
Lumahyphes, a New Genus of LeptoHyphidae (Ephemeroptera)

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Abstract

A new genus of the family LeptoHyphidae is described and illustrated. Three species are treated: *Lumahyphes guacra* sp. n., described from male and female imagines and nymphs from Argentina and Bolivia; *Lumahyphes yagua* sp. n., described from male and female adults and a nymph from Colombia and Peru; in addition, *Lumahyphes* sp. is discussed and illustrated from two male subimagines from Mexico.

Keywords: taxonomy, Neotropics, new genus, new species.

Introduction

LeptoHyphidae is presently composed of nine genera: *Allenhyphes* Hofmann & Sartori, *Haplohyphes* Allen, *LeptoHyphes* Eaton, *LeptoHyphodes* Ulmer, *Traverhyphes* Molineri, *Tricorythodes* Ulmer, *Tricorythopsis* Traver, *Yaurina* Molineri, and *Vacupernius* Wiersema & McCafferty.

The aim of this paper is to describe *Lumahyphes* gen. n., including two new species: *L. guacra* from Argentina and Bolivia and *L. yagua* from Colombia and Peru; an undetermined species from Mexico is also treated. The new genus here described is related to *Traverhyphes* and *Vacupernius*, sharing with both numerous characters of male genitalia.

Material and Methods

Terms used in descriptions of thorax are from Kluge (1992). Material deposition is abbreviated as follows: Instituto-Fundación Miguel Lillo, Tucumán, Argentina (IFML), Universidad Mayor de San Andrés, La Paz, Bolivia (UMSA), Museo de Entomología de la Universidad del Valle, Cali, Colombia (MEUV). In

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the lists of material, collectors are abbreviated as follows: E. Domínguez (D), C. Molineri (M) and M.C. Zúñiga (Z).

Descriptions

Lumahyphes Molineri gen. n.

Type species: *Lumahyphes guacra* sp. n.

Included species: *L. guacra* sp. n., *L. yagua* sp. n.

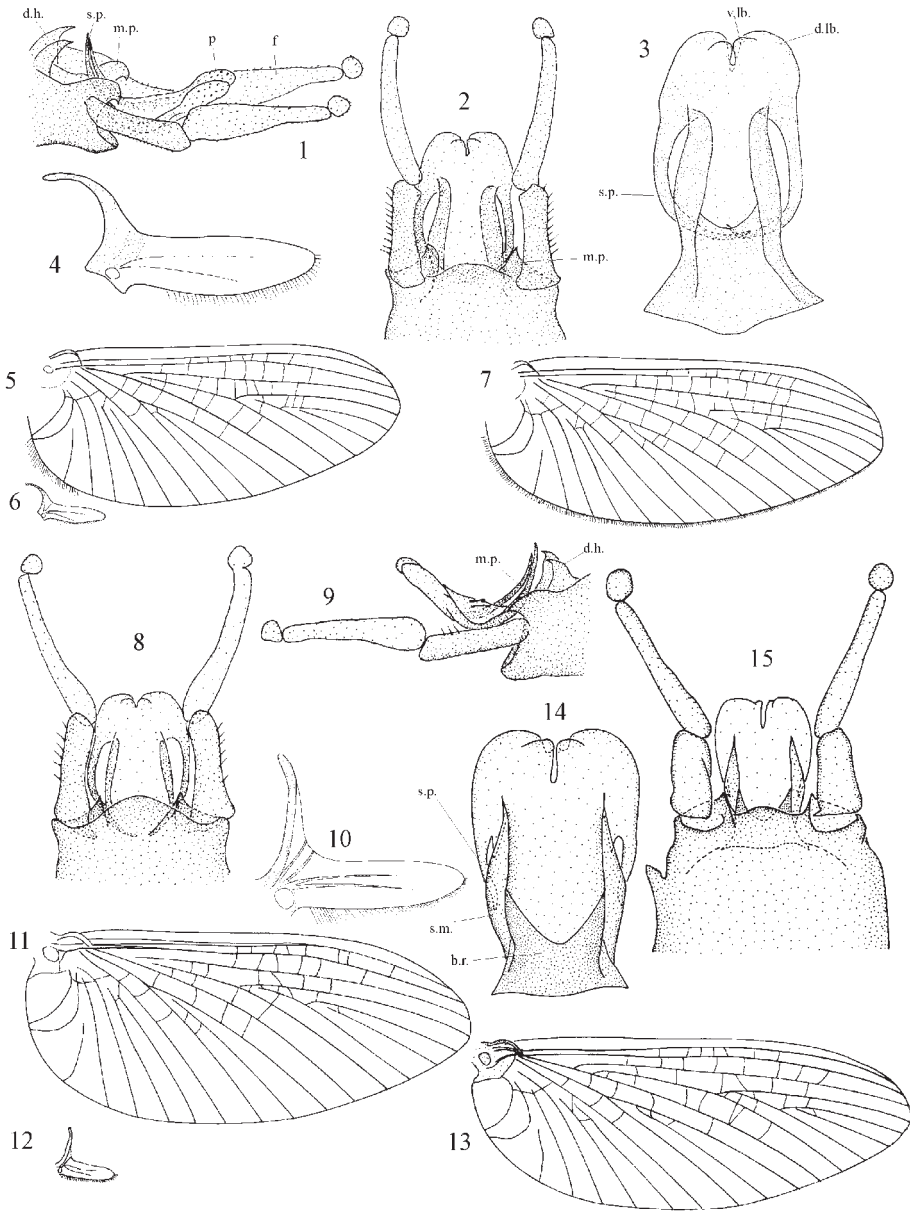
Distribution: Argentina, Bolivia, Colombia, Peru and Mexico.

Imago

Length of male: body, 2.70–3.50 mm; forewings, 2.60–3.50 mm; hind wings, 0.35–0.63 mm. Length of female: body, 3.00–3.80 mm; forewings, 3.10–4.00 mm. Head: eyes small and remote, separated on meson of head by a length equalling 3 widths of an eye. Lateral ocelli large, 0.7–1 width of an eye; median ocellus small, 0.3–0.6 width of an eye. Antennae: Scape short, pedicel of male 2 times length of scape, flagellum 6–8 times length of scape; pedicel of female 1.5 length of scape. With a longitudinal crest between antennae, extending ventrally from median ocellus.

Thorax: mesonotal suture absent; posterior scutal protuberances medially divergent; superior interscutal suture of lateropostnotum not forming a straight line with the inferior interscutal suture; mesoscutellum with a pair of filamentous processes not extending beyond abdominal segment II. Wings: widest part of forewings (Figs. 5, 7, 11, 13) on MP sector. Vein CuP curved, ending near vein A on hind margin, curved strongly on females; ICu1 united at base to CuP and CuA by cross veins; ICu2 shorter than ICu1, free at base; base of MP2 ending free on membrane, united to MP1 by a cross vein; IMP almost as long as MP2, with base ending free on membrane; MA with symmetrical fork. Hind wings (Figs. 4, 6, 10, 12) present in male, absent in female, with two longitudinal veins and a large curved costal projection, 0.42–0.56 of total wing length (from costal margin to apex of costal projection); posterior margin of both wings covered with setae. Hind wing length 0.12–0.19 length of forewings. Legs: ratios of male and female fore, middle and hind femora, 1 (0.4–0.5 mm): 1.0–1.3 : 1.2–1.6. Ratios of tibiae and tarsi (combined) of male, 1 (1.17 mm): 0.5–0.7 : 0.6–0.8, and of female 1 (0.86 mm): 1.0–1.2 : 1.2–1.4. Each pair of tarsal claws dissimilar, one blunt paddle-like and the other apically hooked, except on forelegs of male, both blunt.

Abdomen. Male genitalia: styliger plate with a pair of median projections (hook-like in lateral view, m.p. in Figs. 1, 2) at the base of the forceps. Forceps three-segmented, segment 1 cylindrical and slightly shorter than segment 2, segment 2 flattened and widest at base (in lateral view), segment 3 globular and small. In lateral view penes and forceps are parallel or slightly diverge (<45°). Penes (Figs. 3, 14) sub-rectangular in ventral view, dorsoventrally flattened and almost completely fused, except apical furrow. Apex of penes with two pairs of membranous lobes (v.lb. and d.lb. in Fig. 3), the ventral pair smaller, and with a pair of long curved spines directed dorsally (s.p. in Figs. 1, 3, 14). Dorsally to penes arise a pair of hook-like (in lateral



Figures 1–15. *Lumahyphes*, adult structures. *Lumahyphes guacra*: (1) male genitalia, l.v.; (2) same, v.v.; (3) penes, detail, v.v.; (4) male hind wing, detail; (5) male forewing; (6) male hind wing; (7) female forewing. *Lumahyphes yagua*: (8) male genitalia, v.v.; (9) same, l.v.; (10) male hind wing, detail; (11) male forewing; (12) male hind wing; (13) female forewing. *Lumahyphes* sp.: (14) penes, detail, v.v.; (15) male genitalia, v.v. Abbreviations: b.r. = basal ring; d.h. = dorsal hooks; d.lb. = dorsal lobes; f = forceps; m.p. = median projection; p = penes; s.m. = sclerotized margin; s.p. = spine of penes; v.lb. = ventral lobes.

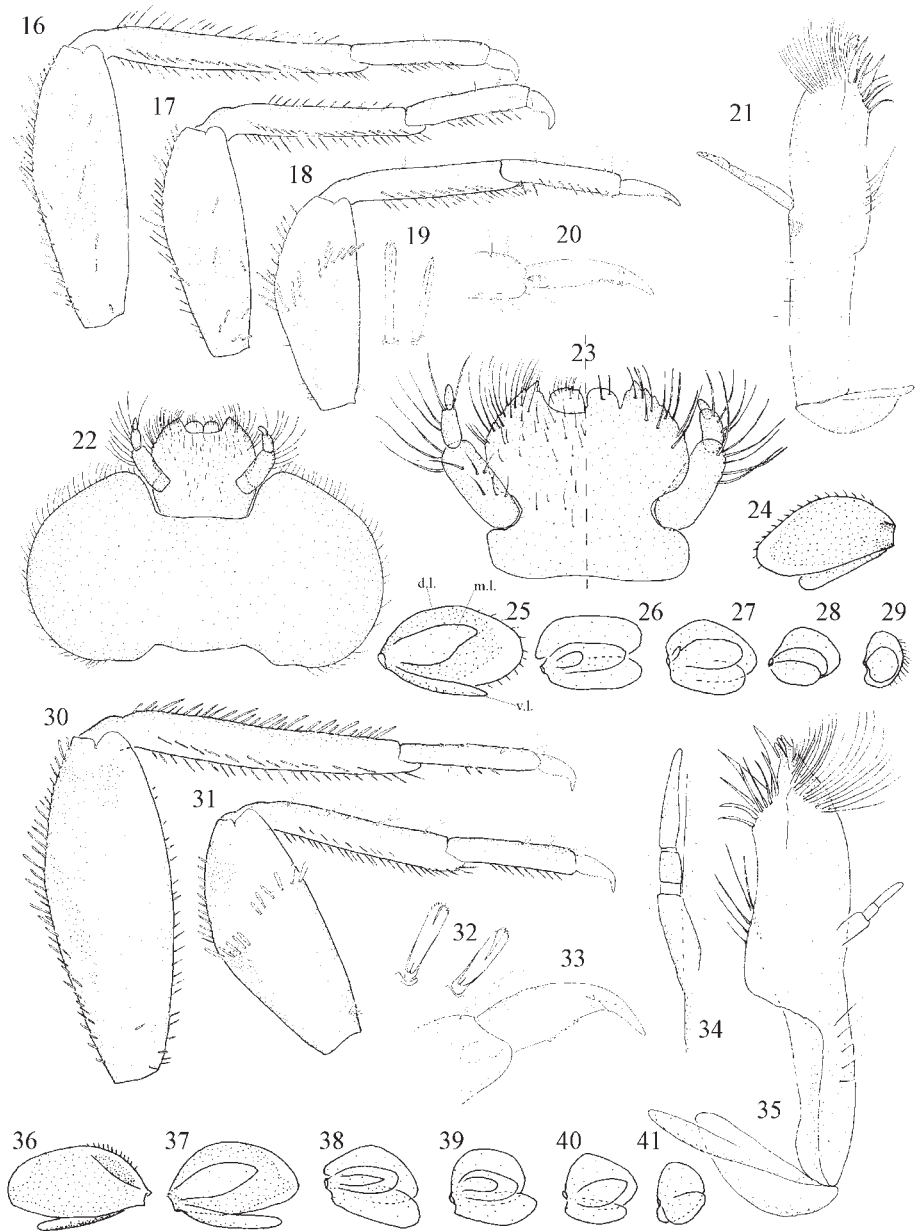
view) projections (d.h. in Figs. 1, 9) with their tips ending near the tips of penial spines. Abdominal sternum IX of female apically truncated and with very slightly concave posterior margin. Three tails present, terminal filament (t.f.) longer than cerci, all bearing very short setae, except cerci of male. Cerci of male 2.2–2.6 length of fore-wings (f.w.); t.f. of male 3.7–4.3 length of f.w.; cerci of female 1.4–1.8 length of f.w.; t.f. of female 1.8–1.9 length of f.w.

Mature nymph

Length of male: body, 3.4–3.7 mm; terminal filament, 1.7–2.6 mm; mesonotum, 1.3–1.4 mm. Length of female: body, 4.2–5.0 mm; terminal filament, 4 mm; mesonotum, 1.5 mm. Head hypognathous without tubercles or spines. Antennae 2.2–2.7 times length of head; pedicel 2 times length of scape; flagellum 8 times length of pedicel and scape combined, with segments decreasing toward apex with whorls of few setae on intersegmental joints. Mouthparts: basal width of labrum subequal to width of distal portion of clypeus; labrum with long setae (some are plumose) on the dorsum and lateral margins, ventrally with a double row of setae, anteromedian emargination shallow. Mandibles: right mandible with a row of setae on apical outer margin; left mandible with a strongly sclerotized blunt projection on molar zone. Maxillae (Figs. 21, 34, 35): palpi three-segmented with the insertion zone strongly sclerotized, palpi shorter than galea-lacinia; galea-lacinia with three distal blunt tusks and a row of seven spines on subapical inner margin, between these there are two larger spines fused at base; another row of five (ventral) and one (dorsal) spines are present on inner margin opposite to palp. Labium (Figs. 22, 23): submentum very large, maximum width of prementum 0.30–0.35 maximum width of submentum; glossae and paraglossae almost completely fused, ventrally covered with setae (some bipectinate), paraglossae with pointed apex; labial palpi three-segmented.

Thorax. Legs (Figs. 16–18, 30, 31): leg proportions : length of fore, middle and hind femora, 1 (0.52–0.65 mm): 1.0–1.3 : 1.2–1.5; ratios length : width of forefemora 1: 0.38–0.48, middle femora 1: 0.33–0.40 and hind femora 1: 0.30–0.37. Foreleg: dorsal side of femora with a transversal row of bifid spines as in Figs. 18 and 31, hind margin with a few long setae; tibiae with a double row of spines on inner margin, with a pectinate spine at apex; tarsi with a single row of spines (the basal pair pectinate). Middle and hind legs: femora with a row of bifid spines on posterior margin and few scattered bifid spines on the dorsum; tibiae as in forelegs except with an additional row of bifid setae on outer margin, apex of tibiae without pectinate spine; tarsi as in forelegs except pectinate spines absent; tibiae and tarsi of all legs with long paired setae, more numerous at apex of tarsi. Tarsal claws (Figs. 20, 33) of all legs similar, with a basal row of eight conical denticles on the margin, a subapical double palisade of 1–4 rectangular denticles and an apical double row of 1–3 small setae.

Gills (Figs. 24–29, 36–41): gills on segments II–VI. Gill II operculate, with two sclerotized lamellae: dorsal lamella oval covering remaining gills, ventral lamella smaller and elongated, perpendicular to the former; gill II with an additional, membranous lamella perpendicular to the opercular one. Gills III–V composed of three



Figures 16–41. *Lumahyphes*, nymphal structures. *Lumahyphes guacra*: (16) hind leg; (17) median leg; (18) foreleg; (19) detail of spines on dorsal side of foreleg; (20) fore tarsal claw, detail; (21) maxillae, d.v.; (22) labium, v.v.; (23) prementum, detail, left v.v., right d.v.; (24) gill II, d.v.; (25–29) gills II–VI, v.v. *Lumahyphes yagua*: (30) hind leg; (31) foreleg; (32) detail of spines on dorsal side of foreleg; (33) fore tarsal claw, detail; (34) maxillary palp, detail; (35) maxillae, d.v.; (36) gill II, d.v.; (37–41) gills II–VI, v.v. Abbreviations: d.l. = dorsal lamella; m.l. = membranous lamellae; v.l. = ventral lamellae.

oval lamellae, gill VI with two oval lamellae. Abdomen. Sternum II laterally expanded forming the base of opercular gill; posterolateral margins of sterna III–VII expanded to protect gills; sterna VII–IX with posterolateral spines, bigger on VIII–IX. Terminal filament slightly longer than cerci with whorls of setae on each intersegmental joint.

Etymology

Arbitrary combination of letters including the prefix ‘hyphes’ commonly used in generic names of the family.

Discussion

This genus shows certain plesiomorphic character states, for example the vein CuP on forewings retains its basal portion paralleling CuA, both directed towards vein R1, also the nymph presents relatively well developed and three-segmented maxillary palpi. The genus *Lumahyphes* can be differentiated from the other genera of the family LeptoHyphidae by the following combination of characters, in the adult: (1) hind wings present in male, absent in female; (2) membranous filaments on mesoscutellum present and relatively long (reaching abdominal tergum II); (3) eyes of male small and remote; (4) hind wings reduced, with a large costal projection (0.42–0.56 total length of hind wing); (5) styliger plate with median projections (Figs. 1, 2); (6) forceps three-segmented, segments 1 and 2 subequal in length; (7) penes almost completely fused, with a pair of long spines arising near the apex; (8) penes with sclerotized lateral margins and basal ring (Figs. 3, 14); (9) two pairs of distal membranous lobes present on apex of penes; (10) with a pair of hook-like projections between penes and cerci (d.h. in Figs. 1, 9). Nymphs: (1) forefemora with a transversal row of long bifid spines (Figs. 18, 19, 31, 32); (2) gills present on segments II–VI; (3) gills on segment II formed by three lamellae as in Figs. 25, 37; (4) gills III–V formed by three oval lamellae; (5) gill VI formed by two subcircular lamellae; (6) maxillary palpi three-segmented (Figs. 21, 34, 35); (7) prementum 0.30–0.35 times width of submentum (Fig. 22); (8) tarsal claws with a basal row of marginal denticles and a double row (or single pair) of submarginal denticles near apex (Figs. 20, 33); (9) all segments of tails similar, decreasing toward apex.

Lumahyphes shares the following characters with *Traverhyphes* Molineri (2001) and *Vacupernius* Wiersema & McCafferty (2000): (1) penes almost completely fused, and with two pairs of distal membranous lobes at the apex; (2) with projections of different form between penes and cerci (d.h. in Figs. 1, 9); (3) styliger plate with median projections (Figs. 1, 2); and (4) hind wings with a large costal projection (>0.42 total length of wing). *Lumahyphes* can be separated from these related genera mainly by male genitalia: spines of penes relatively long, inserted laterally and curved medially; and in the nymph by the number of lamellae per gill and by maxillary palpi that are not reduced.

Lumahyphes guacra Molineri sp. nov. (Figs. 1–7, 16–29)

Male imago

Length: Body, 3.10–3.25 mm; forewing, 3.25–3.50; hind wing, 0.58–0.63 mm. General coloration whitish light brown. Head: coloration brownish grey dorsally, whitish ventrally. Compound eyes blackish. Ocelli whitish, surrounded with blackish. Antennae whitish shaded with greyish except on scape.

Thorax. Pronotum: medial zone and anterior margin translucent whitish light brown, turning light brown on lateral regions; shaded with blackish on lateral margins and with greyish on posterior margin. Mesonotum light yellowish brown widely shaded with greyish turning darker posteriorly, anteroscutum yellowish white on lateral margins and median longitudinal line; mesoscutellum whitish translucent shaded with greyish. Metanotum yellowish light brown shaded with greyish on lateral margins. Mesopleura whitish light brown shaded with greyish; mesosternum translucent yellowish brown; metasternum yellowish white. Legs: translucent yellowish light brown except tibiae and tarsus I whitish translucent and tibiae and tarsi II and III yellowish translucent; shaded diffusely with greyish on leg I and coxa, trochanters and femora of legs II and III. Wings (Figs. 4–6): membrane of forewing hyaline, slightly tinged with yellowish light brown, darker on C and Sc regions; longitudinal veins greyish brown, transversal veins yellowish translucent. Membrane of hind wing hyaline slightly tinged with yellowish; costal projection 0.42 total length of wing, longitudinal veins greyish yellow.

Abdomen: translucent yellowish white except segments IX, X yellowish white; shaded with grey on submedian and sublateral longitudinal bands; pleural fold washed with greyish; sterna IV–VIII slightly shaded with greyish. Genitalia (Figs. 1–3): styliger plate yellowish white with posterior and lateral margins yellowish brown, slightly shaded with greyish; basal segment of forceps yellowish brown, second one yellowish white and third one whitish translucent; penes whitish translucent at middle, with translucent brownish yellow spines and margins. Cerci whitish translucent shaded with greyish.

Female imago

Length: body, 3.00–3.75 mm; forewing, 3.40–4.00 mm. General coloration as male but shaded more extensively with greyish. Head as in male.

Thorax as in male except shading with greyish more marked. Legs: coxa, trochanter, femur and posterior margin of tibia of all legs and tarsus of forelegs translucent yellowish brown, remaining segments whitish translucent; shaded with greyish on coxa, trochanter and femur of all legs. Wings (Fig. 7): forewings as male. Hind wings absent.

Abdomen translucent yellowish brown, darker on segments VIII–X; full of whitish yellow eggs; widely shaded with greyish except on an anteromedian ovoid mark on terga I–IX and anterolateral corners of II–VIII; pleural fold shaded with greyish;

sterna whitish translucent slightly shaded with greyish, darker on median zones of sterna II–IX; sternum VII with a notorious black spot immediately before the protruded genital pore. Cerci whitish translucent slightly shaded with greyish.

Mature nymph

Length of male: body, 3.4–3.7 mm; mesonotum, 1.3–1.4 mm; terminal filament, 1.7–2.6 mm. Length of female: body, 4.2–5.0 mm; terminal filament, 4.0 mm; mesonotum (from foremargin to apex of wingpads), 1.5 mm. General coloration yellowish orange with grey markings. Head washed with grey on a transversal band between eyes and antennae, rest of head dorsally washed with an irregular net of grey marks; submentum washed with grey. Eyes black. Antennae yellowish translucent.

Thorax. Thoracic nota washed with grey as in imagines; sterna yellowish translucent; developing wings yellowish white with anterior margin black. Legs (Figs. 16–18): femora and tibiae of all legs yellowish white, tarsi of all legs yellowish translucent; with grey markings as in imagines.

Abdomen. Washed with grey as in imagines. Opercular gills (Fig. 24) yellowish translucent completely washed with grey, darker toward base; remaining gills (Figs. 26–29) whitish translucent washed with grey at base and superior margin; abdominal sterna washed completely with grey; in female nymphs with a black spot on hind margin of sternum VII (as female adult). Tails yellowish translucent, basal segments yellowish brown.

Etymology

From the quechua ‘guacra’ meaning ‘horn’, in allusion to the form of the penes spines.

Discussion

Lumahyphes guacra can be separated from the other known species of the genus by the following combination of characters. In the adults: (1) total length of hind wing 0.18–0.19 total length of forewing; (2) costal projection of hind wings 0.42 total length of wing; (3) FMI (Fore Mesonotal Transverse Invagination; Kluge, 1992) without submedian darker marks; (4) segment 1 of forceps much darker than remaining segments; (5) spines of penes almost as long as penes; (6) posterolateral projections at base of forceps as in Fig. 1; (7) abdominal sternum VII of female with a notorious black mark. In the nymph: (1) mediolongitudinal pale line on dorsum of abdomen relatively wide; (2) tarsal claw with 7–8 marginal denticles and double row of 2–3 submarginals (Fig. 20).

Material

Holotype male imago from: ARGENTINA, Salta, río Blanco, 10 km al N de Orán, 23-XII-1997, M leg. Allotype female imago, same data as holotype. Paratypes: six male imagines and three female imagines,

same data as holotype; 14 nymphs from ARGENTINA, Cordoba, Rio Cuarto, La Reduccion, 13-IV-1994, M. Gualdoni leg. Other material: one nymph from ARGENTINA, Tucumán, arroyo Barriento, RP 38, 16-XII-1998, M leg.; one nymph from ARGENTINA, Jujuy, arroyo Yuto, 23° 38' 40" S, 64° 32' 21" W, 430 m, 2-VI-2000, M leg.; four nymphs from ARGENTINA, Salta, Metán, río Las Piedras, 8-IV-1995, M leg.; one nymph from ARGENTINA, Tucumán, río Lules, RP 38, 20-I-2000, A. Mergl leg.; 40 male imagines, three female imagines and seven nymphs from BOLIVIA, río Blanco, near Once por Ciento, road between Santa Cruz y Trinidad, 15° 21' 40" S, 63° 17' 29" W, 250 m, 14-VI-2000, D leg. All the material deposited in IFML, except that from Bolivia deposited in part in UMSA.

Biology

Males and females were collected at nuptial flight at 9:30 a.m. The swarm was placed at a height of 3–4 m near the river banks. Individuals displayed the typical up and down movements. In the same swarm 18 males of an undetermined species of *Baetodes* were collected. The nymphs were collected in mountain streams and rivers with stony substrate but the exact microhabitat was not registered.

Life stage association. Male and female imagines were associated by general coloration, forewing venation and because they were collected in the same swarm. Nymphs and adults were associated by male genitalia dissected from a pharate subimago (i.e., still inside the nymphal cuticle) and shared colour patterns.

Lumahyphes yagua Molineri and Zuñiga sp. n. (Figs. 8–13, 30–41)

Male imago

Length: body, 2.70–3.50 mm; forewings, 2.60–3.30 mm; hind wings, 0.35–0.40 mm. General coloration orangish yellow. Head yellowish white tinged with grey dorsally; eyes blackish; ocelli whitish rounded with black; with a pair of small and blunt protuberances medially from lateral ocelli. Antennae whitish yellow.

Thorax. Pronotum whitish translucent at middle turning yellowish translucent to lateral sides, with grey margins. Mesonotum light orangish yellow except a pair of orangish brown submedial oval marks on fore mesonotal transverse invagination. Membranous filaments of mesoscutellum hyaline tinged with grey. Metanotum yellowish. Propleurae and prosternum whitish translucent. Meso and metapleurae yellowish with light grey margins. Mesosternum whitish translucent except episternum orangish yellow and furcasternum light orangish yellow. Metasternum yellowish translucent. Wings (Figs. 10–12): membrane of both wings hyaline slightly tinged with yellow; longitudinal veins of forewings yellowish brown, cross veins yellowish. Hind wings with orangish yellow costal projection, 0.56 total length of hind wing. Legs: coxae and trochanters of all legs yellowish washed with grey; femora of all legs light yellow washed with grey completely on forelegs and on apical 2/3 of middle and hind femora; tibiae and tarsi of all legs yellowish white tinged with grey on forelegs.

Abdomen whitish translucent, except segments IX, X yellowish white; all segments washed with light grey dorsally, darker on pleural folds. Genitalia (Figs. 8, 9): margins of styliiger plate and first segments of forceps yellowish white, rest of

forceps and penes whitish translucent. Tails whitish translucent washed with light grey.

Female imago

Length: body, 3.10–3.80 mm; forewings, 3.10–3.40 mm. General coloration as male, abdomen greyish green when full of eggs. Head as male except washed with black.

Thorax. Pronotum completely washed with black, except medial line and irregular semicircular marks on each side. Mesonotum yellowish brown washed with black, with black margins and carinae, with a pair of small grey marks on anterolateral corners of anteroscutum; membranous filaments of mesoscutellum washed with black. Metanotum orangish yellow completely washed with black. Pleurae, sterna and legs as male, except washed more heavily. Wings (Fig. 13) as male except membrane hyaline slightly tinged with light brown.

Abdomen whitish translucent heavily tinged with grey except on medial line and intersegmental membranes. Tails as male.

Subimagines

Male. As male imago except mesonotum without pair of submedian yellowish brown marks on FMI; anterolateral margins of mesonotum more sclerotized than the rest. Legs as male imago except fore tarsal claws dissimilar, one blunt, the other apically hooked.

Female. As female imago except darker marks on cuticle. Distal part of sternum VII with a black spot.

Female mature nymph

Length: body, 3.60 mm; mesonotum, 1.25 mm; caudal filaments, 3.0 mm. General coloration brownish yellow widely shaded with blackish. Head yellowish shaded almost completely with blackish, except on paler marks preceding each ocellus; occiput shaded with a reticular netting. Mouthparts yellowish shaded with blackish on labium and mandibles; maxilla and palpi as in Figs. 34, 35.

Thorax brownish yellow shaded with blackish except few paler marks; mesoscutellum blackish; wingbuds yellowish translucent. Thoracic sterna yellowish white. Legs (Figs. 30, 31) whitish yellow shaded with blackish on subapex and median zone of femora. Tarsal claw with seven marginal denticles and a pair of submarginals (Fig. 33).

Abdomen brownish yellow completely shaded with black except below gills, whitish; shading less marked on mediolongitudinal line of terga I–IX. Abdominal sterna yellowish white shaded slightly with grey; blackish mark present at hind margin of sternum VII. Lateral flanges on segments III–VI hyaline, posterolateral spines present on segments VII–IX. Opercular gills (Fig. 36) translucent brownish yellow shaded with grey except margins, hyaline; remaining gills (Figs. 37–41) whitish translucent. Caudal filaments yellowish translucent.

Etymology

'Yagua' is the name of one of the ethnic groups of the region.

Discussion

Lumahyphes yagua can be separated from the other species of the genus by the following combination of characters. In the imago: (1) total length of hind wing 0.12–0.15 total length of forewing; (2) costal projection of hind wings 0.56 total length of wing; (3) FMI with a pair of submedian darker marks; (4) all segments of forceps similar in colour; (5) spines of penes almost as long as penes; (6) median projections at base of forceps as in Fig. 9; (7) abdominal sternum VII of female without marks or with a small grey mark. In the nymph: (1) mediolongitudinal pale line on dorsum of abdomen relatively thin; (2) tarsal claw with 7 marginal denticles and a pair of submarginals (Fig. 33).

Material

Holotype male imago: COLOMBIA, Dept. Amazonas, río Amazonas, Leticia, 93 m, 04° 08' 23" S, 69° 59' 12" W, 30-I-1999, at light (5 h AM), D, Z and M leg. Allotype female imago: same data as holotype. Paratypes: 21 male and 21 female imagines, same data as holotype (legs, wings and genitalia of a male and legs and wing of a female paratype on slides); seven male and seven female imagines from PERU, Río Amazonas, Isla Rondiña, 93 m, 04° 12' 00" S, 69° 58' 20" W, 8-II-1999, at light (4–6 h AM), Z and M leg.; eight male and eight female imagines from COLOMBIA, Parque Nacional Amacayacu, qda. Mata-matá and río Amazonas, 93 m, 03° 48' 28" S, 70° 15' 21" W, 2-5-II-1999, at light (3:30–6 h AM), D, Z and M leg.; two male and three female subimagines from COLOMBIA, Puerto Nariño, 93 m, 03° 46' 53" S, 70° 21' 59" W, 4-II-1999, at light (6–8 h PM), D, Z and M leg.; one nymph from COLOMBIA, Amazonas, P. N. Amacayacu, río Amacayacu, 93 m, 3-II-1999, 03° 48' 28" S, 70° 15' 21" W, D, Z and M leg. Holotype, allotype, ten male imagines and ten female imagines in MEUV, remaining material in IFML.

Biology

Imagines were collected before sunrise, and subimagines at night. Some swarms were observed along the river margin, at dawn. The time of collection was the flood season of the Amazon river, and the sandy bottom could not be sampled by us. The only nymph was collected from submersed woody debris attached to river margin.

Life stage association. Male and female were associated by shared colour pattern, wing venation and hour of flight. The unique female nymph found shows the same characteristic dark mark present at the gonopore of female adults.

Lumahyphes sp. (Figs. 14, 15)

Two male subimagines from MEXICO, Chihuahua, Río Gavilán, Las Amarillas, 23-VI-1987, Kondratieff and Baumann leg., were studied. Genitalia as illustrated in Figs. 14, 15. This species is not named nor described because of the limited material represented only by subimagines. Furthermore, the nymphal stage has probably already been described in *Leptohiphes* but is still not associated with the adults. Male

adults of this species can be separated from the other two species of the present genus by the following combination of characters: (1) total length of hind wing 0.17 total length of fore wing; (2) costal projection of hind wings 0.46 total length of wing; (3) FMI without a pair of submedian darker marks; (4) segment 1 of forceps much darker than remaining segments; (5) spines of penes very short, less than 0.5 total length of penes (Fig. 14).

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