

NEW AND LITTLE KNOWN SPECIES OF MOTH FLIES (DIPTERA: PSYCHODIDAE: PSYCHODINAE) FROM NICARAGUA

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The male of a new species *Arisemus venustus* sp. n. from Nicaragua, the Cerro Musun Natural Reserve, is described. *Arisemus atrasetus* (Rapp, 1945) and *Platyplastinx tango* Quate et Brown, 2004 (Diptera: Psychodidae: Psychodinae) from Nicaragua are redescribed and illustrated based on male morphological characters.

Key words: Central America, Nicaragua, non-phlebotomine moth flies, taxonomy, faunistics, new species, Maruinini, Setomimini.

INTRODUCTION

The genus *Arisemus* Satchell, 1955 included 33 known species distributed between Mexico and Panama, and several Caribbean islands (Bahamas, Cuba, Jamaica, Puerto Rico) (see SACHELL 1955, BOTOSANEANU & VAILLANT 1970, VAILLANT 1986, WAGNER & JOOST 1994, QUATE 1996, WAGNER & MASTELLER 1996, COLLANTES & MARTINEZ-ORTEGA 1999, COLLANTES & BAQUERO 2000, QUATE & BROWN 2004, BRAVO & ARAÚJO 2013, BEJARANO & ESTRADA 2016, IBAÑEZ-BERNAL & SUÁREZ-LANDA 2017). The last two coauthors discussed the taxonomic history of this genus and differences of the morphology of male gonostylus of all known species. The redescription of *A. atrasetus* (Rapp, 1945) in this work, is needed because of two synonymized taxa by QUATE and BROWN (2004): *A. lepidotus* Quate, 1996 and *A. stylofurcatus* Collantes et Martinez-Ortega, 1999. All known figures of aedeagal complex of this species (incl. redescription of *atrasetus* of DUCKHOUSE 1974) have some differences (see comments of QUATE & BROWN 2004, p. 79, however, not accepted by IBAÑEZ-BERNAL & SUÁREZ-LANDA 2017, p. 19). A list of the world species of the genus *Platyplastinx* Enderlein, 1937 encompasses 13 known species from Brazil, Costa Rica, Ecuador, Florida and Panama (QUATE 1999, QUATE & BROWN 2004, LOPES & BRAVO 2015, CORDEIRO 2020).

MATERIAL AND METHODS

The material was collected with CDC miniature light-traps placed 1.5 m above the ground in the forest (compare JEŽEK *et al.* 2011, p. 205, Fig. 81, JEŽEK & LE PONT 2016, p. 819, Fig. 25), v–vi.2009.

Study area (localities): Nicaragua: Caribbean side: Cerro Baka station, near El Empalme, RAAN department, Siuna municipality, patches of very damaged forest, 13°40'20.5"N 84°30'21.1"W, altitude 200 m a.s.l. "Cerro Musun Natural Reserve" contains the mountain of the same name (altitude 1100 m a.s.l.), which is an isolated extinct volcano covered with primary forest. In the Penas Blancas mountainous Natural Reserve, part of the Cordillera Isabela, station of La Laguna village, with a slightly degraded forest environment, 13°14'01"N 85°44'55"W, altitude 870 m a.s.l. Waslala, station in a humid subtropical forest 10 km from the town, 13°19'52"N 85°22'29"W, altitude 370 m a.s.l.

Specimens were preserved in the field using 70% ethanol. In the laboratory, specimens were cleared in chloralphenol, treated in xylol and mounted on glass slides in Canada balsam; types and voucher specimens are deposited in the National Museum, Natural History Museum, Department of Entomology, Prague, Czech Republic (NMPC). Slides are numbered with two separate series of numbers: Inv. No. = Inventory Slide Number of the family Psychodidae and Cat. No. = Catalogue Numbers of slides of types and historical specimens of Diptera (see Tkoč *et al.* 2014).

Specimen observation, measurements and illustration. The maximum wing length is approximately equal to the distance from the line connecting the base of the basal costal node and neala to the wing apex. The ratios of the lengths of the femur, tibia and first tarsal segment of P1 (fore leg), P2 (middle) and P3 (hind) are indicated. Observations were made using Carl Zeiss Jena (Germany) and Reichert (Austria) microscopes, with a mirror arm as a drawing aid. The drawings were edited in Corel DRAW X6 and Corel PHOTO-PAINT X6 graphic software.

Morphological terminology for Diptera follows that of CUMMING and WOOD (2009, 2017), WAGNER and IBÁÑEZ-BERNAL (2010), CURLER (2020), ascoids *sensu* KVIFTE and WAGNER (2017), ventral epandrial plate or sclerite are used as in DUCKHOUSE (1990), epandrial clasping lobes as in SANTOS and CURLER (2014) which suggested this terminology and include that this is the same that has been called surstyli and cerci in previous papers on Psychodidae, and wing abbreviations CuA₁ and CuA₂ of STARK *et al.* (1999).

Subfamily Psychodinae

Tribe Maruinini

Arisemus atrasetus (Rapp, 1945)

(Figs 1–18)

Psychoda atrasetata Rapp, 1945: 310.

Arisemus atrasetus; Duckhouse, 1974: 58–60, figs 12–17; QUATE & BROWN, 2004: 78, 88.

Arisemus lepidotus Quate, 1996: 23–25, figs 9 d-g. (syn. by QUATE & BROWN 2004)

Arisemus stylofurcatus Collantes et Martinez-Ortega, 1999: 216–218, figs 1–9. (syn. by QUATE & BROWN 2004)

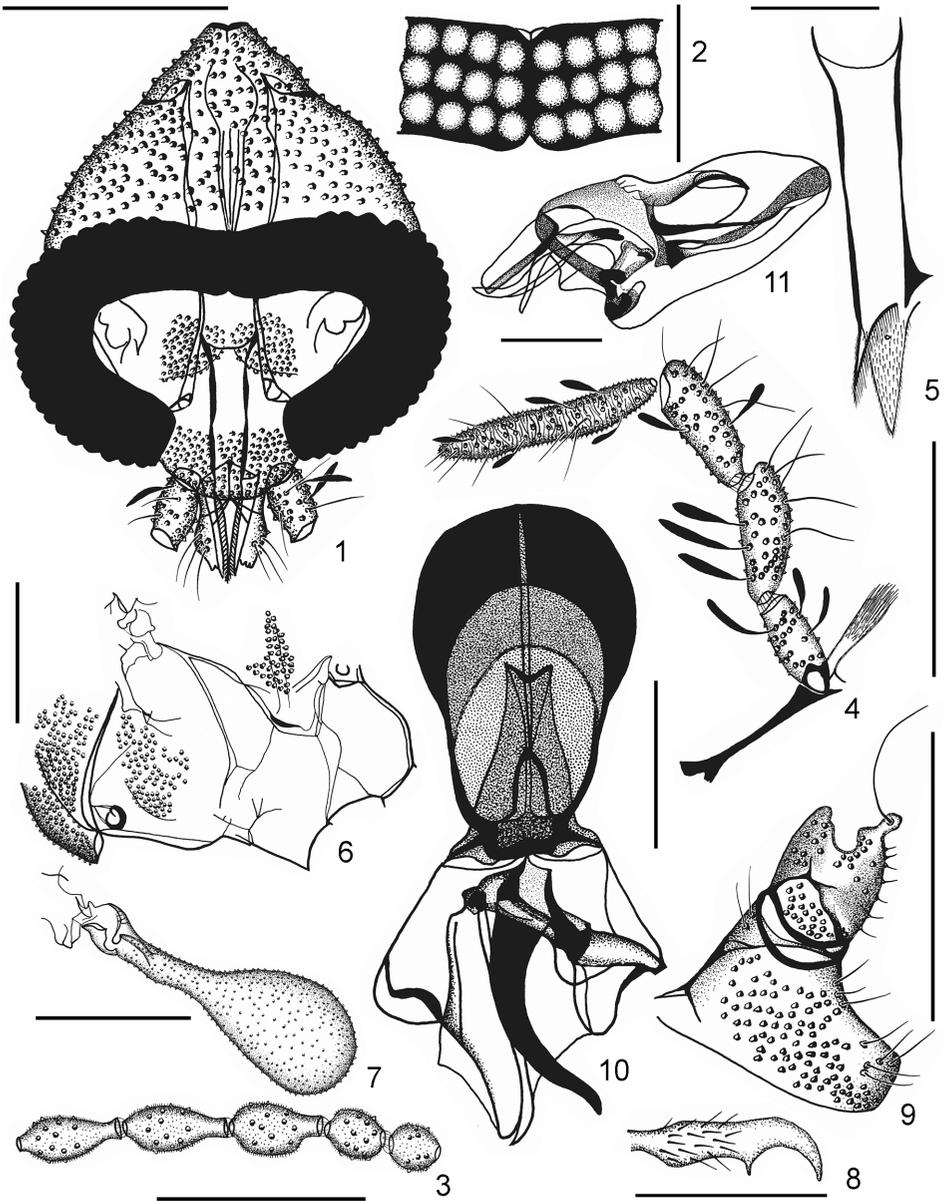
Redescription. Male. Head pyriform, flattened antero-posteriorly, vertex conspicuously elevated (Fig. 1), with shallow cleft apically, a little strangulated near upper ligament

of pharynx, uniformly set with numerous setae alveoli. Horizontal border of setae above upper apices of eyes is slightly convex on both sides. Supraocular bristles above dorsal margins of eyes on both extreme sides of head are not developed. Eyes contiguous, kidney or C-shaped, eye bridge formed by 3 facet rows (Fig. 2). Dorsal and ventral apices of eyes are approximately of the same size. Frontoclypeus with two quite separated almost triangular alveoli patches near the basis of antennae. Antennae (Figs 3, 12) incomplete and digitate paired ascoids were not observed in contrast to the literature (DUCKHOUSE 1974 – *atrasetus*, flagellomere 7–10, QUATE 1996 – *lepidotus*, 8–11, COLLANTES & MARTÍNEZ-ORTEGA – *stylofurcatus*, 1–11). Scape cylindrical, 3.6 times as long as pedicel which is almost globular. Basal flagellomeres nodiform, with necks gradually a little prolonged in contrast to three apical bead-like smaller terminators without necks (the last flagellomere with conical apiculus *sensu* DUCKHOUSE, QUATE and COLLANTES & MARTÍNEZ-ORTEGA – see above). Mouthparts extending slightly beyond basal palp segment (Fig. 1). The lines of small spines between both labial lobes are not developed, however, with digital or scraper fused protuberances in between distally (Fig. 13). Length ratio of maxillary palps 1:1.3:1.3:2.1, segment 4 annulate (Fig. 4). The index of the maximum length of the cibarium to the length of the epipharynx is approximately 2.2:1. Labrum pointed, covered with microsetae (Fig. 5).

Thorax. Anepisternum setae patch approximately elliptic, however, with irregular distal margins, anepimeron with V-shaped patch (Fig. 6). Spiracles set up on mesothorax, closely separated from anterior region of anepisternum. No thoracic allurement organs. Wings lanceolate (Fig. 14), 1.9–2.3 mm long, pointed distally in the ending of R_5 , a little expanded at the posterior margin, dark maculated. Infuscation free parts of wing: wing basis near neala and 11 semicircular flecks between vein endings (white gradually reduced patches, inconspicuous on the top of wing), with almost circular black spots near the wing margin. Following veins or their parts strengthened: Sc , R_1 and R_2 (not basal cell, however, in connection with R_3 and R_4 more strengthened), R_5 , CuA_1 and CuA_2 . Radial and medial fork complete, positioned as seen on Fig. 14. Halteres (Fig. 7) almost ovoid with a prolonged stem. Ratio of maximum length of halteres to their maximum width approximately 2.9:1. Ratios of lengths of femora, tibiae and first tarsal segments P_1 1.9:2.2:1.0, P_2 2.0:2.7:1.2, P_3 2.1:3.2:1.2. Paired tarsal claws of P_1 bent distad, with a medial spine (Fig. 8).

Male genitalia. Aedeagal complex (Figs 10, 11, 18) asymmetrical with large basal, rounded paddle-shaped enlargement of ejaculatory apodeme proximally, inflated and keeled posteriorly, anteriorly dorso-ventrally flattened. Right paramere sickle-shaped, bifurcated in contrast to left one, which is blunt, aedeagus thin, dibble-shaped. Hypandrium (tergite 10) as a broad band between gonocoxites, conspicuous, almost V-shaped or triangular in the middle on both sides, divided proximally in the apex (Fig. 10). Gonocoxites inflated basally, approximately as long as gonostyles, which are forked, smaller appendage more than one-half length of main shaft (with conspicuous seta on the top), both sinuous and rounded apically (Figs 9, 17). Epandrium (Figs 15, 16) almost square-shaped, bare, with a single almost circular aperture placed in vertical axis basally. A rest of ventral plate forms two divergent arms connected proximally. Hypoproct tongue-shaped, epiproct only as a fold, both parts haired. Epandrial clasping lobes almost cylindrical, setose and bent (Figs 15, 16), almost twice as long as epandrium (measured with hypoproct), each with one apical tenaculum, frayed apically and strangulated a little in the middle.

Differential diagnosis. *Arisemus atrasetus* (Rapp, 1945) is morphologically similar to *A. rubeni* Bravo et Araújo, 2013 (male), however, some differences are as follows: scape cylindrical, 3.6 times as long as pedicel which is almost



Figs 1–11. *Arisemus atrasetus* (Rapp, 1945), male. 1 = head, frontal view; 2 = frons and facets in detail, frontal view; 3 = terminal flagellomeres (16th antennomere missing, not observed); 4 = maxilla and palpus maxillaris; 5 = cibarium, labrum and epipharynx; 6 = thoracic sclerites, lateral view; 7 = halter, lateral view; 8 = tarsal claw of P_1 , lateral view; 9 = gonopod, diagonal view; 10 = aedeagal complex, dorsal view; 11 = same, lateral view. Scale bars: 1, 4, 6, 7, 9 = 0.2 mm; 2, 3, 5, 10, 11 = 0.1 mm; 8 = 0.03 mm

globular (Fig. 12), first flagellomere approximately 1.3 times as long as the second one, antepnotum without sensory organ near spiracle (Fig. 6). Wing index 2.4. Larger posterior margin of wing conspicuously infuscated as well as anterior part, endings of all long veins have rather small black patches (Fig. 14). Right paramere sickle-shaped, bifurcated in contrast to left one, which is blunt, aedeagus thin, dibble-shaped, a little longer than left paramere (Fig. 10, dorsal view). Bifurcated gonostyles with large U-shaped cleft between both protuberances (Figs 9, 17). Epandrium (Figs 15, 16) with a single aperture. Epandrial clasping lobes almost twice as long as epandrium, each with one apical tenaculum, strangulated a little in the middle.

A. rubeni Bravo et Araújo, 2013 can be distinguished by scape to pedicel ratio 1.5:1, scape pyriform, first flagellomere approximately twice as long as the second one (BRAVO & ARAÚJO 2013, p. 86, Fig. 1B), antepnotum with pyriform sensory organ in front of thoracic spiracle (BRAVO & ARAÚJO 2013, p. 86, Fig. 1G). Wing index 3.0. A little expanded part of posterior margin of wing inconspicuously infuscated in contrast to anterior part, endings of all long veins have conspicuous black patches (BRAVO & ARAÚJO 2013, p. 86, Fig. 1E). Aedeagus thin, shorter than parameres, S-shaped, sinuous, aedeagal complex as figured (BRAVO & ARAÚJO 2013, p. 86, Fig. 1H, dorsal view), bifurcated gonostyles without cleft between both protuberances, both parts attached together. Epandrium proximally with two foramina. Epandrial clasping lobes approximately as long as epandrium, apical tenaculum is not strangulated in the middle.

Material examined. Nicaragua: Cerro Baka station, coordinates 13°40'20.5"N 84°30'21.1"W, altitude 200 m a.s.l., a small hill in the plain; landscape of large cattle meadows and thickets of degraded forest or coppice. Catches with CDC miniature light-traps, v.-vi 2009, Le Pont leg., 6 male (slides), several specimens dissected, Cat. No. 34915–34920, Inv. No. 25972–25977 (NMPC).

Bionomics. Unknown. Adults (males) collected in residual secondary forest, sometimes trampled by livestock.

Distribution. Costa Rica, Guatemala, Nicaragua, Panama.

***Arisemus venustus* Ježek, Oboňa et Le Pont sp. n.** (Figs 19–37)

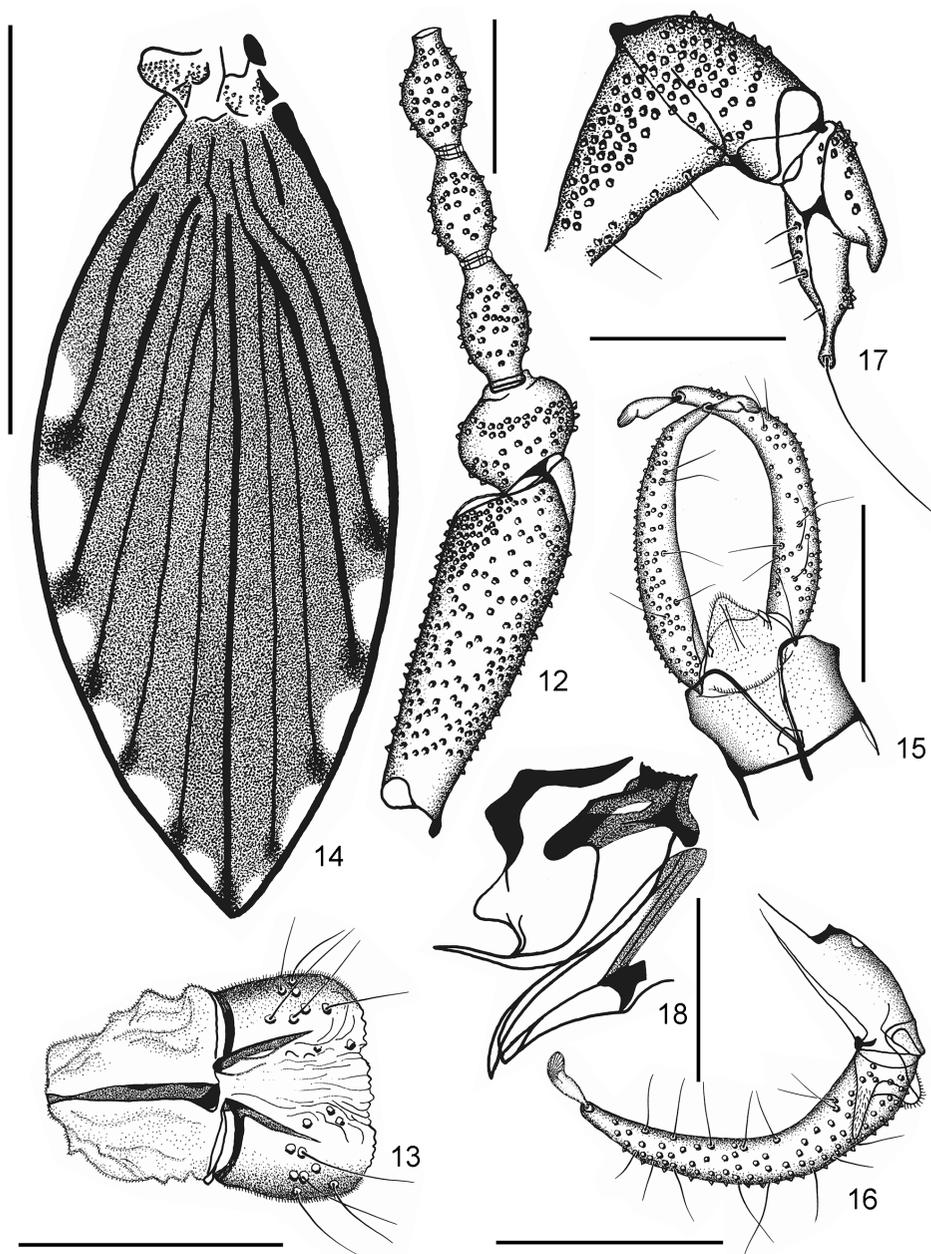
Description. Male. Head (Fig. 19) longer than broad, vertex elevated, slightly sagittate. Frons hair patch irregularly sparse and well separated in a central stripe. Three supraocular bristles above dorsal margins of eyes on both extreme sides of head are developed. Eyes contiguous, kidney-shaped, eye bridge formed by 3 facet rows (Fig. 20). Dorsal and ventral apices of eyes are approximately of the same size. The basis of antennae is skirted by two quite separated almost trapezoidal alveoli patches. Antennae (Figs 21, 31)

incomplete, paired digitate ascoids hardly evident (compare slide Inv. No. 25987, flagellomere 6). Scape conical, twice as long as wide, pedicel globular. First flagellar segment conspicuous, spindle-shaped, 1.4 times longer than following one, which has a short neck. Mouthparts extending beyond basal palp segment (Fig. 19). At the labellum, as shown in Fig. 32, miniature spines between both lobes are not visible. Labellum bulbous, with serrated margin in between distally. Length ratio of maxillary palps 1.0:1.2:1.5:2.3, segment 4 annulate (Fig. 22). Ratio of maximum length of cibarium to length of epipharynx (Fig. 23) 1.9:1, labrum pointed.

Thorax. Anepisternum setae patch missing, anepimeron with V-shaped patch (Fig. 33). Spiracles set up on mesothorax. Thoracic allurement organs present as a small hemispherical protuberances near spiraculum, pair of patagia on prothorax have a specific shape as a grooved capsule, orange coloured in ethanol, prolonged (1.4 times as long as diameter of spiraculum), with many miniature spines apically (Figs 24, 25, 33). Wings (Fig. 35) narrowly lanceolate, 1.9 mm long – holotype, paratypes 1.5–1.9 mm, pointed distally in the ending of R_{5+6} , inconspicuously expanded at the posterior margin, dark maculated. Main infuscation free parts of wing: wing basis near neala and basal cell, vicinity of Sc basally, small limited stripe between R_1 and R_{2+3} , mostly semicircular or oval flecks between vein endings (white gradually reduced 11 patches, very small on the top of wing), with oval black spots on the wing margin. Following veins or their parts strengthened: Sc conspicuously, R_1 and R_2 (not in basal cell, however, in connection with R_3 and R_4 more strengthened, with a supine parallel fold line), R_{5+6} , M_{3+4} , CuA_1 and CuA_2 . Radial and medial fork complete (Fig. 35). Both forks are out of line with CuA_2 , medial fork positioned basally. Wing indices $AB:AC:AD = 9.5:9.5:8.8$; $BC:CD:BD = 1.0:2.3:3.3$. Wing index 3.1, medial wing angle 150° (BCD). Knob of halteres (Fig. 34) almost globular with a prolonged stem. Ratio of maximum length of halteres to their maximum width approximately 3.0:1. Ratios of lengths of femora, tibiae and first tarsal segments P_1 2.1:2.4:1.0, P_2 2.2:3.0:1.4, P_3 2.4:3.6:1.4. Paired tarsal claws of P_1 bent distad, pointed, with a medial blunt tubercle (Fig. 26).

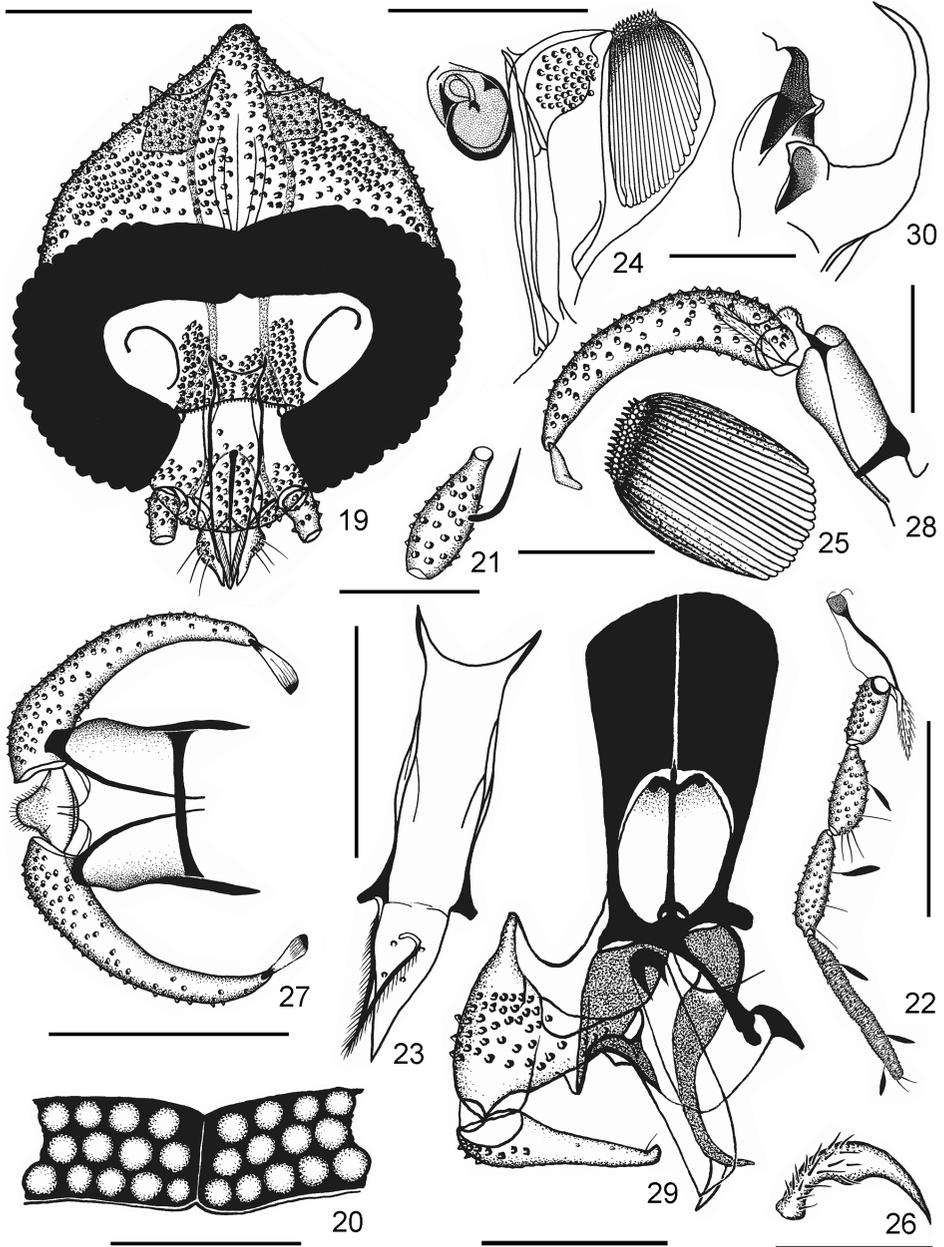
Male genitalia. Aedeagal complex (Figs 29, 30, 36, 37) asymmetrical with rounded paddle-shaped ejaculatory apodeme inflated proximally and dorso-ventrally flattened. Right paramere sickle-shaped (Figs 29, 30, 36), left paramere thick and blunt (Figs 9, 36, 37), aedeagus pointed distally, approximately as long as both parameres, thin, with a very small bent inconspicuous overlap, closely adhering. Hypandrium as a very broad band between gonocoxites, conspicuously oval-shaped in the middle on both sides and shallow sclerotized cleft proximally (Fig. 29). Gonocoxites inflated basally, approximately as long as gonostyles, which are not forked, gradually tapering to the hooked top (Figs 29, 36). Epandrium (Figs 27, 28) almost square-shaped, bare, without aperture. A rest of ventral plate forms two divergent sclerotized arms not fused proximally. Hypoproct tongue-shaped, epiproct only as a fold, both parts haired. Epandrial clasping lobes almost cylindrical, setose and bent (Figs 27, 28), a little longer than epandrium (measured with hypoproct), each with one apical tenaculum, frayed apically.

Differential diagnosis. *Arisemus venustus* sp. n. is morphologically similar to *A. grabhamana* (Dyar, 1926) from Jamaica, however, male characters are quite different: scape 2.3 times as long as pedicel, pedicel globular, without enlarged seta. Length ratio of maxillary palps 1.0:1.2:1.5:2.3 (Fig. 22). Pair of patagia on prothorax have a specific shape as a grooved capsule, orange coloured (observed fresh material in ethanol), prolonged (1.4 times as long as diameter of spiracle), with many miniature spines apically (Figs 24, 25, 33).



Figs 12–18. *Arisemus atrasetus* (Rapp, 1945), male. 12 = scape, pedicel and basal flagellomeres; 13 = terminal lobes of labium; 14 = wing; 15 = epandrium and epandrial claspings lobes, dorsal view; 16 = epandrium and epandrial claspings lobe, lateral view; 17 = gonopod, lateral view; 18 = distal part of aedeagal complex in detail, lateral view. Scale bars: 14 = 1 mm; 15, 16 = 0.2 mm; 12, 13, 17, 18 = 0.1 mm

Wing index 3.1 (Fig. 35). Right paramere sickle-shaped (Figs 29, 30, 36), left paramere thick and blunt (Figs 9, 36, 37), aedeagus pointed distally from dorsal view (Figs 29, 37), rounded from lateral one (Fig. 36), approximately as



long as both parameres, thin, with a very small bent inconspicuous overlap, closely adhering to paramere (Figs 29, 37).

On the other hand, males of *A. grabhamana* (Dyar, 1926) have scape 2.1 times length of pedicel, pedicel eccentric, enlarged medially and bearing a single enlarged seta. Length ratio of maxillary palps 1.0:1.2:1.7:2.0. Pair of patagia quite different, unclear examination (see comments on known morphology below). Wing index 2.0–2.5 (QUATE & BROWN 2004). One from parameres stepped near top, in right angle to aedeagus from dorsal view, without small bent inconspicuous overlap (compare SATCHELL 1955, p. 88, Fig. 2E and VAILLANT 1986, p. 335, Figs 4, 6).

Comments on patagia of *grabhamana/maculosus* (synonymy *sensu* DUCKHOUSE 1974). Defined by SATCHELL 1955, p. 89, as conical protuberances above anterior spiracle – *A. maculosus* Satchell, 1955; DUCKHOUSE 1974, p. 149, as very tenuous sacs, each with a black central body, as large as anterior spiracle – *grabhamana*; VAILLANT 1986, p. 335, only by Fig. 3 „stigmatte prothoracique gauche et organes turgescents du même côté“ without comments in the text – *maculosus*; QUATE & BROWN 2004, p. 81, in front of anterior spiracle, organ a dense cluster of berrylike granules, patch of long hairs behind anterior spiracle – *grabhamana*.

Type material. Holotype, male: Nicaragua: “Natural Reserve Cerro Musun”, coordinates 12°97'N 85°24'W, altitude 800 m a.s.l., catches with CDC light traps near the Research Station, subtropical forest, v.-vi.2009, Le Pont leg. Slide with a dissected specimen, Cat. No. 34921, Inv. No. 25978 (NMPC).

Paratypes 21 males (slides): The same locality, data and collector, several specimens dissected, Cat. No. 34922-34942, Inv. No. 25979-25999 (NMPC).

Type locality. Nicaragua: “Natural Reserve Cerro Musun”, near the town of Rio Blanco (east of the Matagalpa Department).

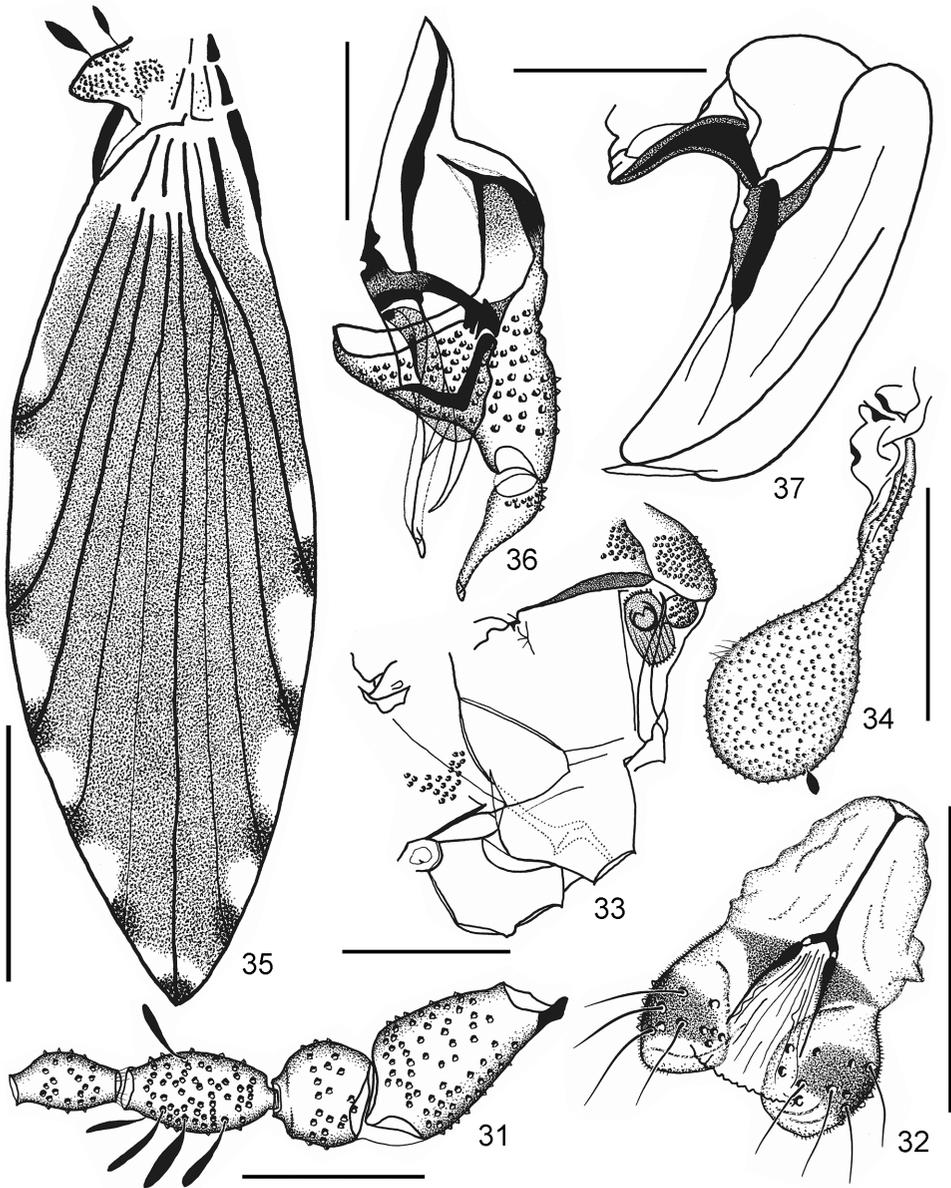
Etymology. The specific epithet is derived from the Latin word „venustus - a - um“ (adjective) = gracefully refined; it refers to pair of characteristic patagia on prothorax (a grooved capsule, orange coloured, with many miniature spines apically).

Bionomics. Unknown. Adults (males) collected in an undergrowth forest, very steep, south-eastern side of Cerro Musun.

Distribution. Currently recorded only from Nicaragua.



Figs 19–30. *Arisemus venustus* Ježek, Oboň et Le Pont **sp. n.**, male. 19 = head, frontal view; 20 = frons and facets in detail, frontal view; 21 = a medial flagellomere in detail; 22 = maxilla and palpus maxillaris; 23 = cibarium, labrum and epipharynx; 24 = thoracic spiracle and tuft of scales (only alveoli are marked) near patagium; 25 = patagium in detail; 26 = tarsal claw of P₁, lateral view; 27 = epandrium and epandrial clasping lobes, lateral view; 28 = same, lateral view; 29 = aedeagal complex and gonopod, dorsal view; 30 = dissected right distal part of aedeagal complex in detail, lateral view. Scale bars: 19, 22, 27 = 0.2 mm; 20, 23, 24, 28, 29 = 0.1 mm; 21, 25, 30 = 0.05 mm; 26 = 0.03 mm



Figs 31–37. *Arisemus venustus* Ježek, Oboňa et Le Pont **sp. n.**, male. 31 = scape, pedicel and basal flagellomeres; 32 = terminal lobes of labium; 33 = thoracic sclerites, lateral view; 34 = halter, lateral view; 35 = wing; 36 = aedeagal complex and gonopod, lateral view; 37 = dissected left distal part of aedeagal complex in detail, lateral view. Scale bars: 35 = 0.5 mm; 33, 34 = 0.2 mm; 31, 32, 36 = 0.1 mm; 37 = 0.05 mm

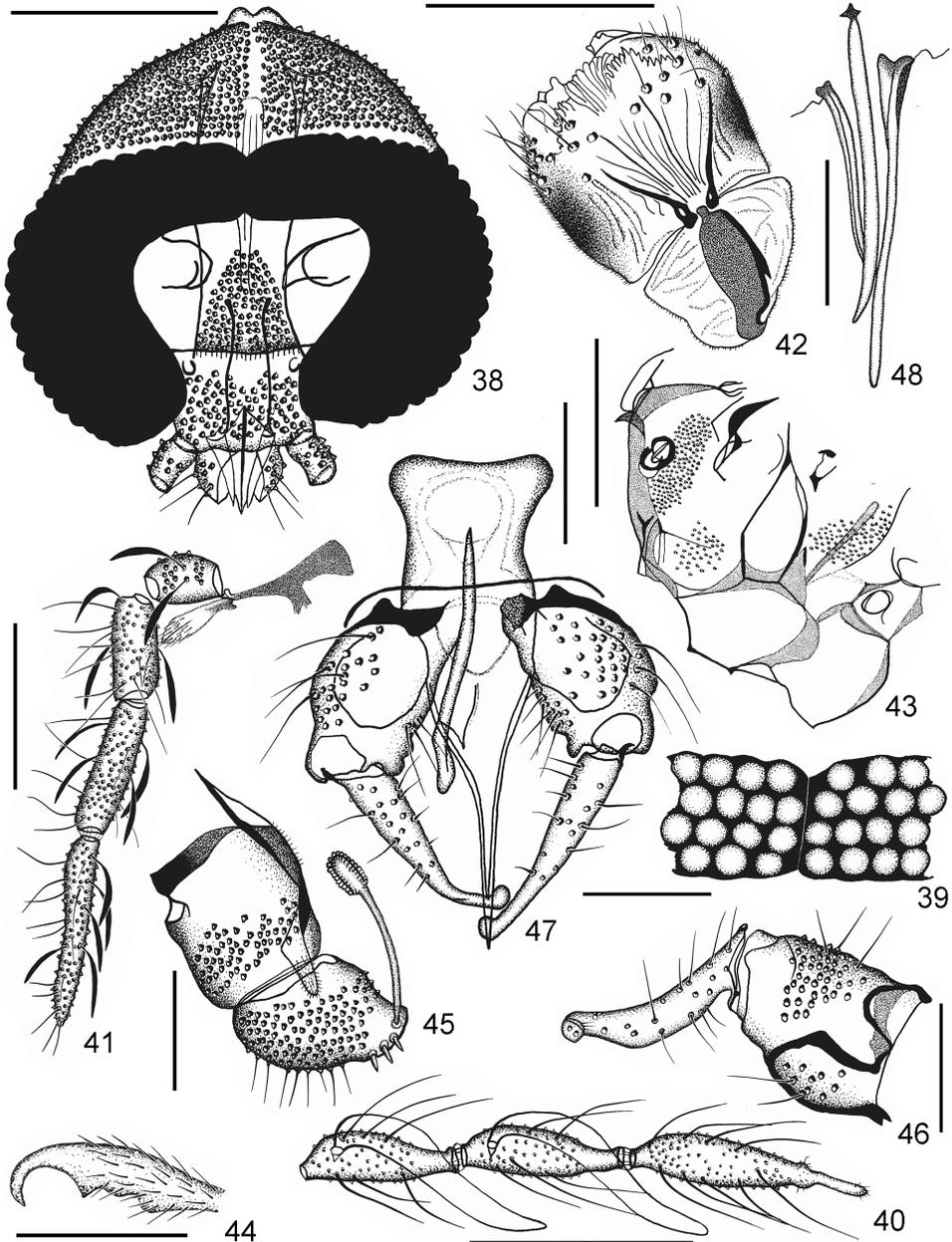
Platyplastinx tango Quate et Brown, 2004
(Figs 38–54)

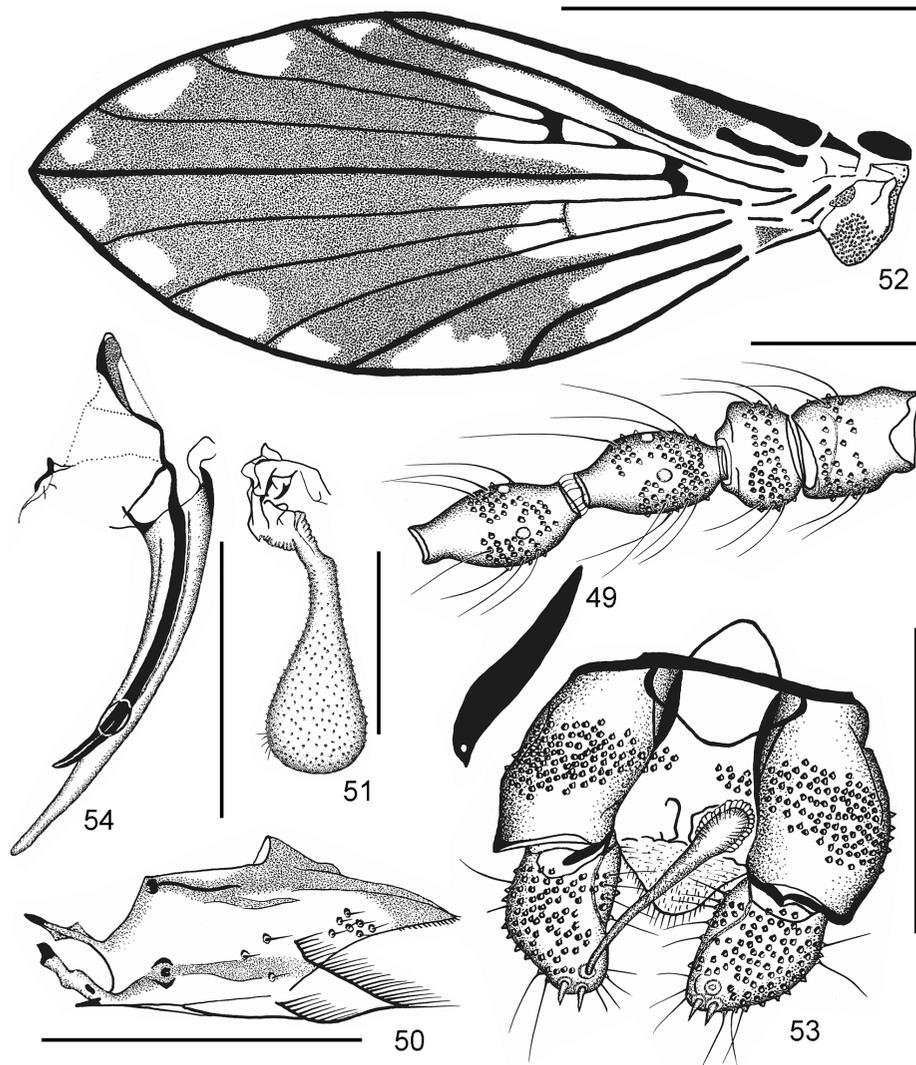
Redescription. Male. Head (Fig. 38) almost rounded from frontal view (1.1 times broader in horizontal axis – measured without mouthparts), with raised concave bare tubercle dorsally and swollen kidney or C-shaped compound eyes laterally, contiguous in frontal area. Hair patch above close sparse and well separated in a central stripe. Ventral apices of eyes are broader than dorsal one. Eye bridge formed by 4 facet rows (Fig. 39). Supraocular bristles above dorsal margins of eyes on both extreme sides of head are not developed. Frontoclypeus with a dense triangular scar patch between and below the basis of antennae, cut terminally. Antennae (Figs 40, 49) of 16 articles. Scape (Fig. 49) cylindrical, 1.4 times as long as pedicel which is 1.3 times broader in horizontal axis (compare vertical one) and a little asymmetrical. Basal flagellomeres (Fig. 49) are spindle-shaped, 1.8 times as long as pedicel, however, 1.3 times narrower. Neck of postpedicel is not conspicuous, however, gradually prolonged to the last flagellomere, which is symmetrical (Fig. 40) in contrast to the foregoing articles. Digital apiculus has a bulbous basis. Ascoids on flagellomeres 1–14 lanceolate (Figs 40, 49), narrow, sinuous, almost twice as long as segments bearing them. Mouthparts extending slightly beyond basal palp segment (Fig. 38). At the labellum, as shown in Fig. 42, parallel lines of miniature spines between both lobes are not visible. Labellum bulbous, with digital protuberances in between (Fig. 42). Length ratio of maxillary palps 1.0:1.4:1.8:2.5, segment 4 not annulate (Fig. 41). Ratio of maximum length of cibarium to length of epipharynx 2.6:1 (Fig. 50), labrum pointed.

Thorax. Anepisternum setae patch approximately elliptic, however, with irregular distal margins, anepimeron with almost triangular patch (Fig. 43), katepisternum with irregular almost circular setae patch more widely spaced. Spiracles set low on mesothorax. No thoracic allurement organs. Wings broadly lanceolate (Fig. 52), 2.3–2.8 mm long, pointed distally in the ending of R_{5+6} , perceivable expanded at the posterior wing margin, irregularly and uniformly patterned mainly in a distal half of wing, with two black spots in basal clear area. Cross-vein $r_2 - r_4$ conspicuous (in contrast to less visible cross-vein $m_1 - m_3$), transformed considerable black spot. The second black spot connecting R_{2+4} , M_1 and basis of R_5 forms distal margin of basal cell. Infuscation free parts of wing: large wing basis near neala and basal cell (Fig. 52), 9 semicircular or oval white spots between vein endings. Following veins or their parts strengthened: Sc conspicuously, R_1 (not proximally), R_2 distally, R_5 , CuA_1 and CuA_2 . Wing index 2.4. Halteres (Fig. 51) almost cudgel-shaped with a prolonged stem. Ratio of maximum length of halteres to their maximum width approximately 3.1:1. Ratios of lengths of femora, tibiae and first tarsal segments P_1 1.5:1.6:1.0, P_2 1.6:1.8:1.0, P_3 1.7:2.2:1.6. Paired tarsal claws of P_1 bent distally, hooked, with one medial tooth subapically and two medial rounded tubercles basally (Fig. 44).

Male genitalia. Basiphallus (ejaculatory apodeme) fan-shaped (Fig. 47), a little concave proximally as well as on both sides, distiphallus longly dibble shaped, inconspicuously sinuous, tapering distally and terminally pointed (Figs 48, 54). Paramere as a single shaft very narrow, much longer than distiphallus, strictured distally (Figs 47, 48, 54). Both parts of aedeagal complex closely adhering, enclosing and penetrating (see small aperture of paramere on Fig. 54), bent from lateral view. Gonocoxites, almost 1.2 times as long as cone-shaped gonostyli, which are bent, with a globular knob terminally (Figs 46, 47). Epandrium (Figs 45, 53) broader than long, with paired oval foramens inconspicuously marked on outer sides, below with two large elliptical areas haired, narrowed medially but not touched. Hypandrium inconspicuous, narrow, as a slender band (Fig. 47). Hypo-

proct largely tongue-shaped, covered with miniature microsetae in distal half, epiproct developed only as a bare fold (Figs 45, 53). Epandrial clasping lobes (Figs 45, 53) very short, almost pear-shaped, strengthened basally, haired, with one long pole-shaped tenaculum (approximately twice as long as clasping lobe) decorated by oval lacy ending. Moreover, 2-8 short apical peg-shaped accessory tenacula near are developed.





Figs 49–54. *Platyplastinx tango* Quate et Brown, 2004, male. 49 = scape, pedicel, basal flagellomeres and dissected ascoid; 50 = cibarium, labrum and epipharynx; 51 = halter, lateral view; 52 = wing; 53 = epandrium and epandrial clasp lobes, dorsal view; 54 = aedeagal complex, lateral view. Scale bars: 52 = 1 mm; 49–51, 53, 54 = 0.2 mm

Figs 38–48. *Platyplastinx tango* Quate et Brown, 2004, male. 38 = head, frontal view; 39 = frons and facets in detail, frontal view; 40 = terminal flagellomeres and ascoids; 41 = maxilla and palpus maxillaris; 42 = terminal lobes of labium; 43 = thoracic sclerites, lateral view; 44 = tarsal claw of P_1 , lateral view; 45 = epandrium and epandrial clasp lobe, lateral view; 46 = gonopod, lateral view; 47 = aedeagal complex and gonopods, dorsal view; 48 = distal part of aedeagal complex, inner view. Scale bars: 38, 43 = 0.3 mm; 40, 41 = 0.2 mm; 39, 42, 45–48 = 0.1 mm; 44 = 0.03 mm

Differential diagnosis. *Platyplastinx tango* Quate et Brown, 2004 (male) is morphologically similar to *P. moragai* Quate, 1996, however, eye bridges are not separated (Fig. 39), terminal flagellomere has a digital apiculus with a bulbous basis and ascoids are lanceolate (Figs 40, 49). Frontoclypeus with a dense triangular scar patch between and below the basis of antennae, cut terminally (Fig. 38). Wing (Fig. 52) patterned mainly in a distal half of wing, with two black spots in basal clear area (cross-vein $r_2 - r_4$ and distal margin of basal cell). Distiphallus longly dibble shaped, intense tapering apically and terminally pointed. Paramere as a single shaft very narrow, much longer than distiphallus, strictured distally (Fig. 47, 48, 54). Gonocoxites with a globular knob terminally (Figs 46, 47). Epandrium (Figs 45, 53) with two large haired elliptical areas and paired oval foramens. Epandrial clasping lobes (Figs 45, 53) almost pear-shaped, with one long pole-shaped tenaculum decorated by oval lacy ending and 2-8 short apical peg-shaped accessory tenacula.

In contrast to the mentioned species, *P. moragai* has eye bridges separated by less than one half facet diameter (QUATE & BROWN 2004, p. 69, Fig. 176) and terminal flagellomere without a bulbous basis of digital apiculus, ascoids are unidigitate (see QUATE 1996, p. 35, Fig. 13i). Hair patch on frontoclypeus quadrate. Wing (QUATE 1996, p. 35, Fig. 13h; QUATE & BROWN 2004, p. 69, Fig.

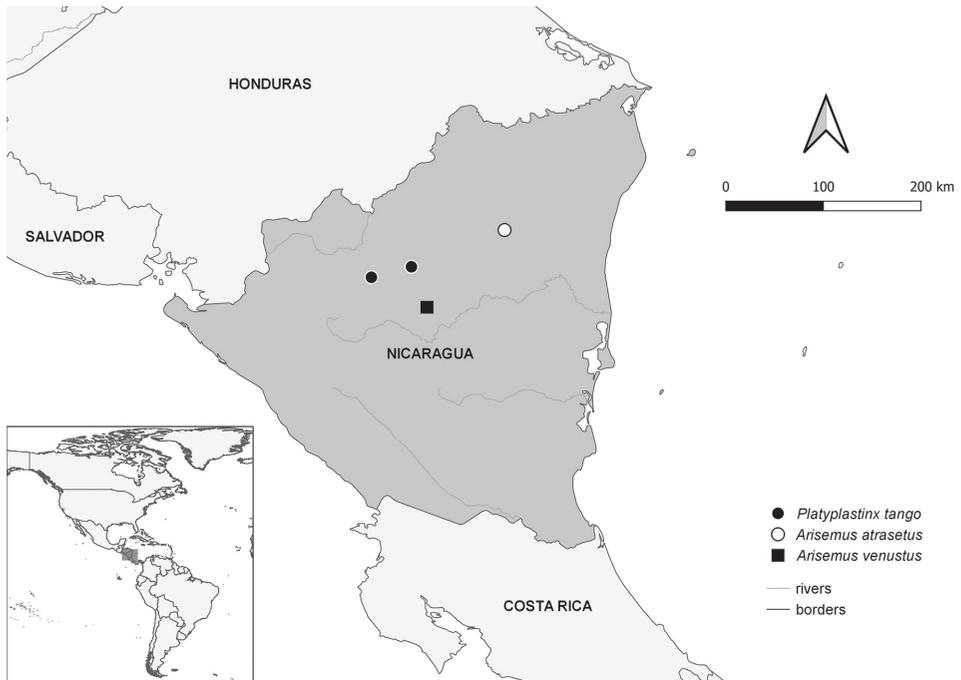


Fig. 55. Map of the collecting areas

174) almost completely infuscated, with black spots limited only on basis of R_5 and endings of all veins. Distiphallus longly tongue-shaped, tapering to shoe-like apex a little beyond apex of paramere (see QUATE & BROWN 2004, p. 69, Fig. 173). Gonocoxites without a conspicuous globular knob terminally. Epandrium bare, with single oval aperture proximally (see QUATE 1996, p. 35, Fig. 13f). Epandrial clasping lobes almost cylindrical, with one conspicuous brush-shaped tenaculum and 3-6 inexpressive apical rods or peg-shaped accessory tenacula near (QUATE 1996, p. 36; QUATE & BROWN 2004, p. 70).

Material examined. Nicaragua: Waslala, in the Atlantico Norte Department, station in an ecotonal forest/coffee plantation, 13°19'52"N 85°22'29"W, altitude 370 m a.s.l., 5 males. One additional male comes from "Penas Blancas Natural Reserve", station La Laguna village, 13°14'01"N 85°44'55"W, 870 m a.s.l. All material collected by CDC miniature light-traps, v.-vi.2009, Le Pont leg. and slided, several specimens dissected, Cat. No. 34943–34948, Inv. No. 26000–26005 (NMPC).

Bionomics. Unknown. The adults (males) collection station was located at a primary forest / coffee plantation ecotone, in a hilly landscape, very humid, in Waslala; in Penas Blancas slightly degraded subtropical forest.

Distribution. Costa Rica, new for Nicaragua.

The subfamily Psychodinae was represented in Nicaragua by 54 species so far (DUCKHOUSE 1973, MAES & KILLICK-KENDRICK 1990, COLLANTES & MARTINEZ-ORTEGA 1999, QUATE & BROWN 2004, Tkoč *et al.* 2017, JEŽEK *et al.* 2020). A list of Psychodine moth flies increases by *Arisemus venustus* sp. n. and *Platyplastinx tango* Quate et Brown, 2004 collected in Nicaragua to 56 species, the last-mentioned genus represents the first record for this country. *Arisemus venustus* sp. n., described here, increases the number of known species of *Arisemus* to 34. The genus *Platyplastinx* Enderlein, 1937 was not known so far from Nicaragua.

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