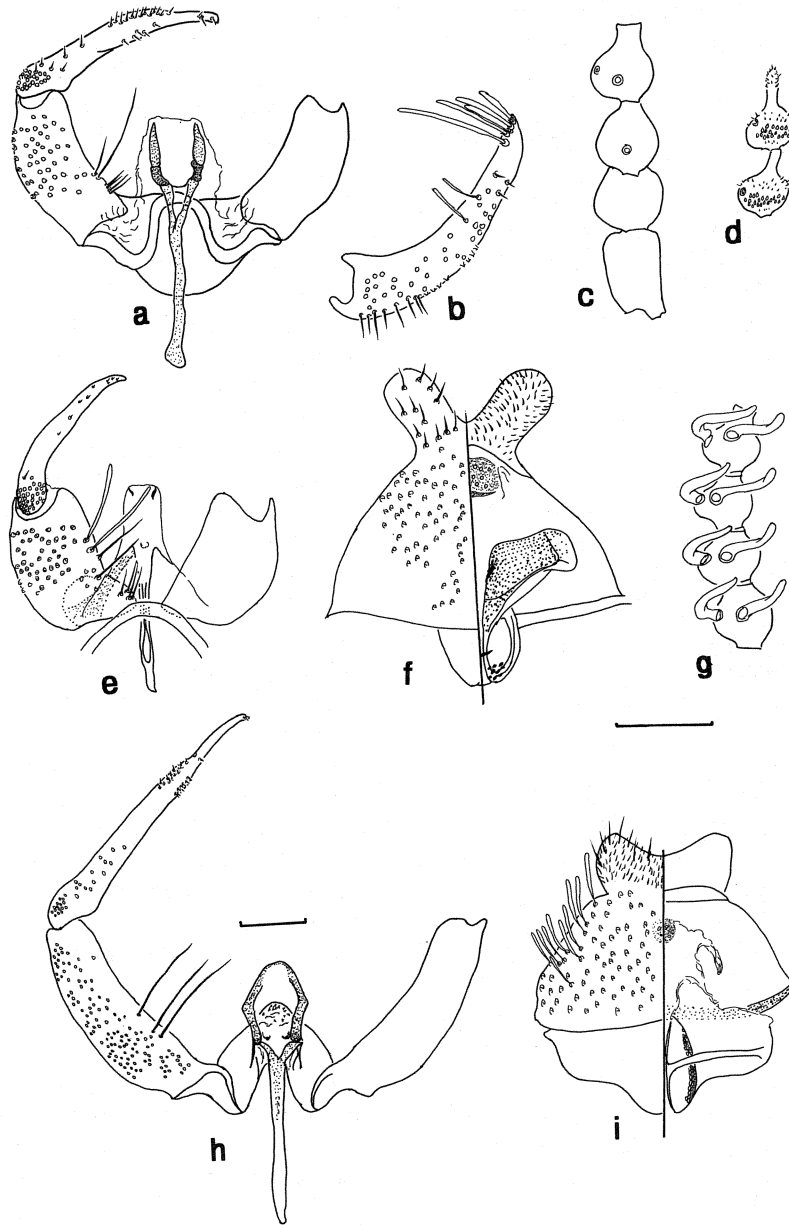


Fig. 14. a-d. *Telmatoscopus mergacolis*. a. ♂ gonopods and aedeagus, dorsal, right gonostylus not shown; b. ♂ surstylus; c. scape, pedicel, flagellomeres 1,2; d. flagellomeres 13, 14. e-g. *T. clavatus*. e. ♂ gonopods and aedeagus, dorsal, right gonostylus not shown; f. ♀ genitalia; g. flagellomeres 1-4. h-i. *T. congruus*. h. ♂ gonopods and aedeagus, dorsal, right gonostylus not shown; i. ♀ genitalia. Scale line = 0.1 mm.

curved distally to form prominent arch below aedeagus, broadly fused on midline, with cluster of spicules on rounded apex. Aedeagus racquet-shaped. Surstylus with about 15 simple tenacula.

Measurements: Antenna 1.55 mm. Wing length 2.43 mm., width 0.99 mm.

Female. Eyes separated by 2 facet diameters; antenna smaller and wing narrower than in ♂.

Subgenital plate broad with shallow apical concavity; setal sclerite ovoid, with about 5 setae; lateral surface of hemispherical lobes with cobblestone appearance.

Measurements: Antenna (broken, estimated 0.93 mm.). Wing length 2.05 mm., width 0.72 mm.

Holotype ♂, allotype ♀, COSTA RICA, Heredia, Estación Biol. La Selva, 18/II/92, fluorescent lights in lab (INBio). Paratype, 1 ♂, same (INBio).

Etymology: 'congruus' L, fitting, agreeable; referring to this species similarity to Holarctic species of *Telmatoscopus*.

Tribe MORMIINI

Mormiini Enderlein, 1937:98; Duckhouse, 1987:267; Duckhouse, 1991:976.

Brunettini Vaillant 1975:156 (Synonymy after Duckhouse, 1987).

This tribe is characterized by the flagellomeres usually being nodiform and bearing diverse ascoids varying from digitate to bifurcate or palmate, the radial sector is pectinate and the radial and medial forks are basal in position, R₅ ends in the wing tip and the male genitalia lack the keel between the gonocoxal apodemes and the base of the aedeagus.

Genus *Bryopharsos* Quate, new genus

Type species: *Bryopharsos palpiculum* Quate, n.sp., by present designation.

Large species with 14, strongly nodiform, eccentric flagellomeres.

Head rather round in appearance with small vertex not more than 1-2X width of eye bridge; eye bridges contiguous on midline, with 3-5 facet rows; occipital foramen variable, slender to broad as shown in Fig. 15a, lateral margins concave. Antenna: scape and pedicel normal, scape but little larger than pedicel; flagellomeres nodiform, 3-14 with strongly eccentric nodes to extent that segments are shoe-shaped; terminal not reduced, with apiculis; pair of large leaf-like ascoids on all flagellomeres except 14. Palpus short, extends only to flagellomere 2 or 3. Labellum small, not bulbous.

Thorax with allurement organs. Pleuron with hair scars only on central and ventral part of anepisternite and posterior part of laterotergite. Wing infusate, but otherwise unpatterned, hair scars on membrane; Rs not pectinate, radial and medial forks basal of wing center; R₅ ends in acute wing apex.

Male. Gonocoxal apodemes narrow and fused on midline, but without keel connected to aedeagus; aedeagus symmetrical, paramere present. Surstylus with multiple tenacula.

Female. Genital digit and setal sclerite lacking; spermatheca without hemispherical lobes.

Etymology: 'bryo' Gr, swell; 'pharsos' Gr, part; referring to unusual enlargements of flagellomeres; gender neuter.

The large, grossly asymmetrical flagellomeres and asymmetrical male aedeagus readily distinguish the genus *Bryopharsos*. It is placed in the Mormiini largely on the basis of the wing venation (pectinate radial sector and basal position of the radial and medial forks, R₅ ends in wing tip); and the absence of the keel of the gonocoxal apodeme in the male genitalia. It does differ from Duckhouse's definition (1991:976) in apparently lacking a thoracic pore below the anterior spiracle and having only a single tenaculum on the male surstylus.

KEY TO SPECIES OF *BRYOPHARSOS*

- 1 Eye bridge with 4 facet rows 2
 Eye bridge with 5 facet rows, at least in medial part. *47. palpiculum*

- 2(1) Medial fork incomplete and with spur at base. 3
 Medial fork complete, without spur; surstylus with 5 tenacula 48. *claviformosum*
- 3(2) ♂ surstylus with 3 tenacula, basal one separated from other 2 50. *tritaleum*
 ♂ surstylus with 4 tenacula 49. *clavigum*

47. *Bryopharsos palpiculum* Quate, n.sp.
 Fig. 15 a-e

Large species with broad, unpatterned wing.
 Male. Occipital foramen variable (Fig. 15a). Antenna with 14 nodiform flagellomeres, 1 with spherical node and short internode, 2-13 with large, eccentric nodes, 14 with node spherical and long apiculis with enlargement near center; ascoids very large and broad, leaf-like, paired (lacking on distal segments but all segments with paired ports which support ascoids where present). Eye bridges contiguous, with 5 facet rows, without spur on midline. Hair patch on frons dome-shaped with dorsal extension nearly to eye bridge. Palpus extends to flagellomere 3, formula = 7:10:10:9.

Wing infusate, but without spots; radial and medial forks on same level, CuA₂ tip little distad of medial fork; medial fork complete, without spur; R₂₊₃ 0.2X R₂.

Gonocoxal apodemes fused on midline, lacking keel, one side with slender appendage, slightly curved, ending before aedeagus apex, other side with 4 small setae in center; gonostylus slightly tapered apically, with blunt apex. Aedeagus simple, base paddle-shaped, apical part slender, pointed; paramere very slender with acute apex beyond aedeagal apex. Surstylus short, with 4 tenacula.

Measurements: Antenna 2.33-2.39 mm. Wing length 2.46-2.77 mm., width 0.99-1.08 mm.

Female. Unknown.

Holotype ♂, COSTA RICA, Heredia, Estación Biol. La Selva, 1/VII/93 (INBio). Paratypes, 10 ♂, same but 23/I/93, 12/II/93; 1/IV/93, 2/V/93, 15/IX/93 (INBio, USNM, MNH, LWQ).

Etymology: 'palpus' L, palpus; '-culum' L suffix denoting diminutive; referring to small palpus.

48. *Bryopharsos claviformosum* Quate, n.sp.
 Fig. 15 f

Male. Same as *palpiculum*, except eye bridges with 4 facet rows medially and 3 laterally; (ascoids presumed same as *palpiculum*), gonostylus club-shaped with blunt apex, gonocoxal apodeme with small, appendage with acute apex at level of aedeagal apex and 10 spines on one side and 4 spines on other, paramere tapering to acute apex aedeagal apex, surstylus with 4 long and 1 short tenacula.

Female. Unknown.

Measurements: (Antenna broken). Wing length 2.60 mm., width 1.04 mm. Holotype, ♂, COSTA RICA, Heredia, Estación Biol. La Selva, 1/VII/93 (INBio).

Etymology: 'clava' L, club; 'formosus' L, beautifully formed; referring to club shape of male gonostylus.

49. *Bryopharsos clavigum* Quate, n.sp.
 Fig. 15 g

Male. Same as *palpiculum*, except eye bridges with 4 facet rows; (ascoids absent but presumed same as *palpiculum*); medial fork incomplete, with faint spur; gonocoxal apodeme with appendage on one side, slightly curved with acute apex and ending before aedeagal apex, and 3 spines on other; gonostylus club-shaped or digitate, with blunt apex. Aedeagus simple, base ovoid, apex acute, paramere little shorter than apical part of aedeagus, with acute apex. Surstylus short, with 4 tenacula.

Measurements: Antenna 2.29 mm. Wing length 2.36 mm., width 0.94 mm.

Holotype ♂, COSTA RICA, Heredia, Estación La Selva, 1/VII/93 (INBio).

Female. Unknown.

Etymology: 'clavigum' L, club-bearing; referring to club shape of male gonostylus.

50. *Bryopharsos tritaleum* Quate, n.sp.
 Fig. 15 h-i

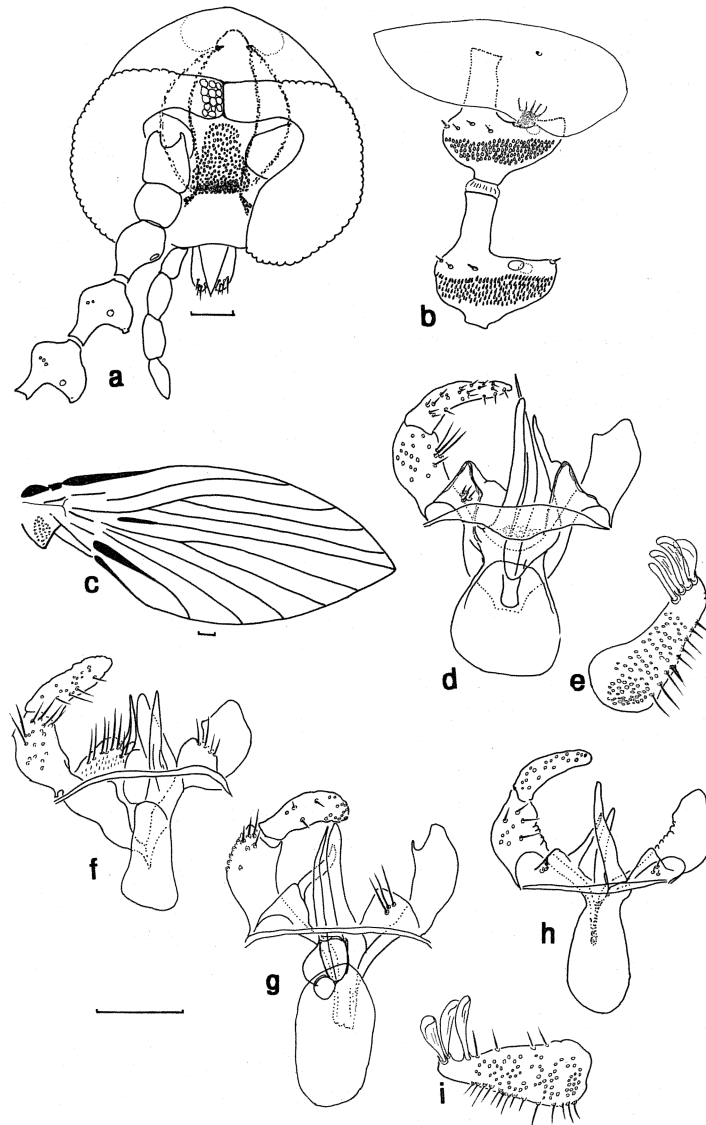


Fig. 15. a-e. *Bryopharsos papiculum*. a. head; b. flagellomeres 5,6; c. wing; d. ♂ gonopods and aedeagus, dorsal, right gonostylus not shown; e. ♂ surstylus. f. *B. claviformosum*, ♂ gonopods and aedeagus, dorsal, right gonostylus not shown. g. *B. clavigerum*, ♂ gonopods and aedeagus, dorsal, right gonostylus not shown. h-i. *B. tritaelum*. h. ♂ gonopods and aedeagus, dorsal, right gonostylus not shown; i. ♂ surstylus. Scale line = 0.1 mm.

Male. Same as *papiculum*, except eye bridges with 4 facet rows medially and 3 laterally; (ascoids absent but presumed same as *palpiculum*); medial fork incomplete; gonocoxal

apodeme fused on midline and extends forward on midline as narrow prolongation, with slender appendage on one side with acute apex little before apex of paramere, with 3 small setae on

both sides; gonostylus club-shaped or digitate with blunt apex; paramere tapered to blunt apex, shorter than distal part of aedeagus; surstylus with 3 tenacula, basal 1 separated from other 2.

Female. Unknown.

Measurements: (Antenna broken). Wing length 2.41 mm., width 1.16 mm.

Holotype ♂, COSTA RICA, Heredia, Estación La Selva, 1/VII/93 (INBio).

Etymology: 'tres' L, three; 'talea' L, rod, stick; referring to three tenacula of male surstylus.

Genus *Eugenys* Quate, new genus

Type species: *Eugenys clavellata* Quate, n.sp., by present designation.

Head subspherical; vertex small, height on midline about 2X width of eye bridge, with suture on midline from eye bridge to apex; frontal suture inverted Y-shaped, stem short, branches extend to tentoria, hair scars dense within branches. Antenna with scape and pedicel normal; 14 fusiform or ovoid flagellomeres, terminal very long, about 3X length of preceding; (ascoids lacking); flagellomeres 1-13 with pair of sensory rods in compact patch adjacent to port (presumed origin of ascoid); 14 with pair of ports near base, covered with teardrop-shaped hair sockets, but without patch of sensory rods, with slender apiculis. Mouthparts very small, atrophied.

Thorax without allurement organs; hair scars on central part of anepisternum posterior to anterior spiracle and on posterior part of latero-tergite. Wing broad, membrane with hair scars; Rs pectinate, radial and medial forks basad of wing center; R₅ ending in acute apex; CuA₂ ending well beyond medial fork.

Gonocoxal apodemes lacking, base of gonostylus fused to aedeagus; base of aedeagus linear. Surstylus with single tenaculum.

Etymology: 'eu' Gr, original, primitive; 'genys' Gr, jaw; referring to atrophied mouthparts; gender feminine.

Eugenys is very distinctive with its atrophied mouthparts, large, ovoid flagellomeres, short palpi, and wide eye bridge with three facet rows occupying much of the frontal area of the head so the vertex is small. The broad wings with pecti-

nate radial sector and basal radial and medial forks are similar to other genera of the Mormiini. Also, the male genitalia lacking a keel between the gonocoxal apodemes and aedeagus and the asymmetrical aedeagus are also similar to other Mormiini. This genus does differ from Duckhouse's definition (1991:976) in that a thoracic pore below the anterior spiracle was not observed and the male surstylus has a single tenaculum.

51. *Eugenys clavellata* Quate, n.sp.

Fig. 16 a-g

Large species with unmarked, asymmetrical wing.

Male. Vertex short, about equal to width of eye bridge on midline. Eye bridges contiguous, with only 3 facet rows, without spur on midline. tergite. Palpus extends to flagellomere 3 or 4, formula = 7:9:9:9.

Wing with radial fork little basad of medial, both basad of wing center; R₂₊₃ very short.

Gonostylus digitate, blunt, curved; gonocoxal apodeme extending posteriorly beyond apex of aedeagus, irregularly bilobed; base of aedeagus slender with yoke-like structure at end, distal part parallel-sided with blunt apex; paramere deltoid with crenate apex. Tergite 9 without pseudo-spiracular openings; tergite 10 small, rounded, dome-like; surstylus with 1 tenaculum.

Measurements: Antenna 2.57-2.71 mm. Wing length 2.84-3.37 mm., width 1.23-1.64 mm.

Female. Unknown.

Holotype ♂, COSTA RICA, Heredia, Estación Biol. La Selva, 1/VII/93 (INBio). Paratypes, 19 ♂, same but 12/II/93, 1/IV/93, 2/V/93, 1/VI/93, 1/VII/93 (INBio, USNM, LACM, MNH. BBM)

Etymology: 'claviger' L, club-bearing; referring to blunt, club-like gonostylus.

Genus *Brunettia* Annandale

Brunettia Annandale 1910:141; Quate 1955:188; 1967:108; Duckhouse 1966:187; 1978:337; 1991:977.

Type species: *Diplonema superestes* Annandale. By subsequent designation, Annandale, 1911:310.

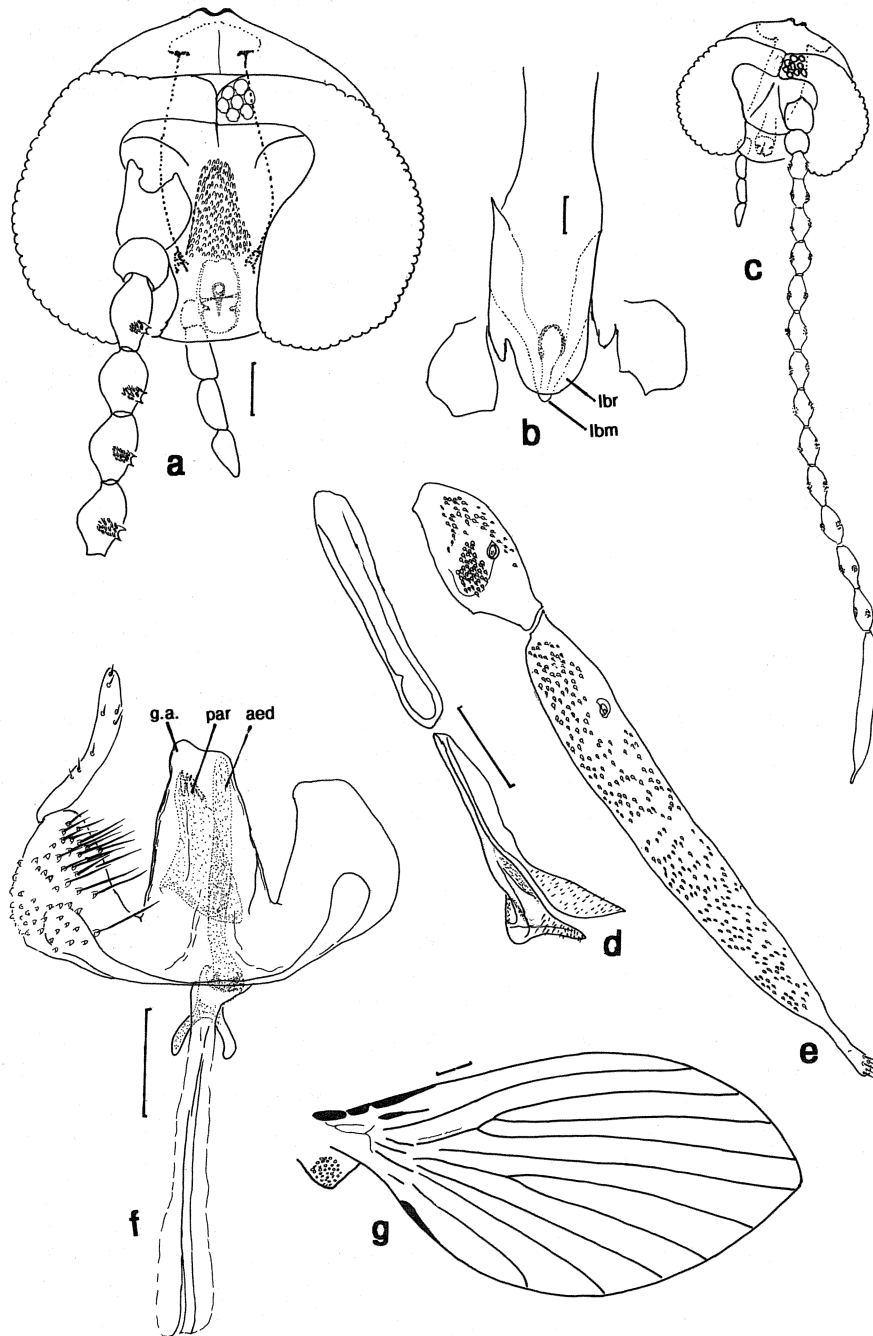


Fig. 16. *Eugenys clavellata*. a. head; b. mouthparts and palpomere 1; c. head; d. pharynx e. flagellomeres 13, 14; f. ♂ gonopods and aedeagus, dorsal, right gonostylus not shown; g. wing. 'lbr' =labrum, 'lbn' = labium, 'g.a.' = gonocoxal apodeme, 'par' = paramere; 'aed' =aedeagus. Scale line = 0.1 mm.

Eye bridges with 3 facet rows. Antenna with scape and pedicel normal; 13 or 14 nodiform flagellomeres, usually eccentric, terminal reduced; ascoids unidigitate. Palpus very long with short palpomere 1. Labellum bulbous, but not flattened apically, with large bristles.

Prothorax usually with allurement organs in ♂. Anepisternite with dense band of hair scars on center posterior to anterior spiracle, posterior part

bare, laterotergite with sparse group of scars. Wing with vestiture on membrane, often with scales; Rs pectinate; R₅ ending in apex; CuA₂ ending beyond medial fork.

♂ genitalia with paired parameres; surstylus with multiple, clavate or umbellate tenacula; tergite 9 with pair of foramen. ♀ genitalia with discrete apical lobes; setal sclerite lacking; spermatheca with hemispherical lobes.

KEY TO SPECIES OF *BRUNETTIA*

- 1 ♂ with eyes separated by about 1.5 facet diameters, apical shafts of aedeagus separated and curving inward at apex to meet on midline; ♀ with lobes of subgenital plate curving outward 52. *bistria*
 ♂ with eyes contiguous, apical shafts of aedeagus closely appressed; ♀ with lobes of subgenital plate parallel 53. *apiculata*

52. *Brunettia bistria* Quate, n.sp.

Fig. 17 a-e

Male. Antenna with scape about 2.5X pedicel; 14 nodiform flagellomeres, 13 without internode, 14 smaller than preceding and with small apiculis; pair of very long, unbranched ascoids on flagellomeres 1-13, curved into loop. Eye bridges separated by 1.5-2.5 facet diameters, interocular suture broadly V-shaped, with irregularity at apex. Hair patch on frons two rectangular patches and posterior band of 3 irregular rows extending to facet row 1. Palpus extends to flagellomere 7, formula = 5:21:23:24.

Thorax with allurement organ dorsad of anterior spiracle, organ globose, about 2X size of spiracle (holotype only with small lobe on lateral surface of main lobe). Wing with attenuate, acute apex, scales on basal 1/3; basal costal node enlarged and projecting anteriorly; Sc broad and indistinct, position indicated by hair scars, pair of clear lines along anterior and posterior margin; R₂₊₃ very short; CuA₂ indistinct, position indicated by broad, sparse band of scars.

Genitalia with aedeagus lacking basal extension, base at level of base of gonocoxite and attached by gonocoxite by slender apodeme, apex ending in forcep-like structure with shafts separated and curving inward to meet on midline; parameres stout, slightly curved, extend little beyond tip of aedeagus and gonocoxite.

Measurement: Antenna 1.52-1.60 mm. Wing length 2.17-2.34 mm., width 0.80-0.89 mm.

Female. Antennal flagellomeres smaller than ♂, palpus extending to flagellomere 11. Eyes separated by 4 facet diameters.

Wing without scales, more slender than ♂.

Subgenital plate setose on ventral surface, with internal flap at base of lobe angled; sides of apical lobes divergent. Spermatheca with band of tread-like marks along ventral rim of inner lobe, outer, membranous layer unmarked.

Measurements: Antenna 1.02-1.07 mm. Wing length 2.10-2.24 mm., width 0.60-0.63 mm.

Holotype ♂, allotype ♀, COSTA RICA, Heredia, Estación Biol. La Selva, 2/V/93 & 1/IV/93 (INBio). Paratypes, 12 ♂, 5 ♀, same but 12/II/93, 2/V/93, 1/VII/93, i/XII/93 (INBio, USNM, LACM, MNH, BBM, LWQ).

Etymology: 'bi' L, two, 'stria' L, furrow; referring to pair of lines flanking the Sc.

53. *Brunettia apiculata* Quate, n.sp.

Fig. 17 f-i

Male. Antenna with scape about 2X pedicel; (terminal flagellomeres lacking), pair of digitiform ascoids on flagellomeres 1-13. Eye bridges contiguous, tapered medially. Hair patch on frons two patches without posterior band. Palpus extends to flagellomere 7, formula = 4:20:20:24.

Thorax with allurement organ, a large, kidney-shaped, gibbosity covered with pits posterior to

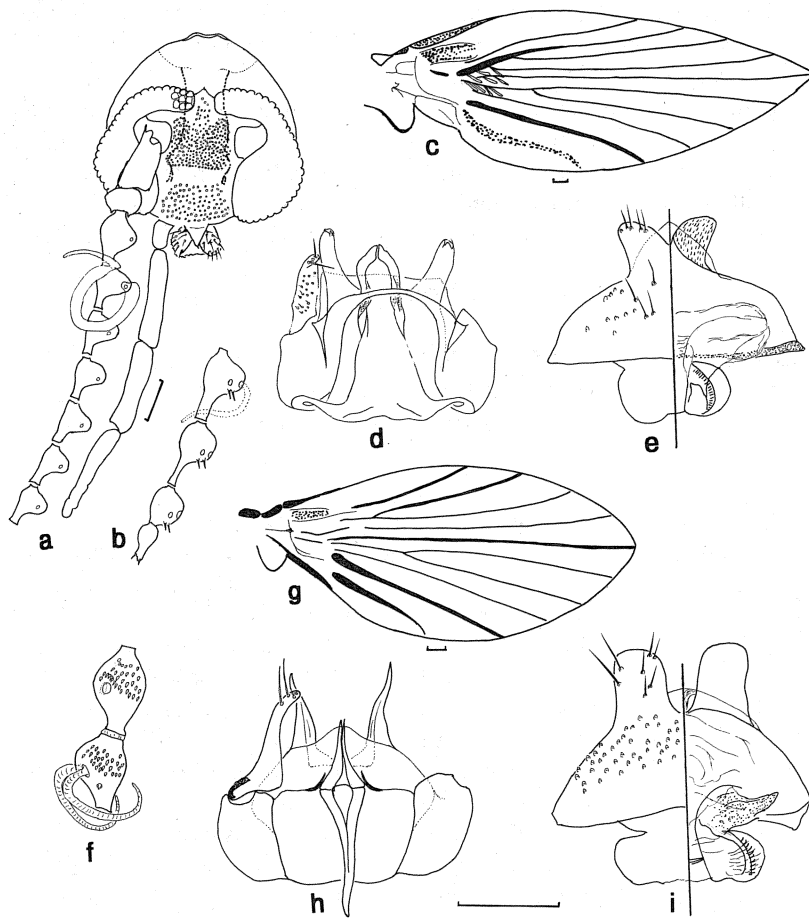


Fig. 17. a-e. *Brunettia bistris*. a. ♂ head; b. ♀ flagellomeres 11-14; c. ♂ wing; d. ♂ gonopods and aedeagus, dorsal, right gonostylus not shown; e. ♀ genitalia. f-i. *B. apiculata*. f. ♂ flagellomeres 5,6; g. ♂ wing; h. ♂ gonopods and aedeagus, dorsal, right gonostylus not shown; i. ♀ genitalia. Scale line = 0.1 mm.

anterior spiracle, 4-5X size of spiracle. Wing apex rounded, with few scales near base; basal costal node normal; R_1 , R_2 , R_3 and CuA_2 heavier than other veins; Sc broad and indistinct, position indicated by hair scars, clear lines along anterior and posterior margins; R_{2+3} about 1/5 length of R_2 .

Aedeagus with slender base, apical shafts small, slender, appressed together; parameres with wide base, tapering to acute, sinuous apex, extend little beyond tip of gonocoxite.

Measurement: Antenna 0.82-0.87 mm. Wing length 1.90-2.05 mm., width 0.82-0.87 mm.

Female. Antennal flagellomeres smaller than ♂, palpus extending to flagellomere 9. Eyes separated by 3-4 facet diameters, interocular suture with triangular opening in center and median spur.

Thorax without allurement organs.

Subgenital plate with internal flap at base of lobe straight across base of lobe; sides of apical lobes parallel. Spermatheca with band of tread-

like marks along ventral rim of inner lobe and finely wrinkled on outer, membranous layer.

Measurements: Antenna 0.80-0.84 mm. Wing length 1.90-2.12 mm., width 0.80-0.84 mm.

Holotype ♂, allotype ♀, COSTA RICA, Heredia, Estación Biol. La Selva, 22/VII/93 (INBio). Paratypes, 1 ♂, 10 ♀, same and 12/II/93 (INBio, USNM, LACM, MNH, BBM, LWQ).

Etymology: 'apiculatus' L, small pointed; referring to slender, apical shafts of the aedeagus.

Tribe PSYCHODINI

Psychodini Quate 1959:446; Duckhouse 1985:613.

This easily recognized tribe is distinguished by possessing 12-14 flagellomeres of which the first 11 are nodiform and those beyond 11 are reduced. The eye bridge usually has four facet rows. The radial and medial forks are central and almost always the radial is distad of the medial; R_5 ends in the acute apex. The male genitalia lack the keel between the gonocoxal apodemes and aedeagus; the aedeagus is either symmetrical or asymmetrical and usually comparatively simple; the surstylus usually has a single tenaculum, but there may be as many as seven.

Genus *Philosepedon* Eaton

Philosepedon Eaton 1904:47; Quate 1959:448

(biblio., illustr.); Vaillant 1972:107.

Type species: *Psychoda humeralis* Meigen (by original designation).

Head. Eye bridge usually with 4 facet rows, sometimes 3; interocular suture present, often with spur. Vertex on midline may be 2-3X width of eye bridge usually shorter than width of eye bridge. Occipital foramen with nearly straight sides. Labellum flattened, not bulbous, bearing large spines, but lacking teeth. Scape and pedicel unmodified; usually 14 flagellomeres, but occasionally 13; flagellomeres beyond 11 reduced, usually equal and separated, but occasionally fused. Ascoids Y-shaped.

Thorax. Pleuron with hair sockets on anepisternum and anepimeron, other sclerites bare.

♂ genitalia. Aedeagus symmetrical. Surstylus usually with 1 tenaculum, but may have up to 7.

♀ genitalia. Genital digit lacking; setal sclerite present; membranous plate of characteristic shape with pair of slightly sinuous, sclerotized ridges on either side of midline extending from base of hemispherical lobes to setal sclerite; inner face usually with division near center. Cercus short.

This genus has been divided into several genera (Vaillant, 1972) and probably is polyphyletic, but I prefer to retain my earlier definition (Quate, 1959) until we have a better understanding of the Neotropical species, which are numerous and diverse.

KEY TO SPECIES OF *PHILOSEPEDON*

- 1 Radial and medial forks on or nearly on same level; R_{2+3} with enlargement basad of radial fork; wing membrane with vestiture (or hair scars); eye bridges contiguous over 1-3 facet rows 2
Radial fork distad of medial; R_{2+3} without enlargement 3
- 2(1) ♂ surstylus with 2 tenacula; antenna with 13 flagellomeres 58. *parifurcus*
♂ surstylus with 4 tenacula; antenna with 14 flagellomeres 56. *tetartos*
- 3(1) Palpomere 4 much shorter than 3; eyes broadly contiguous across entire eye bridge; flagellomeres 12-14 equal and separated; ♂ surstylus with 3 tenacula; radial fork distad of medial 4
Palpomere 4 and 3 subequal; eye bridges separated or contiguous only over several facet rows . . . 9
- 4(3) Gonostylus ending in simple point 5
Gonostylus with 2 claw-like spines on apical projections 66. *bicalcaratus*

5(4) ♂ parameres paired, flanking aedeagus	6
♂ paramere a single lobe	7
6(5) Paramere membranous, inconspicuous, broad at base and tapering to acute, curved apex, extends to tip of aedeagus	67. <i>dimorphus</i>
Paramere sclerotized, short and curved	70. <i>tripetalis</i>
7(6) Apex of paramere rounded or bilobed	8
Apex of paramere concave	68. <i>tritenaculus</i>
8(7) Apex of paramere rounded	69. <i>deceptrix</i>
Apex of paramere bilobed	71. <i>majorinus</i>
9(3) Medial fork incomplete, M ₁ not attached to M ₂	10
Medial fork complete, M ₁ attached to M ₂	12
10(9) ♂ surstylus with more than 1 tenacula; ♂ tergite 9 without diagonal rods	11
♂ surstylus with 1 tenaculum; ♂ tergite 9 with diagonal rods extending from base of tergite center to apicolateral corners	64. <i>ancepsitis</i>
11(10) ♂ surstylus with 3 tenacula	65. <i>pollicaris</i>
♂ surstylus with 6 tenacula	57. <i>atopos</i>
12(9) Eye bridges with 4 facet rows	13
Eye bridges with 3 facet rows, separated by one facet diameter	54. <i>tritaxis</i>
13(12) Node of flagellomere 1 similar to following	14
Node of flagellomere 1 much larger than following, very long, spindle-shaped; flagellomeres 11 and 12 fused	55. <i>pandiculatus</i>
14(13) Terminal 3 flagellomeres distinctly separated and subequal in size; palpomere 4 much shorter than 3	15
2 of terminal 3 flagellomeres fused	16
15(14) Aedeagus of normal size, does extend beyond tip of gonostylus; hair scars on frons extend to facet row 1	59. <i>longistylus</i>
Aedeagus very long, extends far beyond tip of gonostylus; hair scars on frons extend only to facet row 3	60. <i>ensiger</i>
16(14) Hair scars on frons extend to upper eye margin; ♂ paramere large, extends beyond apex of aedeagus	17
Hair scars on frons extend only to facet row 3; ♂ paramere small, extends only to center of distal part of aedeagus	62. <i>bicuspis</i>
17(16) ♂ gonostylus ending in sharp curve	63. <i>hamatus</i>
♂ gonostylus straight	61. <i>retusus</i>

54. *Philosepedon tritaxis* Quate, n.sp.

Fig. 18 a-b

Male. Antenna with 14 flagellomeres, 1 with node pyriform, others bulbous, terminal 3 subequal in size, clearly separated; ascoids Y-

shaped, anterior branches wide. Eye bridge with only 3 facet rows; eyes separated by about 1 facet diameter; interocular suture without median spur. Hair patch on frons extends in irregular row to facet row 1. Palpus extends to flagellomere 4, formula = 25:55:68:68.

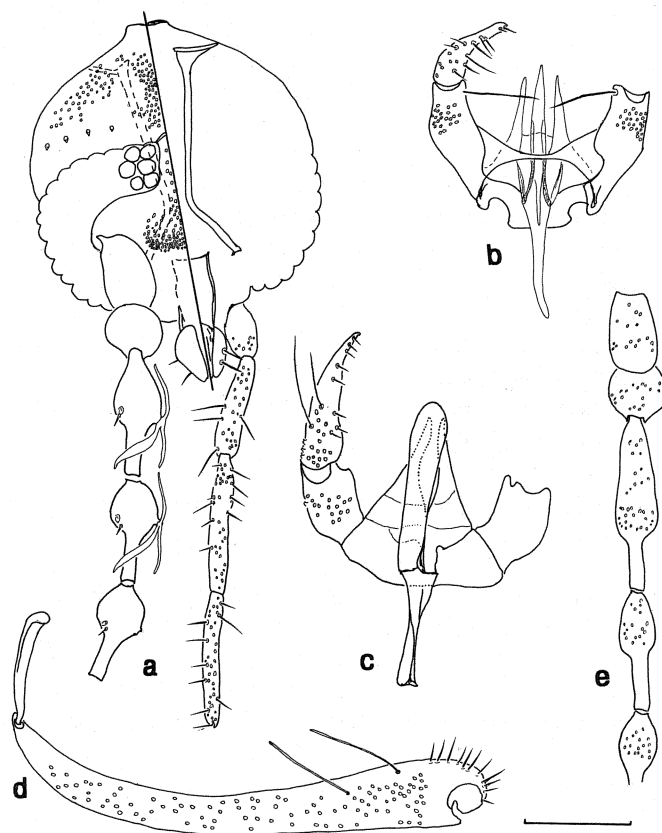


Fig. 18. a-b. *Philosepedon tritaxis*. a. head; b. ♂ gonopods and aedeagus, dorsal, right gonostylus not shown. c-e. *P. pandiculatus*. c. ♂ gonopods and aedeagus, dorsal, right gonostylus not shown; d. ♂ surstylus; e. scape, pedicel, flagellomeres 1-3. Scale line = 0.1 mm.

Wing with medial fork incomplete, clearly basad of radial; R_{2+3} 1.07X R_2 .

Gonocoxites contiguous dorsally, apodemes broadly fused; parameres straight, slender, extend

nearly to apex of aedeagus. Surstylus short and stocky, with 2 tenacula.

Measurements: Antenna 1.46 mm. Wing length 2.02 mm., width 0.77 mm.