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Chironomidae collected in Onchocerciasis endemic areas of Guatemala

(Insecta, Diptera)

By **James E. Sublette & Manabu Sasa**

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Fifty-three species of chironomid midges which were previously unknown from Guatemala are recorded. *Chironomus gualtemalticus* Cockerell is designated as a nomen dubium. Thirty-four new species are described: *Larsia fittkaui, Larsia reissi, Paramerina fasciata, Pentaneura vittaria, Corynoneura ferelobatus, C. hirvenojai, Cricotopus lavaderos, Cricotopus rincon, Limnophyes guatemalensis, Limnophyes mariae, Metriocnemus costatus, Metriocnemus lautus, Metriocnemus virgatus, Thienemaniella medialis, Chironomus wuelkeri, Chironomus jonmartini, Chironomus rincon, Einfeldia atitlanensis, Endotribelos albatum, Endotribelos grodhausi, Polypedilum microzoster, Polypedilum corniger, Polypedilum clavistylus, Polypedilum epomis, Polypedilum luteopedis, Polypedilum obelos, Xestochironomus ankylis, Micropsectra atitlanensis, Rheotanytarsus hamatus, Caladomyia pistra, Tanytarsus capitatus, Tanytarsus guatemalensis, Tanytarsus hastatus*, and *Tanytarsus pandus*. *Hudsonimyia* Roback, 1979 is here considered a subgenus of *Pentaneura* (status novum). Thus, two new combinations are given: *Pentaneura karelena* (Roback) and *Pentaneura parrishi* (Caldwell & Soponis). *Pentaneura inyoensis* now has a new status as a member of the subgenus. *Thienemanniella sanctivincenta* Saether, 1981 is listed as a junior synonym of *Thienemanniella spreta* (Roback, 1962). *Cladopelma forcipis* (Rempel, 1939) is a new combination with *Chironomus* (*Cryptochironomus*) *boydi* Beck, 1962 as a junior synonym. *Cricotopus remus* (Sublette, 1964) is given as a junior synonym of *Cricotopus sylvestris* (F.).

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Introduction

From January to the end of March 1981, M. Sasa was a member of the Japanese Mission for Technical Cooperation in the Onchocerciasis Control Studies in Guatemala (Project leaders: Dr. T. Suzuki, Japan International Cooperation Agency and Dr. H. A. Godoy, Director, Servicio Nacional de Eradication de Malaria (SNEM), Government of Guatemala). During this time chironomids were collected by him mainly in the onchocerciasis endemic areas within the volcanic zone of Escuintla, at altitudes from 800 to 1200 m.

Two methods of collection were employed: 1. larvae in bottom sediments from various lotic and lentic water bodies were brought into the laboratory and mass reared in plastic containers; and 2. adults were collected by aerial sweep net from vegetation adjacent to water bodies. Most of the stream-dwelling chironomids were taken from the small mountain streams along with *Simulium ochraceum* Walker, the principal vector of filariae for onchocerciasis.

Bottom materials containing chironomid larvae were collected in plastic bags and transported to the SNEM laboratory. The larvae were reared to maturity in 30 × 15 cm nylon screen-covered plastic containers

in which constant air bubble agitation was maintained. Emerging adults were aspirated from the container and exuviae of immature stages associated, where possible. Some individual rearings of fourth instar larvae or pupae were also made.

Most of the adult material was preserved with paradichlorobenzene and stored dry in plastic boxes. Subsequently, individual midges were isolated, the wings removed with fine forceps, and dry mounted under 18 x 6 mm coverglass strips using a spot of fingernail polish as corner adhesives. The body was macerated for a few minutes in hot 10 per cent KOH, washed in distilled water, dissected in a drop of gum arabic-chloral on the same slide as the wings, and a coverglass added. In many instances multiple dissections were made on a single slide.

The following water bodies were surveyed: 1. small stream at Lavaderos; 2. small stream in Barretal; 3. small stream in Guachipilan; 4. concrete watering tank for cattle in Medio Monte; 5. small stream waterfall in Medio Monte; 6. small streams in Rincon; 7. small stream heavily polluted by coffee seed fermentation pond in Rincon; 8. shore of Lake Amatitlan; 9. aquatic plants in Lake Amatitlan; 10. shore of Lake Atitlan; 11. Santiago Atitlan; 12. Medio Monte; and 13. Rincon.

The morphological terminology employed is based on Saether (1980). However, we use the temporal setae as a single entity representing the postorbital setae plus the outer vertical setae. If the frontal setae are continuous with the temporal they are also included. While the palpi of adult chironomids are normally five-segmented, the basal palpomere is weakly chitinized and frequently partially collapsed; therefore, the measurements presented are of the apical four palpomeres. On the pupal wing sheaths the "perlen" (pearls) and "nasen" (nose) are termed bacatiform papillae and nasiform tubercles, respectively.

In the descriptions which follow, each mensurable or meristic feature of the holotype is given first followed by the range and number of specimens upon which the range is based in parenthesis which were taken from the paratype series. If only the values are given in parenthesis, then the character was lacking or obscured in the holotype.

Type specimens are retained in the collection of M. Sasa. Duplicate paratypes, where available, are deposited in the collection of J. E. Sublette.

Utilizing temporary water mounts, drawings of thoracic horns of selected pupae were made by M. Sasa. The pupae subsequently were mounted in gum arabic-chloral.

Subfamily Tanypodinae

Alotanypus venustus (Coquillett)

Tanypus venustus Coquillett, 1902: 91, ♂.

Alotanypus venustus (Coquillett); Roback 1971: 96, review, ♂, ♀; Fittkau & Roback 1983: 163, generic position, redescription of larva; generic comparison; Fittkau & Murray 1986: 68, redescription of pupa; generic comparison.

Macropelopia (*Alotanypus*) *venusta* (Coquillett); Roback 1978: 163, generic position, redescription of pupa, description of larva.

The genus *Alotanypus* can be recognized in the adult stage by the absence of a mesonotal tubercle and postnotal setae, and the presence of elongate tibial spurs, a weak P1 Ti comb, and a setose ninth tergum. The genitalia lack basal appendages on the gonocoxites and have moderately short, stout gonostyli; the phallopodeme has both a proximal and distal element (Roback 1971, in part).

Alotanypus venustus has a distinctive wing pattern (Roback 1971, Fig. 168).

Material examined: **Rincon**, coffee pond, no. A-21 1♂, no. V-22, 1♀, no. V-25, 5 pupal exuviae, (on same slide with 2 pupae, *Chironomus* sp.), no. V-26, 1 pupal exuviae, (on same slide with 2 fragmentary pupa, *Endotribelos* sp.), no. V-27, 1 pupal exuviae, 2 larval exuviae, no. V-29, 2 larvae; small stream, no. V-28, 2 larvae, (on same slide with 1 larval exuviae, 1 pupal fragment, *Endotribelos* sp.; 1 larva, *Dicrotendipes* sp.), no. V-30, 1 larva, (on same slide with 1 larva, 1 pupal fragment *Endotribelos* sp.; 1 larval *Parametriocnemus lundbecki*), 3.-9.II.81.

Distribution: Western U.S.A., Guatemala.

Larsia fittkaui, spec. nov.

Holotype ♂. Colouration. Mesonotal vittae brownish with the anterior and posterior apices somewhat darker; scutellum and postnotum also dark; legs pale; abdominal terga III-VII each with a narrow dark brown fascia which is slightly interrupted on the midline of III-V; fasciae on VI and VII broader than preceding.

Head. Antennal ratio 1.59 (1.56, 1.69: 2). Palpal proportions 90:150:177:267 µm. Clypeal setae (obscured on holotype). Temporal setae 17 (13, 20; 2) in a single row.

Thorax. Mesoscutal tubercle distinct. Setae: Antepronotals 2; dorsocentrals mostly in 2 rows 38 (38, 48; 2), of which 14 (23, 18; 2) are humerals; acrostichals 29 (32, 33; 2), mostly in 2 rows; prealars 15 (14; 2); supra-alar 1; posterior scutellars 13 (14, 15; 2), coarse, and 13 (9, 15; 2) setae in an anterior, staggered series.

Wing. Membrane with macrotrichia on entire surface; crossvein infuscate. Costa extended 45 µm (62, 66; 2) beyond R_{4+5}. Arculus to m-cu/m-cu to wing tip, 0.44. Wing length 1.46 mm (1.47, 1.61; 2). Squama with 25 (21; 2) marginal setae. Venarum ratio 0.88 (0.90; 2).

Legs. Tibial spur teeth: PI 12 (11, 12; 2); PII 10/12 (12/11, 10/11; 2); PIII 10/11 (9/9, 8/9; 2), comb of 4 (4;2) setae. Leg ratios: PI 0.80 (0.86, 0.95; 2); PII 0.73 (0.75, 0.77; 2); PIII 0.75 (0.75, 0.80; 2). PI BR 3.9. Sensilla chaetica lacking.

Abdomen. Genitalia, Fig. 1. Ninth tergum with 12 setae. Gc/Gs ratio 1.22 (1.13, 1.15; 2). Phallopodeme much longer and heavier than in *L. reissi*.

Diagnosis. This species with its darkened crossveins appears to be nearest to the Nearctic *Larsia planensis* (Joh.) but differs in having significantly different PII and PIII tibial spurs (*L. fittkaui*, 8-12 teeth; *L. planensis*, 4-7).

Allotype female. Colouration: Similar to male but greatly faded in the slide preparation; infuscation on r-m evident but faint.

Head. Antenna with 11 flagellomeres; proportions 140:94:101:125:117:125:125:133:133:133:275 µm; nipple-shaped apex of terminal flagellomere with a long seta. Scapus with 6 setae; pedicel with 8. Palpal proportions 195:367:390:445 µm; third palpomere with 10 straight to moderately curved sensilla clavata which are more concentrated near the apex but with a few extending almost to the base; each is parallel-sided with an abrupt, sharp tip. Dorsal extension of eye almost parallel-sided, 5 facets wide near apex. Ocular ratio 0.12. Clypeus tapered towards the apex; with 24 setae. Temporal setae 11, in a single row.

Thorax. Mesoscutum tubercle weak but with slightly longer microtrichia. Setae: Lateral antepronotals 3; 63 dorsocentrals mostly in a double row, 7 form a prescutellar clump and 20 a humeral group; acrostichals 29, in 2 rows; prealars 20; supra-alar 1; posterior scutellars 12, coarse, and with 17 fine setae strewn on anterior surface.

Wing. Membrane with macrotrichia on the entire surface. Costa extended 70 µm beyond R_{4+5}. Venarum ratio 0.89. Wing length 1.45 mm. Squama with 21 marginal setae.

Legs. Sensilla chaetica of PII and PIII lacking. Pulvilli minute. Teeth of tibial spurs: PI 10; PII 9/9; PIII 8/7, comb with 5 setae. Leg ratios: PI 0.75; PII 0.67; PIII 0.71.

Abdomen. Genitalia distorted in slide mounting but apparently not strongly dissimilar to other members of the genus; the dorsomesial lobe of gonapophysis VIII is shorter and blunter than in *Larsia canadensis* Bilyj (1984, Fig. 35).

Pupa. Total length: 3.72 mm. Cephalothorax and abdomen entirely dark brown. Terga I-V with a darkened rounded spot at each posterolateral corner.

Thoracic horn, Fig. 2, plastron occupying more than one-half of corona; basal half of horn with inconspicuous prickles; respiratory atrium deeply sacculate. Thoracic comb and basal lobe similar to other species of *Larsia*.

Tergum I, Fig. 3, shagreen in the form of minute spinulae scattered over entire tergum on all segments, not arranged in rows as in other species of the genus. Tergum IV chaetotaxy, Fig. 4. Tergum VII anal lobe, Fig. 5.

Material examined. Holotype: ♂, **Barretal,** no. 316k, 16.III.1981. - Allotype: ♀, **Barretal** no. 314c, 14.III.81. - Paratypes: **Barretal**, no. 305l, 1♂, 1 pupal exuviae, no. 315b; 1 pupal exuviae, (on same slide with 3 pupal exuviae, *Cricotopus* sp. and 1 larval exuviae, *Metriocnemus costatus*, spec. nov.); no. 316h, 1♂, no. 318a, 1♀, 2 pupal exuviae, (on same slide with 1♀, 1 pupal exuviae, *Pentaneura vittaria*, spec. nov.); no. 322a, 1♀, 3.-18.III.1981.

We are pleased to dedicate this new species to E. J. Fittkau, Zoologische Staatssammlung, Munich, who has contributed much to our knowledge of Neotropical Chironomidae and to the Tanypodinae in general.

Larsia reissi, spec. nov.

Holotype male. Colouration: Yellowish with the thoracic vittae, postnotum, and preepisternal venter brownish. Abdomen and legs pale. Genitalia slightly darker, especially the gonostyli.

Head. Antennal ratio 1.37 (1.21-1.25; 3); pedicel with 4 setae. Palpal proportions 87:155:170:214 µm. Dorsal extension of eye long and almost parallel-sided, slightly widened to 5 facets near apex. Clypeus with 22 (17, 20; 2) setae. Temporal setae 16 (14, 16; 2), in a single row.

Thorax. Mesoscutum with a conspicuous median tubercle. Setae: Lateral antepronotals 5 (3; 1), dorsal to setae is a small tubercle with fine microtrichia; dorsocentrals 29 (20-35; 3), in a single to double row, humeral expansion with 5 (7-11; 3) setae; acrostichals 34 (20-29; 3), in mostly 2 rows; prealars 15 (5-10; 3); supra-alars 1; scutellars 12 (8-13: 3), coarse, in a straight posterior row and with 7 (7-8; 3) finer setae in an anterior, slightly staggered row.

Wing. Membrane with macrotrichia on entire surface; r-m crossvein not infuscate. Costa extended 70 µm (55-78; 3) beyond R_{4+5}. Arc to m-cu/m-cu to wing tip, 0.5. R_{4+5} ends proximal to M_{1+2} at 0.22 of the distance between the apex of M_{3+4} and M_{1+2}. Venarum ratio 0.94 (0.90-0.94; 3). Wing length 1.69 mm (1.42-1.47; 3); squama with 18 (12-16; 3) marginal setae.

Legs. Tibial spur teeth: PI, 10 (11-12; 3); PII, 6/7 (6-7/7; 3); PIII, 8/7 (7-8/5-6; 3); comb of 3 (3-5; 3) setae. Pulvilli absent, small basal spine on each claw (paratype). Leg ratios: PI, - (0.81-0.83; 3); PII, 0.78 (0.77-0.82; 3); PIII, (0.73-0.77; 3).

Abdomen. Genitalia, Fig. 6. Ninth tergum with 2 setae. Gc/Gs ratio 1.33 (1.21-1.41; 3).

Diagnosis. *Larsia reissi* most closely resembles *Larsia decolorata* (Malloch), but can be differentiated by having a lower antennal ratio, smaller size, and more sparsely setose ninth tergum.

Allotype female. Head: Antennal proportions, 59:43:46:50:50:53:53:53:50:53:93 µm. Scape with 5 setae and pedicel with 10; terminal flagellomere ovoid with a nipple-like tip. Antennal ratio 0.18. Palpal proportions 78:133:156:211 µm; third palpomere with a single parallel-sided, blunt sensillum capitatum. Dorsal extension of eye long and almost parallel-sided, 4 facets wide at the base of the dorsal extension and 5 facets wide near the apex. Clypeus with 28 setae. Temporal setae 14, in a single row.

Thorax. Mesoscutum tubercle covered with dense, fine microtrichia. Setae: Lateral antepronotals 5; dorsocentrals 38, mostly in 2 rows, of which anteriorly there are 19 humerals; acrostichals 27, in 2 rows; prealars 16; supra-alar 1; scutellars 12, in a straight posterior series and 9 strewn on anterior face.

Wing. Membrane with macrotrichia on the entire surface. Costa extended 62 µm beyond R_{4+5}, ending about midway between the apex of M_{3+4} and M_{1+2}. Venarum ratio 0.96. Wing length 1.37 mm. Squama with 19 marginal setae.

Legs. Sensilla chaetica not evident. PI spur with 14 teeth; PII spurs with 9/7 teeth; PIII spurs with 9/7 teeth, comb with 5 setae. Leg ratios: PI 0.77; PII 0.69; PIII 0.70.

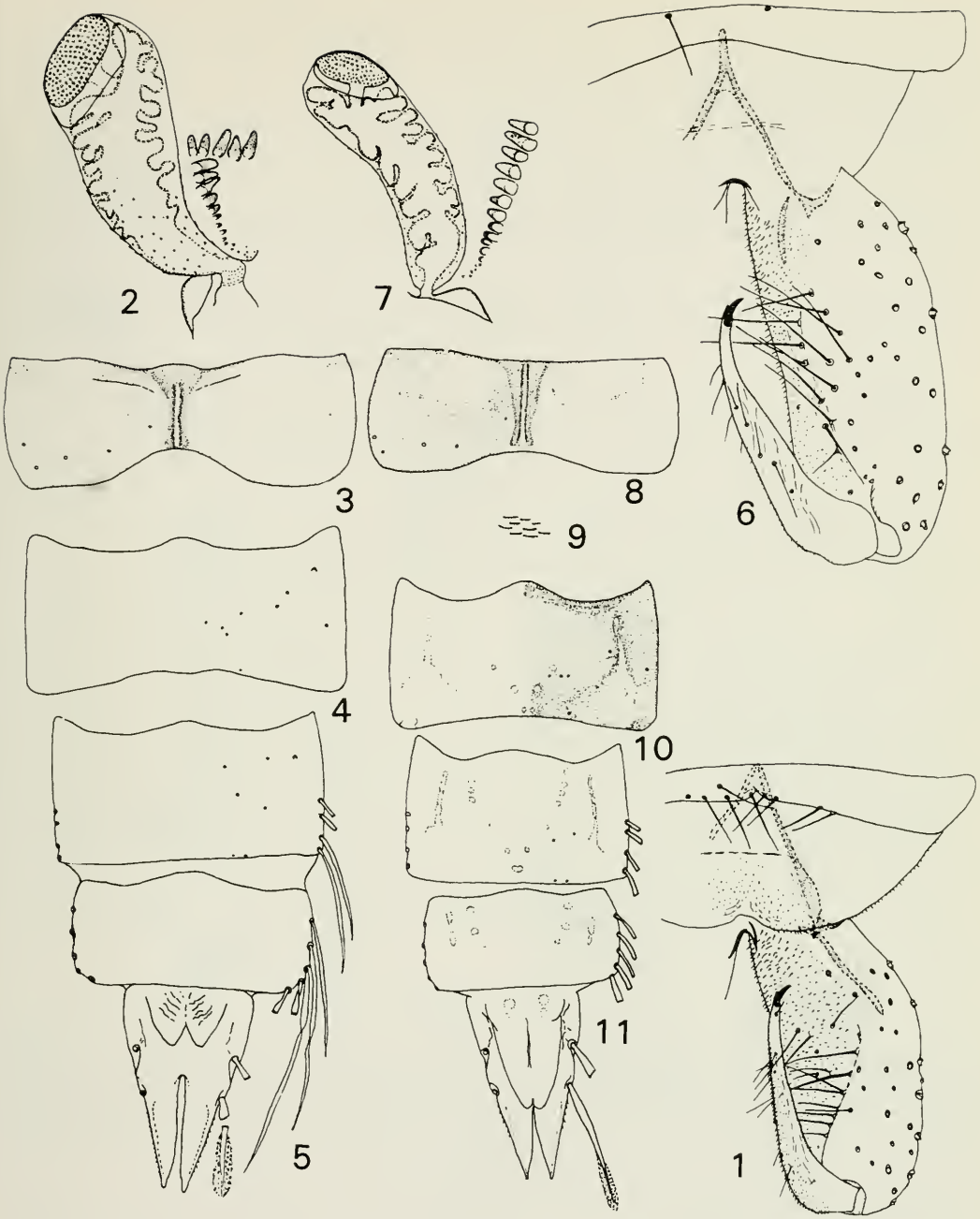
Abdomen. Genitalia distorted in slide mounting.

Pupa (exuviae). Total length 3.32 mm. Cephalothorax and abdomen mostly dark brown but with distinctive, paler posterolateral markings on the abdominal terga; terga IV-VII with a complete V-shaped series of pale muscle scars (cf. Fig. 11); on I-III and VIII the V-shaped marking is incomplete (not closed behind).

Thoracic horn and thoracic comb, Fig. 7; tergum I scar, Fig. 8; shagreen, Fig. 9; tergum IV, Fig. 10; terga VII-VIII and swim fin, Fig. 11.

Material examined. Holotype: ♂, **Rincon**, no. 313h, 25.II.81. - Allotype: ♀, **Barretal**, no. 323b, 23.III.81 (Paratype on same slide). - Paratypes: **Barretal** no. 324c, 1♂, 1♀; 324d, 1♂, 1♀; no. 312i, 1♂; no. 316g, 1 pupal exuviae; no. 311f, 1 pupal exuviae; no. 321a, 2 pupal exuviae (also *Polypedilum* pupal ♀); no. 321a, 1♀; no. 324b, 1♂, 3 pupal exuviae; no. 317c, ♂, pupal exuviae (on same slide with paratype *Pentaneura vittaria*), 25.II.-24.III.1981.

We are pleased to dedicate this species to Dr. Friedrich Reiss, Zoologische Staatssammlung, Munich, in honor of his many contributions to the study of the Neotropical Chironomidae.



Figs 1-5. *Larsia fittkaui*, spec. nov. 1. Genitalia, holotype ♂. 2. Thoracic horn, pupa. 3. Tergum I, pupa. 4. Tergum IV, chaetotaxy, pupa. 5. Tergum VII - anal lobe.
Figs 6-11. *Larsia reissi*, spec. nov. 6. Genitalia, holotype ♂. 7. Thoracic horn and thoracic comb, pupa. 8. Tergum I, pupa. 9. Shagreen, pupa. 10. Tergum IV, showing posterolateral markings, pupa. 11. Tergum VII - anal lobe, pupa.

Key to the Nearctic and Central American *Larsia*

1. Abdomen pale or with very faint infuscations on the tergal bases; r-m crossvein pale ..... 2.
– Abdomen distinctly fasciate; r-m pale or infuscate ..... 5.

2. PI leg ratio 0.73 or less; teeth of foretibial spur 13; second palpomere with two strong apical setae .... *L. berneri* Beck & Beck
– PI leg ratio 0.74 or greater; teeth of foretibial spur 12 or less; apex of second palpomere without strong setae ..... 3.

3. PII leg ratio 0.70 or less; PIII leg ratio 0.72 or less; PI Ti spur teeth 8; ninth tergal setae lacking .... *L. canadense* Bilyj
– PII leg ratio 0.73 or greater; PIII leg ratio 0.75 or greater; PI Ti spur teeth 10 or more; ninth tergal setae present ..... 4.

4. Antennal ratio 1.23-1.25; wing length 1.42-1.45 mm; ninth tergum with two setae .... *L. reissi*, spec. nov.
– Antennal ratio 1.4-1.69; wing length 1.5-1.9 mm; ninth tergum with 5-6 setae ..... *L. decolorata* (Mall.)

5. Antennal ratio 2.0; phallopodeme weak; ninth tergal setae lacking; crossveins pale .... *L. sequoiaensis* (Sub.)
– Antennal ratio 1.88 or less; phallopodeme weak or strong; ninth tergal setae strong, crossveins infuscate or pale ..... 6.

6. Crossveins infuscate; phallopodeme strong ..... 7.
– Crossveins pale; phallopodeme weak or strong ..... 8.

7. Teeth on PII and PIII Ti spurs 8-11 ..... *L. fittkaui*, spec. nov.
– Teeth on PII and PIII spurs 4-7 ..... *L. planensis* (Joh.)

8. Phallopodeme strong; ninth tergal setae 11; PI leg ratio 0.74 ..... *L. lyra* (Sub.)
– Phallopodeme weak; ninth tergal setae 3; PI leg ratio 0.63-0.64 ..... *L. marginella* (Mall.)

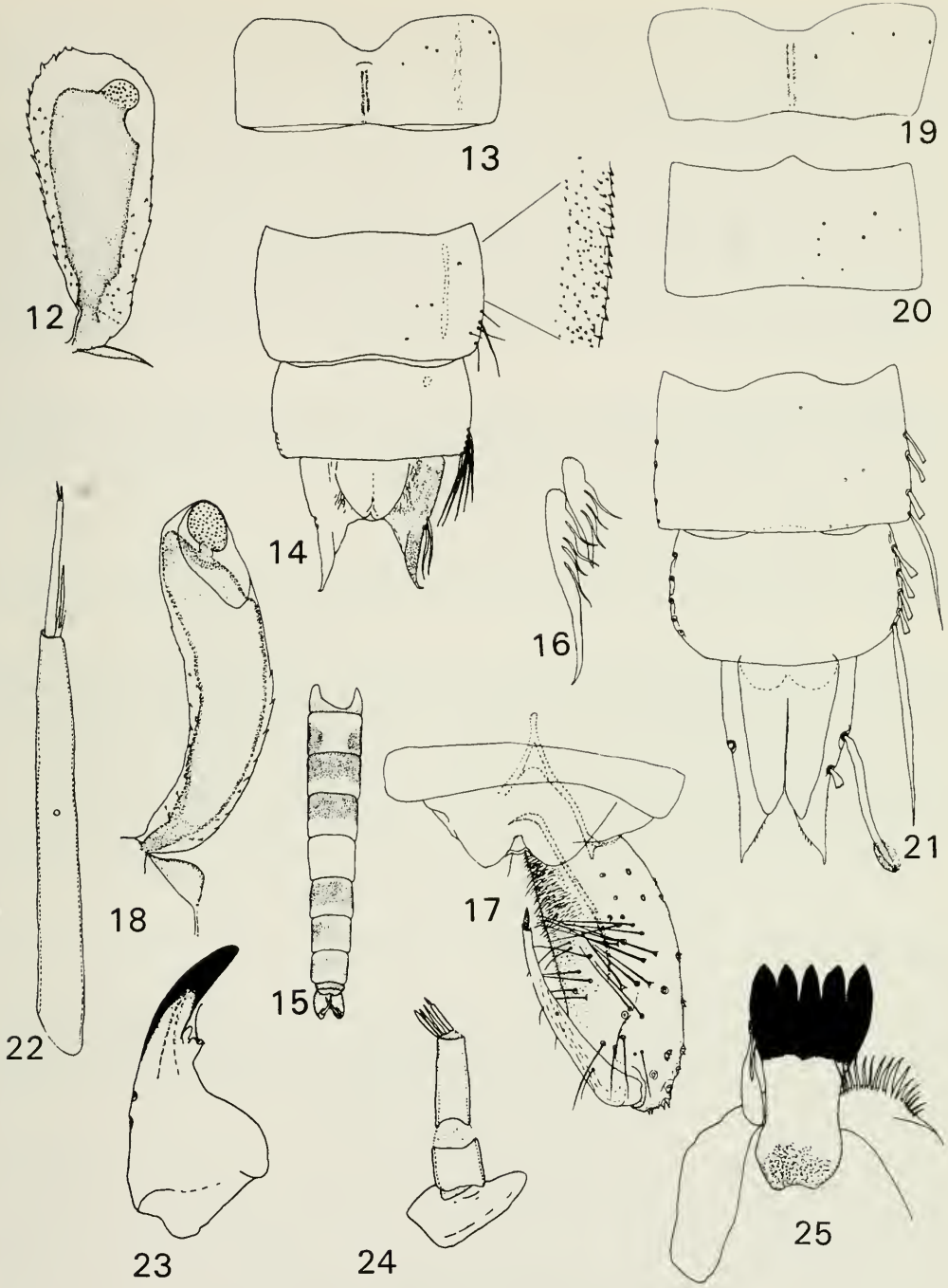
Meropelopia spec.

A single pupal exuviae taken in a stream at Guachipilan appears to be referable to this genus. The thoracic horn, Fig. 12, is similar to that illustrated as *Meropelopia flavifrons* var. Roback (Fittkau & Murray 1986, Fig. 5, 24B) except that the horn is broader with the nonsacculate respiratory atrium much broader. All terga, anal lobes, and genital sacs are covered with coarse shagreen which consists of simple points. Tergum 1, Fig. 13. The lateral margin of segment VII has 4 fine lateral setae, Fig. 14.

Material examined: **Guachipilan**, no. II-33, 1 pupal exuviae, (on same slide with 1♀, 1 pupal exuviae, *Parametriocnemus lundbecki*), 26.III.81.

Paramerina fasciata, spec. nov.

Holotype male. Colouration: Head and thoracic vittae pale brown; at posterior apex of lateral vittae are darker brown, medially, inturned markings; posterior apex of median vitta with a narrow brown stripe separated on the median by a narrow white line which extends to the scutellum. Scutellum pale brown.



Figs 12-14. *Meropelopia* spec. 12. Thoracic horn, pupa. 13. Tergum l, pupa. 14. Segments VII - anal lobe. Figs 15-25. *Paramerina fasciata*, spec. nov. 15. Abdominal colouration, ♂. 16. Tibial spurs of PII, ♂. 17. Genitalia, holotype ♂. 18. Thoracic horn, pupa. 19. Tergum l, pupa. 20. Tergum IV. 21. Tergum VII - anal lobe, pupa. 22. Antenna, larva. 23. Mandible, larva. 24. Maxillary palpus, larva. 25. Ligula, pecten, hypopharyngis, paraligula, larva.

Postnotum and small spot on the pleura dark brown. Legs light brown. Abdomen with dark vittae, Fig. 15.

Head. Antennal ratio 1.52 (1.44; 1). Palpal proportions 55:187:250:257 µm. Dorsal extension of eye long and parallel, 5 facets wide near apex. Ocular ratio 0.16. Clypeus longer than wide, with 21 (20; 1) setae. Temporal setae 14 (16; 1), in a single row.

Thorax. Setae: Dorsocentrals 30 (32; 1), in one staggered row, posterior apex of row expanded into a clump of 4 setae, anteriorly with a clump of 9 humerals; acrostichals 37 (34; 1), in 2 rows; prealars 17 (12;1); supra-alar 1 (1; 1); coarse posterior scutellars 10 (10; 1) in a straight row and anteriorly 15 (13; 1) smaller, strewn setae.

Wing. Membrane with macrotrichia on the entire surface. Costa extended 47 µm beyond R_{4+5}. Wing length 1.82 mm. Venarum ratio 0.94. Squama with 28 (28; 1) marginal setae.

Legs. Pulvilli minute. Claws sharp. PI and II tarsi missing; PIII leg ratio 0.71 (only one set of tarsi are on the slide; by their position it is assumed that they are of the hind leg). PI spur 44 µm; 3 side teeth; PII spurs 64, 38 µm (Fig. 16); PIII spurs 80, 40 µm, similar to PII but with 3 side teeth on each spur, tibial comb of 8 setae.

Abdomen. Genitalia, Fig. 17.

Diagnosis. *Paramerina fasciata*, spec. nov. resembles the Nearctic *Paramerina fragilis* (Walley) and *Paramerina anomala* (Beck & Beck) in having pale tergal patterns. However, the banding patterns are different. In *Paramerina fasciata*, terga I and II are largely pale with lateral infuscations and tergum V entirely pale. *Paramerina fragilis* has terga II and V pale, and in *P. anomala* terga II, V, and VII are pale. Also, *P. fragilis* has a distinctive wing pattern which *P. fasciata* lacks.

Pupa. Total length, female 4.03, 4.38 mm (2).

Thoracic horn, Fig. 18. Tergum I, Fig. 19. Terga devoid of shagreen but sterna II-VIII and anal lobe with fine shagreen consisting mostly of isolated spinulae. Terga IV, Fig. 20. Terga VII-VIII and swim fin, Fig. 21.

Larva (only head capsule retained). Ventral head length 0.47 mm. Head pale yellow except for narrow occiput, tips of mandibles and apex of ligula. Antenna, Fig. 22; length 328 mm. Mandible, Fig. 23; length 97 µm. Maxillary palpus two-segmented, Fig. 24; palpifer roughly teardrop-shaped. Ligula, pecten, hypophyngis and paraligula, Fig. 25.

Holotype: ♂, **Barretal**, small stream, no. 316d, 18.III.81. - Paratypes: **Barretal**, no. 316b, ♂, pupal exuviae; no. 316h, 3 pupal exuviae; no. 312a, ♀, pupal and larval exuviae; no. 316m, ♀, 16.-21.III.1981.

Pentaneura (Hudsonimyia) Roback, new status, emended

Hudsonimyia Roback, 1979: 1; type species, *Hudsonimyia karelena* Roback, by original designation; Caldwell & Soponis 1982: 512; emendation.

In the adult stage, the subgenus *Hudsonimyia* is characterized by the presence of only one comb-like spur with 3-6 teeth on the PIII Ti and by a weakly to moderately developed comb which bears 0-6 setae. The genitalia have a short, ovoid gonocoxites, each with a basimedial patch of microtrichia which are coarser than those in the subgenus *Pentaneura* (s.s.). In *Hudsonimyia* the megaseta of the gonostylus is shorter (7-10 µm) and paler brown; in *Pentaneura* (s.s) it is longer (14-17 µm) and blackish.

Included species: *Pentaneura* (*Hudsonimyia*) *karelena* (Roback), comb. nov.; *Pentaneura* (*Hudsonimyia*) *parrishi* (Caldwell & Soponis), comb. nov.; *Pentaneura* (*Hudsonimyia*) *inyoensis* Sublette, stat. nov.; and *Pentaneura* (*Hudsonimyia*) *vittaria*, spec. nov., described below.

Pentaneura (Hudsonimyia) vittaria, spec. nov.

Holotype male. Colouration: Head and thorax brown to dark brown; antennal pedicels, apex of antepronotum, mesonotal vittae, postnotum, pleural areas, and preepisternum darker brown. Legs pale brown with a weak darker brown fascia on the dorsal part of each femoral apex; PI Ta_{1-5} infuscate as is Ta_5 of PII and III. Abdomen with dark vittae, Fig. 26.

Head. Antennal ratio 1.66 (1.79; 1). Palpal proportions 31:93:186:223 µm, pedicel with 5 (4; 1) ventral and 1 (1;1) lateral setae. Eyes glabrous, dorsal extension long and parallel-sided, 4 facets wide near apex. Ocular ratio 0.06. Temporal setae 13, in a single staggered row.

Thorax. Setae: Lateral antepronotals 4 (4; 1); dorsocentrals 19 (19-24; 2); acrostichals 59 (59, 57; 2), in a double staggered row which diverges posteriorly to join the dorsocentral row; prealars 7 (7; 1); supra-alar 1 (1; 1); scutellars 19 (19; 1).

Wing. Membrane with macrotrichia on the entire surface. Costa extended 31µm(31;1) beyond R_{4+5}. R_{4+5} ends considerably proximal to M_{1+2}. Arc to m-cu/m-cu to wing tip 0.48. Venarum ratio 0.87 (0.91; 1). Wing length 1.96 mm (1.93; 1). Squama with 8 (8; 1) marginal setae.

Legs. Pulvilli vestigial. Claws sharp. PI spur 42 µm, with 7 (6; 1) teeth; PII spurs 34, 40 µm, with 5, 4 teeth; PIII spur 26 µm, with 3 (3; 1) teeth; PIII Ti comb of 6 (6; 1) setae. Leg ratios: PI 1.0 (0.95; 1); PII 0.86 (0.87; 1); PIII 0.81 (0.73; 1).

Abdomen. Genitalia, Fig. 27; internal skeleton, Fig. 28. Ninth tergum with 7 (6; 1) setae. Megaseta of Gs 10 µm.

Diagnosis. This species resembles *P. inyoensis*, *P. karelena* and *P. parrishi*, but differs in abdominal banding patterns. In *P. karelena* the abdomen is entirely pale brown; in *P. inyoensis* and *P. parrishi* it is evenly banded; and in *P. vittaria* the vittae are more irregular, with V weakly banded and VIII pale.

Larval and pupal exuviae are provisionally associated.

Pupal exuviae. Yellowish-brown with first tergum mark blackish as are the anterior margins of terga II-VII.

Thoracic chaetotaxy somewhat obscured; thoracic horn, Fig. 29; thoracic comb with about 12 spinulae of almost evenly graduated sized from small to large; tergum I, Fig. 30; tergum IV, Fig. 31; shagreen, Fig. 32; Terga VII, VIII and anal fin, Fig. 33.

Larva. Head yellowish brown except for the extreme tips of the mandibles, the pecten epipharyngis and the narrow occipital sclerite which are blackish. All claws of the posterior prolegs pale yellowish.

Ventral head length, 0.63 mm; antenna, Fig. 34, length 0.4 mm; antennal ratio 0.2.

Ligula, pecten hypopharyngis and paraligula, Fig. 35; Maxilla, Fig. 36; mandible, Fig. 37.

Procercus and posterior parapod, Fig. 38, slender hooks with scarcely discernable basal serrations.

Material examined. Holotype: ♂, **Barretal,** no. 314a (IV 64), 14-III-1981. - Paratypes: **Medio Monte**, 1 pupal exuviae, no. 213, 28-III-1981; 1 larva, no. L30a, 3-II-1981; **Barretal**, no. 317c, ♂, pupal exuviae, 17.III.1981 (on same slide with paratype ♂, pupal exuviae of *Larsia reissi*).

Pentaneura (Pentaneura) spec.

A single pupal exuviae was taken. The thoracic horn, terga I, IV, and VII, VIII, and anal fin are shown in Figs. 39 to 43.

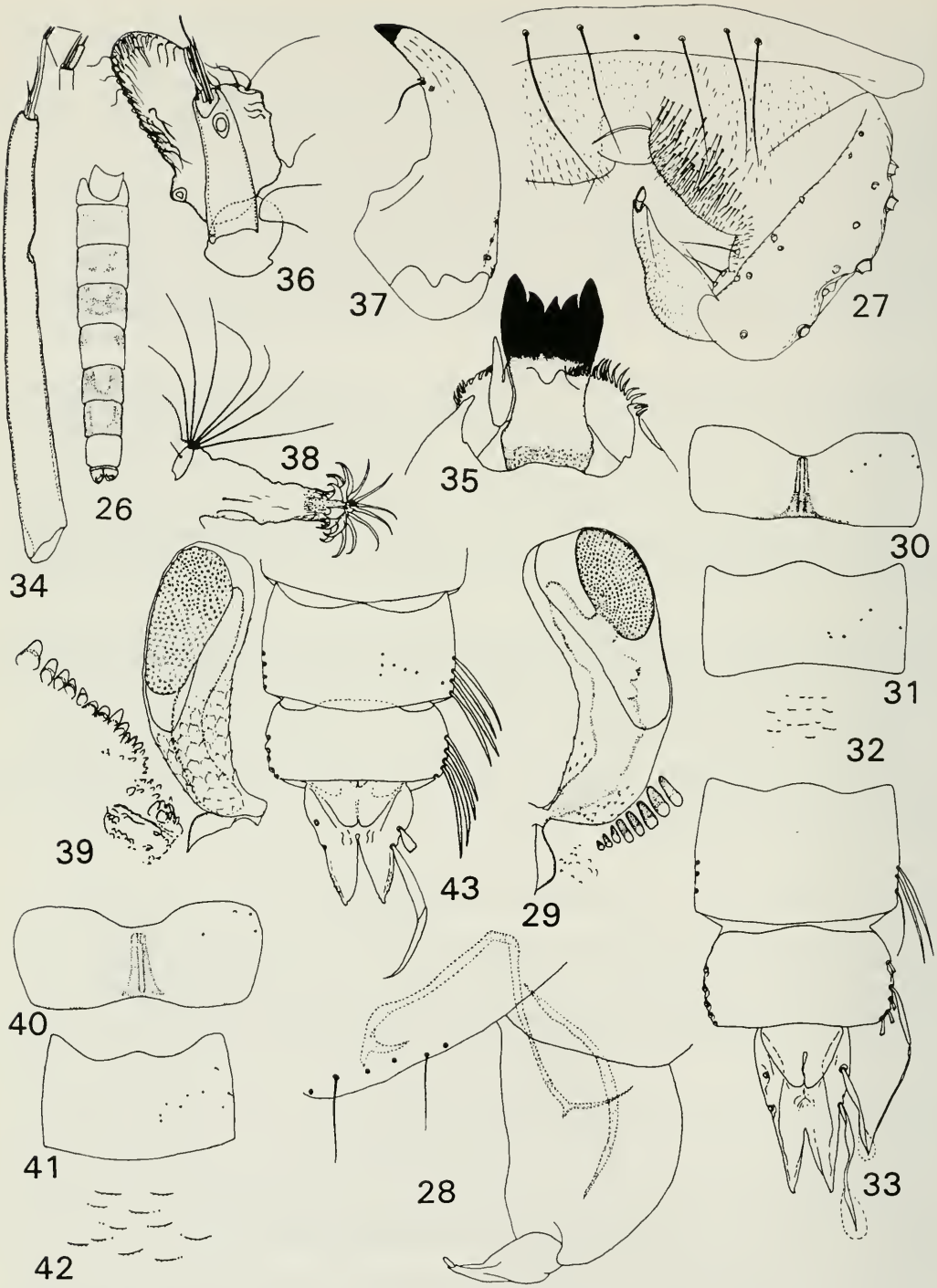
Material examined: Barretal, no. 219e, 1 pupal exuviae, 2.II.81.

Subfamily Orthocladiinae

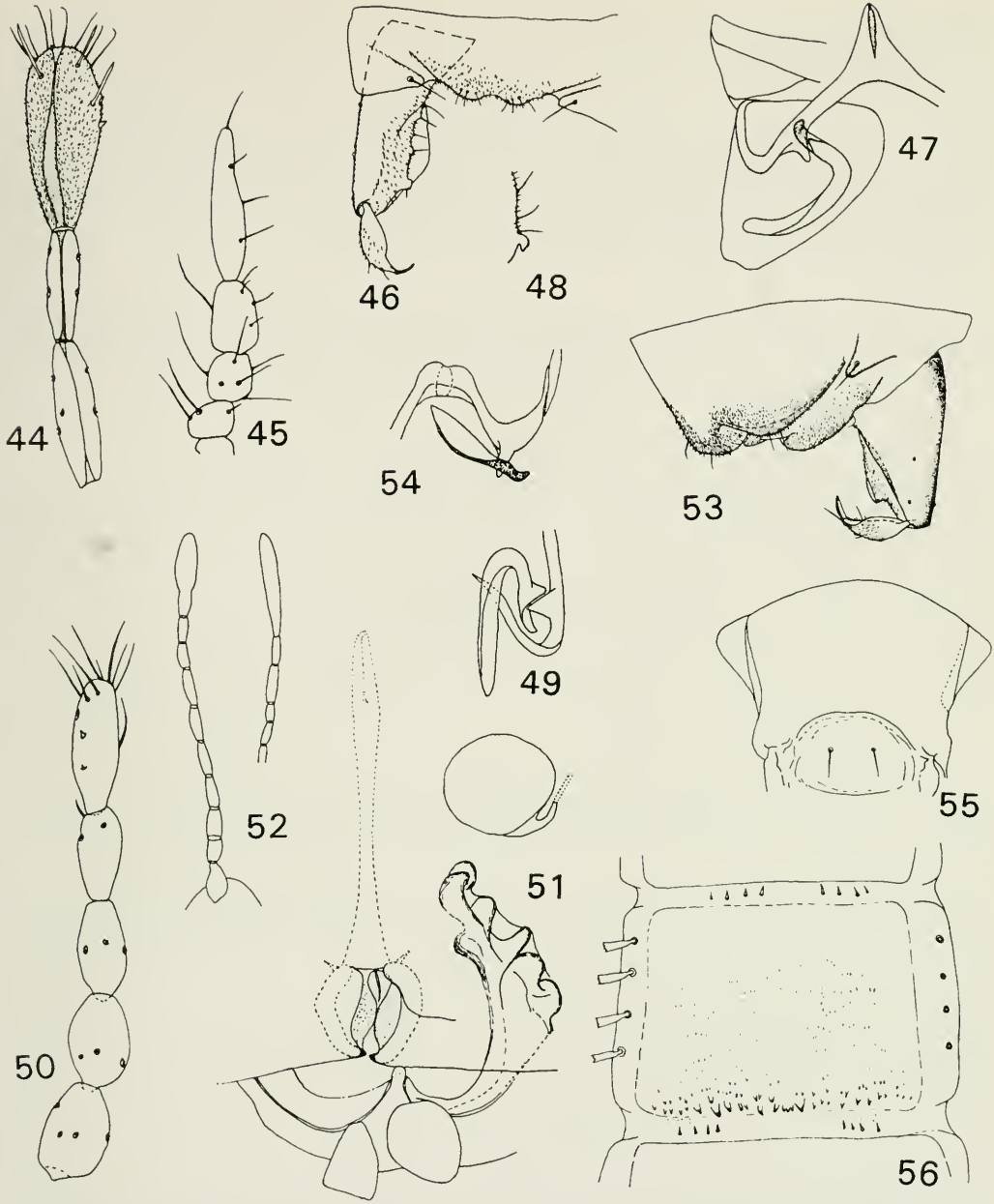
Corynoneura ferelobatus, spec. nov.

Holotype male. Colouration: Head and thorax largely black with only a slight yellowish colouration visible on the pleura. Legs mostly pale except for knees which are narrowly black as is a very narrow fascia on apex of Ti and base of Fe on all legs. Abdominal tergum I largely pale; II-III with a weak brown blotch on each side; IV-VIII mostly dark. Genitalia dark.

Head. Antenna with 9 flagellomeres. Antennal ratio 0.25 (0.21-0.26; 4); antennal apex, Fig. 44. Palpomeres, Fig. 45, 2-4 subglobular, 5 cylindrical. Palpal proportions (2-5) 14:16:24:48 µm. Eyes reniform, moderately exerted on head, glabrous. Ocular ratio 0.49. Clypeus at the base about as wide as the antennal pedicel; with 7(6-8; 3) setae. Temporal setae lacking.



Figs 26-38. *Pentaneura (Hudsonimyia) vittaria*, spec. nov. 26. Abdominal colouration, ♂. 27. Genitalia, ♂. 28. Internal skeleton, ♂. 29. Thoracic horn and thoracic comb, pupa. 30. Tergum I, pupa. 31. Tergum IV, pupa. 32. Shagreen, pupa. 33. Abdominal apex, tergum VII - anal lobe, pupa. 34. Antenna, larva. 35. Ligula, pecten hypo-



Figs 44-51. *Corynoneura ferelobatus*, spec. nov. 44. Antennal apex, ♂. 45. Palpomeres 2-5, ♂. 46. Genitalia, ♂. 47. Internal skeleton of holotype ♂ genitalia. 48. Ventro-distal lobe of holotype ♂ genitalia. 49. Internal skeleton of paratype ♂. 50. Antennal flagellum, ♂. 51. Genitalia, allotype ♀.
Figs 52-56. *Corynoneura hirvenojai*, spec. nov. 52. Variations of antennal flagellum, ♂. 53. Genitalia, ♂. 54. Internal skeleton of holotype ♂ genitalia. 55. Frontal apotome, pupa. 56. Tergum V, chaetotaxy, pupa.

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pharyngis, paraligula, larva. 36. Maxilla, larva. 37. Mandible, larva. 38. Procercus and posterior parapod, larva. Figs 39-43. *Pentaneura (Pentaneura)* spec. 39. Thoracic horn and thoracic comb, pupa. 40. Tergum I, pupa. 41. Tergum IV, pupa. 42. Shagreen, pupa. 43. Tergum VII - anal lobe, pupa.

Thorax. Setae: Lateral anteprontals 2 (2 ;3); dorsocentrals 4 (4-5; 4), in 1 row; acrostichals lacking; prealars 2 (1-2; 3); supra-alars lacking; scutellars 2 (2; 3).

Wing Membrane with very fine microtrichia, visible only at 500 × or greater. Costa/wing length 0.22 (0.23-0.27; 3). Venarum ratio not discernable on holotype male (paratypes, 3.31, 3.53; 2). Wing length 0.61 mm (0.58-0.66; 3).

Legs. PI spur 19 µm, 1 side denticle; PII with one spur at the pointed tibial apex, length 10 µm; hind tibial apex similar to *Corynoneura scutellata* Winnertz (Hirvenoja & Hirvenoja 1988, Fig. 6), with the apical seta strong S-shaped; PIII spur 36 µm, comb with 17 (16-18; 4) setae. Ta_1 on all legs subcordiform. Leg ratios: PI 0.52 (0.43-0.53; 3); PII 0.62 (0.55-0.68; 3); PIII 0.60 (0.53-0.63; 3).

Abdomen. Genitalia, Figs. 46, 47, 48, 49. Gc/Gs ratio 2.77 (2.08, 2.62; 2).

Diagnosis. *Corynoneura ferelobatus*, spec. nov. closely resembles the Palearctic *Corynoneura lobatus* Edward (Schlee 1968, p. 43), differing only slightly in genitalic features. However, *C. ferelobatus* is a smaller species with a wing length of 0.51-0.66 mm (*C. lobata* 0.67-1.0 mm) and has only 9 flagellomeres (some flagellomeres may be fused in some species but the basic number is evident).

Allotype female. Colouration: Similar to holotype male except that the yellow ground colour is broader so that the lateral and medial vittae are distinct and the prescutal area is largely pale.

Head. Antenna with 5 flagellomeres, Fig. 50; palpal proportions 8:14:22:42 µm. Eyes reniform, moderately exerted on head, glabrous. Ocular ratio 0.69. Clypeus distinctly wider than the antennal pedicel; with 8 setae. Temporal setae lacking.

Thorax. Antepronotum similar to male. Setae: Antepronotals 1, lateral; dorsocentrals 5, in 1 row; acrostichals lacking; prealars 2; supra-alar setae lacking; scutellars 2.

Wing. Membrane with microtrichia visible at 312 ×. Costa/wing length, 0.48; clavus longer and heavier than in male. Wing length 0.64 mm.

Legs. Tibial spurs as in the male. PIII tibial apex similar to male; comb with 15 setae. Leg ratios: PI 0.52; PII 0.61; PIII 0.52.

Genitalia, Fig. 51.

Pupa. Virtually indistinguishable from that of *C. lobatus* (Coffman et al. 1986, Fig. 9.12).

Total length, 1.45-1.78 mm (4); swim fin setae, 29-33 (4). Bacatiform papillae on wing sheaths more reduced in number than in *C. lobatus* (Coffman et al. 1986, Fig. 9.12B) with the innermost row represented by only 0-4 papillae and the outermost row by 5-15; two outer rows usually of the same length.

Material examined. Holotype: ♂, **Barretal**, 3.II.81. - Allotype: ♀, no. I-39, 12 (on slide with holotype). - Paratypes: **Barretal**, no. 2, ♂; no. 6, 2 paratype pupal exuviae, 4 unnumbered ♀♀ (on slide with holotype along with: no. 3, ♂; no. 7, pupal exuviae; paratypes, *Corynoneura hirvenojai*, spec. nov.; no. 4 *Thienemanniella medialis*, spec. nov., allotype ♀; no. 5, 8, 9, 10, 5 pupal exuviae; no. 11, *Cricotopus* sp., pupal exuviae). - Paratypes: **Barretal**, no. I-40, 1♀ (on slide with paratype male of *Corynoneura hirvenojai*), no. I-41, 2♂♂, no. I-42, 1♂ (poor), 1 pupal exuviae; no. I-44, 1♀; no. I-45, 1♂; no. I-46, 1♀, no. I-47, 1♀, pupal exuviae, 3.II.-3.III.81; **Rincon**, no. I-100, 2♀♀, (on same slide with holotype ♂ of *Thienemanniella medialis*, spec. nov., 2 pupal exuviae of *Thienemanniella semifimbriatus*, spec. nov.).

Corynoneura hirvenojai, spec. nov.

Holotype male. Colouration: Head and thorax largely dark with narrow yellow ground colour visible on pleura. Halteres pale. Fore and middle femora weakly infuscate, the colour apparently being formed by irregular, close set rows of microtrichiae; bases of all tibiae narrowly dark fasciate. Abdominal terga I-IV pale; V-IV mostly dark; genitalia dark but usually slightly paler than ninth tergum.

Head. Antenna with 7 (7-8; 3) flagellomeres; antennal ratio 1.42 (0.62-1.42; 3); antennal segmentation variable with 3 or 4 fused flagellomeres visible in addition to the elongate terminal one, Fig. 52. Palpal proportions, -:16:22:44 µm, similar to those of *C. ferelobatus*. Eyes reniform, moderately exerted on head; glabrous. Clypeus at the base about the same width as the antennal pedicel; with 6 (6-8; 3) setae. Temporal setae lacking.

Thorax. Antepronotum wide in the basal third, abruptly tapered in the middle third, and weakly tapered in the apical third. Setae: Lateral antepronotals 1; dorsocentrals 3 (3; 3), in 1 row; acrostichals lacking; prealars 2 (3; 3); scutellars 2 (2; 2).

Wing. Membrane with very fine microtrichia visible at 500 ×. Costa extended 0.26 (0.23-0.24; 3) of the wing length. Wing length 0.56 mm (0.55-0.60; 3). Venarum ratio 2.71.

Legs. Sensilla chaetica of PII and PIII lacking. Pulvilli not evident. Claws weakly bifurcate at tips. PI spur 20 mm; PII spur 8 µm; Hind tibial apex similar to that illustrated by Hirvenoja & Hirvenoja (1988, Fig. 6) and Schlee (1968, Fig. 113). PIII spur 38 µm, with weak side teeth reaching 0.47 of the spur length; PIII tibial comb of 15 setae. Leg ratios: PI 0.37 (0.37-0.45; 3); PII 0.57 (0.53-0.58; 3); PIII 0.56 (0.57-0.62; 3).

Abdomen. Genitalia, Fig. 53, 54. Ventrobasal appendage ("Drittespange") apparently lacking. Gc/Gs ratio 2.31 (2.54-2.73; 3).

Diagnosis. *Corynoneura hirvenojai*, spec. nov. resembles *Corynoneura lacustris* (Edwards) in tibial features and genitalia. It may be differentiated from *C. lacustris* by having only 7-8 flagellomeres (*C. lacustris*, 10-12; Schlee (1968), and a differently shaped ventroapical lobe on the gonocoxite.

Female. Unknown.

Pupal exuviae (presumptive association). Total length 1.46 mm. Frontal apotome, Fig. 55, and cephalothorax similar to those of other species (cf. Cranston et al. 1986, Fig. 9.12A, C). Wing sheath with 14 bacatiform papillae in a single row.

Abdomen. Tergum I devoid of shagreen; II with small median patch of weak shagreen and a posterior weak transverse band followed by a coarser band of intersegmental spinulae in a single row; III-VI with most of the tergum covered with sparse shagreen; along the posterior margin the shagreen becomes enlarged in 2-3 rows which are underlain by darker pigment, Fig. 56, similar to that described by Roback & Coffman (1983, Fig. 274) for a species from Venezuela (*C.* sp. 7); VII with only a few of the coarser posterior denticles; VIII-IX with weak shagreen, that of VIII over most of the tergum while on IX the shagreen is confined to a median longitudinal band. Terga III-VII with 4 flattened lateral setae. Genital sacs each with coarse apical seta. Anal lobe fringe with 27 flattened setae, the anterior 3-5 being somewhat shorter.

Material examined. Holotype: ♂: **Medio Monte**, small waterfall, no. I-43, 28.I.81. - Paratypes: **Barretal**, small waterfall, no. I-48, 1 ♂; no. I-40, 1 ♂; no. I-39, 1♂ (no.3), 1 pupal exuivae (no.7), 25.II.-3.II.1981 (see *C. ferelobatus* material examined for additional material on same slide).

This species is dedicated to Dr. Mauri Hirvenoja, University of Helsinki, who has graciously shared materials with the senior author over many years.

Cricotopus lavaderos, spec. nov.

Holotype male. Colouration: Head and thorax black. All coxae dark, trochanters pale; all femora and tibiae dark except for the extreme basal portion of the femora of PII and PIII and a slightly broader part of PI; tarsi on all legs infuscate yellow, becoming darker apically. Abdominal terga dark vittate, Fig. 57, with the darker markings blackish and the paler markings a dark brown.

Head. Antenna with 13 flagellomeres; antennal ratio 0.49 (0.44-0.53; 3). Palpal proportions 49:95:118:213 µm. Clypeus with 20 (16-22; 3) setae. Temporal setae 13 (10, 12; 2), in a single row.

Thorax. Antepronotum evenly tapered dorsally. Setae: Lateral antepronotals 4; dorsocentrals 20 (14-17; 3), in a partially doubled row with humeral clump of 4 (5; 1); acrostichals 21 (16-22; 3); prealars 3 (3-4; 3); supraalars lacking; scutellars 16 (10-16; 3), in a single row across the apex of the scutellum, becoming slightly clumped on either side.

Wing. Membrane with microtrichia visible at 120 ×. Costa strongly extended, 94µm(81-115; 3) beyond R_{4+5}. R_{4+5} ends proximal to M_{1+2} at 0.23 of the distance between the apex of M_{3+4} and M_{1+2}. R_{2+3} ends at 0.58 of the distance between the apex of R_1 and R_{4+5}. Anal ends well beyond f-Cu. Anal lobe obsolete. Wing length 1.87 mm (1.85-2.02; 3). Venarum ratio 1.13 (1.14-1.16; 3). Squama with 3 (3, 4; 2) marginal setae. R with 1 (1-2; 2) setae.

Legs. Pulvilli minute. PI spur very slender, 49 µm; PII spurs 24, 41 µm; PIII spurs 41, 77 µm, comb of 14 setae. Leg ratios: PI 0.67 (0.66-0.69; 3); PII 0.47 (0.47-0.49; 3); PIII 0.53 (0.55-0.56; 3); PI BR <3.0; Sensilla chaetica of PIII (9-13; 3).

Abdomen. Genitalia, Fig. 58 (Paratype male). Abdominal chaetotaxy, Fig. 59. Gc/Gs ratio (1.98-2.17; 3).

Diagnosis: *Cricotopus lavaderos*, spec. nov. is similar in appearance to *C. rincon*, spec. nov. but differs significantly in colour patterns as well as genitalic features. In *C. lavaderos*, the thorax is almost entirely dark as are all femora and tibiae; in *C. rincon* the thorax is vittate and the legs are strongly bicoloured. In *C. lavaderos*, the basiventral gonocoxite lobe has only coarse microtrichia; in *C. rincon*, the microtrichia is present as a slightly projecting weak patch. In *C. rincon*, the scutellar setae are in 2-3 rows across the apex while in *C. lavaderos* they are in only 1 row.

Allotype female. Colouration: similar to male.

Head. Antenna with 5 flagellomeres; proportions 77:46:53:56:90 µm. Palpal proportions 43:74:102:170 µm; sensilla clavata at the apex of third segment 3 parallel-sided and blunt-tipped. Ocular ratio 0.41. Clypeus with 29 setae. Temporal setae 9, in a single row.

Thorax. Setae: Antepronotals 3, 2 lateral and 1 near the middle; dorsocentrals 20, mostly in a single, staggered row; humerals 2; acrostichals 18, partially in 2 rows; prealars 3; scutellars 18.

Wing. Membrane with coarse microtrichia visible at 120 ×. R_{4+5} ends proximal to M_{1+2} almost over the apex of M_{3+4}. R_{2+3} ends at 0.5 of the distance between the apex of R_1 and R_{4+5}. Venarum ratio 1.3. Wing length 1.82 mm. Squama with 3 marginal setae. R_1 with 5 setae; R_{4+5} with 4 setae near the apex.

Legs. Sensilla chaetica of PII 23, PIII 22. Pulvilli vestigial. Spurs: PI 44 µm; PII 38, 26 µm; PIII 60, 24 µm, tibial comb with 13 setae. Leg ratios: PI 0.66; PII 0.49; PIII 0.54.

Abdomen. Genitalia very similar to those of *C. rincon* except that the neck of the spermatheca is slightly longer and slightly curved, Fig. 60. The genitalia of *C. pilocapsulus* Saether are virtually indistinguishable; however, that species has microtrichia (?) in the seminal vesicles.

Pupal exuviae. Total length 4.03-4.27 mm. Thoracic horn and adjacent setae, Fig. 61. Thorax on both sides of the median raphe with weak and irregularly arranged papillae. Abdomen: Tergum II with 2 transverse bands of shagreen in the same position as that of III-VI, but weaker; posterior hooks 60-71 (3), in 2 uniform rows, Fig. 62, in which the hooks are mostly alternately spaced. Pedes spurii B present on segments II and III. Terga III-V bearing 3 transverse bands of shagreen the most posterior of which is the weakest (cf. Fig. 62). Tergum VI with only two bands of shagreen similar to that of terga III-V, but lacking the weaker posterior band. Sterna IV-VI with pedes spurii A; sterna II-VIII with anterolateral patches of very fine shagreen, with that of II and VIII weakest. Swim fin, Fig. 63.

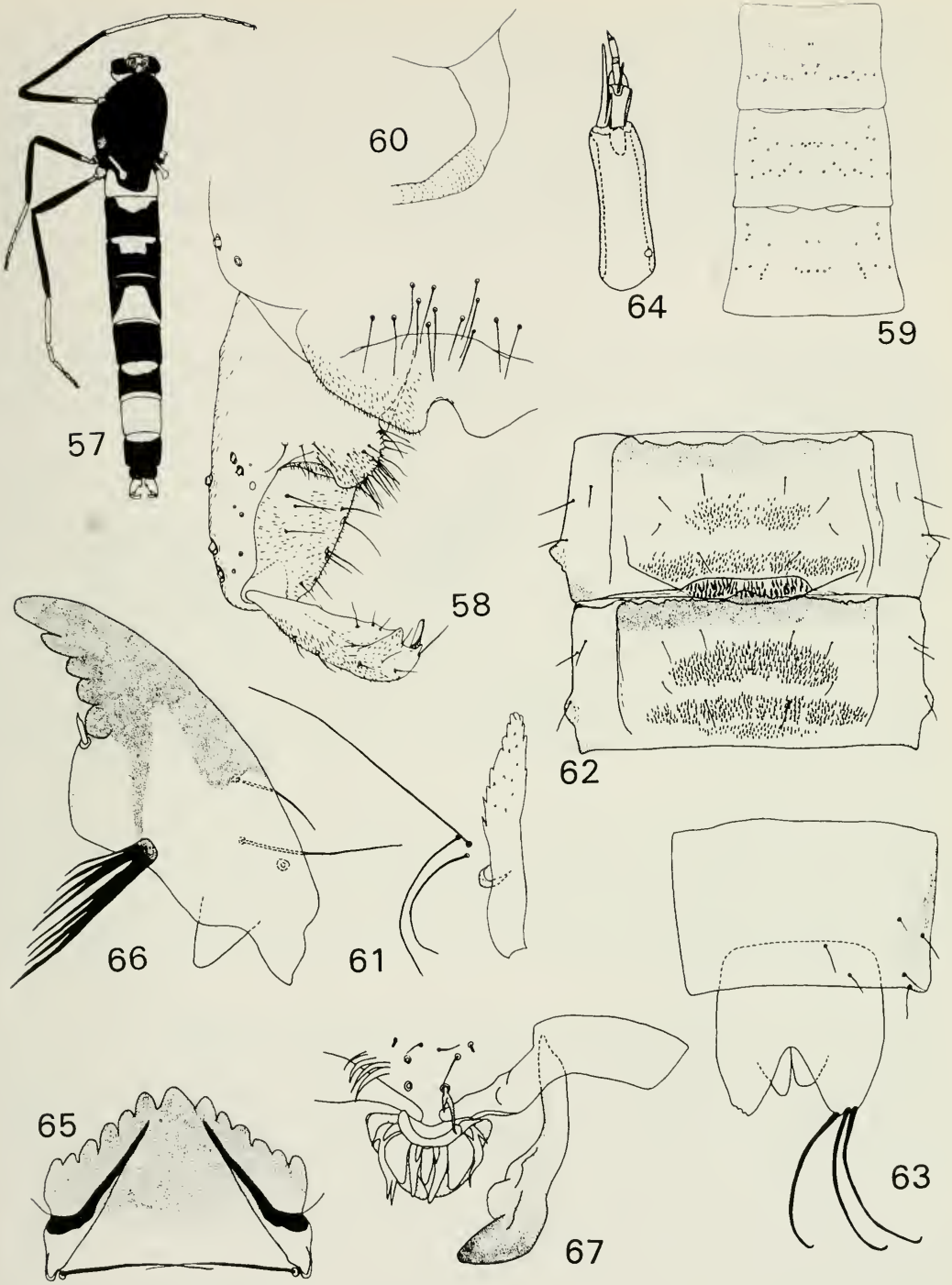
Cricotopus lavaderos, spec. nov. is very similar to the pupa briefly described as *Cricotopus* sp. 3 by Roback & Coffman (1983, Fig. 97, 98) from Bolivia, Peru, and Venezuela. That species, however, has stronger spinulae on the apex of the thoracic horn.

Larva. Head capsule yellowish; mentum blackish as is slightly more than half of the apex of the mandible; base of mandible dark brown as is the apex of the premandible and a narrow rim of the postoccipital margin. Ventral head length 172-195 µm (3). Antenna, Fig. 64; length 68-84 µm (3). Mentum, Fig. 65. Mandible, Fig. 66. Ephipharyngeal structures and premandible, Fig. 67.

Posterior parapods each with 13 long slender claws. Anal tubules 4, 2 almost as long as the parapods and 2 slightly shorter. Procerci about as long as broad, each with one short anterior seta and 6-7 long, terminal setae.

This larva is unusual in having (1) the pecten epipharyngis with the lateral teeth much shorter than the central one, (2) SI with very unequal branches, and (3) the next to last lateral tooth of the mentum being almost as short as the outermost tooth.

Material examined. Holotype: ♂, **Lavaderos**, no. A1d (1-02), sweep net, 22-I-81. - Allotype ♀, **Rincon**, 16-III-81. - Paratypes: **Barretal**, no. I-03 1♀, pupal exuviae; no. I-06, 1♂, pupal exuviae, no. I-32, 1♂, pupal exuviae, no. I-18 1♀, pupal exuviae, no. I-16 1♀, pupal exuviae, larval exuviae, no. I-15 1♀, pupal exuviae, no. I-26, 1 larval exuviae, 2 pupal exuviae, no. I-24, 4 pupal exuviae, (also on same slide 1 pupal exuviae of *C. rincon*, spec. nov.), no. I-21 3 pupal exuviae, (also on same slide 1 pupal exuviae *C. rincon*), no. I-28, 4 larvae, no. I-27, 1 pupal exuviae, no. I-19a 1 pupal exuviae no. I-01 1♂, pupal exuviae, no. I-05 1♂, 1♀, no. I-20, 1♂, 1♂ (fragmentary), 12 pupal



Figs 57-67. *Cricotopus lavaderos*, spec. nov. 57. Colour pattern of ♂. 58. Genitalia, paratype ♂. 59. Chaetotaxy of terga II-IV, holotype ♂. 60. Neck of spermatheca, ♀. 61. Thoracic horn and adjacent setae, pupa. 62. Terga II, III, pupa. 63. Swim fin, pupa. 64. Antenna, larva. 65. Mentum, larva. 66. Mandible, larva. 67. Ephipharyngeal structures and premandible, larva.

exuviae, no. V-07, 2 pupal exuviae, (on same slide with 1 pupal exuviae, *Cricotopus rincon*, spec. nov., 1♀ *Chironomus rincon*, spec. nov., 1♀ *Chironomus* sp.) no. 228f[40], 1 larvae exuviae, (on same slide with paratype pupal ♂, *Endotribelos grodhausi*, spec. nov.), 22.I.-25.II.81; **Rincon**, no. I-07, 1♂, 1♀, no. I-08, 1♂, 1♀, no. I-19b 1♀, pupal exuviae, 42♂♂, 34♀♀, 8 pupal exuviae (also 8♂♂, 30♀♀ in alcohol), no. I-33, 15 pupal exuviae (also on same slide 1 pupal exuviae, *Cricotopus rincon*, spec. nov. and 1 larva, *Metriocnemus* spec.), no. 215 1 pupal exuviae, 1 larval exuviae (assoc.), 3 pupal exuviae, no. I-23, 2 pupal exuviae, 2 larval exuviae (assoc.), 12 pupal exuviae, no. II-42 3 pupal exuviae, 4 larvae, (on same slide with 3 pupal exuviae *Metriocnemus* spec.), no. I-36, 8 larvae, (on same slide with 5 larvae, *Metriocnemus* spec.), 2.II.-3.III.81; **Lavaderos**, no. I-09, 1 larval exuviae, pupa♂, no. I-10 1♂, no. I-11 1♂, no. I-14, ♀, no. I-13 1♀, no. I-12 1♀, no. I-04 1♂, 22.I.-22.II.81; **Medio Monte**, no. I-31, 1♂, no. I-25 6 pupal exuviae, (on same slide with 1 pupal exuviae, *Polypedilum* spec.), 28.I.81.

Cricotopus rincon, spec. nov.

Holotype male. Colouration: Head and thorax almost entirely dark. Thoracic vittae blackish with a narrow yellow band between the median and lateral vittae; shoulders and prescutum yellowish. Scutellum infuscate. Postnotum and venter of preepisternum blackish. Halteres pale. Legs and abdomen strongly marked with yellow and black markings, Fig. 68.

Head. Antenna with 13 flagellomeres. Antennal ratio 0.95 (0.87-1.06; 4). Palpal proportions 90:195:255:390 µm. Dorsal extension of eye short and broadly wedge-shaped. Clypeus at the base slightly wider than the antennal pedicel; with 17 (12-16; 3) setae. Frontal setae 3 (2-3; 7). Temporal setae 7 (6-7; 3).

Thorax. Antepronotum evenly tapered from the lateral margin to the apex. Setae: Lateral antepronotals 3 (2-3; 2); dorsocentrals 27 (16-22; 3), in a partially double row; acrostichals 26 (16-22; 3), 1 row posteriorly becoming doubled anteriorly; prealars 6 (4-5; 3); scutellars 26 (21-26; 3), in 2 to 3 staggered rows.

Wing. Membrane with microtrichia visible at 125 ×. Costa 95 µm (62-68; 3) beyond R_{4+5}. R_{4+5} ends proximal to M_{1+2} at 0.42 of the distance between the apex of M_{3+4} and M_{1+2}. R_{2+3} ends at 0.61 (0.55-0.58; 3) of the distance between the apex of R_1 and R_{4+5}. Wing length 2.16 mm (1.79-2.01; 3). Venarum ratio 1.16 (1.10-1.16; 3). Squama with 4 (4-7; 3) marginal setae. R with 2 setae.

Legs. Pulvilli absent. PI spur 62 µm; PII spurs 31, 34 µm; PIII spurs 38, 82 µm, comb of 13 setae. Sensilla chaetica of PIII 11. Leg ratios: PI 0.66 (0.64-0.67; 3); PII 0.48 (0.47-0.50; 3); PIII 0.57 (0.56-0.59; 3). PI BR 3.02.

Abdomen. Genitalia, Fig. 69. Abdominal chaetotaxy, Fig. 70. Ninth tergum with 14-23 (3) setae. Gc/Gs ratio 2.0 (2.17-2.30; 3).

Diagnosis: The vittate thorax, the distinctively banded foretibia and more vittate abdomen together with the presence of a setose basiventral gonocoxite lobe will separate this species from *C. lavaderos*, spec. nov. The abdominal colour pattern and foretibial leg bands are similar to the Peruvian *Cricotopus cantus* Roback but the male genitalia are quite different (cf. Roback 1960, Fig. 38). This species is also similar to *Cricotopus oris* Roback from the Canal Zone and *Cricotopus pilocapsulus* Saether from St. Vincent, West Indies, but those species lack the basal dark fascia on the foretibia and the genitalia are slightly different (cf. Roback 1962, Figs. 26-28; Saether 1981, Fig. 3A, B).

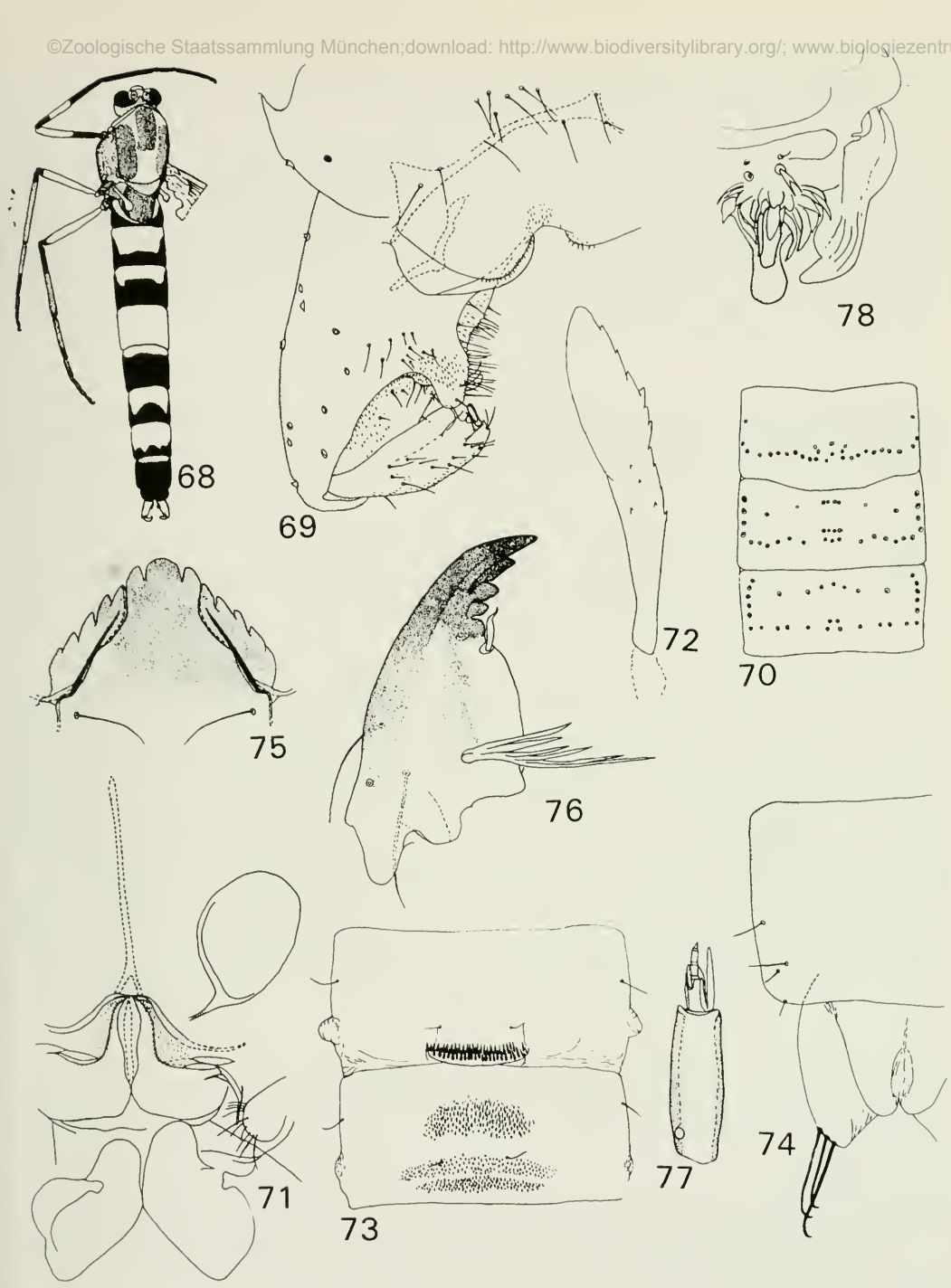
Female allotype. Colouration: As male but with colours slightly more intensified.

Head. Antenna with 5 flagellomeres. Antennal proportions, 77:53:50:53:99 µm. Palpal proportions 46:87:112:167 µm. Eyes reniform. Clypeus with 33 setae. Temporal setae 11 in a single row.

Thorax. Antepronotum moderately narrowed towards the middle then continuing almost parallel-sided to the apex. Setae. Lateral antepronotals 8; dorsocentrals 26, in a partially double row; acrostichals 22, in a staggered single row posteriorly, becoming doubled and divergent anteriorly; prealars 6; supra-alar setae 1; scutellars 18, forming a single row across the apex but becoming 2-3 rows laterally.

Wing. Membrane with microtrichia visible at 125 ×. Costa extended 87 µm beyond R_{4+5}. R_{4+5} ends proximal to M_{1+2} at 0.33 of the distance between the apex of M_{3+4} and M_{1+2}. R_{2+3} ends at 0.62 of the distance between the apex of R_1 and R_{4+5}. Anal ends at 0.71 of the distance between f-Cu and the apex of Cu_1. Wing length 1.76 mm. Venarum ratio 1.11. Squama with 4 marginal setae. R with 7 setae. R_1 with 5 setae. R_{4+5} with 7 setae.

Legs. Pulvilli small. PI spur 49 µm; PII spurs 27, 32 µm; PIII spurs 36, 68 µm, comb of 16 setae. Sensilla chaetica of PII 40, PIII 20. Leg ratios: PI 0.61; PII 0.48; PIII 0.56.



Figs 68-78. *Cricotopus rincon*, spec. nov. 68. Colour pattern, ♂. 69. Genitalia, ♂. 70. Abdominal chaetotaxy, tergum II, III, ♂. 71. Genitalia, ♀. 72. Thoracic horn, pupa. 73. Abdominal shagreen pattern, tergum II, III, pupa. 74. Tergum VIII - swim fin, pupa. 75. Mentum, larva. 76. Mandible, larva. 77. Antenna, larva. 78. Epipharyngeal structures, premandible, larva.

Abdomen. Genitalia, Fig. 71, similar to those of *C. lavaderos* and *C. pilocapsulus* except that the neck of the spermatheca is shorter and straighter; however, the latter species has microtrichia (?) in the seminal vesicles.

Pupa. Cephalothorax and abdomen entirely brownish with the lateral margin of VI-VIII darker brown. Total length 3.09-3.92 mm (3). Thoracic horn, Fig. 72; variable, ranging from completely smooth to moderately denticulate; length, 179, 234 µm (2). Hooks at the apex of tergum II in an alternating double row of 51-52 (3) hooks. Frontal apotome very similar to that illustrated for *Cricotopus pilocapsulus* Saether (1981, Fig. 4A). Abdominal shagreen pattern, Fig. 73, as in the cylindraceus-group (Hirvenoja 1973, Fig. 130-4) as well as the Antillean *Cricotopus pilocapsulus* Saether. Pedes spurii B present on segments II and III. Pedes spurii A present on III-VI. Tergum VIII and swim fin, Fig. 74.

From the descriptions given by Saether (1981), the pupa of *C. pilocapsulus* is virtually indistinguishable from this species.

Larva. Head capsule yellowish; mentum and apical two-thirds of mandibles black; postoccipital ring darker yellow. Ventral head length, 156-195 µm (3). Antennal length, 74-81 µm (3).

Mentum, Fig. 75; second lateral tooth slightly recessed and insloped with the apices of remaining teeth almost in a straight line. Mandible, Fig. 76. Antenna, Fig. 77. Epipharyngeal apparatus, Fig. 78, and labral sensilla not distinguishable from those of *C. lavaderos*.

Posterior parapods each with 14-15 slender yellow claws; procercus about as wide as long, with 6-7 apical setae and a short preapical seta; anal tubules obscured.

The larva of *C. rincon* is very similar to that of *Cricotopus cylindraceus* (Kieffer) (Hirvenoja 1973, Fig. 131). The only discernable difference is in the seta subdentalis which Hirvenoja (1973) describes as bluntly rounded; in this species it is finely attenuate and slightly downcurved.

Material examined. Holotype: ♂, **Rincon**, no. 226a, 2.II.81. - Allotype: ♀, collected with holotype, no. I-62, 2.II.81. - Paratypes: **Rincon**, no. I-69, 1♂, 1♀, no. IV-40, 1♂, 1 pupal exuviae, 28.I.-2.II.81; **Barreta**l, no. I-53, 1♂ no. 220b, 1♂, no. I-35, 1♂, no. I-54, 1♂, no. I-57, 1♂, 1 pupal exuviae, no. I-65, 1♂, 1 pupal exuviae, no. I-59, 1♂, 1 pupal exuviae, no. I-61, 1♀, 1 pupal exuviae, no. I-63, 1♂, no. I-60, 1♀, no. I-58, 1♂, no. I-56, 1♂, no. I-67, 1 pupal exuviae, no. I-28, 4 larvae, no. I-30, 3 larvae, no. I-29, 4 larvae, no. I-35, 2 larvae, (on same slide 3 larvae, *Polypedilum* spec. and 5 larvae, *Simulium*), no. I-64, 3 pupal exuviae, no. I-66, 3 pupal exuviae, no. IV-100, 2 pupal exuviae, no. I-70, 3 pupal exuviae, 1 larva, no. IV-60, 1 pupa♀, 1 larva (also on same slide 4 larvae, *Dicrotendipes californicus* and 3 larvae, *Tanytarsus* spec.), no. V-0, 1 pupal exuviae (on same slide with 2 pupal exuviae, *Cricotopus lavaderos*, spec. nov., 1♀ *Cricotopus lavaderos*, spec. nov., 1 female *Chironomus* spec.), no. IV-99, 1 pupal, ♀ 2.I.-25.II.81; **Atitlan**, no. IV-29, 2 pupal exuviae, 1 larval exuviae, (on same slide with 3 pupal exuviae, 3 larvae, *Cricotopus sylvestris*); no. IV-27, 1♂, 1♀; no. IV-20, 1♂, (on same slide with 1♀, *Cricotopus sylvestris*), 1♀ (on same slide with 1♂, *Cricotopus rincon*, spec. nov.), 21.II.81; no. 303b, 1♂, 1♀, no. A-85, 1♂, 1♀, no. IV-18, 1♀, no. IV-32, 5 pupal exuviae (also on same slide 6 pupal exuviae, *Cricotopus sylvestris*), no. IV-30, 4 pupal exuviae (on same slide with 28 pupal exuviae, *Cricotopus sylvestris*), no. A-31, 2 larvae, 3 pupal exuviae (on same slide with 3 larvae, 6 pupal exuviae, *Cricotopus sylvestris*), ? 28.I.-22.II.81; **Amatitlan**, no. A-85, 1♂, 1♀, 24.II.81.

Cricotopus (Isocladius) sylvestris (F.)

Tipula sylvestris Fabricius, 1794: 252, adult.

Cricotopus remus Sublette, 1964: 115, male, female, pupa, larva, *new synonymy*; LeSage & Harrison 1980: 111, suggested synonymy.

Cricotopus (*Isocladius*) *sylvestris* (F.); Hirvenoja 1973: 27, male, female, pupa, larva; review, subgeneric position, distribution.

Cricotopus sylvestris (F.); Michailova 1976: 291, cytotaxonomy; 1980: 263, cytogenetics; 1985: 10; Rossaro 1979: 78, phylogeny; Sublette & Sublette 1979: 58, review, distribution; LeSage & Harrison 1980: 107, male, female, pupa, larva; review; distribution; Boesel 1983: 78, review; distribution, ecology.

Specimens do not differ from material taken in the southern and southwestern United States (Sublette 1964; Sublette & Sublette 1979). Chaetotaxy, colouration, and genitalia of adults as well as larvae and pupae of the Guatemalan populations agree with descriptions of this species given by Hirvenoja (1973). The junior author has examined Palearctic material determined by Dr. Hirvenoja.

Material examined. **Atitlan**, IV-29, 3 pupal exuviae, 3 larvae (on same slide with 2 pupal exuviae, 1 larval exuviae, *Cricotopus rincon*, spec. nov., and 1 pupal exuviae, Trichoptera spec. indet.), no. IV-20, 1♀ (on same slide 5 pupal exuviae, *Cricotopus rincon*, no. IV-32, 6 pupal exuviae (also on same slide 5 pupal exuviae, *Cricotopus rincon*, spec. nov.), no. IV-30, 28 pupal exuviae (on same slide 4 pupal exuviae, *Cricotopus rincon*, spec. nov.), no. IV-26, 1♂, 1♀, no. A-31, 3 larvae, 6 pupal exuviae, (on same slide with 2 larvae, 3 pupal exuviae, *Cricotopus rincon*, spec. nov.); **Amatitlan**, no. V-61, 9 pupal exuviae, 4 larvae (on same slide with 1♂ *Thienemanniella spreta* (Rob.); no. IV-51, 1♂, 1♀; no. IV-62, 1♂, 1 pupal exuviae; no. A-70, 1♀, 1 pupal exuviae; no. A-55, 1♂, 1♀; no. A-56, 2♂s; no. A-67, 1♀; no. A-76, 1♂; no. A-75, 1♀; no. A-52, 5 larvae, 4 pupal exuviae; no. A-54, 5 larvae; no. A-53, 5 larvae no. V-58, 10 larvae; no. A70, 1♀; no. A55, 1♂, 1♀; no. A56, 2♂s; no. 67, 1♀; no. A76, 1♂; no. A75, 1♀; no. A52, 5 larvae, 4 pupal exuviae; no. A54, 5 larvae; no. A53, 5 larvae; no. V-58, 9 larvae; no. II-51, 1♂, 1♀; no. V-62, 1♂, 1 pupal exuviae, 3.-24.II.81.

Limnophyes guatemalensis, spec. nov.

Holotype male. Colouration: Antennae and dorsum of head blackish, remainder yellowish. Antepronotum, thoracic vittae, scutellum, upper part of postnotum and preepisternum blackish; prescutellar and humeral areas, lower part of postnotum and preepisternum and pleural areas except MAII sclerite, yellowish. Halteres pale. Legs brownish-black with the foreleg slightly darker than PII and PIII. Abdomen, including genitalia, blackish.

Head. Antenna with 11 (11; 3) flagellomeres. Antennal ratio 0.25 (0.25-0.27; 3); flagellomere sparsely plumed with short straight setae; apical flagellomere with a terminal short stiff seta; tip almost devoid of sensilla. Palpal proportions 25:62:65:96 µm. Eyes reniform, moderately exerted on head. Ocular ratio 0.64 (paratype). Clypeus short, the width about equal to that of the antennal pedicel, with 11 (10-11; 3) setae. Inner vertical setae 1 (1: 3). Postocular setae (not discernable on holotype male) (3; 3).

Thorax. Fig. 79. Setae: Antepronotals 3 (2-3; 3) lateral, 1 dorsal, coarse, as long as the dorsolateral setae; dorsocentrals 8 (5-7; 3), in one row; acrostichals lacking; prescutellars 1 (1,3), lanceolate; humerals 5 (5-7; 3), none lanceolate; prealars 7 (6-7; 3), the most posterior one lanceolate; supra-alar 1 (1; 3); scutellars 4 (4; 3); posterior anepisternals II, 1 (1; 3); preepisternals, 3 (2; 3); epimerals II, 3 (2; 3).

Wing. Membrane with coarse microtrichia. Costa extended 62 µm (62-70; 3) beyond R_{4+5}. R_{4+5} ends far proximal to M_{1+2}. R_{2+3} almost parallel to R_1. Downcurved portion of Cu_1 at an angle of 40° to basal part of Cu. Wing length 0.93 mm (0.76-0.90; 3). Venarum ratio 1.39 (1.36-1.41; 3). Squama with 2 (2; 3) marginal setae. R without setae.

Legs. Pulvilli absent. PI spur 30 µm; PII spurs 16, 20 µm, side denticles weak; PIII spurs 14, 40 µm, side denticles slightly stronger than PII, comb of 9 (10-12; 3) setae. Sensilla chaetica of PII and PIII lacking. Leg ratios: PI 0.52 (0.49-0.52; 2); PII 0.44 (0.43-0.45; 3); PIII 0.48 (0.49-0.51; 3). Ta_4 on all legs slightly shorter than Ta_5.

Abdomen. Genitalia, Fig. 80; gonostylus, Fig. 81; internal skeleton, Fig. 82. Ninth tergum conically produced to form an anal point. Gc/Gs ratio 1.47 (1.36-1.55; 3); virga absent but represented by a weak, slightly curved socket plate.

Diagnosis. This species resembles *Limnophyes mariae*, spec. nov. in lacking setae on the radial veins but it differs in that the genitalia have a small triangular anal point and lacks a virga. It also differs in having a much lower number of thoracic lanceolate setae with only one occurring on the prescutellar area, one in the prealar series, and none in the humeral area.

Allotype female. Colouration similar to male.

Head. Antenna with 4 flagellomeres; proportions 64:36:36:74 µm; terminal flagellomere with an apical stiff seta. Antennal ratio 0.54. Palpal proportions 30:64:78:100 µm. Eyes reniform, moderately exerted on head. Ocular ratio 0.31. Clypeus with 7 setae. Inner vertical setae 1. Postocular setae 2.

Thorax. Antepronotum similar to the male. Setae: Lateral antepronotals 2; dorsocentrals 8, in 1 row, plus 6 humerals (rubbed so lanceolates not discernible). Acrostichals lacking; prescutellars 1, lanceolate; prealars 8, most posterior seta lanceolate; posterior anepisternals II, 1; preepisternals 4. epimerals II, 4.

Wing. Membrane with microtrichia visible at 120 ×. Costa extended 55 µm beyond R_{4+5}. Wing length 0.81 mm. Venarum ratio 1.49. Squama with 3 marginal setae. Longitudinal veins without setae.

Legs. Pulvilli absent. PI spur 34 µm; PII spurs 20, 14 µm; PIII spurs 42, 16 µm, tibial comb of 10 setae. Leg ratios: PI 0.51; PII 0.45; PIII 0.49. PI with Ta_4 slightly shorter than Ta_5; PII and PIII with Ta_4 much shorter Ta_5.

Abdomen. Genitalia slightly turned in slide preparation but all features appear to be very similar to those of *L. mariae*.

Material examined. Holotype: ♂, **Rincon**, 3-II-81, no. II 18. - Allotype: ♀, paratype ♂ on same slide, **Rincon**, 2.II.81, no. II-8. - Paratypes: **Rincon**, no. II-09, 1♂, **Barretal**, no. II-08, 1♂, no. II-07, 1♂, no. II-11, 1♂, 2♀♀, no. A-16, 1♂, 2♀♀, no. II-17, 1♂, 2.II.-27.III.81.

Limnophyes mariae, spec. nov.

Holotype male. Colouration: Head and thorax, including legs and halteres, and abdomen blackish.

Head. Antenna with 12 flagellomeres. Antennal ratio 0.59 (0.52-0.58; 4). Palpal proportions 36:66:64:130 µm. Eyes reniform, moderately exerted on head, glabrous. Ocular ratio 0.60. Clypeus at the base slightly greater than the width of the antennal pedicel; with 14 (11-18; 3) setae. Inner vertical setae 1 (4). Postocular setae 3 (3-5; 4).

Thorax (Fig. 83). Antepronotum slightly narrowed to near the middle, then almost parallel-sided to near the apex. Setae: Lateral antepronotals 2 (2-3; 3); dorsocentrals 29 (23-30; 3), 9 (5-10; 3) forming a group of lanceolate humerals and 7 (4-11) a group of lanceolate prescutellars; prealars 6 (5-8; 2); supra-alars 7 (4-8; 4); scutellars 7 (4-8; 4); medial anepisternals II, 1 (1; 4); posterior anepisternals II, 1 (1; 4); preepisternals, (1-3; 4); epimerals II, 7 (5-6; 3).

Wing. Membrane with coarse microtrichia visible at 125 ×. Costa extended 70 µm (4) beyond R_{4+5}. Wing length 1.14 mm (1.07-1.23; 3). Venarum ratio 1.42 (1.32-1.38; 3). Squama with 4 (3; 3) marginal setae. Longitudinal veins without setae.

Legs. Pulvilli vestigial. Claws weakly palmate. PI spur 46 µm; PII spurs 19, 25 µm; PIII spurs 15, 50 µm, comb of 10 setae, the outermost being almost a long and as heavy as the main tibial spur. Leg ratios: PI 0.49 (0.48-0.53; 3); PII 0.45 (0.38-0.49; 3); PIII 0.54 (0.53-0.55; 3). Ta_4 subequal to Ta_5 on PI but distinctly shorter on PII and PIII. Sensilla chaetica lacking on all tarsi.

Abdomen. Genitalia, Fig. 84; gonostylus (paratype ♂), Fig. 85; internal skeleton, Fig. 86. Gc/Gs ratio 1.33 (1.26-1.66; 3). Virga a single spine similar to those of the brachytomus-group (Saether 1990, Fig. 7F-J).

Diagnosis. The combination of a moderate number of lanceolate prescutellar and humeral setae, sparse anterior preepisternal setae, wings without R setae, a posteriorly notched ninth tergum, almost right-angled basidorsal gonocoxite lobe, and a gonostylus with a very weak crista dorsalis are unique among known *Limnophyes*. The genitalia are similar to *Limnophyes difficilis* Brundin (Saether 1990, Fig. 55E, F) but the ninth tergum is rounded in that species as well as the thorax being distinctly different (cf. Saether 1990, Fig. 55B).

Allotype female. Colouration: Almost entirely blackish.

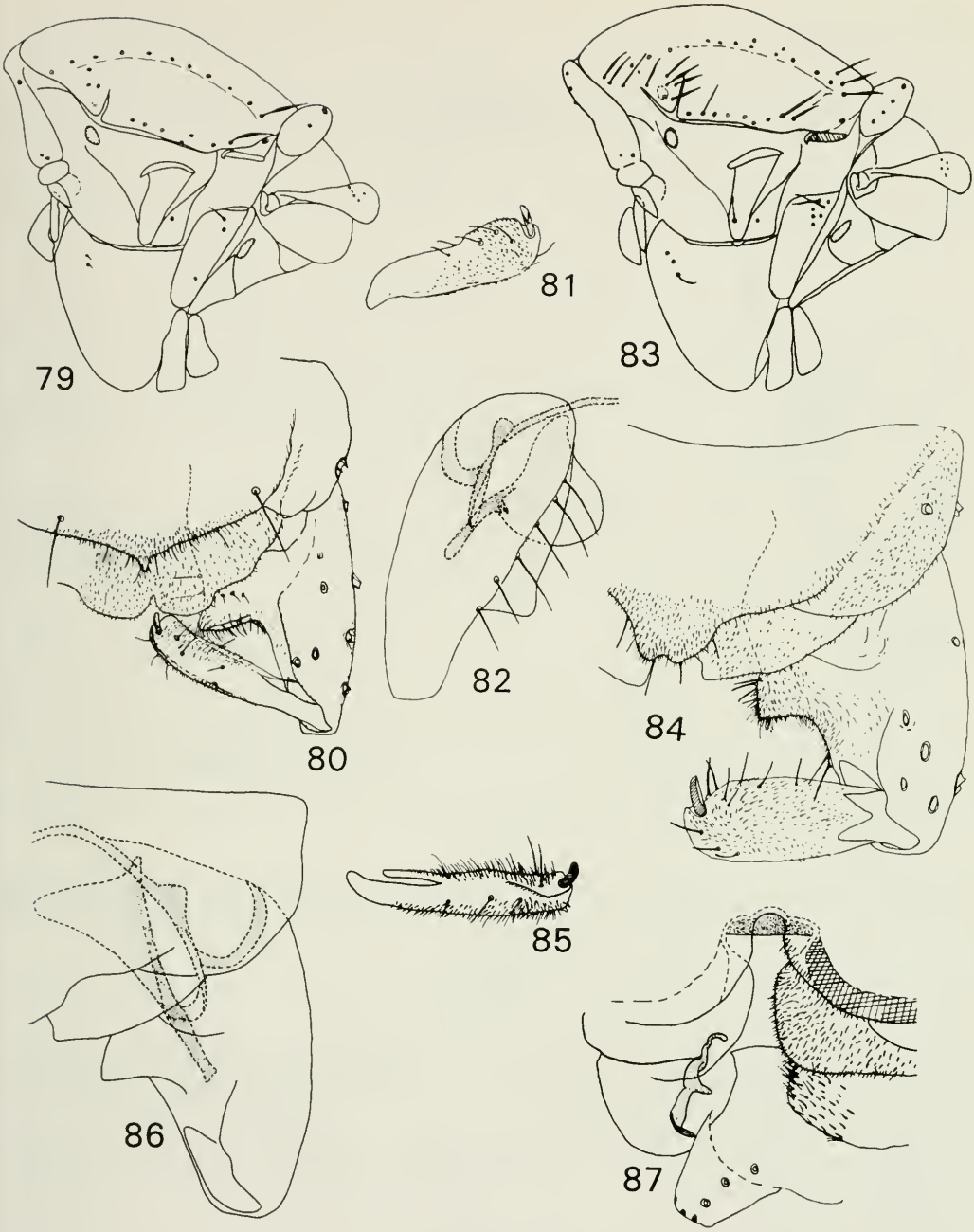
Head. Antenna with 5 flagellomeres, very similar to that of *Limnophyes minimus* (Meigen) (as *L. hudsoni* Saether 1975, Fig. 4A), except that the terminal flagellomere has a subapical stiff seta; proportions 40:34:40:48:86 µm. Antennal ratio 0.53. Palpal proportions 30:54:54:134 µm. Third palpomere with a single cylindrical sensillum clavatum. Eyes reniform, moderately exerted on head. Ocular ratio 0.53. Clypeus much wider than the antennal pedicel; with 17 setae. Inner vertical seta 1; postocular setae 3.

Thorax. Setae: Lateral antepronotals 3, 2 near the middle and 4 near the dorsal apex; dorsocentrals 8, in 1 row; prescutellars 8, lanceolate; humerals 9, at least 4 lanceolate; acrostichals lacking; prealars 7; supra-alar 1; scutellars 4; median anepisternals II, 1; posterior anepisternals II, 2; preepisternals 5. Epimerals II, 7.

Wing. Membrane with coarse microtrichia at 125 ×. Costa extended 70 µm beyond R_{4+5}. Wing length 0.85 mm. Venarum ratio 1.29. Squama with 4 marginal setae. R with 13 setae; R_1 with 6 setae; R_{4+5} with 10 setae.

Legs. Pulvilli absent. PI spur 20 µm; PII spurs 16, 20 µm; PIII spurs 14, 44 µm; PIII comb of 11 setae. Sensilla chaetica of PII 5, PIII 8. Leg ratios: PI 0.53; PII 0.47; PIII 0.54. PI Ta_4 subequal to Ta_5; PII and PIII Ta_4 shorter than Ta_5.

Abdomen. Genitalia, Fig. 87.



Figs 79-82. *Limnophyes guatemalensis*, spec. nov. 79. Thorax, lateral view, ♂. 80. Genitalia, ♂. 81. Left gonostylus, paratype ♂. 82. Internal skeleton, ♂.
Figs 83-87. *Limnophyes mariae*, spec. nov. 83. Thorax, lateral view, ♂. 84. Genitalia, ♂. 85. Gonostylus, paratype ♂. 86. Internal skeleton, paratype ♂ genitalia. 87. Genitalia, allotype ♀.

As relatively few female *Limnophyes* have been described, it is not possible to separate the female of *L. mariae* at this time.

Material examined. Holotype: ♂, **Rincon**, no. II-03, 25.II.81. - Allotype: ♀, **Barretal**, no. II-13, 6.III.81. - Paratypes: **Rincon**, no. II-05, 1♂, no. II-14, 1♀, 25-II-81; **Barretal**, no. II-06, 1♂, no. II-02, 1♂, no. II-04, 1♂, no. II-01, 1♂, no. II-15, 1♀, no. 306b, 1♀, [slide also with♂ orthocladine, genitalia lost.], 3.II.-6.III.81.

We are pleased to dedicate this species to Mary Sublette whose contribution to this work has been indispensable.

Metriocnemus costatus, spec. nov.

Holotype male. Colouration: Head, thorax, and abdomen black. Halteres pale. Legs dark brownish-black; Femur of PI with a slightly darker at apex. Genitalia dark except for pale gonostyli.

Head. Antenna with 13 flagellomeres. Antennal ratio 0.82 (0.87-0.94; 3). Palpal proportions 31:187:156:203 µm. Eyes almost reniform, with a short broad dorsal extension. Clypeus at base about the same width as the antennal pedicel, with 52 (44-58; 3) setae. Temporal setae 31 (27-34; 3); medial to the eyes multiserial and fine, posterior to the eyes becoming uniserial and very coarse.

Thorax. Antepronotum broad, only weakly tapered at the dorsal apex. Setae: Lateral antepronotals 15 (8-15:3), dorsocentrals 88 (67-94; 3), multiserial, anteriorly the row expanding to form a group of 19 (13-19; 3) humerals; acrostichals 54 (43-49; 3), mostly in 2 rows; prealars 34 (34-42; 3); supra-alars 4 (3-4; 3); scutellars 20 (19-23; 3), fine, scattered on the anterior face; 42 (31-41; 3) along the dorsal apex, much coarser in a single row laterally, 2 staggered rows medially; preepisternals 18 (11-17; 3).

Wing. Membrane with dense macrotrichia on the entire surface. Costa extended 155 µm (117-140; 3) beyond R_{4+5}. Chaetotaxy of longitudinal veins not clearly discernable because of the dense membrane macrotrichia. Down-curved portion of Cu_1 at an angle of 17° (13-17; 3) to basal part of Cu. Wing length 1.68 mm (1.47-1.59; 3). Venarum ratio 1.25 (1.22-1.27; 3). Squama with 34 (21-29; 3) setae.

Legs. Pulvilli vestigial. Claws trifid. PI spur 70 µm; PII spurs 46, 40 µm; PIII spur 80, 42 µm; all spurs with coarse appressed denticles. Sensilla chaetica of PII and PIII lacking. Leg ratios: PI 0.82 (0.84-0.86; 3); PII 0.49 (0.48-0.50; 3); PIII 0.53 (0.51-0.52; 3).

Abdomen. Genitalia, Figs. 88, 89, 90. Ninth tergum with 28 (21-30;3) setae. Virga lacking but genitalia with a midventral notched, somewhat quadrangular plate.

Diagnosis. This species may differentiated from the known Nearctic species by having a short anal point, a moderately developed gonocoxite lobe, and a midventral, somewhat quadrangular plate. The chaetotaxy of the thorax also appears to be distinctive.

Allotype female. Colouration: Mostly black; ground colour of thorax, scutellum, and haltere knobs somewhat paler brownish.

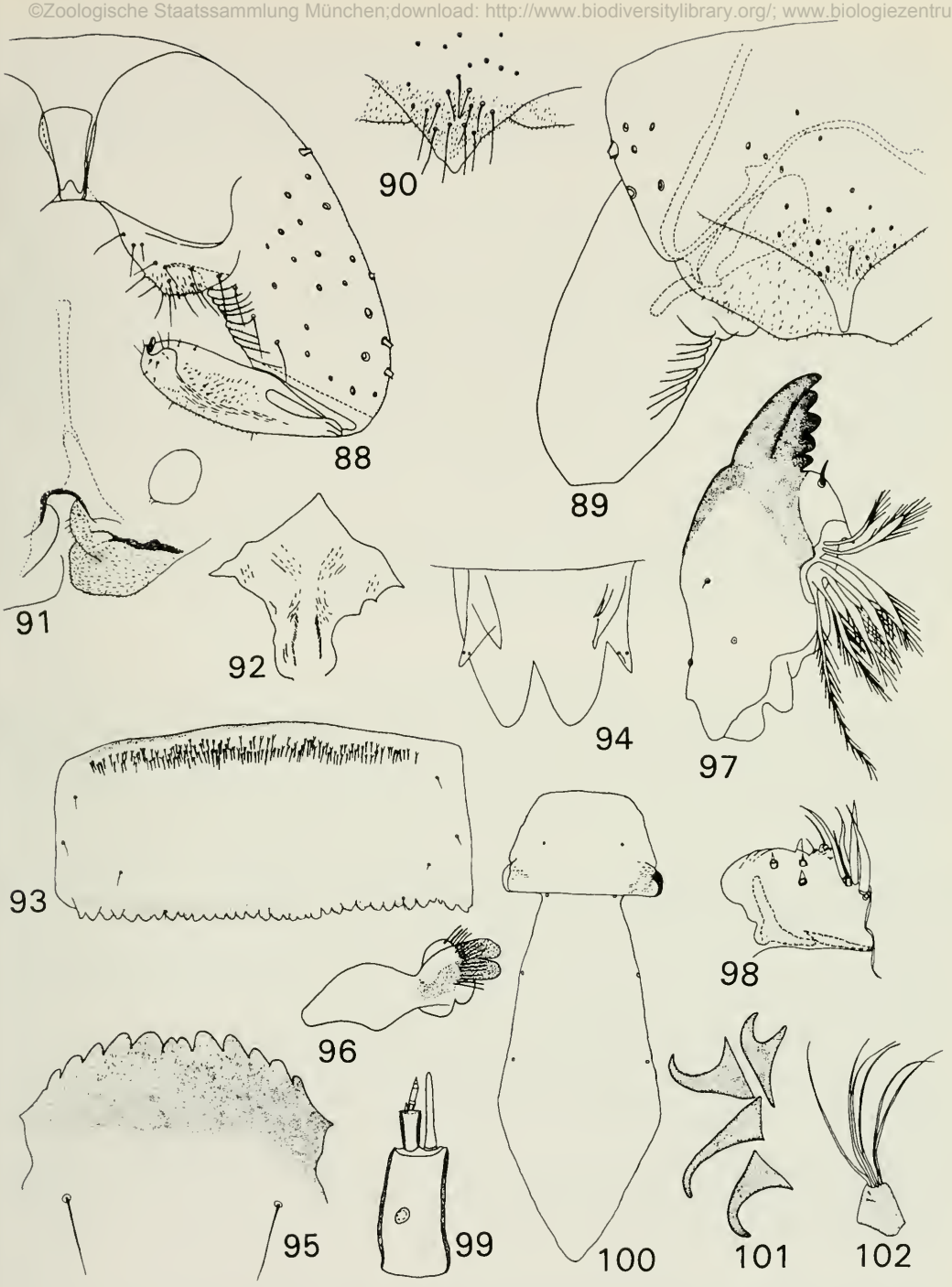
Head. Antenna with 5 flagellomeres; proportions 84:56:65:65:71 µm; basal and apical flagellomeres ovoid, flagellomeres 2-4, flask-shaped. Palpal proportions 31:210:158:226 µm. Eyes reniform, moderately exerted on head. Ocular ratio 0.71. Clypeus at the base much broader than the width of the antennal pedicel; with 90 setae. Frontal setae 8. Temporal setae 78.

Thorax. Setae: Lateral antepronotals 18; dorsocentrals 119, mostly in 2-3 rows, posteriorly an expanded clump of 13 prescutellars and anteriorly a clump of 37 humerals; acrostichals 59, mostly in 2 rows; prealars 41; supra-alars 4; scutellars 74, somewhat strewn; posterior series heaviest, grading off to fine anteriorly; preepisternals 24.

Wing. Membrane with heavy macrotrichia on the entire surface. Costa extended 179 µm beyond R_{4+5}, strongly down-curved at the apex. Setae of wing veins not distinguishable because of the heavy membrane vestiture. Wing length 1.59 mm. Venarum ratio 1.36. Squama with 32 marginal setae.

Legs. Pulvilli vestigial. PI spur 59 µm; PII spurs 46, 34 µm; PIII spurs 68, 40 µm; PIII tibial comb with 9 setae, the outermost much heavier than the remainder. Leg ratios: PI 0.87; PII 0.49; PIII 0.52. Sensilla chaetica of PII 16; PIII lacking.

Genitalia. Fig. 91, similar to other members of the genus.



Figs 88-102. *Metriocnemus costatus*, spec. nov. 88. Genitalia, holotype ♂. 89. Internal skeleton, holotype ♂ genitalia. 90. Anal point, paratype ♂. 91. Genitalia, ♀. 92. Frontal apotome, pupa. 93. Tergum III, pupa. 94. Swim fin, pupa. 95. Mentum, larva. 96. Premandible, larva. 97. Mandible, larva. 98. Maxilla, larva. 99. Antenna, larva. 100. Frontoclypeus, larva. 101. Posterior paropods, claws, larva. 102. Procercus, larva.

Pupa. Total length 3.08 mm (1). Frontal apotome, Fig. 92. Thoracic horns apparently lacking. Wing sheaths without bacatiform papillae or nasiform tubercles. Terga II-VIII with an apical row of slightly darkened tubercles, Fig. 93. Tergum II tubercles 38 (1); tubercles on VII-VIII with more acute tips than those on II-VI; terga III-VIII with a basal band of clustered microtrichia of two types: type I finer and with 3-4 microtrichia usually clustered at the base; and type II coarser with most of the microtrichia single. Tergum IX with sparse fine shagreen. Anal lobe with the posterolateral corners acute, each of which has two small, pale setae, Fig. 94.

Larva. Ventral head length 172 µm. Head dark brown with the tips of the mandibles and premandibles, mentum and broad postoccipital ring blackish.

Mentum, Fig. 95; ventromental plates lacking. Premandible, Fig. 96. Mandible, Fig. 97, with 7 main branches to seta interna. Maxilla with 4 lacinial chaetae, Fig. 98. Antenna five-segmented, Fig. 99. Pecten epipharyngis with 3 main teeth and apparently with a smaller tooth on either side; SI strongly pectinate; chaetulae basales and laterales only weakly fimbriate. Frontoclypeus, Fig. 100. Anterior parapods each with the anterior hooks long, slender, slightly curved and very weakly pectinate at the tips; the posterior field hooks are very small and strongly hooked, with the intermediate showing a transition between the two extremes. Posterior parapods with 11 black hooks and three slightly paler hooks, Fig. 101; hooks of three shapes; procercus, Fig. 102. Anal tubules not evident on the exuviae available for study.

Material examined. Holotype: ♂, **Barreta**l, no. II-51, 22.I.81. - Allotype: ♀, no. II-67, (on same slide with paratype ♂, pupal exuviae), 25.II.81. - Paratypes: **Rincon**, no. II-59, 1♀, 13.III.81; **Barreta**l, II-53, 1 pupal ♂; no. II-54, 3♂♂ (one slide), no. II-55, 1♂, no. II-66, 1♂, no. II-68, 1♂, no. II-61, 1 larva, 1♀ pupa, no. II-43, 1 larvae, 1 pupal exuviae, no. II-52, 1 larva, 1 pupal exuviae, 1♂, no. II-58, 1 larva, 2 pupal exuviae, 1♀, no. II-60, 1♀ pupa, no. II-62, 1♀, no. II-63, 1♀ pupa, no. II-64, 1♀, no. II-65, 1 pupal exuviae (1♀ pin 305a).

Metriocnemus lautus, spec. nov.

Holotype male. Colouration: Ground colour of head and thorax yellowish-brown; most of head, thoracic vittae, scutellum, postnotum, and ventral apex of preepisternum blackish; median vittae separated by a narrow yellow fascia which contains the acrostical setae; median and lateral vittae separated by the yellowish-brown ground colour. Prescutellar area yellowish with some brownish colour adjacent to the scutellum. Halteres yellowish. Legs mostly black; trochanters and extreme base of all femora yellowish.

Head. Antenna with 12 flagellomeres. Antennal ratio 0.32. Palpal proportions 43:155:161:174 µm; apex of third palpomere with an apical, short heavy seta (a second seta may have been present as evidenced by an empty alveolus), Fig. 103. Eyes reniform, moderately exerted on head. Ocular ratio 0.59. Clypeus at the base about as wide as the antennal pedicel, with 17 setae. Temporal setae 19.

Thorax. Setae: Lateral antepronotals 5; dorsocentrals 29, mostly in a staggered double row, posteriorly forming a clump of 3 prescutellars, anteriorly a clump of 11 humerals; acrostichals 28, in a staggered double row; prealars 17; supra-alars 3; scutellars 28, posterior series very heavy, in an almost straight row, anterior ones much smaller and strewn; epimerals II, 5, other thoracic sclerites bare.

Wing. Membrane with dense macrotrichia. Costa extended 155 µm beyond R_{4+5}, ending slightly proximal to the apex of M_{1+2}. R_{4+5} ends almost directly over M_{3+4}. Down-curved portion of Cu_1 at an angle of 18° to basal part of Cu_1. Anal ends very slightly proximal to f-Cu. Wing length 1.49 mm. Venarum ratio 1.30. Squama with 8 marginal setae. Chaetotaxy of longitudinal veins obscured by the dense membrane macrotrichia.

Legs. Pulvilli vestigial. Tips of claws trifid. PI spur 46 µm; PII spurs 34, 24 µm; PIII spurs 62, 37 µm; PIII tibial comb of 12 setae. Sensilla chaetica of PII lacking, not discernable on partially obscured PIII. Leg ratios: PI 0.59; PII 0.44; PIII 0.50.

Abdomen. Genitalia, Fig. 104; internal skeleton, Fig. 105. Ninth tergum with 14 seta.

Diagnosis. The twelve segmented flagellum, the very low antennal ratio, the longer anal point, and the broad midventral plate will differentiate this species from known Panamerican *Metriocnemus*.

Material examined. Holotype: ♂, **Lavaderos**, sweep net, no. II-56 (on same slide as 1♀, *Paraphaenocladius exagitans* (Joh.), 22.I.81.

Metriocnemus virgatus, spec. nov.

Holotype male. Colouration: Head, thorax, and abdomen largely blackish; humeral area and pleura yellowish-brown; on some paratypes a thin yellowish line occurs along the acrostichal setal row. Halteres pale. Legs yellowish brown; apex of fore femur, all of tibia and tarsus blackish; middle and hind femora yellowish, tibiae yellowish becoming darker apically; all tarsi dark.

Head. Antenna with 13 flagellomeres. Antennal ratio 0.78 (0.75-0.87; 3); palpal proportions 31:195:187:226 µm. Dorsal extension of eye short and wedge-shaped. Clypeus at the base about equal to the width of the antennal pedicel; with 35 (32-34; 3) setae. Temporal setae 27 (32-41; 3), multiserial medial to the eyes but becoming coarser and uniserial behind the eyes.

Thorax. Antepronotum only slightly narrowed dorsally, with a broad median notch at the posterior margin of which the two halves are slightly contiguous. Setae: Lateral antepronotals 15 (10-15; 3); dorsocentrals 68 (59-70; 3) mostly in 2 rows, posteriorly the row expands to form a clump of 7 (9-10; 3) prescutellars and anteriorly, broadly expanding to form a clump of 31 (17-20; 3) humerals; prealars 29 (25-32; 3); supra-alars 2(2-3; 3); scutellars 17 (19-20; 3), coarse, in a transverse row, with 26 (15-28; 3) anterior setae, coarse to fine, in a strewn pattern; preepisternals 3 (4-7; 3).

Wing. Membrane with heavy macrotrichia on the entire surface. Costa 140 µm (100-156; 3) beyond R_{4+5}. R_{4+5} ends over M_{1+2}. Apex of R_{2+3} only slightly divergent from the apex of R_1. Downcurved portion of Cu_1 at an angle of 13° to the basal part of Cu. Wing length 1.80 mm (1.68-1.80; 3). Venarum ratio 1.22 (1.20-1.33; 3). Squama with 24 (17-22; 3) setae.

Legs. Pulvilli vestigial. Claws trifid. PI spur 64 µm; PII spurs 42, 38 µm; PIII spurs 72, 36 µm, comb of 10(9-10; 3) setae, the outermost of which is distinctly heavier than the remainder. Sensilla chaetica lacking. Leg ratios: PI 0.68 (0.68-0.69; 3); PII 0.45 (0.46-0.49; 3); PIII 0.49 (0.48-0.51; 3).

Abdomen. Genitalia, Fig. 106; internal skeleton, Fig. 107. Anal point lacking but with forked basal plate and virga.

Diagnosis. This species resembles the Neotropical species *Metriocnemus griseovittatus* Edwards (Edwards 1931) in lacking an anal point; that species, however, is said to resemble *Metriocnemus picipes* (Meigen) in genitalic features. According to Pinder (1978), *M. picipes* has a very weak basal gonocoxite lobe and a stronger, rounded subapical lobe. It is obvious that *M. virgatus*, with its strong, almost right-angled basal gonocoxite lobe, cannot be Edwards' species.

Metriocnemus virgatus can be differentiated from all known Nearctic species by lacking an anal point.

Allotype female. Colouration: As in the male.

Head. Antenna with 5 flagellomeres; proportions 77:57:59:62:68 µm. Palpal proportions 37:180:167:139 µm (terminal palpomere somewhat shriveled). Eyes reniform, moderately exerted on head. Clypeus with 40 setae. Temporal setae 68, multiserial dorsally covering virtually all of the frons and vertex, becoming uniserial behind the eyes.

Thorax. Setae: Lateral antepronotals 16; dorsocentrals 75, in 2-3 rows; posteriorly the row includes 7 clumped prescutellars, anteriorly 31 humerals; acrostichals 55, in 2 rows; prealars 31; supra-alars 2; scutellars 18, heavy, in a posterior row and 34, mostly finer setae, in an anterior strewn series; preepisternals 5.

Wing. Membrane with macrotrichia on the entire surface. Costa extended 164 µm beyond R_{4+5}. R_{4+5} ends proximal to M_{1+2} at 0.5 of the distance between the apex of M_{3+4} and M_{1+2}. R_{2+3} parallel to and ending near the apex of R_1. Down-curved portion of Cu_1 at an angle of 12° to basal part of Cu. Wing length 1.59 mm. Venarum ratio 1.13. Squama with 25 marginal setae.

Legs. Pulvilli vestigial. PI spur 58 µm; PII spurs 40, 38 µm, Ta_{1-3} with pseudospurs; PIII spurs 70, 38 µm, Ta_{1-3} with pseudospurs; PIII tibial comb with 9 setae, the outermost of which distinctly heavier than the remainder. Leg ratios: PI 0.72; PII 0.46; PIII: 0.51.

Abdomen. Genitalia distorted in mounting but apparently not significantly different from those of *M. costatus* (cf. Fig. 91).

Pupa. Very similar to *M. costatus*, differing in only slight details. The frontal apotome apex blunter as are the lateral margins (Fig. 108). Tubercles at the apex of terga II-VII paler and fewer in number with II having 29 (1) tubercles. Basal fine microtrichia of terga III-VII similar to *M. costatus* type I.

Larva. Very similar to that of *M. costatus*; antennal proportions very slightly different, Fig. 109.

Material examined. Holotype: ♂, **Rincon**, no. II-77 (larva mounted on same slide), 16.III.81. - Allotype ♀, **Barretal**, on same slide with paratype ♂, no. II-83), 16.III.81. - Paratypes: **Barretal**, no. II-72, 1♂; no. II-75, 1♂, no. II-78, 1♂, no. II-79, 1♂, no. II-81, 1♂, 1♀; no. II-82, 1♂, no. II-71, 1 intersex, no. II-76, 1♂, 1 pupal exuviae, no. II-73, 1 pupal ♂, no. II-74, 1 pupal ♂, 1 pupal ♀, 1 larval exuviae, no. II-80, 1♂, 1 pupal exuviae, 1 larval exuviae, no. 326g, 1♂, 1 pupal exuviae, (on same slide with *Parametriocnemus lundbecki* 1♀, 1 pupal exuviae), 3.II.-16.III.81.

Parametriocnemus lundbecki (Johannsen)

Metriocnemus lundbecki Johannsen, 1905: 302, replacement name for *nana* Lundbeck *nec* Meigen.
Parametriocnemus lundbecki (Joh.); Sublette 1967: 537, review; Saether 1969: 115, synonymy; description of adults, pupa, and larva; Sublette and Sublette 1979: 67, distribution; Saether 1981: 18, added description of ♂; distribution; Cranston et al. 1983: 261, figures of larval morphology; Coffman et al. 1986: 265, figures of pupal morphology.

The elongate triangular ninth tergum with an elongate, bare anal point that is almost parallel-sided (Sublette 1967, Figs. 33, 34; Saether 1969, Fig. 63), together with the wing membrane that is covered in the apical three-fourths with macrotrichia is distinctive among Panamerican *Parametriocnemus*.

Material examined. **Rincon**, no. II-20, 1♂, no. II-21, 1♂, no. II-24, 1♂, no. II-25, 1♂, no. II-26, 1♂, no. II-27, 1♂, no. II-28, 1♂, no. SW21h, 1♀, no. II-35, 1♀, no. II-36, 1♀, no. 318e, 1♀, 1 pupal exuviae, (also 1♂ paratype, *Cricotopus rincon*); no. II-39, 1♀, no. II-40, 1♀, 1 pupal exuviae, no. II-41, 4 larvae, (1 larval exuviae, pupal exuviae, *Cricotopus* spec.), 3.II.-21.III.1981; **Barretal**, no. II-23, 1♂, no. 326g, 1♀, 1 pupal exuviae (also 1♂, 1 pupal exuviae, *Metriocnemus virgatus*, spec. nov. on same slide, 22.I.-16.III.81; **Medio Monte**, no. 218, 1♀, 1 pupal exuviae, 28.II.81; **Guachipilan**, stream, no. II-34, 1♀, no. II-33, 1♀, 1 pupal exuviae (also 1 pupal exuviae, *Meropelopia* spec.), 3.II.-26.III.81.

Paraphaenocladius exagitans (Joh.)

Metriocnemus exagitans Johannsen, 1905: 300, male.
Paraphaenocladius exagitans (Joh.); Sublette 1967: 543, review, synonymy.
?*Paraphaenocladius* nr. *exagitans* (Joh.); Saether 1981: 18, description of male; distribution.

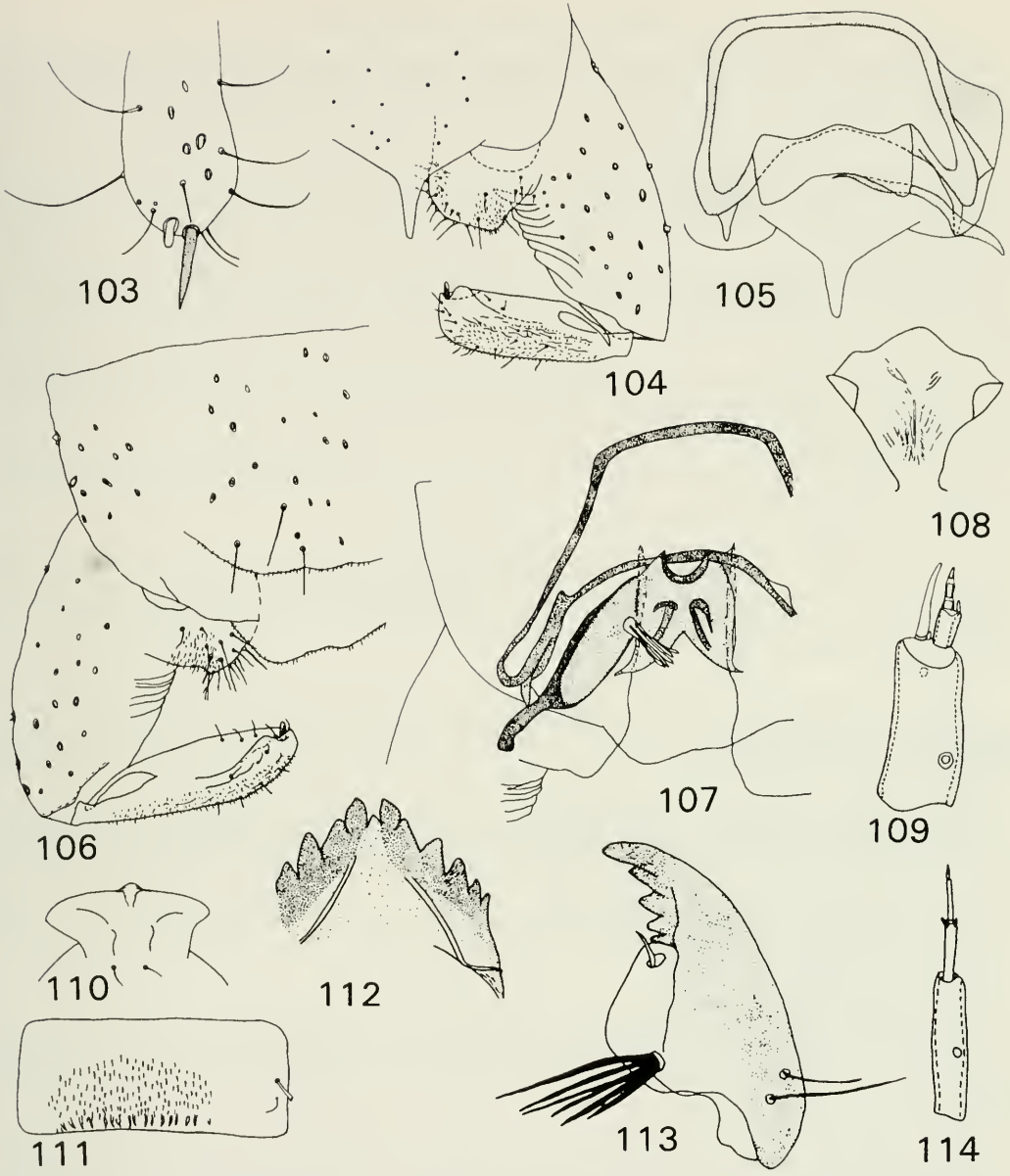
The position of the C proximal to the apex of M_{3+4}, the wing with most of the surface covered with macrotrichia, together with genitalic features: elongate triangular ninth tergum, slender, almost parallel-sided, bare anal point, and rounded basidorsal lobe to the gonocoxite (Sublette 1967, Figs. 36, 37) will differentiate the species from other Panamerican orthocladines.

Material examined: **Barretal**, no. II-22, 1♂, no. II-29, 1♂, no. II-39, 1♀, 22.I.-3.II.81; **Lavaderos**, no. II-56, 1♀ (on same slide with holotype of *Metriocnemus latus*, spec. nov.), 22.I.81.

Pseudosmittia forcipata (Goetghebuer)

Camptocladius forcipatus Goetghebuer, 1921: 87, male.
Pseudosmittia triplex Strenzke, 1950: 301, male.
Pseudosmittia forcipatus (Goetghebuer); Pinder 1978: 94, generic position.
Pseudosmittia forcipata (Goetghebuer); Sublette & Sublette 1979: 82, synonymy, distribution; Cranston & Oliver 1988: 450, synonymy; distribution.

This species, which can be recognized by the distinctive trilobed male genitalia (Pinder 1978, Figs. 46D, 136D), has a conspicuous virga and a series of elongate denticles at the apex of the phallopodeme. The Antillean species, *Pseudosmittia antillaria* Saether (1981) is similar but has a very weak anal point (well developed in *P. forcipata* with coarse microtrichia along the entire length) and a tapering gonostylus (basally broadened in *P. forcipatus* in medial view).



Figs 103-105. *Metriocnemus lautus*, spec. nov. 103. Apex of third palpomere, ♂. 104. Genitalia, ♂. 105. Internal skeleton, ♂.
Figs 106-109. *Metriocnemus virgatus*, spec. nov. 106. Genitalia, ♂. 107. Internal skeleton, ♂. 108. Frontal apotome, pupa. 109. Antenna, larva.
Figs 110-111. *Thienemanniella medialis*, spec. nov. 110. Frontal apotome, pupa. 111. Tergum III, pupa.
Figs 112-114. *Thienemanniella spreta* (Roback). 112. Mentum, larva. 113. Mandible, larva. 114. Antenna, larva.

Material examined. **Guachipilan,** sweep net, 1♂, 28.I.81; **Santiago Atitlan**, no. IV-07, 2♂♂, no. IV-08, 11♂♂, no. IV-09, 1♂, 1♀, 22.II.81.

A pupa with visible male genitalia was reared from the same sediments where *Thienemanniella semifimbriata* Saether was taken. Although it is somewhat incomplete, sufficient details are visible to differentiate it as a new species.

Holotype male (pharate, partially dissected from pupal exuviae). Colouration: Thoracic vittae blackish, separate and concolourous with the scutellum, postnotum, and lower part of preepisternum. Abdominal terga I-V mostly dark; VI-VII basally and laterally dark but with a quadrate pale area occupying most of each tergum; VIII-IX dark.

Head. Antenna with 10 flagellomeres. Antennal ratio 0.22; terminal flagellomere with an apical rosette of sensilla and without macrotrichia at the base. Palpal proportions 10:16:28:80 µm, third segment without an apical lobe. Eyes moderately exerted on head with distinct microtrichia extending past the facets. Clypeus slightly wider than the antennal pedicels; with 9 setae in a partially doubled row. Temporal setae lacking.

Thorax. Antepronotum broad, only slightly tapered dorsally. Setae: Lateral antepronotals 2, very weak; dorsocentrals 11; prealars 2; scutellars 2.

Wing. Crumpled in pharate male.

Legs. Crumpled. PI spur 26 µm, basal side denticles coarse; PII spur 26 µm; PIII main spur 26 µm, basal side denticles coarse. Hind tibial apex similar to that of *T. spreta* (Saether 1981, Fig. 16 E, [as *T. sanctivincenta*]); comb of 12 setae. Fourth tarsomere on all legs strongly cordiform.

Abdomen. Tergum I with 4 setae; II-III with a single median seta set in a paler spot; terga IV-VI each with 3 setae, each seta set in a paler spot; VI with 2 setae, one towards the lateral margin on each side; VIII bare; IX with 6 setae, 3 on each side of the midline near the apical margin. Genitalia indistinguishable from that of *Thienemanniella afra* Lehmann (1981, Fig. 27) except for a slightly less pronounced medial gonocoxite lobe and fewer ninth tergal setae.

Diagnosis. The hairy eyes, third palpal segment without an apical spur, antenna with 10 flagellomeres and with an apical rosette separates this species from the Paleotropical species *T. afra* and known Panamerican species of *Thienemanniella*.

Allotype female. Colouration: Similar to the male; apical antennal flagellomere black.

Head. Antenna with 5 flagellomeres; proportions 34:31:34:31:46 µm; terminal segment with an apical rosette of sensilla. Palpal proportions 15:22:43:77 µm. Eyes reniform, moderately exerted on head, distinct microtrichia extending beyond facets. Clypeus with 8 setae.

Thorax. Antepronotum similar to the male; without lateral setae. Setae: Dorsocentrals 9, in 1 row; acrostichals lacking; prealars 2; scutellars 2.

Wings. Crumpled in slide mount.

Leg. Badly crumpled and obscured in slide mounting; all spurs are similar to the holotype male; fourth tarsomeres on all legs strongly cordiform.

Abdomen. Genitalia structural details somewhat obscured, but apparently very similar to *T. spreta* (Saether 1981, Fig. 16H [as *T. sanctivincenta*]). However, the notum is broader at the base and is tapered to a very fine point at the anterior tip.

Pupa. Abdominal length 1.02 mm. Frontal apotome, Fig. 110. Wing sheaths without bacatiform papillae. With 2 median antepronotal setae, one of which is much coarser and strongly flattened; with 3 precornial setae, one of which is coarser and slightly flattened; with 3 dorsocentral setae, the middle one more ventral in position. On either side of the median raphe are sparse, very fine microtrichia-like denticles. Abdomen with terga I-II devoid of shagreen; III-V with sparse shagreen and a single apical row of coarse spinulae, Fig. 111; VI-VIII with similar shagreen but without apical spinulae; intertergal membrane II/III with sparse fine spinulae; sterna IV-VII with an apical transverse row of sparse, coarse denticles similar to those of the terga. Swim fin with 3 coarse marginal setae and about 10 very fine setae.

Material examined. Holotype: ♂, **Rincon**, leaf litter at small waterfall C, no. I-100, (on same slide with 2 paratype ♀♀ of *Corynoneura ferelobatus*, and 2 pupal exuviae of *Thienemanniella semifimbratus*), 16.III.81. - Allotype: ♀, **Barretal**, no. I-3, no. 4, (on same slide with holotype ♂, allotype ♀, 2 paratype ♂♂, 4 paratype ♀♀, 7 pupal exuviae of *Corynoneura hirvenojai*, spec. nov. and 1 *Cricotopus* spec., pupal exuviae), 3.II.81.

Thienemanniella semifimbriata Saether

Thienemanniella semifimbriata Saether, 1981: 32. Male, female, pupa, larva; type-locality, St. Vincent, West Indies.

The Guatemalan material is remarkably similar to the St. Vincent specimens as described by Saether (1981), differing notably in having a reduced number of antennal flagellomeres (Guatemala, 9; St. Vincent, 12). Reduction in antennal flagellomeres has been observed as both inter- and intra-population (seasonal) variation in corynoneurines by Schlee (1968). Other differences are slight as is indicated in Table 1 and are construed as population differences. The congruence of genitalic features, tibial spur structure, pupal chaetotaxy and swim fin morphology is considered diagnostic of conspecificity.

The Neotropical species, *Thienemanniella desertica* Paggi has genitalia with a similar basal lobe to the gonocoxite (Paggi 1985, Fig. 9); however, that species has an almost straight phallopodeme while *T. semifimbriata* has a strongly curved one.

Material examined. **Rincon**, from leaf litter at small waterfall C, no. 301a, IV-10, 1♂ pupa, no. 303b, I-95, ♂, no. 326h, I-96, ♂, ♀, 2 pupal exuviae, no. 326j, I-98, ♂, ♀, no. 301c, I-99, ♂, no. 326k, I-97, ♂, ♀, 1 pupal exuviae [on same slide 1♀ *Corynoneura*], no. 327a, I-100, 2 pupal exuviae [on same slide: holotype *Thienemanniella medialis*, spec. nov., 1♀, 1 intersex *Corynoneura ferelobatus*, spec. nov.], no. L31a, I-50, 1 pupal exuviae [3 larval *Corynoneura* sp.], no. L31a, 217L, I-49, 3.II.-25.III.81.

Thienemanniella spreta (Roback), comb.nov.

Corynoneura (Thienemanniella) spreta Roback, 1962: 2, male; type locality, Panama.
Thienemanniella sanctivincenta Saether, 1981: 37, larva, pupa, adult male and female; type locality, St. Vincent, West Indies. **Syn. nov.**

Although we have not examined the type materials, it appears that the Guatemalan specimens agree well with the adults described by Roback (1962) and Saether (1981) (cf. Table 1) and the pupa described by Saether (1981). The larva as described by Saether (1981) is, however, distinctly different from that associated with the pupae and adults in Guatemala. Since both the St. Vincent and Guatemala are presumptive associations, there is some question as to which is the correct association. However, the Guatemalan larval material is from the same lake sediments samples from which pupae and adults were reared.

Table 1. Comparison of selected features in adult *Thienemanniella* species from various locations.

	T. semifimbratus		*T. spreta*		
	St. Vincent	Guatemala	Panama	St. Vincent	Guatemala
Flagellomeres	12	9	12	12	12
Antennal ratio	0.28-0.43	0.48-0.64	0.47	0.32-0.38	0.49-0.57
Setae:					
Temporal	3-4	2-3	–	1-2	0-1
Clypeal	12-14	9-11	–	7-11	6-11
Dorsocentral	12-15	9-11	–	10-14	10-12
Antepronotal	4	4-5	–	3-4	2-3
Prealar	3	3-4	–	2-4	3-4
Scutellar	4-7	4	–	2-3	2
Wing length	0.38	0.70-0.72	0.90	0.63-0.78	0.82-0.93
Venarum ratio	1.79	1.71-1.82	–	1.73-1.84	1.65-1.83
Costa\Wing length	0.38	0.31-0.35	0.38	0.33-0.34	0.30-0.36
Pl LR	0.84-0.86	0.82-0.93	–	0.77-0.82	0.76-0.91

Larva. Ventral head length 174-180 µm (3); mandible length 74-78 µm (3). Head yellowish except for the darkened mentum, postoccipital sclerite, mandibular tips and the second antennal segment.

Mentum, Fig. 112, with 13 teeth of which the central tooth is much smaller and paler than the first laterals. Mandible, Fig. 113. Antenna, Fig. 114; proportions 82-94 µm (3):30-32 µm (3):24 µm (3): 4-5 µm (3):4-5 µm (3).

Epipharyngeal apparatus somewhat obscured; pecten epipharyngis with 3 triangular curved blades; premandibles simple with a virtually indistinguishable weak brush.

Anterior parapods separate with numerous long claws which grade off to short claws posteriorly; the anteriorly directed claws are simple while the bulk of the lateral and ventral claws are pectinate; the posterior shorter claws also appear to be simple.

Procercus about twice as long as wide with 4 long terminal setae. Posterior parapods each with a short heavy ventral seta near the base and with about 15 curved claws without basal denticles; anal tubules only slightly longer than the procerci.

Material examined. **Amatitlan**, no. V-64, 1♂, no. A-72, 1♂, no. L-91, 2♂♂, 1♂, no. I-95, 1♂, no. V-59, 2♂♂, no. V-60, 1♂, 1♀, no. A-60, 1♂, 2♀♀, 1 pupal exuviae [7 *Cricotopus* pupal exuviae], no. V-63, 4 pupal exuviae [*Cricotopus*, 2 pupal exuviae, 1♂ pharate, fragmentary], no. A-71, 1♀, no. A-68, 1♂, 1♀, no. A-73, 1♀, no. A-74, 1♀, no. A-65, 1♂, no. A-69, 3 larvae (?), no. V-61, 1♂ (on same slide 9 pupal exuviae, 4 larva, *Cricotopus sylvestris*), 3.-25.II.81.

Subfamily Chironominae

Tribe Chironomini

Apedilum elachistus Townes

Apedilum elachistus Townes, 1945: 33, adults; Epler 1988b: 105, review; generic reassignment.
Paralauterborniella elachista (Townes); Sublette & Sublette 1979: 101, review, distribution.

The wing pattern and genitalia of this species are distinctive (Townes 1945, Figs. 205, 25).

Material examined. **Medio Monte**, no. IV-40, 1♂, concrete cattle drinking trough, no. IV-58, 1♂, no. IV 57, 1♀, 25.II.-12.III.81.

Apedilum subcinctum Townes

Apedilum subcinctum Townes, 1945: 33, adults; Epler 1988b: 105, review, generic reassignment.
Paralauterborniella subcincta (Townes); Sublette & Sublette 1979: 102, review, distribution.

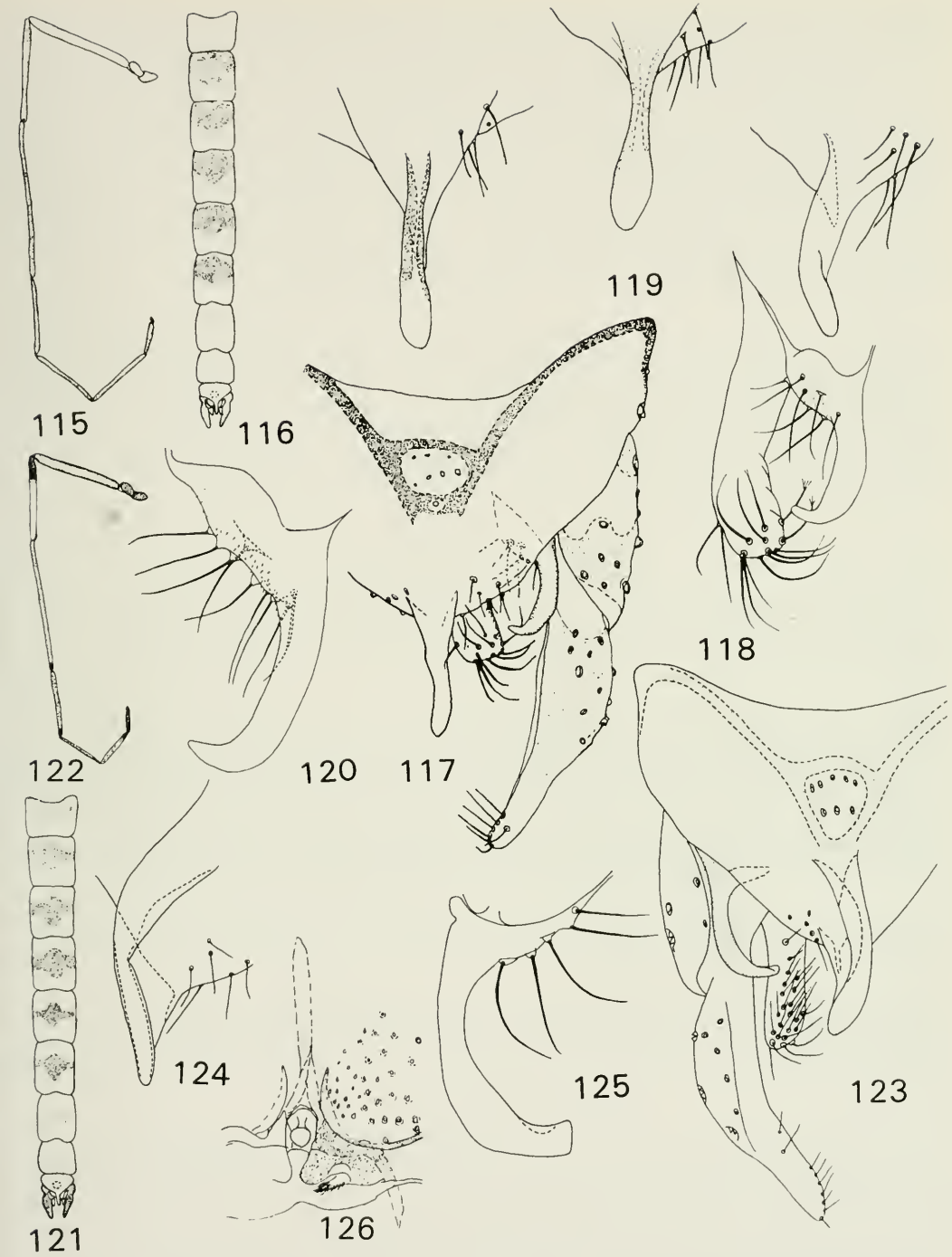
The combination of unmarked wings and genitalic features (Townes 1945, Fig. 24) will differentiate this species.

Material examined. **Atitlan**, no. B03-B06, sweep net, 4♂♂, 21-II-81; **Amatitlan**, no. A-81, 1♂, 1♀, no. A-82, 2♂♂, 24.II.81.

Chironomus wuelkeri, spec. nov.

Holotype male. Colouration: Palpi and antennal flagella blackish-brown, remainder of head and thoracic vittae pale brown. Postnotum, preepisternum and pleural spot dark brown; legs pale brown to dark brown, with the foretibiae and foretarsi black, Fig. 115; narrow base and apex of middle and hind tibiae blackish; middle and hind tarsi brownish at base, becoming darker apically so that Ta_{4+5} on both legs are blackish. Abdominal vittae and genitalia blackish-brown; abdominal markings, Fig. 116.

Head. Antennal ratio 3.06 (2.94-3.34; 3); palpal proportions 50:275:237:237 µm. Frontal tubercle short and conical, length 83 µm (38; 1). Dorsal extension of eye long and parallel-sided, 6 facets wide near apex.



Figs 115-120. *Chironomus wuelkeri*, spec. nov. 115. Foreleg markings, ♂. 116. Abdominal colour pattern, ♂. 117. Genitalia, holotype ♂. 118. Superior and inferior volsellae, holotype ♂. 119. Variations in anal point, ♂. 120. Superior volsella, paratype ♂.
Figs 121-126. *Chironomus jonmartini*, spec. nov. 121. Abdominal colour pattern of ♂. 122. Foreleg colouration, ♂. 123. Genitalia, ♂. 124. Anal point, lateral view, paratype ♂. 125. Superior volsella, ♂. 126. Genitalia, ♀.

Ocular ratio 0.13 (paratype). Clypeus basal width less than the width of the antennal pedicel; with 26 (25-31; 3) setae. Temporal setae 34 (27-30; 3), in double to triple rows behind the dorsal eye extension.

Thorax. Mesoscutum hump not present. Setae: Dorsocentrals 20, partially in 2 rows; acrostichals 18 (16-27; 3), in two rows; prealars 5 (6-7; 3); supra-alars 1 (1; 3); scutellars 18 (17-19; 3), in a partially doubled row.

Wing. Membrane unmarked, with microtrichia clearly visible at 125 ×; r-m crossvein and R, R_1, R_{4+5} and base of M darkened. Venarum ratio 1.04 (1.03-1.04; 3). Wing length 3.61 mm (3.60-3.77; 3); squama with 35 (21-25; 3) marginal setae. R with 37 (33-43: 3) setae; R_1 with 33 (26-39; 3) setae; R_{4+5} with 51 (43-49; 3) setae.

Legs. Sensilla chaetica of PII 12 (8-11; 3), PIII 15 (12-14; 3), both in apical one-third. Pulvilli large. Leg ratios: PI 1.5 (1.5-1.52; 2); PII 0.58 (0.56-0.58; 3); PIII 0.70 (0.65-0.68; 3). PI BR <3.0.

Abdomen. Genitalia, Fig. 117; superior and inferior volsellae, Fig. 118. Ninth tergal setae 9 (6-11; 3). The chaetotaxy on the ninth tergum is variable with setae occurring in 1-3 patches. The variation in anal points due to mounting variation is shown in Fig. 119. Superior volsella, Fig. 120 (paratype).

Diagnosis. This species is similar to several Neotropical species which have narrow anal points. It differs from *Chironomus strenzkei* Fittkau in having a more elongate, hooked superior volsella (cf. Fittkau 1968, Figs. 2, 3); it differs from *Chironomus calligraphus* Goeldi also in the same feature (cf. Fittkau 1965, Figs. 9, 10); and from *Chironomus latistylus* Reiss in differences in abdominal colouration as well as differences in the superior volsella (Reiss 1974, Fig. 6). The latter two species also have differently-shaped gonostyli. In *C. strenzkei*, which has a similar gonostylus, the wing membrane is strongly marked in contrast to this species which has unmarked wings except for the slightly darker r-m crossvein.

Allotype female. Colouration: Very similar to the male; leg markings somewhat darker than the male with the PI femur brown and PII and III pale; PI and II Ti and Ta_{1-5} dark; in PIII Ta_1 dark only on apex and with Ta_{2-5} dark.

Head. Antennal proportions 250:137:137:137:300 µm; palpal proportions 62:250:250:400 µm (apical palpomere somewhat shriveled). Frontal tubercle length 39 µm. Ocular ratio 0.15; Clypeus with 33 setae. Temporal setae 30.

Thorax. Setae: Dorsocentrals 27, in 1-3 rows; acrostichals 26, in 2 rows; prealars 5; supra-alar 1; scutellars 24.

Wing. Membrane with microtrichia clearly visible at 125 ×. Venarum ratio 1.11. Wing length 3.94 mm. Squama with 34 marginal setae, mostly in a 2X series. R with 44 setae; R_1 with 64 setae; R_{4+5} with 91 setae.

Legs. Sensilla chaetica of PII 55, PIII 51. Pulvilli as in the male. Leg ratios: PI 1.57; PII 0.54; PIII 0.67.

Abdomen. Genitalia distorted in mounting but apparently not significantly different from other *Chironomus* species.

Females of the genus *Chironomus* cannot be separated on the basis of genitalic features. However, colour patterns of legs and abdomens, size, and various ratios permit recognition of most species.

Material examined. Holotype: ♂, **Rincon**, sweep net, no. V-01, 25.II.81. - Allotype: ♀, **Rincon**, sweep net, no. V-06, 3.II.81. - Paratypes: **Rincon**, no. V-03, 1♂ 3-III-81, no. SW2h, 2♂♂, sweeping (on same slide with holotype ♂ of *Chironomus rincon*, spec. nov.), 2.II.81.

This species is named in honor of Dr. Wolfgang W. Wuelker, Albert-Ludwigs-University, Freiburg, who has contributed significantly to our knowledge of the karyosystematics of the genus *Chironomus*.

Chironomus jonmartini, spec. nov.

Holotype male. Colouration: Palpi dark; antennal pedicels, thoracic vittae which are almost contiguous, postnotum, a spot on the pleura and preepisternum yellowish-brown. Wing membrane not darkened except on the r-m and f-cu; principal longitudinal veins, including anal, darkened. Tibiae narrowly infuscated at base; Ta_{1-4} on fore legs with a narrow dark fascia at the apex, middle and hind legs similar except that Ta_1 is largely dark; Ta_5 on all legs dark. Abdomen with markings darker than thorax (Fig. 121).

Head. Antennal ratio 3.68 µm (3.41-4.20; 3). Palpal proportions 75:225:237:250 µm. Frontal tubercle length 77 mm (paratype). Dorsal extension of eye parallel-sided with 6 facets near apex. Clypeus with 42 (33-36; 3) setae. Temporal setae 32 (26-33; 3), in an irregular series which may be 2-3 rows wide.

Thorax. Presence or absence of a mesoscutum tubercle cannot be determined from the material at

hand. Setae: Dorsocentrals 30 (25-28: 3), in 2-3 rows; acrostichals 19 (25-26; 3), mostly in 2 rows; prealars 8 (7-8; 3); supra-alars (1; 2); scutellars 16 (16, 18; 2), in a posterior staggered row, with 19 (18, 30; 2), finer setae strewn on anterior face.

Wing. Membrane with microtrichia visible at 125 ×. Wing length 3.26 mm (3.45-3.72; 5). Squama with 18 (23, 28; 2) setae. R with 18 setae. R_1 with 24 setae. R_{4+5} with 32 setae.

Legs. Foreleg colouration, Fig. 122. Pulvilli large. Sensilla chaetica of PII 10 (7-12; 4), PIII 10 (3-9; 4). Leg ratios: PI 1.65 (1.56-1.59; 3); PII 0.61 (0.60-0.67; 3); PIII 0.76 (0.77; 3); PI BR <3.0

Abdomen. Genitalia, Fig. 123. Ninth tergum with 9 (8-12; 3) setae. Anal point broad at base, weakly downturned at apex, Fig. 124 (paratype). Superior volsella darkened, with a hooked apex, Fig. 125; inferior volsella subcylindrical from near the base, with several distinctly branching setae.

Diagnosis. This species resembles members of *Chironomus decorus* complex of the Nearctic region but differs in the details of the superior and inferior volsella.

The holotype male of *Chironomus decorus*, which was examined by the senior author, has genitalia as illustrated by Townes (1945, Fig. 136A).

The species *Chironomus gualtematicus* Cockerell (1915) was described from "... a couple of specimens ..." (female). The co-types have not been located. From the description of the colour pattern it is similar to *C. jonmartini*, particularly in leg colouration. However, the abdominal colour patterns are distinctively different with *C. gualtematicus* having dark abdominal tergal bands which cover half or more of each tergum while *C. jonmartini* has small distinct "saddles" near the middle of terga II-VI. The species *C. gualtematicus* is here considered a *nomen dubium*.

Allotype female. Colouration: Similar to the male; basal segments of antenna brownish; terminal, blackish; crossvein r-m and f-Cu more heavily darkened than in male.

Head. Antennal proportions: 174:118:130:115:232 µm; all segments, except the terminal one flask-shaped; terminal, narrow and spindle-shaped; antennal ratio 0.43. Palpal proportions 55:203:211:- µm (terminal palpomere considerably shriveled). Frontal tubercle length 55 µm. Dorsal extension of eye broad and moderately tapered, with 7 facets near the apex in a diagonal series. Clypeus with 42 setae. Temporal setae 32, 2-3X dorsally.

Thorax. Setae: Dorsocentrals 55, in 2-3 rows posteriorly, becoming 1 row anteriorly, then expanding to form a clump of 6 humeral setae; acrostichals 20, mostly in 2 staggered rows; prealars 7; supra-alar 1; scutellars 16, in a straight posterior series and with 21 smaller setae in an anterior strewn series.

Wing. Membrane with microtrichia clearly visible at 125 ×. R_{4+5} ends over the apex of M_{1+2}. R_{2+3} ends at 0.15 of the distance between the apex of R_1 and R_{4+5}. Venarum ratio 1.08. Wing length 3.46 mm. Squama with 30 marginal setae, mostly in 2 rows. R with 36 setae; R_1 with 41 setae; R_{4+5} with 51 setae.

Legs. Sensilla chaetica of PII 48, occupying the apical 0.85 of Ti; PIII 59, occupying the apical 0.82 of Ti. Pulvilli large, as in other members of the genus. Leg ratios: PI 1.65; PII 0.59: PIII 0.76.

Abdomen. Genitalia, Fig. 126.

The females of the genus *Chironomus* cannot be recognized on genitalic features; however, colour patterns, in combination with size and leg ratios, will usually separate most species.

Material examined. Holotype: ♂, **Atitlan**, sweep net, no. IV-10, 21.II.81. - Allotype: ♀, **Amatitlan**, no. A-87, 23.II.81. -Paratypes: **Amatitlan,** no. A-88, 1♂, no. V-89, 1♂, no. A-80, 1♂, no. A-78, 1♂, no. A-79, 1♀, 23.-25.II.81; **Atitlan,** no. IV-13, 1♂, 21.II.81; **Rincon**, no. V-10, 1♂, 2.II.81, no. V-02, 1♂, no. V-09, 1♂, no. V-08, 1♀, 2.-3.II.81, no. V-05, 1♀, Rincon.

We are pleased to dedicate this species to Dr. Jon Martin, University of Melbourne, who has contributed significantly to our knowledge of *Chironomus* systematics.

Chironomus rincon, spec. nov.

Holotype male. Colouration: Head and thorax yellowish; antennal flagellum black; antennal pedicels yellowish brown. Thoracic vittae yellowish brown except for a blackish spot at the posterior end of the lateral vittae. Postnotum blackish. Legs mostly pale yellowish-brown; foreleg marked with blackish-brown as in Fig. 127; middle and hind legs similarly marked except that the fascia at the base of PII and III tibia

is scarcely longer than the tibial width. Abdomen yellowish with blackish-brown markings as in Fig. 128. Genitalia mostly blackish.

Head. Antennal ratio 2.96. Palpal proportions 55:312:296:335 µm. Frontal tubercle about 3 times as long as wide; length 46 µm. Clypeus narrower than the width of the antennal pedicel; with 26 setae. Temporal setae 26.

Thorax. Antepronotum obscured. Mesoscutal tubercle not evident. Setae: Dorsocentrals 17, partially in 2 rows; acrostichals 9, in 2 rows; prealars 6; supra-alars 1; scutellars 33.

Wing. Membrane with microtrichia visible at 125 ×. Anterior wing veins slightly darker than posterior ones; r-m crossvein weakly darkened. Wing length 3.74 mm. Venarum ratio 1.01. Squama with 18 marginal setae. R with 42 setae. R_1 with 44 setae. R_{4+5} with 51 setae.

Legs. Sensilla chaetica of PII 9, PIII 11. Leg ratios: PI 1.72; PII 0.62; PIII 0.75; PI BR <3.0.

Abdomen. Genitalia, Fig. 129. Ninth tergum with 9 setae. Anal point distorted in mounting but clearly almost parallel-sided and broad at base. Gc/Gs ratio 0.84. Superior volsella very short, almost straight. Inferior volsella short, weakly capitate, with 29 setae.

Diagnosis. This species closely resembles *Chironomus jonmartini*, spec. nov., but can be separated by having a slightly different colour pattern and striking different superior volsellae on the genitalia.

Material examined. Holotype: ♂, **Rincon**, no. SW2h (on same slide with 2♂ paratypes, *Chironomus wuelkeri*, spec. nov.), 2.II.81.

Cladopelma forcipis (Rempel), comb. nov.

Chironomus (Cryptochironomus) forcipis Rempel, 1939: 211; male.
Chironomus (Cryptochironomus) boydi Beck, 1962: 91, male, **syn. nov.**.
Harnischia boydi (Beck); Beck & Beck 1969: 300, generic position; male, immature stages.
Cryptocladopelma boydi (Beck); Lichtenberg 1979: 541, male, distribution, ecology, possible synonym [name corrected to *Cladopelma boydi* in addendum].
Cladopelma boydi (Beck); Palomäki 1987: 46, distribution.

This species can be readily recognized by its distinctive genitalia (Rempel 1939, Fig. 4; Beck 1962, Fig. 5; Beck & Beck 1969, Fig. 13; Lichtenberg 1979, Figs. 1-3). Known distribution is southern U.S.A., Mexico, Guatemala, Columbia, Brazil. The synonymy of *C. boydi* with *C. forcipis* suggested by Beck & Beck (1969) and Lichtenberg (1979) is accepted here based on descriptions given. Antennal and leg ratios, and, above all, the distinctive genitalia are considered to be diagnostic. The legs of Guatemalan specimens are darker than those described by Rempel (1939). The types of *C. forcipis* are lost.

Material examined. 4♂♂, **Atitlan**, sweep net, 4♂♂, 21.-22.III.81.

Cryptochironomus spec.

This species appears to be a member of the *fulvus*-group. In the absence of associated adults, it is not described further.

Material examined. **Medio Monte** no. IV-35, 1 larva, cattle watering trough, 28.I.81 [on same slide with larvae of *Dicrotendipes californicus*, *Chironomus* spec., *Tanytarsus* spec.].

Dicrotendipes californicus (Johannsen)

Chironomus californicus Johannsen, 1905: 217; adult.
Tendipes (Limnochironomus) californicus (Johannsen); Townes 1945: 105, adults, generic position, distribution.
Dicrotendipes californicus (Johannsen); Epler 1987a: 34, male, larva, pupa, revision, distribution, synonymy; 1988a: 61, distribution.

The larval, pupal, and adult stages agree closely with Epler's description (1987a), differing only slightly in some particulars, mostly extensions of ranges for mensurable and meristic features. These are as follows (Epler's range values in parenthesis): Male: Antennal ratio 2.76 (2.29-2.67); clypeal setae 15 (16-30); dorsocentral setae 17 (23-39); prealar setae 5 (6-10); scutellar setae 19 (6-16); venarum ratio 1.05 (0.91-0.99) Epler apparently reversed the venarum ratio because he states "F-Cu below or slightly distal to R-M"; this would give a ratio of 1.0-1.1. The venarum ratio of 1.05 in Guatemala specimens is thus within the range. Leg ratios: PI 1.77 (1.48-1.65); PII 0.56 (0.47-0.53); tergum IX setae ("dorsal basal setae" of Epler) 9 (3-7).

Female. Colouration: Very similar to the male but with leg fasciae somewhat broader. Flagellomere 1 with 2 transverse dark fasciae, flagellomeres 2-4 with a single median dark fascia, and apical flagellomere entirely dark. One feature not mentioned in previous descriptions is the darkened longitudinal veins beyond the r-m crossvein; these, together with the faint clouds on the membrane, makes the apical half of the wing appear to have a faint infuscation.

Head. Antenna with 5 flagellomeres; proportions 133:84:93:102:161 µm. Palpal proportions 62:186:186 :288 µm. Length of frontal tubercles 12 µm. Dorsal extension of eye long and parallel-sided, 6 facets wide near apex. Ocular ratio 0.12. Clypeus with 40 setae. Temporal setae 33, in a single row behind the eyes, becoming doubled behind the dorsal extension and forming a clump of 5-6 setae just medial to the dorsal apex of the extension.

Thorax. Setae: Dorsocentrals 35, in a partially doubled row; anteriorly the row includes a loose clump of 8 humerals; acrostichals 16, in 2 rows; prealars 6; supra-alar 1; scutellars 26, scattered.

Wing. Membrane with microtrichia visible at 125 ×. Venarum ratio 1.11. Wing length 2.68 mm. Squama with 31 marginal setae, in a partially doubled series. R with 19 setae; R_1 with 17 setae. R_{4+5} with 38 setae.

Legs. Foretibia with a low rounded scale as in other members of the genus. Middle and hind tibial combs contiguous, each pair of combs with 2 spurs subequal in length. Sensilla chaetica of PII 90 in 2 series, extending the length of Ta_1. Leg ratios: PI 1.82; PII 0.63; PIII 0.74.

Abdomen. Genitalia, Fig. 130.

The females of this genus have not been adequately described; however, colour features, size, ratios, etc. allow association with males.

Material examined. **Atitlan**, no. IV-23, 1♀, no. IV-21 [SW 7a], 1♂, no. IV-22 [SW 7c], 1♂, 22-II-81; **Medio Monte**, no. IV-35, 2 larvae, cattle watering trough,[on same slide as larvae of *Cryptochironomus* spec., *Chironomus* spec., *Tanytarsus* spec.], no. IV-61 [208 L], 4 larvae, 1 pupal exuviae, (1 larva of *Tanytarsus* spec. on same slide). no. IV-98, 6 pupal exuviae, (on same slide as 1 pupal exuviae *Chironomus*; 8 pupae, pupal exuviae *Tanytarsus* spec.) no. IV-97, 4 pupae, pupal exuviae [on same slide as 9 pupal exuviae *Tanytarsus* spec., 1 pupal exuviae *Polypedilum* spec.], no. IV-96, 5 pupal exuviae, 1 larval exuviae, no. IV-45 [208 PL], 1 larval exuviae, 1 pupal exuviae, no. IV-51, 3 pupae, pupal exuviae, no. L3a, 1 pupal exuviae, no. IV-59, 1 pupal exuviae, no. IV-55, 1 pupal exuviae, 1♀, no. IV-92 [205f], 1♂, no. IV-95 [206b], 1♀, no. IV-92 [206c], 1♀, no. IV-93 [206a], 1♂, no. IV-91 [205e], 1♂, 28.I.-2.III.81.

Distribution. U.S.A., Mexico, Guatemala, Costa Rica, Panama, Chile, Peru, Columbia.

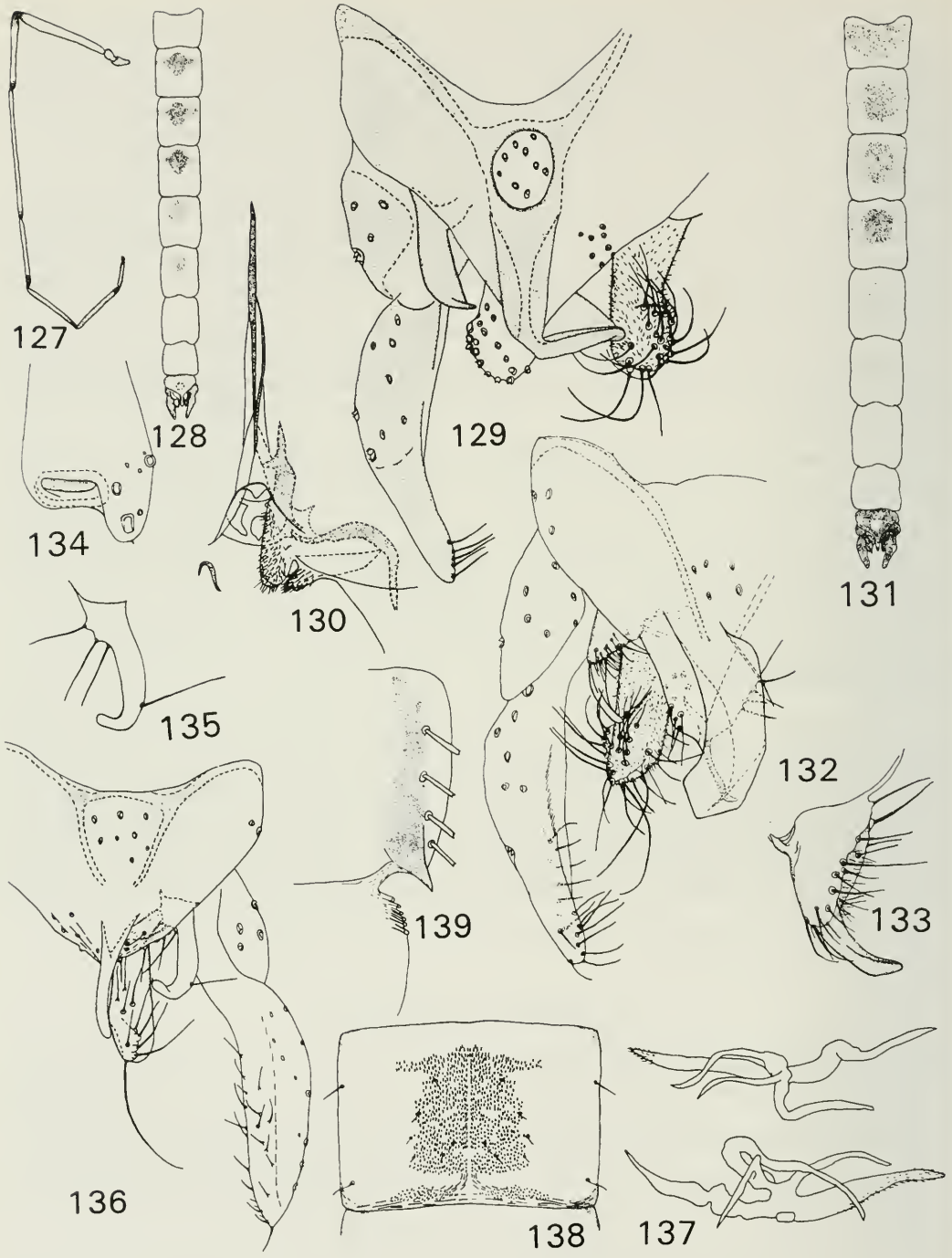
Dicrotendipes lucifer (Johannsen)

Chironomus lucifer Johannsen, 1907: 110; adult.
Dicrotendipes lucifer (Joh.); Epler 1987a: 62, review; synonymy; redescription of♂, pupa, and larva; distribution.

The distinctive features of the larva (Epler 1987a, Figs. 224-228) permit recognition of the species.

Material examined. **Atitlan,** no. IV-33, 1 larva, 21.II.81, (on same slide with 1 larva of *Pseudochironomus* spec.) was taken during this study.

Distribution. Canada, U.S.A., Guatemala.



Figs 127-129. *Chironomus rincon*, spec. nov. 127. Foreleg colouration, ♂. 128. Abdominal colour pattern of ♂. 129. Genitalia, ♂.
Fig. 130. *Dicrotendipes californicus*, (Joh.), genitalia, ♀.
Figs 131-133. *Einfeldia atitlanensis*, spec. nov. 131. Abdominal colour pattern of ♂. 132. Genitalia, holotype ♂.

Dicrotendipes sinoposus Epler

Dicrotendipes sinoposus Epler, 1987b: 152, ♂; 1988a: 64, distribution.

We have not encountered this species in Guatemala but it should occur here.

Distribution. Mexico, Dominica, Columbia, Brazil (Epler 1988a).

Einfeldia atitlanensis, spec. nov.

Holotype male. Colouration: Antennae, palpi, preepisternum, postnotum, leg and abdominal markings blackish-brown; thoracic vittae paler brown; abdomen marked as in Fig. 131; base of foretibia with a narrow blackish-brown fascia, as are the narrow apices of Ta_{1-3}; Ta_{4-5} dark on all legs.

Head. Antenna with 11 flagellomeres. Antennal ratio 2.83. Palpal proportions 47:171:190:275 µm, with 5 sensilla clavata at the surface, not embedded in a pit. Frontal tubercle length 47 µm. Dorsal extension of eye long, broad and parallel-sided. Clypeus narrower than the antennal pedicel; with 27 setae. Temporal setae 23, mostly in a single row.

Thorax. Antepronotum crumpled so that precise shape cannot be determined. Setae: Dorsocentrals 8, in single row; acrostichals 16, mostly in a double row; prealars 4; supra-alars lacking; scutellars 13, coarse, in a straight posterior row, with 14 anterior, smaller, strewn setae.

Wing. Without conspicuous markings but with anterior wing veins slightly darker that the posterior; r-m narrowly infuscate. Membrane with microtrichia visible at 125 ×. R_{4+5} ends very slightly proximal to M_{1+2} at 0.93 of the distance between the apex of M_{3+4} and M_{1+2}. R_{2+3} ends at 0.22 of the distance between the apex of R_1 and R_{4+5}. Anal ends at 0.48 of the distance between f-Cu and the apex of Cu_1. Anal lobe projecting. Venarum ratio 1.04. Wing length 2.85 mm. Squama with 21 marginal setae. R with 2 setae; R_1 with 30 setae; R_{4+5} with 29 setae.

Legs. Foretibial apex with a low rounded scale. Middle and hind tibial combs contiguous; each leg with 2 spurs which are subequal in length. Sensilla chaetica of PIII 4. Pulvilli about half as long as the claws. Leg ratios: PI 1.72; PII 0.63; PIII 0.76; PI BR <0.3.

Abdomen. Genitalia, Fig. 132. Anal point crumpled in slide mounting but breadth apparently not distorted. Gc/Gs ratio 0.59. Superior volsella, Fig. 133.

Diagnosis. *Einfeldia atitlanensis* resembles the Holarctic *Einfeldia paganus* (Mg.) (Townes 1945, Fig. 129) in having a broad anal point. However, in this species the superior volsella is shaped differently and the gonostylus is of moderate width and evenly tapered to the apex. Also, *E. paganus* is a paler species with a lower PI leg ratio (1.4-1.5).

Allotype female. Colouration: Antenna pale brown except for apical flagellomere which is blackish. Head and body similar to the male except the r-m crossvein is more heavily infuscate and the abdominal terga are more darkly marked with the blackish saddle-shaped markings distinct on II-VI; VII-IX and cerci darkened; sternum VIII blackened.

Head. Antennal proportions 187:125:140:133:187 µm; palpal proportions 78:234:281:351 µm. Frontal tubercle length 62 µm. Dorsal extension of eye broad and weakly tapered apically with 7 facets across the middle and 3-4 facets in the terminal row. Clypeus with 36 setae. Temporal setae 24, in a partially double row at the medial apex of the series.

Thorax. Antepronotum narrowed, then widened near the dorsal apex; with a broad median notch. Setae: Dorsocentrals 22, in a partially doubled row; acrostichals 16; prealars 7; supra-alar 1; scutellars 17, in a posterior transverse series and with 23 anterior setae in a more irregular pattern.

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133. Superior volsella, holotype ♂.
Figs 134-139. *Endotribelos albatum*, spec. nov. 134. Foretibial spine, ♂. 135. Superior volsella, ♂. 136. Genitalia, holotype ♂. 137. Thoracic horn; left, above; right, below, pupa. 138. Chaetotaxy of abdominal tergum III, pupa. 139. Posterolateral spur of segment VIII, pupa.

Wing. Membrane with microtrichia visible at 125 ×. Venarum ratio 1.08. Wing length 3.46 mm. Squama with 32 setae. R with 22 setae. R_1 with 33 setae. R_{4+5} with 51 setae.

Legs. Tibial spurs as in the male. Sensilla chaetica of PII 66, PIII 63, occupying most of the length of Ta_1. Leg ratios: PI 1.84; PII 0.58; PIII 0.74.

Abdomen. Genitalia distorted in mounting.

Material examined. Holotype: ♂, **Atitlan**, sweeping, 21.II.81. - Allotype: ♀, collected with the holotype. - Paratype: 1♀ mounted on the same slide (bottom) with the allotype female (top).

Genus *Endotribelos* Grodhaus, emended

Endotribelos Grodhaus, 1987: 237; type-species, *Tendipes hesperius* Sublette, by original designation.

Adult. As described by Grodhaus (1987) but with the following changes: 1. Middle tibia with a single spur on the posterior comb or both combs spurred. 2. r-m and apex of M just proximal to r-m with or without setae (male) or always present (female).

Pupa. The following changes are noted: 1. Intersegmental membranes III/IV and IV/V with a continuous or interrupted series of shagreen.

Larva. These modifications are needed: Mandible with 4 dark, almost even inner teeth or with 3 teeth separated by a gap from a dark knob (Grodhaus 1987, Figs. 238, 239); mola with or without serrations. Mentum with 15 (Grodhaus 1987, Fig. 240-242) or 16 teeth.

Endotribelos albatum, spec. nov.

Holotype male. Colouration: Head infuscate yellow, antennae and fourth palpomere blackish. Thorax ground colour yellowish-white with lateral half of antepronotum, postnotum, spots on pleura, anterior part of preepisternum, and halteres blackish. Forelegs dark brown, middle and hind legs yellowish-brown. Abdomen black with narrow apex of tergum VII slightly paler; genitalia black.

Head. Antennal ratio 1.38 (1.28, 1.40; 2). Palpal proportions 78:148:101:133 µm. Dorsal extension of eye long and parallel-sided, 6 facets wide near apex. Clypeus with 10 (11; 2) setae. Temporal setae 13 (12, 15; 2), in a single row.

Thorax. Setae: Dorsocentrals 11 (14, 16; 2) in a single row; acrostichals 16 (15, 17; 2) in 2 rows; prealars 4 (4; 2); scutellars 12 (10, 12; 2), coarse, in a posterior row and 4 (6, 9; 2) anterior, fine, slightly scattered setae.

Wing. Membrane with microtrichia visible at 125 ×. R_{4+5} ends slightly proximal to M_{1+2}. Wing length 1.73 mm (1.54, 1.59; 2). Venarum ratio 1.22 (1.19, 1.24; 2). Squama with 6 (6, 8; 2) setae. R with 19 (23; 2) setae. R_1 with 16 (20, 24; 2) setae. R_{4+5} with 30 (33, 38; 2). M with 0-1 (0; 2) setae.

Legs. PI with a minute spine at the apex of the Ti scale, Fig. 134; PII and PIII combs slightly separated, PII with one spur; PIII with two spurs of greatly unequal length. Sensilla chaetica of PII 2 (2; 2). Leg ratios: PI 1.30 (1.16, 1.27; 2); PII 0.57 (0.59, 0.60; 2); PIII 0.74 (0.78, 0.83; 2).

Abdomen. Superior volsella, Fig. 135. Genitalia, Fig. 136. Ninth tergum with 9 (5, 14; 2) setae. Gc/Gs ratio 0.78 (0.71, 0.92; 2).

Diagnosis. The colouration of this species is striking and unique. Field notes by M. Sasa listed this species as "seshiro" ("white back") because of the strongly contrasting whitish scutum against the blackish abdomen.

The genitalia are similar to other members of the genus but wing setation is generally much sparser. The male typically lacks setae (0/1 on one paratype) on M while the female has sparse setae at the apex of M. The only other adequately studied species, *Endotribelos hesperium* (Sublette) typically has several setae on M in both male and female (Grodhaus 1987).

Allotype female. Colouration similar to the male.

Head. Antenna with 5 flagellomeres; proportions 117:86:101:94:172 µm. Palpal proportions 55:140:109

:187 µm. Dorsal extension of eye long and parallel-sided, 6 facets wide near apex. Clypeus with 16 setae. Temporal setae 15, mostly in one row.

Thorax. Setae: Dorsocentrals 20, mostly in one row; acrostichals 20, in 2 rows; prealars 4; scutellars 11, coarse, in a posterior series and 10 finer, in an anterior series.

Wing. Membrane with microtrichia visible at 125 ×. Wing length 1.88 mm. Venarum ratio 1.27. Squama with 10 marginal setae. R with 23 setae. R_1 with 27 setae. R_{4+5} with 58 setae. M with 3 setae; r-m with 1 seta.

Foretibia with a longer spine than male (cf. Fig. 133). Middle and hind tibial combs slightly separated, middle tibial combs with one spur; hind tibial combs with 2 spurs of unequal length, the longer 2 times the length of the shorter one. Sensilla chaetica of PII 7, lacking the pronounced hooked tips; PIII lacking. Leg ratios: PI 1.36; PII 0.63; PIII 0.82.

Abdomen. The genitalia slides which were mounted in a lateral position are considerably flattened. No significant differences could be noted in genitalic features between the female of this species and *Endotribelos grodhausi*, spec. nov. However, the colour patterns of the two are distinctively different.

Pupa. Thoracic horns, Fig. 137, drawn from temporary slide mount by M. Sasa; cephalothorax subsequently lost. Abdomen length 3.51 mm. Abdominal colouration as in *E. grodhausi* but suffused brown of terga less intense.

Shagreen pattern, Fig. 138, virtually indistinguishable from *E. grodhausi* except that the basal and apical shagreen patches of IV and V are weakly contiguous while in *E. grodhausi* they are mostly separate.

Posterolateral spur virtually indistinguishable from that of *E. grodhausi*, Fig. 139. Swim fin with 30 fringe setae.

Material examined. Holotype: ♂, **Medio Monte**, cattle watering trough, no. 301g, 25.II.81. - Allotype: ♀, **Barretal**, waterfall in small stream, no. 3305h, 25.II.81. - Paratypes: no. 305f, 1♂, pupal exuviae, no. 305a, 1♂, collected with the allotype, 25.II.81.

Endotribelos grodhausi, spec. nov.

Holotype male. Colouration: Head yellowish, infuscate posteriorly, antennae and distal 2 palpomeres blackish. Thorax yellowish with blackish markings as follows: preepisternum, pleura, postnotum, and a narrow dark stripe down the midline of the scutum which expands posteriorly covering the prescutal area. Legs yellowish with the fore coxae and foretarsi blackish; abdomen largely blackish with terga II-VIII each with a narrow apical paler fascia. Genitalia largely dark.

Head. Antennal ratio 1.60 (1.69-1.95; 3). Palpal proportions 56:223:124:158 µm (paratype). Dorsal extension of eye long and parallel-sided, 6 facets wide for most of the length of the extension. Clypeal setae 27 (30-42; 3). Temporal setae 18 (14-15); 3).

Thorax. Setae: Dorsocentrals 30 (27-37; 3), mostly in a single, staggered row, posteriorly may form a clump of 3-4; acrostichals 28 (24-29; 3), in 2 rows; prealars 6 (6-7; 3); supra-alars lacking; scutellars 15 (14-16; 3), coarse, in a straight posterior row and with 12 (10-17; 3) much finer setae on the anterior face.

Wing. Membrane with very fine microtrichia visible at 312 ×. Wing length 1.99 mm (2.04-2.44 mm; 3). Venarum ratio 1.14 (1.14-1.15; 3). Squama with 10 (9-14; 3) marginal setae. R setae 32 (31-38; 3). R_1 setae 28 (28-40; 3); R_{4+5} setae 40 (46-55; 3).

Legs. PI with a low spine, Fig. 140; PII and PIII combs slightly separated, each leg with the shorter spur about 0.6 the length of the longer. Sensilla chaetica of PII 6(4-9; 4), PIII lacking. Leg ratios: PI 1.19 (1.02-1.33; 4); PII 0.60 (0.55-0.59; 3); PIII 0.86 (0.80-0.85; 3). Foretibial beard lacking.

Abdomen. Genitalia, Fig. 141. Anal point, lateral view, Fig. 142; anal point (paratype ♂), Fig. 143. Ninth tergum with 18 (17-19; 3) setae. Gc/Gs ratio 0.76 (0.82-0.84; 3).

Diagnosis. This species is very near *Endotribelos hesperium* (Sublette) but has a strikingly different thoracic colouration, lacks setae on vein M (sparse setae on M in female), has typically a strongly spatulate anal point, and has 2 spurs on the middle tibial combs, while *E. hesperium* has only one.

Allotype female. Colouration: General pattern similar to the male but darker and with dark markings more extensive. In addition to the median dark stripe of the mesothorax, the lateral vittae are also brown. Legs brownish.

Head. Antennal proportions 179:125:125:94:179 µm; all flagellomeres flask-shaped except the terminal one which is fusiform; basal flagellomere with indication of suture near middle, similar to *E. hesperium* (Grodhaus 1987, Fig. 5). Palpal proportions 70:195:117:187 µm. Dorsal extension of eye short and broad, almost parallel-sided. Clypeus with 37 setae. Temporal setae 22, in a staggered single row of large and some smaller setae.

Thorax. Setae: Dorsocentrals 42, mostly in 2 rows; acrostichals 27, in 2 rows; prealars 8; supra-alars lacking; scutellars 15, coarse, in a straight posterior row and with 15 fine, irregularly arranged setae on the anterior face.

Wing. Membrane with microtrichia visible at 125 ×. Wing length 2.37 mm. Venarum ratio 1.19. Squama with 17 marginal setae. M with 3 setae; r-m crossvein with 3 setae; R with 35 setae; R_1 with 44 setae; R_{4+5} with 68 setae.

Leg. Foretibial apex similar to that of the male (cf. Fig. 140). Middle and hind tibial combs and spurs as in the male. Sensilla chaetica of PII 33; proximally in a single row becoming 2 rows distally; PIII lacking. Leg ratios: PI 1.33; PII 0.58; PIII 0.79.

Abdomen. Genitalia not distinguishable from that of *E. hesperium* (Grodhaus 1987, Figs. 81, 82, 83), except that the "group of prominent microsetae between ventrolateral and dorsomesal lobes" is lacking.

Pupa. Cephalothorax blackish; abdomen weakly infuscate; lateral junctions of intersegmental membranes blackish on I/II, II/III, III/IV, and IV/V; lateral margins of terga V-VIII with a black longitudinal stripe which becomes progressively broader posteriorly. Total length 4.38-5.52 mm (3).

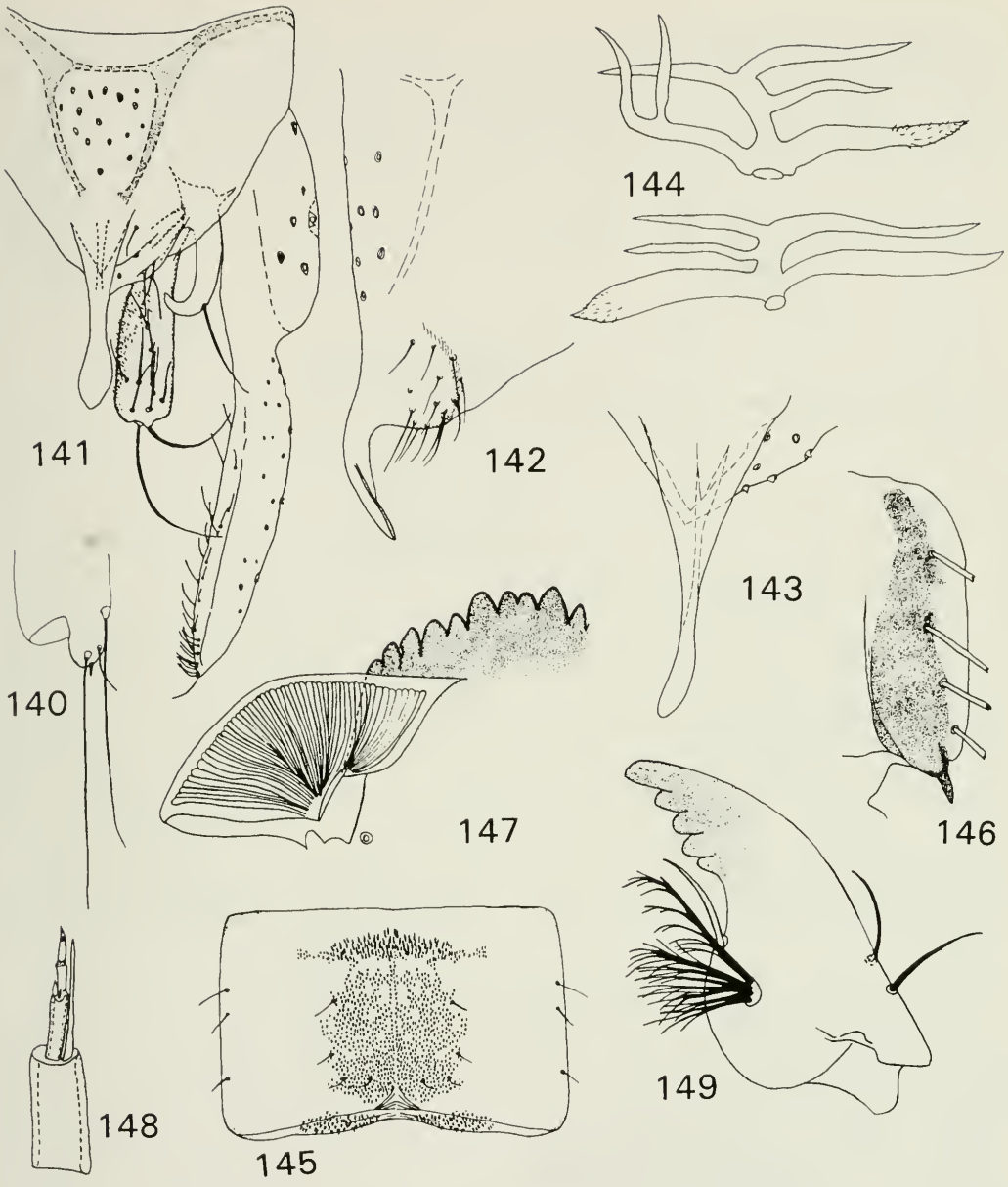
Pupal thoracic horns similar to *E. hesperium* (Grodhaus 1987, Fig. 35) but with fewer branches, Fig. 144. Cephalic tubercles with heavy setae at the base of which are numerous denticles, as in *E. hesperium* (Grodhaus 1987, Fig. 93).

Tergum II with 44-53 (3) weak recurved hooks. Terga II-VI with a basal transverse shagreen band and a central, roughly round finer shagreen patch, Fig. 145; on terga II-III the two bands are contiguous, while on IV-VI the two bands are weakly separated. Tergum VII with 2 small circular patches of weak shagreen near the base of the tergum. Pedes spurii B on I and II; pedes spurii A on IV. Tergum V-VII with flattened lateral setae, 3 on V-VI and 4 on VII-VIII. Intersegmental membrane III/IV and IV/V with coarse shagreen which is interrupted in the middle on each, thus forming 2 patches on each intersegmental membrane. Posterolateral spur of VIII, Fig. 146, almost always with a single spine; however, in one specimen a second, very small outer spur was observed. Swim fin with 37-59 (3) flattened setae.

Larva. Head capsule yellowish with the mandibular tips, teeth of mentum and occipital ring blackish. Ventral head length 239-263 µm (3). Dorsal head sclerites very similar to *E. hesperium* (Grodhaus 1987, Fig. 138) except that the sclerites are devoid of reticulations and S1 is more anterior, at the point of abrupt curvature. The mentum, Fig. 147, is very similar to several species of *Tribelos* as are the ventromental plates which have about 47 major striae. Antenna with 5 segments, Fig. 148. Mandible, Fig. 149 similar to *Tribelos* except that the seta subdentalis is longer as in *E. hesperium* (Grodhaus 1987, Fig. 239) and medial denticles on the mola are lacking. Premandible with 2 subequal terminal teeth and one very weak subterminal tooth. Seta premandibularis simple as in *Tribelos*. Pecten epipharyngis as in *E. hesperium* (Grodhaus 1987, Fig. 193). Labral sensillum SI fully pectinate; SII very weakly pectinate at the tip. Basal segment of maxillary palpus 36 × 20 µm; two medial LCh subequal in length. Preanal papillae with 7-8 long apical setae and 2 short preapical. Posterior parapods each with 14-15 yellowish claws.

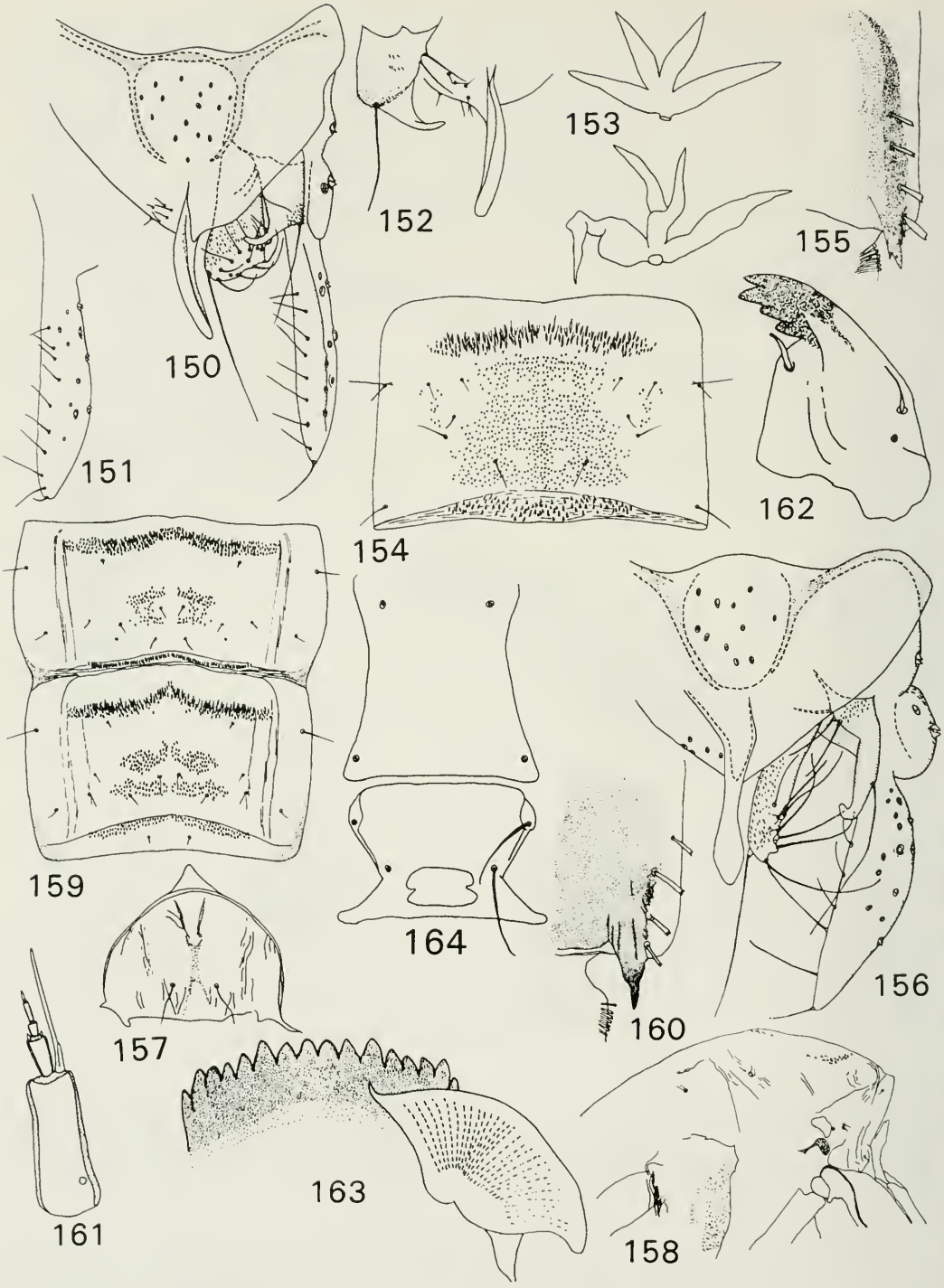
The pupa of *E. grodhausi* is very similar to that of *E. hesperium* with the differences of such a minor magnitude that generic status is not questioned. It is also very near *Endotribelos albulum*, spec. nov. differing in having a higher number of swim fin setae.

The larva is most dissimilar of all life history stages in that the previously known species, *E. hesperium*, has an odd numbered series of teeth in the mentum and a peculiar mandibular structure while the species described here, *E. grodhausi*, spec. nov., is similar to various members of the *Phaenopsectra-Tribelos-Endochironomus* series, which typically have an even number of mentum teeth. The head sclerites in *Endotribelos* are most similar to those of *Tribelos* while the 4 inner mandibular teeth are similar to *Sergentia*. In light of the larval types exhibited by various members of this series of genera the variation exhibited by *E. grodhausi*, spec. nov. are not considered sufficient to erect a new supraspecific taxon.



Figs 140-149. *Endotribelos grodhausi*, spec. nov. 140. Foretibial apex showing spine, ♂. 141. Genitalia, ♂. 142. Anal point, lateral view, ♂. 143. Anal point, paratype ♂. 144. Thoracic horns, pupa. 145. Shagreen of tergum IV, together with intersegmental membrane, pupa. 146. Posterolateral spur of segment VIII, pupa. 147. Mentum and ventromental plate, larva. 148. Antenna, larva. 149. Mandible, larva.

Material examined. Holotype: ♂, **Rincon**, small waterfall, no. 209a [31],l 25.II.81. - Allotype: ♀ and pupal exuviae, collected with the holotype, no. 311b [44], 25.II.81. - Paratypes: **Barretal**, no. 228f [40], 1 pupal ♂ (also includes 1 larval exuviae, *Cricotopus lavaderos*, spec. nov.) no. 216 [41], 1♂, 1 pupal exuviae, no. 223 [42], 1♂, 1 pupal exuviae, no. 219 [32], 1♂, no. 318b [45], 2 pupal ♀♀, 1 larval exuviae, no. 224f [46], 1♀, 1 pupal exuviae,



Figs 150-155. *Polypedilum (P.) microzoster*, spec. nov. 150. Genitalia, ♂. 151. Gonostylus, paratype ♂. 152. Anal point and superior volsella, paratype ♂. 153. Thoracic horns, pupa. 154. Shagreen of tergum IV, pupa. 155. Posterolateral spur of VIII, pupa.

no. 312c [47], 1♀, 1 pupal exuviae, no. 310e [48], 1♂, 1 pupal exuviae, no. 309e [49], 1 pupal exuviae, 2.II.-18.III.81; **Rincon**, small waterfall, no. 223b [33], 1♂, no. 309b [34], 1♂, no. 310d [35], 1♂, 1 pupal exuviae, 1 larval exuviae, no. 316c [36], 1♂, 1 pupal exuviae, no. 311c [37], 1♂, 1 pupal exuviae, no. 318d [38], 2 pupal ♂♂, 2 larval exuviae, no. 310 [39], 1♂, 1 pupal exuviae, no. 310b [50], 1♂, 1 pupal exuviae, no. 313e [51], 1♂, no. 223d [52], 1♀, no. 315a [53], 1♂, 1 pupal exuviae, no. 305j [54], 1♀, no. 312b [55], 2 pupal ♀♀, 2 larval exuviae, no. 309c [56], 1♀, no. 312e [57], no. 305k [58], 1 pupal exuviae, no. 220a [59], 1♂, 1 pupal exuviae, no. 316r [60], 1 pupal ♂ (on same slide with 1 pupal ♀, 1 larval exuviae, *Polypedilum corniger*, spec. nov.), no. 315c, 1♂, no. 313d, 1♂, no. 315d, 1 pupal exuviae (on same slide with 1 pupal exuviae *Polypedilum* spec.), 2.II.-18.III.81.

This species is dedicated to the late Gail Grodhaus, California Department of Public Health, who contributed much to the knowledge of this and related genera of Chironomini.

Polypedilum (Polypedilum) microzoster, spec. nov.

Holotype male. Colouration: Pale yellowish-brown, postnotum blackish-brown. Halteres pale. Legs yellowish, becoming brownish on the tarsal apices. Abdomen pale with very narrow black transverse fasciae at the bases of terga II-VI; genitalia brownish.

Head. Antennal ratio 1.65 (1.34-1.52; 11). Palpal proportions 46:139:136:205 µm. Clypeal setae 17 (14-17; 3). Temporal setae 15 (12-15; 3), mostly in a single row but forming a clump of 2-4 setae medial to the dorsal apex of the eye.

Thorax. Antepronotum evanescent dorsally. Setae: Dorsocentrals 17 (14-17; 3), mostly in a single row; acrostichals 20 (15-18; 3) in 2 rows; prealars 5 (4-5; 3); supra-alars lacking; scutellars 9 (10-13; 3), coarse, in a staggered posterior row and with an anterior staggered row of 8 (4-8; 3) finer setae.

Wing. Membrane without markings, with microtrichia visible at 125 ×. R_{4+5} ends slightly proximal to M_{1+2}. Wing length 1.82 mm (1.71-1.82; 3). Venarum ratio 1.24 (1.22-1.26; 3). Squama with 11 (8-9; 3) setae. R with 15 (14-19; 3) setae. R_1 with 16 (14-21; 3) setae. R_{4+5} with 25 (26-28; 3) setae.

Legs. Foretibia with a projecting rounded scale which lacks an apical spine. Middle and hind tibial combs similar to other members of *Polypedilum* (s.s.). Sensilla chaetica of PII and PIII lacking. Leg ratios: PI 1.74 (1.68-1.76; 3); PII 0.63 (0.61-0.69; 3); PIII 0.76 (0.78-0.81; 3).

Abdomen. Genitalia, Fig. 150. Gonostylus (paratype ♂), Fig. 151; anal point and superior volsella (paratype ♂), Fig. 152. Ninth tergum with 12 (8-13) setae. Gc/Gs ratio 0.85 (0.73-0.87; 3).

Diagnosis. The pale abdomen with very narrow, basal dark fasciae, the weakly spatulate anal point arising from a narrow base together with the boot-shaped superior appendage are distinctive among described Panamerican *Polypedilum*.

Allotype female. Colouration. Similar to the male; terminal flagellomere black.

Head. Antennal proportions 144:84:92:68:144 µm; flagellomeres 1-3 flask-shaped, fourth flagellomere weakly so; terminal flagellomere subfusiform, with 5 subterminal setae. Palpal proportions 37:139:158:149 µm. Dorsal extension of eye short and broad. Clypeal setae 21. Temporal setae 12, in a single row.

Thorax. Setae: Dorsocentrals 25, mostly in a single slightly staggered row, anteriorly the row expands into a clump of 8 humerals; acrostichals 18; prealars 6; supra-alars lacking; scutellars 12, coarse, in a posterior straight transverse row and anteriorly with 10, small setae, in a straight transverse row.

Wing. Wing length 1.99 mm. Venarum ratio 1.27. Squama with 10 marginal setae. R with 15 setae. R_1 with 18 setae. R_{4+5} with 38 setae.

Leg. Foretibia with a low rounded scale which lacks an apical spine. Middle and hind tibial combs similar to the male. Sensilla chaetica apparently lacking on PII and PIII. Leg ratios: PI 1.84; PII 0.64; PIII 0.77.

Abdomen. Obscured in mounting.

Figs 156-164. *Polypedilum (P.) corniger*, spec. nov. 156. Genitalia, holotype ♂. 157. Frontal apotome, pupa. 158. Cephalothorax, lateral view, pupa. 159. Terga II, III, pupa. 160. Posterolateral spur of tergum VIII, pupa. 161. Antenna, larva. 162. Mandible, larva. 163. Mentum and ventromental plate, larva. 164. Dorsal sclerites of head, larva.

Pupa. Total length 3.5-3.86 mm. Cephalothorax blackish, abdomen pale, becoming darker posteriorly; lateral margin of terga V-VIII blackish, the stripe narrow on V but becoming progressively broader posteriorly, terminating at the posterolateral spur of VIII. Thoracic horn, Fig. 153.

Bands of hooks at the apex of II narrow with 23-26 rather coarse hooks. Terga II-VI with a basal transverse band of spinulae, that of II with much finer spinulae than III-VI; shagreen of II-VI narrow immediately behind the spinulae row then becoming broader posteriorly, Fig. 154. Intersegmental membrane of IV-V with coarse shagreen, lacking on other intersegmental membranes.

Posterolateral spur of VIII, Fig. 155, dark brown, usually with a single coarse apical spine and 2-3 weak side spines. Lateral margin of V and VI with 3 lateral, flattened setae, VII and VIII with 4.

Swim fin with 64-80 marginal setae in a partially doubled row.

Material examined. Holotype: ♂, **Rincon**, no. 313c, 13.III.81. - Allotype: ♀, **Rincon**, no. 214c, 3.II.81. - Paratypes: **Medio Monte**, small waterfall, no. 204b, 1♂, no. 205c, 1♂, 28-I-81; **Rincon**, no. 315g, 1♂, no. 214b, 1♂, no. A31a, 1♂, no. 214, 1 pupal exuviae, 1♂ (second pupal exuviae on slide not associated.], no. 310a, 1 pupal exuviae, 1♂, no. 301a, 1♂; no. 301a, 1♂; no. 204c, 1♂, no. 204d, 1♂, no. 207c, 1 pupal exuviae, 1♂, no. 311h, 1♀, 28.I.-15.III.81.

Polypedilum (Polypedilum) corniger, spec. nov.

Holotype male. Colouration: Head and thorax largely dark brown to blackish-brown. Ground colour of scutum and scutellum paler brown. Abdomen fasciate with tergum I largely blackish and II-VIII with more than basal half of each blackish, the apices pale; genitalia black. Most of legs dark brown; narrow apex of all femora blackish, not strongly contrasting with remainder. Halteres black.

Head. Antennal ratio 1.11 (1.08-1.18; 3). Palpal proportions 55:109:148:242 µm. Dorsal extension of eye long and broad. Clypeal setae 24 (20-24; 3). Temporal setae 13 (14-17; 3), mostly in a single row expanded at the dorsal apex of the eye into a clump of 4-5 setae.

Thorax. Antepronotum narrowed dorsally. Setae: Dorsocentrals 22 (25-30; 3), in a partially doubled row; acrostichals 28 (20-22; 3); prealars 5 (5-8; 3); supra-alars lacking; scutellars 12 (12-14; 3), coarse, in a staggered posterior row and with 12 (9-15; 3), fine setae in an anterior irregular row.

Wing. Membrane with microtrichia visible at 125 ×; without conspicuous markings. R_{4+5} ends slightly proximal to M_{1+2}. R_{2+3} parallel with R_1 to the tip. Wing length 1.68 mm (1.54-1.63; 3). Venarum ratio 1.25 (1.21-1.24; 3). Squama with 14 (13-16; 3) setae. R with 19 (19-20; 3) setae; R_1 with 17 (12-17; 3) setae; R_{4+5} with 23 (16-22; 3) setae.

Legs. Foretibia with a low, broad spine. Middle and hind tibial combs similar to those of other members of the genus; unarmed hind tibial comb much broader than unarmed comb of middle leg. PI 1.60 (1.57-1.67; 3); PII 0.61 (0.60-0.62; 3); PIII 0.82 (0.80-0.83; 3).

Abdomen. Genitalia, Fig. 156. Ninth tergum with 11 (10-11; 3) setae.

Diagnosis. The dark thorax and haltere knob, the almost concolourous tibiae and tarsi and vittae abdomen separate this species from all Nearctic *Polypedilum* (s.s.) except *Polypedilum vibex* Townes. It can be separated from that species by having a much lower antennal ratio, R_{4+5} proximal to M_{1+2}, and a distinctly spatulate anal point.

Allotype female. Head: Antenna with 5 flagellomeres; proportions 139:96:93:62:158 µm; basal 3 flagellomeres flask-shaped; fourth and fifth elongate fusiform. Palpal proportions 40:108:124:161 µm. Dorsal extension of eye moderately long and almost parallel-sided. Clypeal setae 31. Temporal setae 15, mostly in a single row, becoming clumped near the midline of the head with 6 setae in the cluster.

Thorax. Antepronotum evanescent dorsally. Setae: Dorsocentrals 42, mostly in double row which is slightly expanded anteriorly; acrostichals 30, in 2 rows; prealars 6; scutellars 14, coarse, in a straight posterior row and with 14 smaller anterior setae in a staggered series.

Wing. Membrane with microtrichia visible at 125 ×; without markings. R_{4+5} ends almost directly over M_{1+2}. R_{2+3} parallel to R_1 to the tip. Wing length 1.68 mm. Venarum ratio 1.25. Squama with 14 marginal setae. R with 20 setae. R_1 with 21 setae. R_{4+5} with 21 setae.

Legs. Foretibia with an elongate spine. Middle and hind tibial combs similar to the male. Sensilla chaetica of PII and PIII lacking. Leg ratios: PI 1.54; PII 0.51; PIII 0.72.

Abdomen. Genitalia distorted in mounting.

Pupa. Total length 4.08-4.50 mm. Frontal apotome, Fig. 157 Cephalothorax, Fig. 158, blackish; abdomen dusky, becoming darker posteriorly so that segments 6-8 are blackish; lateral margin of intersegmental membranes I-II, II-III, and III-IV blackish so that when viewed on low magnification, three dark spots are conspicuous on either side of the exuviae; lateral margin VI-VIII with a black margin which terminates in the posterolateral spur of VIII. Terga II-VI with 3 more or less separate transverse bands of spinulae of which the basal band on each tergum is composed of much heavier spinulae, Fig. 159. Tergum II with 71-81 (3) posterior, weak hooks. Terga V, VI with 3 lateral flattened setae; terga VII, VIII with 4. Posterolateral spur, Fig. 160, with a single apical spine and 1-3 very weak side teeth. Swim fin with 37-42 marginal setae.

Larva. Ventral head length 203 µm. Head capsule yellow except for tips of mandible, mentum and occipital ring. Antenna, Fig. 161. Mandible, Fig. 162, with preapical tooth subequal to apical tooth; with two dark subapical teeth; seta subdentalis hooked at tip, reaching slightly beyond the base of the proximal subapical tooth; mola with 2-3 filiform spines; pecten mandibularis with 5 very weak sensilla trichoidea. Premandible with 3 teeth. Labral sensilla similar to other *Polypedilum* (s.s.): SI palmate; SII very weakly pectinate as are the chaetae. Mentum, Fig. 163; ventromental plates with 29 striae. Dorsal head sclerites, Fig. 164. Epipharyngeal apparatus obscured.

Posterior parapods with 12 yellowish claws. Anal setae 5.

Material examined. Holotype: ♂, **Rincon**, no. 206b, 28.I.81. - Allotype: ♀, larva, pupal exuviae, **Rincon**, no. 316a, 16.III.81. - Paratypes: **Medio Monte**, no. A46, 1♂, 28-I-81; **Rincon**, no. 301b, 1♀, no. 302c, 1♂, no. 310k, 1♂, no. 314b, 1♂, no. 306a, 1♂, pupal exuviae, no. 307a, 1♂, pupal exuviae, no. 312j, 1♂, pupal exuviae [on same slide, *Cricotopus* pupal exuviae], no. 312j, 1♂ pupa [plus *Culicoides*? pupa], no. 301d, 1♂, no. 301a, 1♂, no. 208, 1♂, 1 pupal exuviae, no. 207a, 1♂, no. 310i, 1 larva, 1 pupal exuviae, no. 311a, 1♂, 1 larva, 1 pupal exuviae; no. 316q, 1♀ pupa, 1 larva, pupal exuviae (left middle) [on same slide, right pupal exuviae, *Polypedilum* spec.]; no. 316r, [larva and pupa♀, right specimen; left, *E. grodhausi* spec. nov. pupa, pupal exuviae], no. 309d, 1 pupal exuviae, (on same slide, left, *Polypedilum* spec.); 1 pupal exuviae, *Cricotopus*, circled in blue], no. I-34 c303, 3 pupal exuviae (on same slide, 2 pupal exuviae, *Cricotopus* spec., 1 pupal exuviae *Polypedilum* spec.), no. 305c, pupal exuviae, 25.II.-16.III.81.

Polypedilum (Tripodura) apicatum Townes

Polypedilum (Tripodura) apicatum Townes, 1945: 39, male; Sublette & Sublette 1979: 104, distribution.

The characteristic wing pattern (Townes 1945, Fig. 207) and genitalia (Townes 1945, Fig. 31) are unique among Panamerican *Polypedilum*.

Material examined. 1♂, Atitlan, sweep net, 21.II.1981, no. IV-19.

Polypedilum (Tripodura) clavistylus, spec. nov.

Holotype male. Colouration: Head, thorax and abdomen dark; scutum between vittae and scutellum paler brown. Legs bicoloured, all coxae blackish; fore femur dark with an infuscate yellowish fascia on about the middle 0.4; middle and hind femora with the yellow band narrower and paler, closer to the apex than to the base, occupying about 0.3 of total length; tibiae dark, the foretibia more so, with the base narrowly to broadly infuscate yellowish; tarsi brownish. Haltere knob pale.

Head. Antennal ratio 0.77. Palpal proportions 31:77:96:152 µm. Dorsal extension of eye long, almost parallel-sided. Clypeal setae 11. Temporal setae 8, in a single row.

Thorax. Antepronotum evanescent dorsally. Setae: Dorsocentrals 14, in a single row to near the anterior apex where the row forms a humeral clump of 4 setae; acrostichals 14, in 2 rows; prealars 4; supra-alars lacking; scutellars in a straight row of 4 setae.

Wing. Fig. 165. Membrane with microtrichia visible at 120 ×; membrane faintly marked in a pattern similar to *Polypedilum luteopedis*, spec. nov.(visible only with very oblique lighting). Wing length 1.56 mm. Venarum ratio 1.33. Squama with 6 setae. R with 16 setae. R_1 with 11 setae. R_{4+5} with 20 setae.

Legs. Foretibia with a low rounded scale with an apical spine on the tibial apex of one leg, the other tibial apex with only a rounded scale. Sensilla chaetica lacking. Leg ratios: PI 1.9 [probably slightly higher as the extreme base of the basitarsus is lost]; PII 0.62; PIII 0.73.

Abdomen. Genitalia, Fig. 166.

Diagnosis. This species resembles *Polypedilum floridense* Townes in some features but differs in having faintly marked wings, pale haltere knobs, bicoloured legs, longer, more capitate inferior volsellae, stronger shoulders on the ninth tergum and more clavate gonostyli.

Material examined. Holotype: ♂, **Rincon**, small stream, no. SW21f (99), 3.II.81.

Polypedilum (Tripodura) epomis, spec. nov.

Holotype male. Colouration: Ground colour of head and thorax yellowish brown; antennal flagellum blackish as are the thoracic vittae, preepisternum, postnotum, meso- and metacoxae and abdominal terga. Haltere knob pale. Legs brownish, apex of femora blackish with a preapical pale band, that of PI occupying about 0.3 of total Fe length.

Head. Antenna with 13 flagellomeres. Antennal ratio 0.54 (0.52-0.61; 4). Palpal proportions 28:68:90 :105 µm. Dorsal extension of eye long and moderately tapered. Clypeus with 18 (14-24; 4) setae in a small triangular cluster. Temporal setae 10 (10-14; 4).

Thorax. Antepronotum obscured but apparently evanescent dorsally, overhung by the mesonotum extension. Setae: Dorsocentrals 19 (13-21; 4); acrostichals 15 (14-19; 4); prealars 5 (4-5; 4); supra-alar 1 (0-1; 4); scutellars 7 (6-9; 4), coarse, in a posterior row and with 4 (2-7; 4) fine setae in an anterior series.

Wing. Membrane with microtrichia visible at 120 ×; without markings. R_{4+5} ends over M_{1+2}. R_{2+3} distinctly separated from the apex of R_1. Downcurved portion of Cu_1 at an angle of 40° (30-35°; 3) to basal part of Cu. Wing length 1.09 mm (1.07-1.18; 3). Venarum ratio 1.47 (1.30-1.40; 3). Squama with 4 (3-4; 3) setae. R with 12 (12-15; 4) setae. R_1 with 11 (7-9; 4) setae. R_{4+5} with 13 (12-22; 4) setae.

Legs. Foretibia with an apical spine. PII and III tibial combs slightly separated; PII anterior tibial comb with one spur, posterior comb unarmed; PIII anterior tibial comb with one spur, posterior unarmed. Sensilla chaetica of PII and PIII lacking. Leg ratios: PI 1.75 (1.70-1.82; 4); PII 0.53 (0.48-0.59; 4); PIII 0.67 (0.67 (0.62-0.75; 4). PI BR 3.4

Abdomen. Genitalia, Fig. 167, somewhat distorted in slide mounting. Superior and inferior volsella, Fig. 168. Ninth tergum with 5 (5-7; 4) setae. Gc/Gs ratio 0.76 (0.68-0.76; 4).

Diagnosis. In genitalic features this species most closely resembles the Nearctic *Polypedilum pardus* Townes (1945, Fig. 34) but differs in having a small tubercle on the lateral apex of the superior volsella, more pronounced "shoulders" at the base of the anal point, a much lower antennal ratio, and unmarked wings.

Allotype female. Colouration: Similar to the male.

Head. Antenna with 5 flagellomeres; proportions 74:68:71:43:112 µm; basal 3 flagellomeres flask-shaped; 4th ovoid; terminal, elongate fusiform with 4 long macrotrichia near apex. Palpal proportions 25:74:102:158 µm. Eyes reniform, moderately exerted on head. Clypeal setae 25. Temporal setae 12, in a single row.

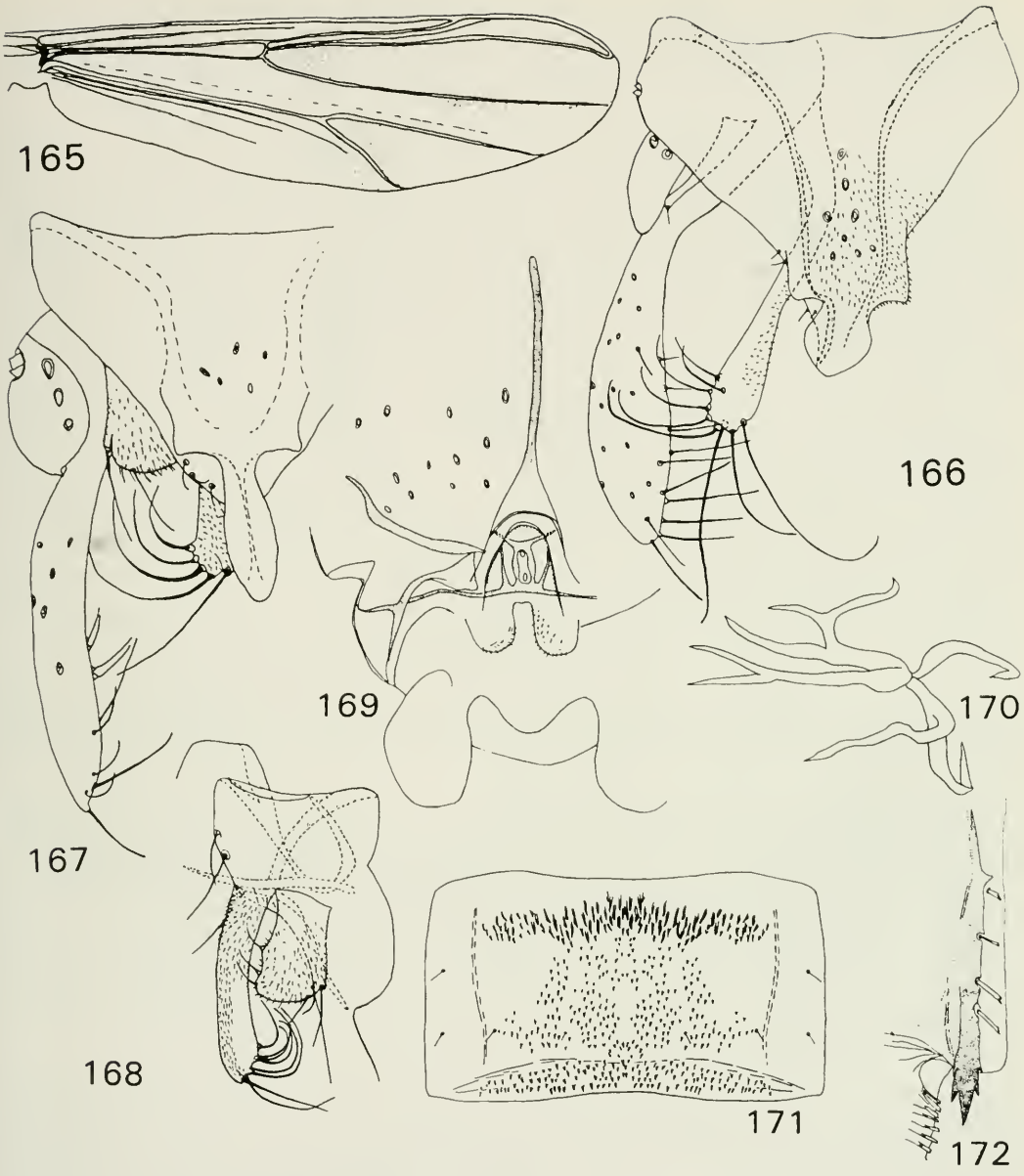
Thorax. Setae: Dorsocentrals 20, in 1 row; acrostichals 18, in 2 rows; prealars 5; supra-alars lacking; scutellars, 8 large posterior setae in a transverse row and 7 smaller ones in an anterior row.

Wing. Similar to male. Wing length 1.14 mm. Venarum ratio 1.38. Squama with 11 marginal setae. R with 14 setae. R_1 with 15 setae. R_{4+5} with 26 setae.

Legs. Sensilla chaetica lacking on PII and PIII. Leg ratios: PI, tibia missing; PII 0.50; PIII 0.67.

Genitalia. Fig. 169.

Pupa. Total length (exuviae) 2.80 mm. Cephalothorax, first abdominal tergum, and lateral margin of segment VIII infuscate. Pupal thoracic horns, Fig. 170 (drawn from temporary slide mount by M. Sasa). Details of cephalothorax obscured in slide mounting.



Figs 165-166. *Polypedilum (Tripodura) clavistylus*, spec. nov. 165. Wing, holotype ♂. 166. Genitalia, holotype ♂. Figs 167-172. *Polypedilum (T.) epomis*, spec. nov. 167. Genitalia, holotype ♂. 168. Superior and inferior volsellae, holotype ♂. 169. Genitalia, allotype ♀. 170. Thoracic horn, pupa. 171. Shagreen of tergum III, pupa. 172. Posterolateral spur of VIII, pupa.

Abdomen with a coarse basal band of shagreen on terga II-VI (Fig. 171), that of VI weakest; remainder of terga II-VI with finer shagreen covering much of the remainder of each tergum. Tergum II with 39-54 (3) weak recurved hooks. Intersegmental membranes III\IV and IV\V with coarse shagreen. Tergum VII with 2 very small patches of weak shagreen. Lateral margins of V and VI with 3 flattened setae; VII and VIII each with 4. Posterolateral spur of VIII, Fig. 172. Swim fin with 21-22 (3) flattened fringe setae.

Material examined. Holotype: ♂, **Rincon**, no. 310h (81), 10.III.81. - Allotype: ♀, **Rincon**, no. 310m (88), 10.III.81. - Paratypes: **Rincon**, no. 310h (79), 1♂, no. 316i (93), 1♂, no. 311g (83), 1♂, 1♀, no. 310n (87), 1♂, no. 309d (90), 1 pupal exuviae, 1♂, no. 310g (86), 1♂, no. 312d (89), 1 pupal exuviae, 7.-16.III.81.

Polypedilum (Tripodura) luteopedis, spec. nov.

Holotype male. Colouration: Head and scutum dorsum yellowish-brown; antennae, palpi, preepisternum, postnotum, and abdomen blackish. Thoracic vittae slightly darker than ground colour. Legs strongly bicoloured, femora blackish with a yellowish preapical annulus; the basal 0.3 and apical 0.3 of PI blackish; PII and III with basal 0.3 and apical 0.2 blackish; between the basal and apical dark fasciae is a yellowish fascia; remainder of legs yellowish except for a narrow infuscation at the base of Ta_1 on PII and PIII.

Head. Antennal ratio 0.45 (0.45-0.71; 3). Palpal proportions: 28:56:81:146 µm. Dorsal extension of eye long and broad, moderately tapered to the apex. Clypeus with 17 (15-22; 4) setae. Temporal setae 7 (6-11; 4), in a single row.

Thorax. Antepronotum evanescent dorsally. Setae: Dorsocentrals 12 (8-20; 4), in a single row which is doubled at the last 2 setae; acrostichals 14 (15-17; 4), in a double row; prealars 3 (3-5; 4); supra-alars lacking; scutellars 5 (4-7; 4), in a straight transverse row.

Wing. Membrane with microtrichia visible at 120 ×; with distinct markings, Fig. 173. R_{4+5} ends slightly proximal to M_{1+2}. Wing length 1.33 mm (1.23-1.36; 4). Venarum ratio 1.35 (1.32-1.45; 4). Squama with 5 (3) setae. R with 15 (12-18; 3) setae. R_1 with 10 (10-14; 3) setae. R_{4+5} with 20 (19-22; 3) setae.

Legs. Foretibia with a short spine. Sensilla chaetica of PII 1 (paratype), PIII lacking. Leg ratios: PI 2.10 (1.79, 2.0; 2); PII 0.62 (0.61-0.73: 3); PIII 0.71 (0.74-0.77; 3).

Abdomen. Genitalia, Fig. 174; lateral view of anal point, Fig. 175; superior and inferior volsellae, Fig. 176. Ninth tergum with 7 (5-8; 4) setae. Gc/Gs ratio 0.90 (0.74-0.89; 4).

Diagnosis. This species closely resembles *Polypedilum apicatum* Townes but differs in having a much lower antennal ratio, smaller size, more distinctly coloured legs, more sparsely setose inferior volsella, and shorter points on each side of the anal point.

Allotype female. Colouration: Similar to the male.

Head. Antennal proportions 102:77:81:37:130 µm. Palpal proportions 31:81:99:124 µm. Dorsal extension of eye broad and moderately long. Clypeus with 24 setae. Temporal setae 10, in a single row.

Thorax. Setae: Dorsocentrals 22, mostly in 1 row; anteriorly 5 setae form an isolated humeral clump; acrostichals 22, in 2 rows; prealars 5; supra-alars lacking; scutellars 8, in a single row.

Wing. Colour pattern as in male, but somewhat more intense. Wing length 1.21 mm. Venarum ratio 1.32. Squama with 4 marginal setae. R with 16 setae. R_1 with 11 setae. R_{4+5} with 22 setae.

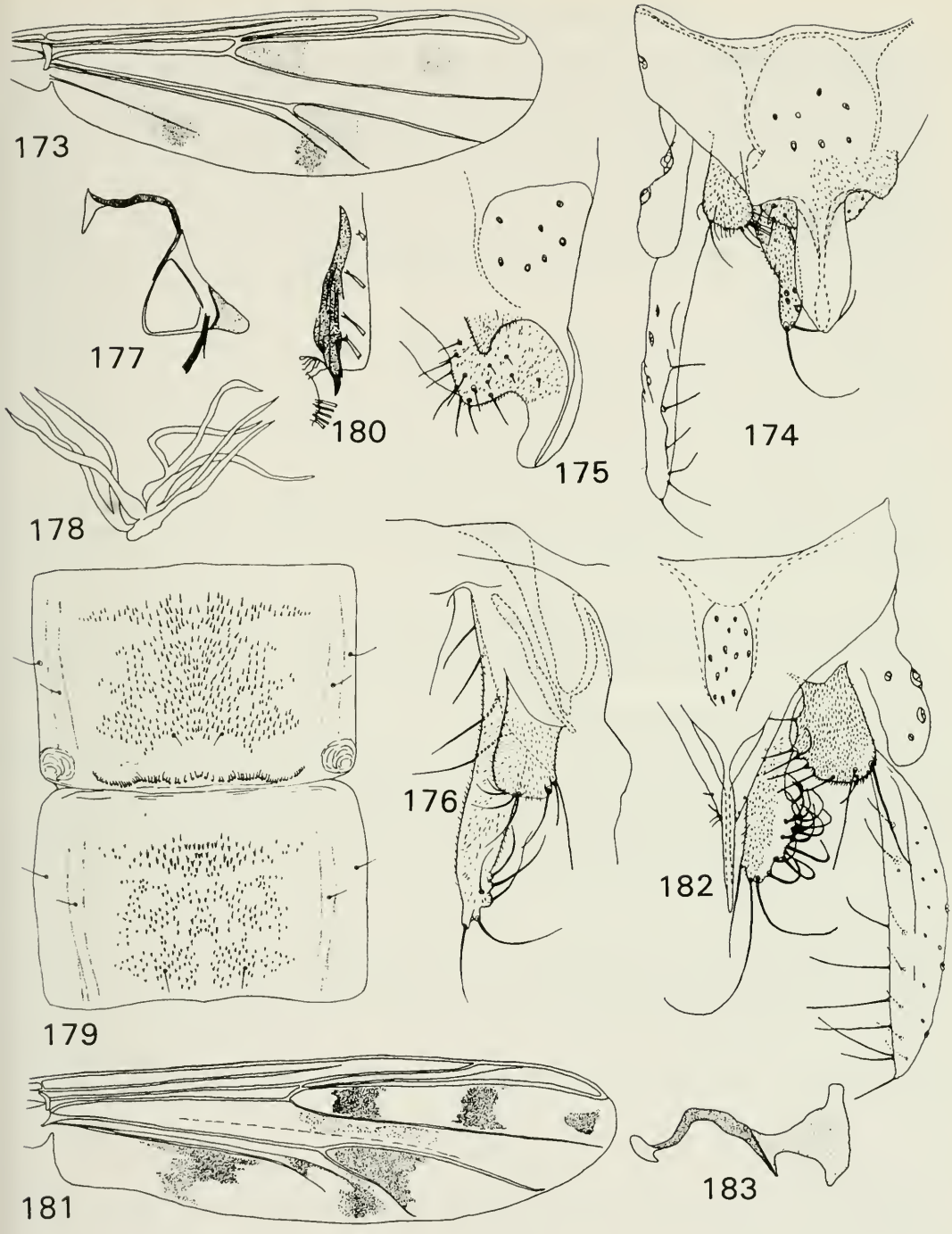
Legs. Foretibia with a low spine similar to the male. Sensilla chaetica of PII 3 (tarsi of PIII missing). Legs crumpled or tarsi lacking so ratios not determined.

Abdomen. Genitalia coxosternapodemes of gonocoxite IX, Fig. 177.

Pupa (associated with reared male). Pupal thoracic horn, Fig. 178 (drawn from temporary mount by M. Sasa). Cephalothorax lost in slide mounting. Abdomen pale, length 2.58 mm. Tergum I and lateral margins of II-V weakly infuscate and with VI-VIII with a stronger lateral black stripe which terminates in the posterolateral, darkened spur.

Tergum I devoid of shagreen; tergum II with an almost uniform median patch of shagreen, Fig. 179; terga III-VI with 3 transverse bands of almost uniform shagreen which are moderately to slightly contiguous on terga III-V but completely separate on VI. Tergum II with 39-49 (3) hooks at the posterior margin. Intersegmental membrane of terga III/IV, IV/V, and V/VI with weak shagreen, with that of V/VI weakest. Posterolateral spur of segment VIII with an apical point and 2-3 weak side points ,Fig. 180. Swim fin with 24-25 (3) flattened fringe setae.

Material examined. Holotype: ♂, **Rincon**, no. A31b (84), 9.II.81. - Allotype: ♀, **Rincon**, no. 323a (77) (on same slide with 2 paratype ♂♂, 1 pupal exuviae), 23.III.81. - Paratypes: **Medio Monte**, no. IV-37 208b, 1♂, 28.I.81; **Rincon**, no. 324a, 2 pupal exuviae, 1♂, no. 82 SW31a, 1♂, no. 325a 1 pupal exuviae, 1♂, no. 323a 2♂♂, 1 pupal exuviae (on same slide with allotype ♀), 3.II.-25.III.81.



Figs 173-180. *Polypedilum (T.) luteopedis*, spec. nov. 173. Wing, ♂. 174. Genitalia, holotype ♂. 175. Anal point, lateral view, paratype ♂. 176. Superior and inferior volsellae, ♂. 177. Genitalic sclerites, ♀. 178. Thoracic horn, pupa. 179. Terga II, III, shagreen, pupa. 180. Posterolateral spur of segment VIII, pupa.
Figs 181-183. *Polypedilum (P.) obelos*, spec. nov. 181. Wing, ♂. 182. Genitalia, holotype ♂. 183. Genitalic sclerites, ♀.

Polypedilum (Tripodura) obelos, spec. nov.

Holotype male. Colouration: Head blackish, terminal palpomere brownish. Thorax blackish with a very narrow yellowish ground colour as is the scutellum. Haltere pedicel infuscate, knob pale. Legs strongly bicoloured, femora blackish with a yellowish preapical fascia which is only slightly longer than wide on PI, yellow band on PII about 3 times as long as wide; and on PIII, 2 times; all tibiae yellowish with a subbasal black band which is 4 times as long as wide on Ti I; on Ti II and III the band is about as long as wide. Foretarsi yellowish brown; tarsi of PII and III yellowish, becoming slightly darker apically. Abdomen strongly vittate with blackish vittae covering the basal 0.6 to 0.2 of each tergum. Genitalia blackish with gonistyli yellowish.

Head. Antennal ratio 1.14 (1.07-1.14; 3). Palpal proportions 55:148:164:257 µm. Clypeus with 28 (33-36; 3) setae. Temporal setae 15 (17; 3), mostly in a single row but above the dorsal apex of the eye forming a weak clump of about 4 setae.

Thorax. Antepronotum apically narrowed. Setae: Dorsocentrals 27 (31-36; 3), in a single row which is abruptly downturned anteriorly in the humeral area; acrostichals 33 (26-34; 3), in 2 rows; prealars 10 (7-10; 3), in a partially double row; supra-alars lacking; scutellars 15 (13-14; 3), in a straight posterior row; anteriorly 28 (20-33; 3) strewn setae, mostly smaller than posterior series.

Wing. Membrane with microtrichia visible at 125 ×; with a strong colour pattern, Fig. 181. Wing length 2.42 mm (2.13-2.30; 3). Venarum ratio 1.19 (1.17-1.22; 3). Squama with 18 (18-23; 3) setae. R with 21 (19-26; 3) setae; R_1 with 24 (18-22; 3) setae, and R_{4+5} with 41 (40; 3) setae.

Legs. Foretibia with a strong apical triangular spine. Middle and hind tibial combs contiguous, similar to the other members of the genus. Sensilla chaetica of PII 5 (2-3;3), PIII lacking. Leg ratios: PI 1.62 (1.55-1.64; 3); PII 0.61 (0.54-0.58; 3); PIII 0.78 (0.75-0.77; 3).

Abdomen. Genitalia, Fig. 182. Ninth tergum with 15 (11-16; 3) setae. Gc/Gs ratio 0.71 (0.62-0.72; 3).

Diagnosis. This species resembles *Polypedilum pterospilus* Townes in several features. It differs by having the basal dark spot in cell R_5 clearly separated from the r-m crossvein and by having a longer, more lanceolate anal point. The superior volsella also appears broader but this may be only a mounting variation.

Allotype female. Colouration: As in the male.

Head. Antennal proportions 155:93:108:74:164 µm; basal 3 flagellomeres flask-shaped, fourth ovoid, terminal subfusiform. Palpal proportions 56:164:192:298 µm. Dorsal extension of eye broad and parallel-sided. Clypeus with 44 setae. Temporal setae 14, in a single, slightly staggered row.

Thorax. Antepronotum as in male. Setae: Dorsocentrals 52, in a partially doubled row; acrostichals 38, in 2 rows; prealars 10; supra-alar setae lacking; scutellars 18 in a slightly staggered posterior row of 18 setae and with 30 setae scattered on the anterior surface.

Wing. Markings and venation similar to the male, (cf. Fig. 181). Membrane with microtrichia visible at 125 ×. Wing length 2.54 mm. Venarum ratio 1.15. Squama with 18 marginal setae. R with 32 setae, R_1 with 26, and R_{4+5} with 52 setae.

Legs. Foretibial spine as in male. Sensilla chaetica of PII 9, PIII lacking. Leg ratios: PI 1.77; PII 0.57: PIII 0.85.

Abdomen. Genitalia somewhat distorted in slide mountings; coxosternapodeme IX, Fig. 183.

Material examined. Holotype: ♂, Lavaderos, 22.I.81, no. 72. - Allotype: ♀, **Rincon**, no. 315h, 15.III.81. - Paratypes: 71 325h, 1♂, no. 223a L21b, 1♂, no. 226g L21b, 1♂, no. 323b 1♂, 2.II.-15.III.81.

Pseudochironomus spec.

The larvae are typical *Pseudochironomus* but as pupae and adults are not associated, they are not described further.

Material examined. **Atitlan**, no. IV-33, 8 larvae, 21.II.81. [On same slide with *Dicrotendipes fumidus*.]

Stenochironomus (Petalopholeus) leptopus (Kieffer)

Chironomus leptopus Kieffer, 1906: 19, replacement name for *Chironomus longimanus* Williston, 1896: 274, nec *Chironomus longimanus* Meigen, 1830: 256.

Stenochironomus leptopus (Kieffer); Sublette 1966: 28; designation of lectotype.

Stenochironomus (Petalopholeus) leptopus (Kieffer); Borkent 1984: 95; review, description of larva, pupa, and female, redescription of male, distribution.

The single male at hand agrees well with Borkent's description of the genitalia (Borkent 1984, Fig. 33D). The colouration (Fig. 184) is similar to the Ecuadorian specimens described by him. Since there are slight differences in colouration between the Guatemala-Ecuador material and the Antillian, the possibility exists that two species are involved. In the absence of immature stages from Guatemala, designation of a new species is not warranted at this time.

Material examined. **Rincon**, no. V-46, 1♂, 9.II.81.

Distribution. Guatemala, St. Vincent Is., West Indies, Ecuador (Borkent 1984).

Xestochironomus ankylis, spec. nov.

Holotype male. Colouration: Entirely yellowish except for forelegs; fore femur with a narrow apical pale brown band occupying the apical 0.16; apical band is concolourous with foretibia; foretarsi slightly darker brown.

Head. Antennal ratio 0.79. Palpal proportions 53:121:121:205 µm. Dorsal extension of eye long and moderately tapered. Clypeus with 16 setae. Temporal setae 9, in a single row.

Thorax. Antepronotum obscured on the slide mount. Setae: Dorsocentrals 19, mostly in one row; acrostichals 21, in 2 rows; prealars 4; supra-alars lacking; scutellars 9, coarse, in a posterior transverse series and with 8 much finer ones in an anterior, irregular transverse series.

Wing. Membrane with microtrichia visible at 125 ×, without markings. R_{4+5} ends slightly proximal to M_{1+2}. R_{2+3} closely paralleling R_1 to its apex. Wing length 1.68 mm. Venarum ratio 1.29. Squama with 8 setae. R with 24 setae, R_1 with 34, and R_{4+5} with 35.

Legs. Foretibia with a low rounded scale with 3 large basal setae and one much smaller curved subapical setae. Middle and hind tibial combs slightly separated as described by Borkent (1984). Pulvilli almost as long as the claws. Sensilla chaetica of PII 2, PIII lacking. Leg ratios: PI 1.14; PII 0.72; PIII 0.75. PI BR 3.87.

Abdomen. Genitalia, Fig. 185. Ninth tergum with 13 seta. Gc/Gs ratio 0.59 [0.76 using Borkent's (1984, Fig. 29B) measurements].

Diagnosis. In genitalic features this species is virtually identical to *Xestochironomus brunneus* Borkent (1984, Fig. 29B), differing only in the length and placement of setae on the inferior volsella. However, *X. brunneus* is a dark species with vittate abdomen and some dark markings on the hindleg. From the description (genitalia not figured) *Xestochironomus latitobus* Borkent is also similar but has dark markings on the postnotum and abdomen.

Material examined. Holotype: ♂, **Rincon**, no. SW3 (66), 2.II.81.

Tribe Tanytarsini

Micropsectra atitlanensis, spec. nov.

Holotype male. Colouration: Antennal pedicels, thoracic vittae, postnotum, and preepisternum yellowish-brown; remainder of body pale as are the legs and abdomen.

Head. Antenna with 13 flagellomeres. Antennal ratio 0.93. Palpal proportions 47:171:161:285 µm. Length of frontal tubercles 8 µm. Dorsal extension of eye long and weakly wedge-shaped. Clypeus longer than wide, with 17 setae. Temporal setae 10, in a single row.

Thorax. Antepronotum narrow, wedge-shaped in lateral view; laterally without setae. Mesoscutum apparently with a slight hump (mesoscutum mounted dorsal side up; macrotrichial pattern suggests slight hump). Setae: Dorsocentrals 10, in a single row; acrostichals 13, in a partially doubled row; prealars 3; supra-alar setae lacking; scutellars 9, in a staggered row.

Wing. Membrane with heavy macrotrichia on entire surface. R_{4+5} ends proximal to M_{1+2} at 0.62 of the distance between the apex of M_{3+4} and M_{1+2}. R_{2+3} scarcely distinguishable, ending near the apex of R_1. Anal ends under f-Cu. Anal lobe obsolete. Wing length 2.12 mm. Venarum ratio 1.10.

Legs. Foretibia with a low spine; middle and hind tibial combs fused, occupying more than 0.5 of the tibial apex; without spurs. Sensilla chaetica of PII 3. Leg ratios: fore tarsi lacking; PII 0.62 ; PIII 0.70. Pulvilli present; about half as long as the claws.

Abdomen. Genitalia, Fig. 186; median volsella, Fig. 187. Gc/Gs ratio 0.62.

Diagnosis. The spatulate blades of the median volsella separate this species from the described species of Nearctic and Neotropical *Micropsectra*.

Material examined. Holotype: ♂, **Atitlan**, sweep net, 22.II.81.

Rheotanytarsus hamatus, spec. nov.

Holotype male. Colouration: Entirely pale except for the darker antennal flagella.

Head. Antenna with 13 flagellomeres. Antennal ratio 0.34. Palpal proportions 27:57:68:106 µm. Frontal tubercles not discernable. Dorsal extension of eye long, broad and slightly tapered. Clypeus with 17 setae in a triangular basal group. Temporal setae 8, in a single row.

Thorax. Antepronotum broad in the basal half, abruptly narrowed near the middle, tapering and becoming evanescent dorsally. Setae: Dorsocentrals 11, in a single row; acrostichals 13, in a double row; prealar 1; supra-alars lacking; scutellars 6.

Wing. Membrane with macrotrichia on entire surface. R_{4+5} ends proximal to M_{1+2} at 0.21 of the distance between the apex of M_{3+4} and M_{1+2}. R_{2+3} not evident. Anal ends distinctly proximal to f-Cu. Anal lobe obsolete. Wing cuneiform. Venarum ratio 1.66. Wing length 1.17 mm.

Legs. Foretibia with a low spine which is 0.41 of the diameter of the tibial apex. Tibial combs well separated; PII tibial comb with two spurs unequal in length, while on PIII the spurs are subequal. Sensilla chaetica of PII 2. Leg ratios: PI 2.19; PII 0.52; PIII 0.67. Pulvilli present, minute.

Abdomen. Genitalia, Fig. 188. Gc/Gs ratio 0.86.

Diagnosis. The combination of strongly hooked gonostylus, egg-shaped superior volsella and the spatulate anal point is distinctive among those Nearctic and Neotropical *Rheotanytarsus* with a short, straight medial volsella (2a).

Pupa. Total length (exuviae) 2.82 mm. Thorax infuscate; abdomen mostly pale with a narrow infuscate stripe extending posteriorly from the basal shagreen patches on terga II; lateral margins of II-IV very weakly infuscate; lateral margins of V-VIII becoming progressively more heavily darkened with the posterolateral spur of VIII as well as the lateral margin heavily darkened. Thoracic horn similar in shape to most other members of the genus (Roback & Coffman 1983, Fig. 417) but apex almost devoid of spinulae. Cephalothorax with one flattened Maps and one LAps, also flattened; Dc1-4 small, normal. Wing sheaths with bacatiform papillae lacking; nasiform tubercles broad and low. Terga II-V each with the two rounded patches of coarse shagreen near the base which are characteristic of the genus; the patches of coarse shagreen on II and III are subequal; those of IV and V are progressively smaller. At the posterior end of the dark stripe on II is a weak patch of shagreen just anterior to the hook row of II (similar to that illustrated by Roback & Coffman 1983, Fig. 412). Hook row at the apex of II considerably folded but apparently with at least 15 hooks. Pedes spurii A present on sterna IV-VI. Tergum VI without coarse shagreen patches but with two basal, elongate patches of very fine shagreen. Tergum IV with 1 flattened lateral seta and 1 normal seta; V with 3 flattened setae; VI-VIII each with 4 flattened setae. Posterolateral spur very similar to other members of the genus (cf. Roback & Coffman 1983, Fig. 414, 415). Swim fin with 18 flattened fringe setae.

Material examined. Holotype ♂, **Rincon**, no. 301e (V-41 on same slide with pupal exuviae, 25.II.81.

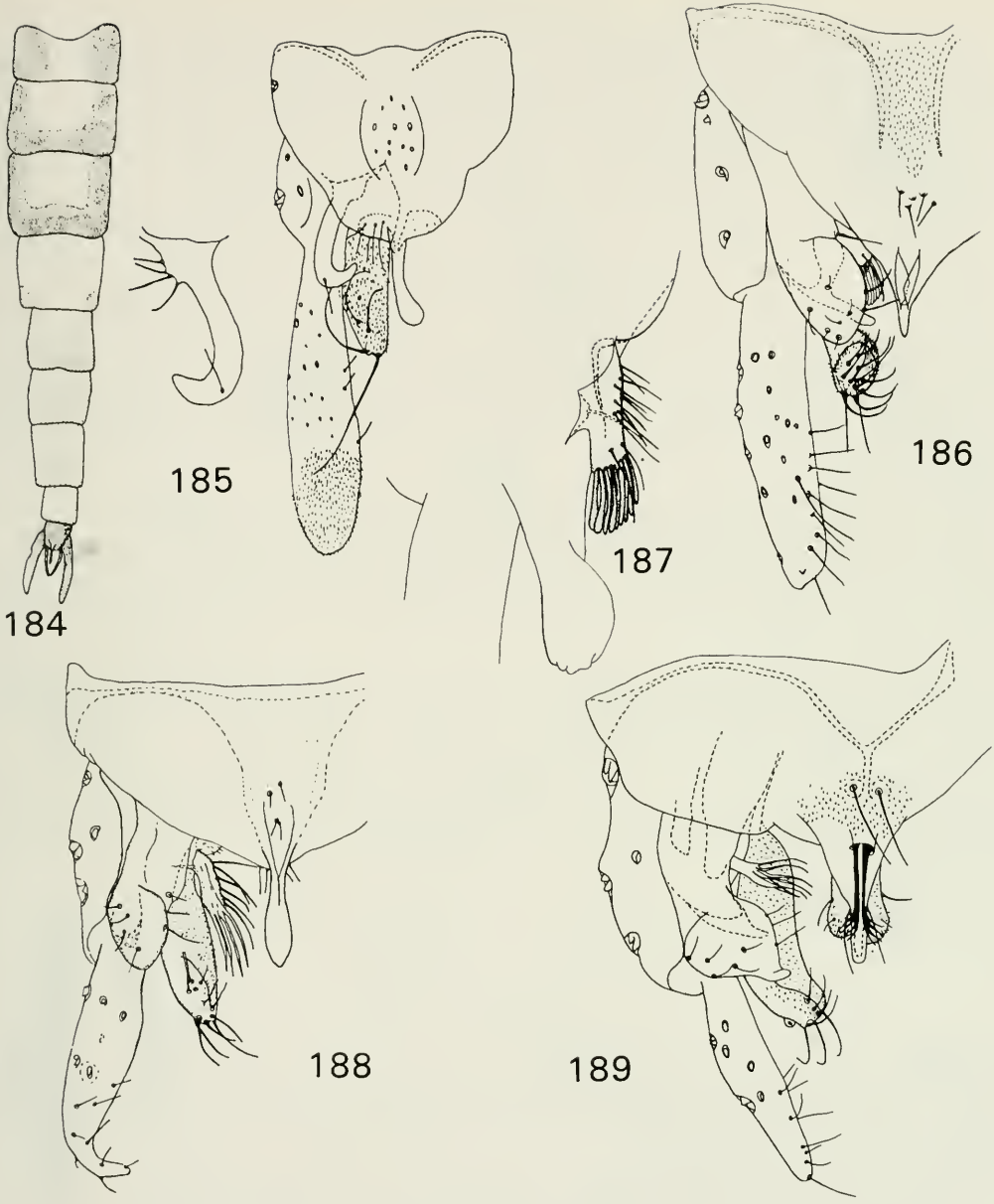


Fig. 184. *Stenochironomus (Petalopholeus) leptopus*, (Kieffer), colouration of ♂.
Fig. 185. *Xestochironomus ankylis*, spec. nov., genitalia, holotype ♂; superior volsella to the left.
Figs 186-187. *Micropsectra atitlanensis*, spec. nov. 186. Genitalia, holotype ♂. 187. Median volsella, ♂.
Fig. 188. *Rheotanytarsus hamatus*, spec. nov., genitalia, holotype ♂.
Fig. 189. *Caladomyia pistra*, spec. nov., genitalia, holotype ♂.

Rheotanytarsus spp.

Two additional species were represented each by a single pupal exuviae, which are distinctively different from *R. hamatus* in that terga II-VI have coarse shagreen patches rather than II-V as in *R. hamatus*. Thoracic horn features and/or spur features are also different.

In the absence of other associated life history stages, these species are not described further.

Material examined. [Species 1] **Rincon**, 3.II.81; [Species 2] **Medio Monte**, 28.I.81.

Caladomyia pistra, spec. nov.

Holotype male. Colouration: Antenna, mesonotal vittae and postnotum dark; forelegs dark beyond basal one-third of femora, while on the middle and hind legs the femora are darker on the apical one-third, and the remainder of the legs pale.

Head. Antenna with 13 flagellomeres. Antennal ratio 0.42. Palpal proportions 19:53:48:96 µm. Length of frontal tubercle 7 µm. Dorsal extension of eye long and weakly tapered. Clypeus with 11 setae. Temporal setae 6, in a single row.

Thorax. Antepronotum obscured in slide mounting. Setae: Dorsocentrals 6, in a single row; acrostichals 10, mostly in a single row; prealar 1; supra-alar setae lacking; scutellars 4, in a straight row.

Wing. Membrane with macrotrichia over most of the surface but heaviest distal to r-m. R_{4+5} ends considerably proximal to M_{1+2} at 0.14 of the distance between the apex of M_{3+4} and M_{1+2}. R_{2+3} scarcely distinguishable. Anal ends slightly proximal to f-Cu which is far distal to r-m. Anal lobe obsolete. Wing length 1.06 mm. Venarum ratio 1.4.

Legs. Foretibia with a moderately strong spine, length 14 µm; diameter of tibial apex 38 µm. Middle and hind tibial combs well separated, combs with two spurs of unequal length. Sensilla chaetica of PII 2. Leg ratios: PI 3.13; PII 0.56; PIII 0.67. Pulvilli present, minute.

Abdomen. Genitalia, Fig. 189 [Slightly tilted in mounting]. Gc/Gs ratio 1.06.

Diagnosis. This species resembles *Caladomyia ortoni* Säwedal from Brazil but differs in having a slightly broader, more truncate anal point and the digitus of the superior volsella much shorter (cf. Säwedal 1981, Fig. 11).

Material examined. Holotype: ♂, **Medio Monte**, cattle watering tank, 28.I.81.

Tanytarsus capitatus, spec. nov.

Holotype male. Colouration: Yellowish; antenna, thoracic vittae, and postnotum pale brown; foretarsi infuscate.

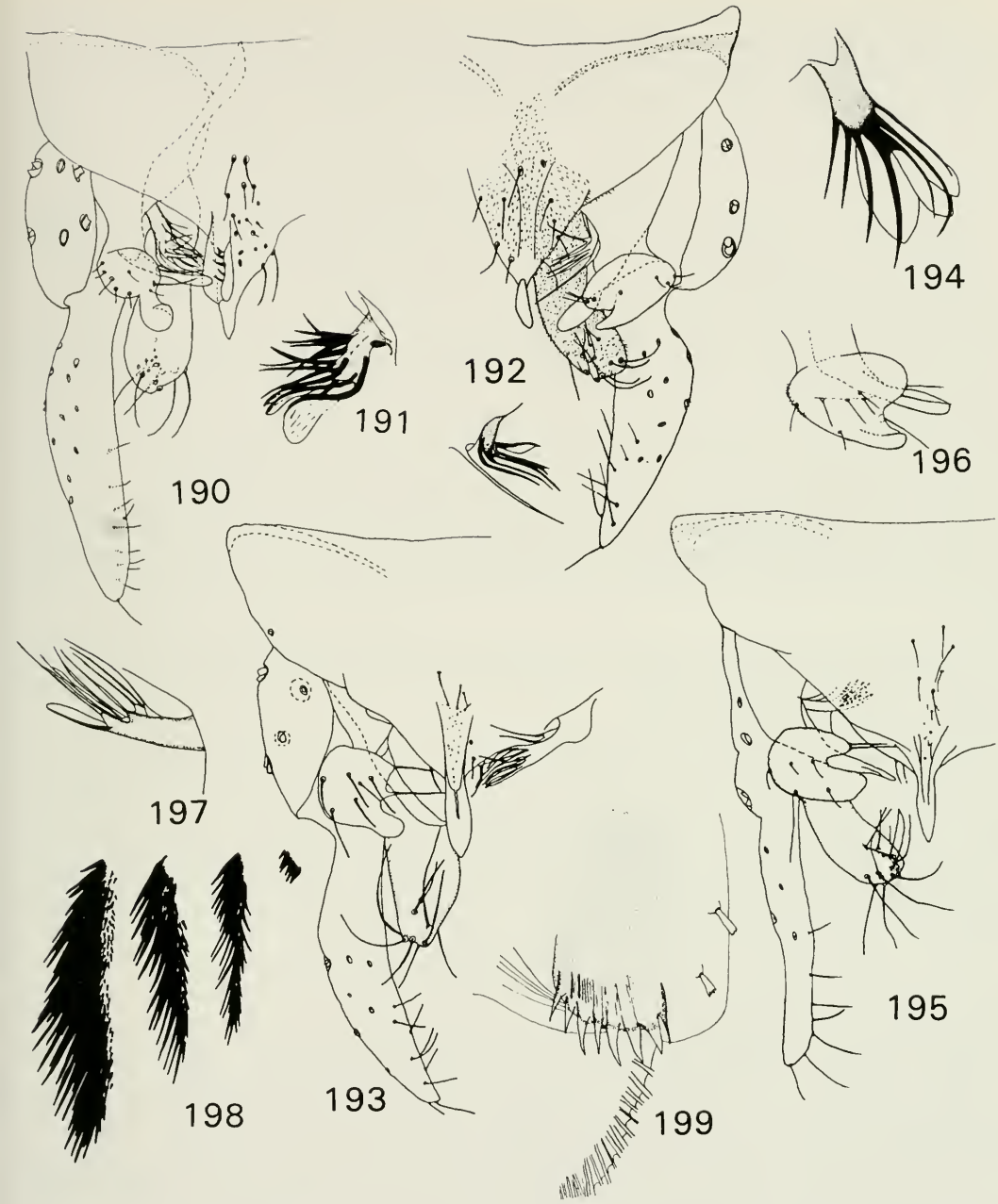
Head. Antenna with 13 flagellomeres. Antennal ratio 0.86. Palpal proportions 27:141:141:236 µm. Dorsal extension of eye moderately long and wedge-shaped. Clypeus with 16 setae, in a basal triangular cluster. Temporal setae 4 (?), in a single row.

Thorax. Antepronotum somewhat obscured in slide mounting but apparently only slightly tapered dorsally. Setae: Dorsocentrals 11, in a single row; acrostichals 24, in a partially double row; prealars 3; supra-alars lacking; scutellars 4, in a straight row.

Wing. Membrane with dense macrotrichia except on the basal 0.1. R_{4+5} ends proximal to M_{1+2} at 0.63 of the distance between the apex of M_{3+4} and M_{1+2}. R_{2+3} scarcely distinguishable. Anal ends slightly proximal to f-Cu. Anal lobe obsolete. Wing length 1.82 mm. Venarum ratio 1.16.

Legs. Foretibia with a low spine which is 0.23 of the diameter of the tibial apex. Middle and hind tibial combs large, well separated; both tibiae with 2 spurs of unequal length. Sensilla chaetica of PII 4. Leg ratios: PI 2.42; PII 0.67; PIII 0.74. Pulvilli present, small.

Abdomen. Genitalia, Fig. 190 (anal point slightly tilted in slide preparation). Median volsella, Fig. 191. Gc/Gs ratio 0.6.



Figs 190-191. *Tanytarsus capitatus*, spec. nov. 190. Genitalia, holotype ♂. 191. Median volsella, slightly flattened, holotype ♂.
Fig. 192. *Tanytarsus guatemalensis*, spec. nov., genitalia, holotype ♂; median volsella, to the left.
Figs 193-194. *Tanytarsus hastatus*, spec. nov. 193. Genitalia, holotype ♂. 194. Median volsella, slightly flattened, holotype ♂.
Figs 195-199. *Tanytarsus pandus*, spec. nov. 195. Genitalia, holotype ♂. 196. Superior volsella, ♂. 197. Median volsella, ♂. 198. Abdominal spinulae patches, pupa. 199. Posterolateral comb of segment VIII, pupa.

Diagnosis. This species is a member of the *riopreto*-group and may be distinguished by the superior volsella which is unique among Nearctic and Neotropical *Tanytarsus* (cf. Fittkau & Reiss 1973).

Material examined. Holotype: ♂, **Medio Monte**, 3.II.81, no. 22a (V-42).

Tanytarsus guatemalensis, spec. nov.

Holotype male. Colouration: Yellowish; antenna dark; thoracic vittae and postnotum slightly darker than the ground colour; foretarsus infuscate, remainder of legs pale.

Head. Antenna with 13 flagellomeres. Antennal ratio 0.96. Palpal proportions 38:110:125:236 µm. Frontal tubercles not discernable. Dorsal extension of eye long and parallel-sided. Clypeus with 15 setae in a basal triangular group. Temporal setae 9, in a single row.

Thorax. Antepronotum evenly attenuated dorsally, wedge-shaped in lateral view. Setae: Dorsocentrals 8, in a single row; acrostichals 20, mostly in a double row; prealar 1; supra-alars lacking; scutellars 4, in a straight row.

Wing. Membrane with macrotrichia on most of the surface except the basal 0.15. R_{4+5} ends proximal to M_{1+2} at 0.71 of the distance between the apex of M_{3+4} and M_{1+2}. R_{2+3} scarcely distinguishable. Anal terminates slightly proximal to f-Cu. Anal lobe obsolete. Wing length 1.56 mm. Venarum ratio 1.24.

Legs. Foretibia with a low spine which is 0.4 the diameter of the tibial apex. Middle and hind tibial combs well separated, middle tibial comb with 2 spurs of unequal length; hind tibial combs with 2 spurs subequal in length. Sensilla chaetica of PII 6. Leg ratios: PI 3.04; PII 0.64; PIII 0.74. Pulvilli minute.

Abdomen. Genitalia, Fig. 192, slightly flattened in slide mounting and the superior volsella is slightly folded.

Diagnosis. This species is a member of the *riopreto*-group described from the amazonian basin (Fittkau & Reiss 1973), but the genitalia are distinctive in that the anal point is inserted before the apex of the ninth tergum and basal spinulae are lacking.

Material examined. Holotype: ♂, **Medio Monte**, 28.I.81.

Tanytarsus hastatus, spec. nov.

Holotype male. Colouration: Ground colour of head, thorax, and abdomen yellowish; thoracic vittae, postnotum, and venter of preepisternum light brown. Apical half of fore femur, foretibia, and tarsus brownish; apices of middle and hind femora brownish, tibiae and tarsi darker yellow.

Head. Antennal ratio 1.15 (1.03-1.15; 3). Palpal proportions 37:102:112:195 µm (paratype). Frontal tubercle length 28 µm (paratype). Dorsal extension of eye long and slightly tapered. Ocular ratio 0.24. Clypeal setae 17 (12-18; 3). Temporal setae 12 (9-11; 3).

Thorax. Setae: Dorsocentrals 10 (7-9; 3), in one row; acrostichals 17 (14-20; 3), in 2 rows; prealars 2 (1-2; 3); scutellars 6 (5; 3).

Wing. Membrane with macrotrichia on the entire surface. R_{4+5} ends proximal to M_{1+2} at 0.62 of the distance between the apex of M_{3+4} and M_{1+2}. R_{2+3} ends at 0.62 of the distance between the apex of R_1 and R_{4+5}. Venarum ratio 1.19 (1.12, 1.15; 2). Wing length 1.62 mm (1.54, 1.59; 2).

Legs. Foretibia with a low, dark spine which is 0.44 of the apical diameter of tibia. Middle and hind tibial combs slightly separated, two spurs on each leg. Sensilla chaetica of PII 7 (5, 7; 2), PIII lacking. Pulvilli minute. Leg ratios: PII 3.35 (3.00-3.37; 3); PII 0.66 (0.64-0.68; 3); PIII 0.66 (0.68-0.72; 3).

Abdomen. Genitalia, Fig. 193. Median volsella, Fig. 194.

Diagnosis. The elongate, lanceolate anal point with numerous fine spinulae between the anal point crests is distinctive among described Pan American *Tanytarsus* of the *riopreto*-group (Fittkau & Reiss 1973). An undescribed species from the southern U.S.A. is closely related but differs in the shape of the superior volsella.

Allotype female. Colouration: Similar to the male; apical flagellomere black.

Head. Antennal proportions 68:74:68:56:84 µm; apical two flagellomeres almost completely fused. Antennal ratio 0.32. Palpal proportions 25:77:87:115 µm. Dorsal extension of eye short and broad. Ocular ratio 0.23. Clypeus with 18 setae. Temporal setae 9.

Thorax. Setae: Dorsocentrals 13, in 1 row, anteriorly expanded into a humeral clump of 4 setae; acrostichals 13, in 2 rows; prealars 2; scutellars 4.

Wing. Crumpled. Wing length approximately 1.5 mm.

Legs. All tibial combs and spurs similar to the male. Sensilla chaetica of PII 27, PIII lacking. Pulvilli minute. Leg ratios: PI 3.22; PII 0.67; hind leg crumpled.

Abdomen. Genitalia badly distorted in mounting.

Pupa. Cephalothorax dark; abdomen paler with the lateral margins progressively darkened posteriorly.

Total length (exuviae), 2.96 mm. Frontal apotome indistinguishable from that of *Tanytarsus eminulus* (Walker) (Pinder & Reiss 1986, Fig. 10.79A). Thoracic horn simple, attenuate evenly to the tip as other members of the genus (Pinder & Reiss 1986, Fig. 10.79C) but without spinulae. Cephalothorax with weak papillae on both sides of the median raphe, with papillae occupying about the middle one-third of the length of the raphe. Wing sheaths with weak nasiform tubercles but without bacatiform papillae.

Tergum I devoid of shagreen; tergum II with two patches of coarse spinulae near the base and a field of weak shagreen extending posteriorly to the hook row, as in *Tanytarsus curticornis* Kieffer (Pinder & Reiss 1986, Fig. 10.80D); hook row of II with 41-53 (3) hooks in two staggered rows; terga III and IV as *Tanytarsus lestagei* Goetghebuer (Pinder & Reiss 1986, Fig. 10.80 F); tergum V with the spinulae patch about the same as IV; terga VI-VIII devoid of spinulae or shagreen; anal lobe with weak shagreen. Lateral flattened setae (LS) 4 and simple setae (L) lacking on segments VII-VIII. Posterolateral spur of VIII very similar to *Tanytarsus clivosus* Reiss (Reiss 1972, Fig. 14C), with 17-19 (3) spines of which 5-6 on the margin are much heavier. Swim fin with 33-40 (3) fringe setae.

The pupa is similar to the ones described from Patagonia for *T. clivosus* and *Tanytarsus hamatus* Reiss (1972), but differs but noticeably in having two spinulae patches on tergum II and lacking them on VI.

Material examined. Holotype: ♂, **Medio Monte**, no. 205a (IV-39), 28.I.81. - Allotype: ♀, pupal exuviae, collected with the holotype, no. 208C (IV-44). - Paratypes: **Medio Monte**, no. 205b (IV-38), 1♂, no. 206a (V-43), 1♂, no. 207a (IV-47), 1♂, no. IV-52, 1 pupal ♂, (on same slide with 1 pupal exuviae, *Cricotopus rincon*, spec. nov.), no. 212 (IV-41), 5 pupal exuviae, (on same slide with 1 pupal ♂, 2 pupal ♀♀, 1 pupal exuviae, *Tanytarsus pandus*, spec. nov.; 1 pupal ♂, *Dicrotendipes californicus*; 1 pupal exuviae, *Parametriocnemus lundbecki*; 1 pupal exuviae, *Cricotopus rincon*, spec. nov.), no. 205 (IV-53), 11 pupal exuviae, 3 pupal exuviae fragments (on same slide with 1 pupal exuviae *Rheotanytarsus* spec. 2; 1 pupal exuviae, *Cricotopus rincon*, spec. nov.), all collected with holotype and allotype.

Tanytarsus pandus, spec. nov.

Holotype male. Colouration: Entirely yellowish white; flagellum darkened.

Head. Antenna with 12 flagellomeres. Antennal ratio 1.03. Palpal proportions 39:109:109:148 µm. Frontal tubercle length 10 µm; slender, 2.5 times as long as broad. Ocular ratio 0.24. Clypeus with 14 setae in a triangular patch near the base. Temporal setae 9, in a single row.

Thorax. Antepronotum almost parallel-sided in the basal 0.4, then abruptly narrowed, with apical 0.4 being evenly attenuate to the narrow dorsal apex. Setae: Dorsocentrals 10, in 1 row; acrostichals 12, in 2 rows; prealars 2; supra-alars lacking; scutellars 4, heavy, in a posterior straight row and 6 smaller ones in a scattered anterior series.

Wing. Membrane with macrotrichia on the entire surface, but weaker towards the base. Wing length 1.40 mm, venation details obscured.

Legs. Foretibia with a low darkened spine which is 0.31 of the diameter of the tibial apex. Middle and hind tibial combs slightly separated, each leg with 2 spurs of unequal length. All tarsi missing.

Abdomen. Genitalia, Fig. 195. Superior volsella, Fig. 196. Median volsella, Fig. 197.

Diagnosis. This species is a member of the riopreto-group which includes two Patagonian species (Reiss 1972), several amazonian species (Fittkau & Reiss 1972), and the southern Nearctic species *Tanytarsus limneticus* Sublette (1964). It differs from all described species in having the spinulae of the anal point towards the base of the anal point crests rather than between them and the distal lobe of the superior volsella more digitiform than the amazonian species (Fittkau & Reiss 1973, Figs. 4-8). The posterior margin of the superior volsella is smoothly curved rather than notched as in *T. limneticus* (Sublette 1964, Figs. 108, 109). This new species most closely resembles *Tanytarsus clivosus* Reiss (1972) but differs by having a slender digitus to the superior appendage and more basal spinulae on the anal point.

Allotype female. Head: Antennae and palpi obscured. Clypeus with 17 setae. Temporal setae 9, in a single row.

Thorax. Antepronotum similar to that of the male. Setae: Dorsocentrals 11, in 1 row; acrostichals 14, in 2 rows; prealars 2; supra-alars lacking; scutellars 2, heavy posterior and 4 finer anterior.

Wing. Membrane with macrotrichia on the entire surface. R_{4+5} ends proximal to M_{1+2} at 0.5 of the distance between the apex of M_{3+4} and M_{1+2}. R_{2+3} ends at about midway of the distance between the apex of R_1 and R_{4+5}. Venarum ratio 1.16. Wing length 1.68 mm.

Legs. Tibial combs and spurs similar to the male. Sensilla chaetica of PII 29, PIII tarsi missing. Pulvilli minute. Leg ratios: PI 2.84; PII 0.61; hind tarsus missing.

Genitalia missing.

Pupa. Thorax blackish-brown; abdomen yellowish, with 2 lateral dark stripes on each side from segments II-VII; segment VIII laterally infuscate as are the genital sacs and swim fins.

Total length 4.50 mm. Length of thoracic horn 608 µm. Thoracic horn without spinulae but weakly annulate on the apical 0.6. Weak papillae present on both sides of the median raphe, occupying about 0.2 of the total length. Wing sheaths with weak nasiform tubercles. Thoracic chaetotaxy similar to *Tanytarsus eminulus* (Walker) (Pinder & Reiss 1986, Fig. 10.79B).

Abdominal spinulae patches, Fig. 198. Hook row of second tergum 97-116, mostly in a single staggered row. Tergum I devoid of fine shagreen; tergum II with weak shagreen over much of the tergum but with a median strip devoid of shagreen, similar to *T. eminulus* (Pinder & Reiss 1986, Fig. 10.79D). Posterolateral comb, Fig. 199. Swim fin with 40-43 fringe setae.

Material examined. Holotype: ♂, **Medio Monte**, no. 212 (IV-43) (on same slide with allotype ♀, 1 fragmentary ♂, and 4 pupal exuviae and 3 pupal exuviae fragments of *Tanytarsus hastatus*, spec. nov.), 28.I.81. - Paratypes: **Medio Monte**, no. 212 (IV-41), 1 pupal ♂, 2♀♀, 1 pupal exuviae (on same slide with 5 pupal exuviae of *Tanytarsus hastatus*, spec. nov.; 1 pupal ♂, *Dicrotendipes californicus*; 1 pupal exuviae, *Parametriocnemus lundbecki*; 1 pupal exuviae, *Chironomus rincon*, spec. nov.), no. 212 (IV-42), 2 pupal exuviae (on same slide with 4 larvae, *Tanytarsus* spec.), 28.I.81.

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