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Description and morphological phylogeny of *Otorongo*, a new Andean genus of long-legged flies (Diptera, Dolichopodidae) with claw-like leg spurs

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Abstract

Otorongo Quevedo, Soares & Ramos-Pastrana **gen. nov.** is erected to accommodate four remarkable newly described species from Colombia and Peru: *Otorongo deinonychus* **sp. nov.** (Colombia), *O. piscator* **sp. nov.** (Peru), *O. runyoni* **sp. nov.** (Colombia) and *O. terrificus* **sp. nov.** (Colombia). A cladistic analysis using a morphology-based matrix with 35 characters and 10 terminal taxa, comprising exemplars of most of the Sympycninae genera known from Neotropical fauna was performed to examine the relationships and monophyly of the newly proposed genus. We recovered *Otorongo* **gen. nov.** as a monophyletic group, with six autapomorphies mainly associated with male secondary sexual characters: (1) scutellum bearing a fringe of short, hair-like setae, (2) femur III arched, (3) femur III about 2 times wider than femur II, (4) posterodorsal apex of tibia III with a claw-like spur reaching the base of $IIIt_1$, (5) $IIIt_1$ with hook-like anterior bristle, and (6) presence of basal sclerite of sperm pump. The main diagnostic characters are discussed, as well as the relationship between *Otorongo* **gen. nov.** and other Sympycninae genera. An illustrated dichotomous key and a distribution map to species are also provided.

Key words: biodiversity, Neotropical Region, Sympycninae, systematics, taxonomy

Introduction

The family Dolichopodidae is a species-rich and cosmopolitan group, comprising more than 8,000 described species worldwide, except for Antarctica (Yang *et al.* 2006; Bickel 2009; Grichanov & Brooks 2017; Grichanov 2018). The subfamily Sympycninae is one of the largest among Dolichopodidae, with over 1,000 nominal species. Although well-established in the literature, Sympycninae is a highly diverse assemblage, and its monophyly remains uncertain (Germann *et al*. 2011), with few unique morphological traits supporting it (Bickel 1992, 1999). Recently, a growing number of studies on New World Sympycninae genera have been published, with northern South America and Chile emerging as key areas for the fauna of this subfamily (Soares *et al.* 2023; Runyon 2024; Quevedo *et al.* in press).

Following recent collecting efforts in Colombia and Peru, four new species of Sympycninae were discovered. The males of these species are distinguished by the unique presence of a claw-like spur on tibia III, along with several other morphological modifications, such as enlarged tarsomeres, long and wavy setae between tibia and basitarsus of leg III, and hypopygium bearing a basal sclerite of sperm pump. Together, these features support the recognition of these species as a new genus. In this context, we propose the name *Otorongo* **gen. nov.** to accommodate the four new species.

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Material and methods

The material used in this study belongs to the following collections: **LEUA** (Colección Entomología Universidad de la Amazonia Florencia, Colombia) and **MZUSP** (Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil). Annotations are provided within square brackets, and label data is transcribed verbatim, enclosed in quotation marks, with lines separated by ' | '. The terminology for general morphology follows Cumming & Wood (2017).

Abbreviation list: **I**, **II**, **III**: fore-, mid-, hind legs; ***CuA+CuP***, anterior branch of cubital vein + posterior branch of cubital vein; ***dm-m***, discal medial crossvein; M_1, first branch of media; M_4, fourth branch of media; **MSSC**, male secondary sexual character; R_1, anterior branch of radius; R_{2+3}, second branch of radius; R_{4+5}, third branch of radius; ***Sc***, subcostal; $t_{1–5}$, tarsomeres 1 to 5. Podomere measurements are based on relative lengths, following the sequence: 'coxa/femur/tibia/tarsomere 1/2/3/4/5'. The terms ‘dorsal’ and ‘ventral’ in reference to the hypopygium correspond to their morphological orientation prior to genitalic rotation and flexion; accordingly, in lateral view, the upper part of the image represents the ventral side, and the lower part represents the dorsal side. Unless otherwise noted, all setae are black. Measurements of setae on podomeres are taken from base to the apex.

The cladistic analysis followed the propositions of Hennig (1966), posteriorly summarized and improved by several other authors (Farris 1983; Kitching *et al*. 1998; Amorim 2002; Schuh & Brower 2009). The dataset, composed of morphological characters of adult males (multistate characters were treated as unordered), was assembled and edited in Morphobank 4.0 (O’Leary & Kaufman 2011) after a detailed examination of specimens and comparative analyses of external and internal morphology. Parsimony analyses were conducted in TNT 1.6 (Goloboff 1993, 1995; Goloboff *et al*. 2008; Farris 2008; Goloboff & Morales 2023) using heuristic searches under equal weighting (EW), which proved sufficient given the small size of the ingroup. Search parameters included a maximum of 20,000 trees in memory, random seed = 0, 1000 replications, 20 trees saved per replication, with trees collapsed after analysis. Bremer support was calculated using the command “sub 1 hold 6000; bb = tbr fillonly; unique*,” with adjustments to suboptimal tree values. Character polarization followed Nixon & Carpenter (1993), with the outgroup consisting of *Calyxochaetus frontalis* (Loew), *Diaphorus* sp. (root), *Hyptiocheta convexa* Becker, *Pseudosympycnus bickeli* Soares & Capellari, *Rafaelomyia inpa* Soares, Capellari & Ramos-Pastrana and *Sympycnus andicola* (Bigot). Trees were subsequently examined in WinClada ASADO 1.61 (Nixon 1999).

Photographs were taken with a Leica DFC450 digital camera attached to a Leica M205A stereomicroscope and images were stacked and combined using Leica Application Suite V4.11., except for *O. piscator* **sp. nov.**, for which photographs were taken using an AxioCam MRc 5 camera attached to a Zeiss Discovery V20 stereomicroscope and stacked with ZEISS AxioVs40 v. 4.8.2.0 software and assembled in Helicon Focus 6. The terminalia and one female head were treated with lactic acid following Cumming (1992), drawn with camera lucida attached to a microscope Zeiss Axioskop 40, then transferred to a microvial with glycerin and pinned below the respective specimen. The final images were produced using Adobe Illustrator CS6 for drawing vectorization and Adobe Photoshop CS6 for photo processing.

Taxonomic results

Otorongo Quevedo, Soares & Ramos-Pastrana gen. nov.

Type species: *Otorongo deinonychus* **sp. nov.**, by present designation. Gender masculine.

Etymology. The term Otorongo, meaning "Jaguar" in the Quéchua language, was selected as the generic name in reference to this apex predator that inhabits American continent. The nomenclatural allusion to the jaguar pertains to the claw-like morphology of the hind leg tibial spurs, which exhibit morphological similarity to the claws of this felid predator.

Diagnosis. Male. Head with short, slender vertical seta (about 1/3 as long as ocellar setae); thorax bare of acrostichal setae, and with an apical fringe of short setae on the scutellum; ventral surface of It_1 covered by a row of short, strong setae; femur III arched, and about 2 times wider than femur II; tibia III bearing a claw-like strong spur (some species with long, wavy setae between the apex of tibia III and $IIIt_1$); hypopygium not stalked, dark brown to black; postgonite about as long as phallus, encircling the base of phallus; hypandrial arms bifid and elongated; basal sclerite of sperm pump present and well developed. **Female.** Proboscis conspicuously enlarged, lacinia subtriangular at apex; abdomen very short, about as long as femur III.

Description (males). Head (Figs 2A, F, 3A, E, 4A, F, 5A, E). Face with dense silvery pruinosity, narrower than ocellar tubercle, eyes almost contiguous at narrowest point of face (MSSC); vertical seta short and slender, about 1/3 as long as ocellar setae. **Thorax** (Figs 2A, B, 3A, B, 4A, B, 5A, D). Mesonotum mostly metallic dark green with bluish-purple reflections; acrostichal setae absent; 6 pairs of strong dorsocentral setae, sixth pair thicker and offset; scutellum with 1 pair of strong medial setae and apical fringe of short setae between them. **Wing** (Figs 2G, 3F, 4G, 5F). Membrane and veins dark brown; R_{4+5} subparallel (slightly bowed anteriorly in *O. deinonychus* **sp. nov.** (Fig. 2G)) with M_1, slightly curved posteriorly near apex; halter yellow. **Legs** (Figs 1, 2C–E, 3C, D, 4C–E, 5B, C). Ventral surface of It_1 with row of short, strong erected setae (MSSC); femur III strongly swollen, about 2 times wider than femur II, and slightly excavated ventrally near middle (MSSC); tibia III geniculated at base, distinctly wider than tibiae I and II, strongly swollen and slightly arched, bearing 1 strong posterodorsal apical and claw-like spur (MSSC); $IIIt_1$ 2 times wider than remaining tarsomeres, with hook-like bristle (MSSC). **Abdomen** (Figs 2A, B, 3A, 4A, 5A). Dark brown, without metallic reflections. **Hypopygium** (Fig. 6). Not stalked; dark brown to black; epandrium suboval; ventral surstylus very short, with 2 long, apical setae; dorsal surstylus broad, with apex rounded or hook-like, bearing 3 subapical setae; phallus and phallus sheath long and mostly slender, sometimes with distinct ventral curvature at apex; postgonite about as long as phallus, encircling base of phallus and projecting from epandrium as pair of slender lobes; hypandrial apodeme broad, encircling mid-phallus and connected with hypandrial arms on top; hypandrial arms bifid, elongated; basal sclerite of sperm pump present, well developed; cercus short, leaf-like, covered with vestiture of long setae.

Female (Fig. 7)**.** Similar to male, except for MSSC, with following modifications: **Head** (Fig. 7B, C, I–L). Eyes distinctly separated, almost parallel on face; proboscis conspicuously enlarged, lacinia subtriangular at apex (Fig. 7I, L), covered by brown ellipsoidal sclerite (Fig. 7K). **Abdomen** (Fig. 7A). Very short, about as long as femur III. **Terminalia** (Fig. 7E–H). Strongly sclerotized and dorsoventrally flattened; acanthophorite subtriangular, divided medially into two hemitergites, each bearing 4 stout, spine-like marginal setae; cercus stalk-like, strongly sclerotized, about 8X longer than wide, apex rounded and covered with a few short, slender setae (Fig. 7E–H).

Distribution. Peru and Colombia.

Key to males of *Otorongo* gen. nov.

1 Coxa III dark brown; femur III mostly dark brown and bearing row of short, strong ventral setae at basal 1/4 (Figs 1A, 2D, E); apex of anteroventral surface of tibia III with comb of long, wavy setae, almost reaching apex of basitarsus (Figs 1B, 2E); tibia I with ventral setae longer than It_1 (Fig. 2C) . . . . . *Otorongo deinonychus* **sp. nov.**

\- Coxa III yellow (Figs 3A, 4A, 5A); femur III mostly yellow, ventral surface without basal row of strong setae (Figs 3D, 5C); apex of anterior surface of tibia III lacking comb of long, wavy setae (Figs 3D, 4C, 5C); tibia I with ventral setae shorter than It_1 (Figs 3C, 4D, 5B) 2

2 Tibia III with straight claw-like spur, parallel to $IIIt_1$ (Figs 1D, 5C); $IIIt_1$ with some scattered, long anteroventral setae (Figs 1D, 5C); dorsal lobe of surstylus subtriangular (Fig. 6G, H) . . . . . *Otorongo terrificus* **sp. nov.**

\- Tibia III with curved claw-like spur, perpendicular to $IIIt_1$ (Figs 1C, E, 3D, 4E); $IIIt_1$ bearing tuft of many long, wavy anteroventral setae (Figs 1C, E, 4D, 5C, E); dorsal lobe of surstylus thumb-like or with upturned hook-like apex (Fig. 6C–F) 3

3 It_1 with ventral row of strong, erect setae decreasing in length towards apex (Fig. 4D); tibia III with slight basal geniculation (Fig. 4C, E); $IIIt_1$ with ventral tuft of long setae reaching apex of $IIIt_2$; dorsal lobe of surstylus thumb-like (Fig. 6E, F) . . . . . *Otorongo runyoni* **sp. nov.**

\- It_1 with ventral row of strong, erect setae subequally long (Fig. 3C); tibia III with strong basal geniculation (Fig. 3D); $IIIt_1$ with ventral tuft of setae reaching apex of $IIIt_1$ (Fig. 3D); dorsal lobe of surstylus with upturned hook-like apex (Fig. 6C, D) . . . . . *Otorongo piscator* **sp. nov.**

Otorongo deinonychus Quevedo, Soares & Ramos-Pastrana sp. nov.

(Figs 1A, B, 2, 6A, B)

Diagnosis (male). Face constricted at middle, slightly narrower than anterior ocellus (Fig. 2F); femora mostly brown to dark brown, except ventral surface of femur II yellow; tibia I brownish, bearing long, slender ventral setae (Fig. 2C); It_1 with ventral row of subequally long, stout erect setae (Fig. 2C); apex of anteroventral surface of tibia III bearing a comb of long, wavy setae, reaching the apex of basitarsus (Figs 1B, 2E); 1 posterodorsal apical strong raptorial spur, about as long as $IIIt_1$ (Figs 1B, 2E); $IIIt_1$ strongly excavated ventrally, bearing 1 strong hook-shaped

bristle (Figs 1B, 2E); abdomen wholly dark brown (Fig. 2A, B); ventral surstylus quadrate (Fig. 6A, B); dorsal surstylus somewhat digitiform, about 3X longer than high, with rounded apex (Fig. 6A, B); phallus and phallus sheath long and mostly slender, except at base (Fig. 6A, B); apex of phallus straight with subtriangular projection; hypandrial apodeme boot-like; basal sclerite of sperm pump quadrate.

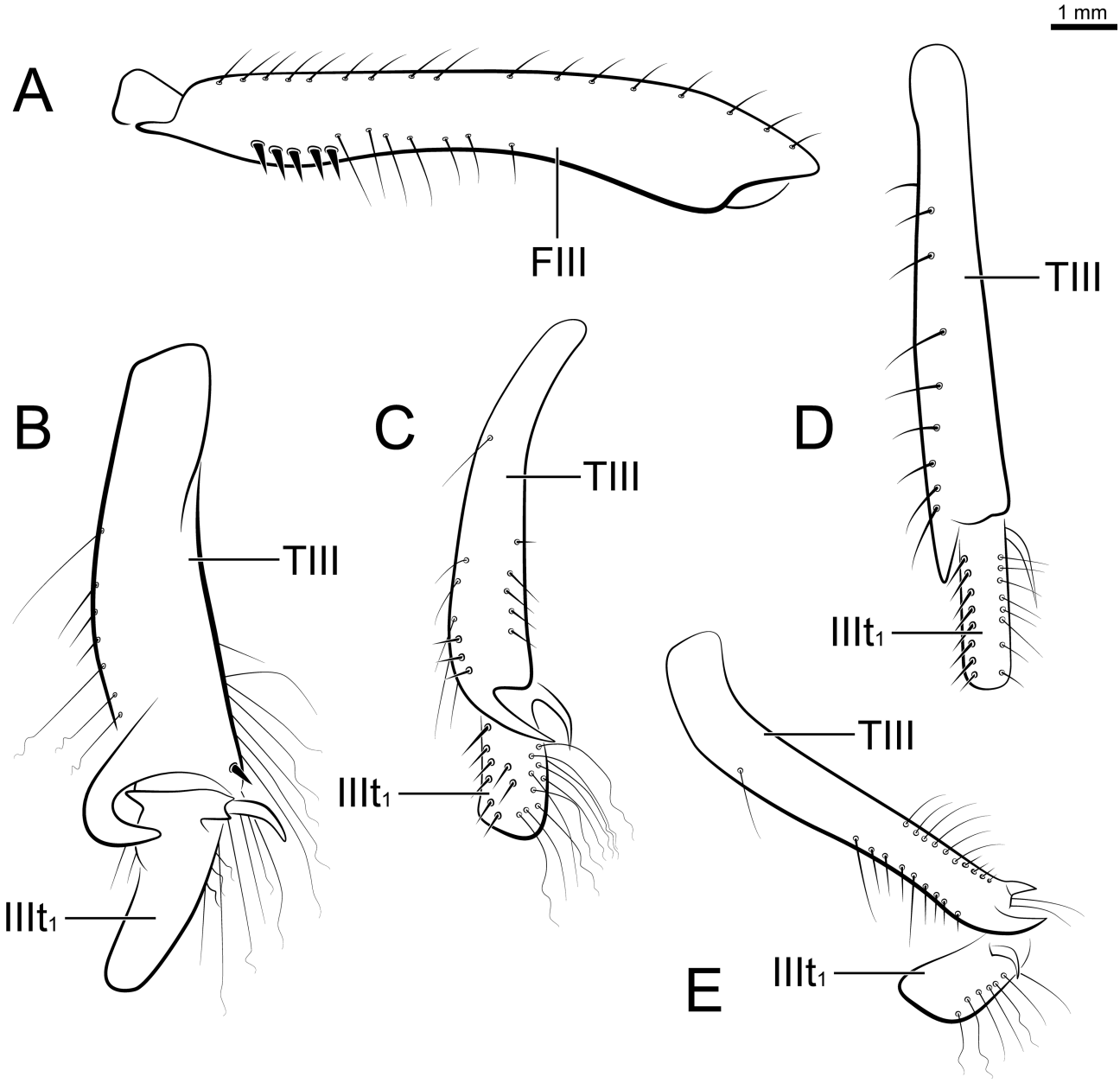

FIGURE 1. Modified podomeres of leg III of *Otorongo* **gen nov.** *Otorongo deinonychus* **sp. nov.**: **A.** Posterior view of femur. **B.** Posterodorsal view of tibia and basitarsus. *Otorongo runyoni* **sp. nov.**: **C.** Posterodorsal view of tibia and basitarsus. *Otorongo terrificus* **sp. nov.**: **D.** Dorsal view of tibia and basitarsus. *Otorongo piscator* **sp. nov.**: **E.** Posterior view of tibia and basitarsus. Abbreviations: FIII—hind femur; TIII—hind tibia; IIIt1—hind basitarsus.

Description. Male (Fig. 2A). Body length: 3.0 mm; wing length: 3.28 mm. **Head** (Fig. 2A, B, F). Frons trapezoidal, wider than high, slightly excavated, metallic dark green, covered with dense coppery pruinosity. Face with dense silvery pruinosity, constricted at middle and narrower than anterior ocellus at narrowest point. Clypeus rectangular, shorter than palpus and silvery pruinose. Palpus oval, short, covered with dense silvery pruinosity, bearing 1 preapical pale seta, shorter than palpus. Proboscis brown, labellum with a few short, slender pale setae. Postcranium dark green, covered with coppery pruinosity; lower postcranium bearing a few short, slender pale setae. Single row of postocular setae, uppermost with 7–8 pairs of black setae, remaining pale yellow; pair of short

divergent ocellar setae; vertical seta short and slender, about 3 times shorter than ocellar, almost inconspicuous. Antenna dark brown; scape and pedicel short and bare, except pedicel with short crown of setae at apex; postpedicel triangular, about as long as scape and pedicel combined, covered with dense yellowish pubescence; arista-like stylus dorsally, arising from upper edge at basal half of postpedicel, about as long as eye height, two-segmented, first segment very short, not overlapping apex of postpedicel, second segment long, covered with short pubescence. **Thorax** (Fig. 2A, B). Mesonotum mostly metallic dark green with strong bluish reflections, covered with weak coppery pruinosity, except notopleuron with silvery pruinosity. Scutellum concolorous with mesonotum, with slight coppery reflection. Pleura and metepimeron brown to dark brown, with bluish and greenish reflections, covered with silvery pruinosity, densely on metepimeron. Pronotum with row of short setae; acrostichal setae absent; 6 pairs of strong dorsocentral setae, sixth pair thicker and offset; 1 pre-, 1 sutural and 1 postsutural intra-alar short setae; 1 short and 1 long postpronotal setae; 2 supra-alar setae, 1 positioned between postpronotal lobe and notopleuron and 1 longer near postalar callus; 2 strong notopleural setae; 1 strong postalar seta; scutellum with 1 pair of strong medial setae, with apical fringe of short setae; upper-surface of proepisternum with 2 short, slender setae. **Wing** (Fig. 2G). Long and narrow, about 3 times longer than wide; membrane and veins dark brown. Costa ending at wing apex, at vein M_1; R_1 ending at basal 1/3, R_{2+3} nearly straight; R_{4+5} slightly bowed anteriorly and ending subparallel with M_1 at wing apex; M_1 straight to apex; M_4 reaching wing margin; *CuA+CuP* short, ending at basal 1/3 of cell bm+dm, not reaching wing margin and fading apically; CuAx ratio: 1.3. Lower calypter yellow with long setae; halter yellow. **Legs** (Figs 1A, B, 2A–E). Mostly brown to dark brown, except apical 2/3 of anterior surface and apical 1/3 of lateral surface of coxa I, all trochanters, base and apex of femur I, base of tibia I, base of femora II and III yellow, lateral surfaces of coxa II and III brown with metallic blue-green reflection. **Leg I** (Fig. 2C). Podomere ratio: 35/60/50/27/11/9/7/10. Anterior surface of coxa covered with dense silvery pruinosity, with apical fringe of short setae. Femur covered with short vestiture of setae, basal 1/2 of anteroventral to ventral surfaces covered with long, curved pale setae, decreasing in length towards apex, posteroventral row of long, pale setae at basal 1/2. Tibia with ventral to posteroventral rows of long mixed pale, black setae at apical 3/4, wavy at apex. Tarsus unmodified, except ventral surface of It_1 with row of short, strong and subequally long erect setae, posteroventral row of long and slender pale setae, and ventral surface of It_2 with almost inconspicuous short, strong setae. **Leg II** (Fig. 2D). Podomere ratio: 28/70/65/43/20/18/10/12. Anterior surface of coxa covered with short setae, longer at apical edge. Ventral surface of femur covered with short vestiture of setae, except ventral surface covered with silvery pruinosity; 1 antero- and 1 posterodorsal preapical long seta; ventral row of long slender yellow setae on basal 2/3. Tibia with 2 long, strong setae, 1 posterodorsal at basal 1/3 and 1 anterodorsal near middle, ventral to anteroventral row of long, slender pale setae at apical 1/2. Tarsus unmodified. **Leg III** (Figs 1A, B, 2E). Podomere ratio: 15/96/75/30/22/15/10/13. Lateral surface of coxa with 1 long seta near middle; femur strongly swollen, slightly excavated near middle of ventral edge, about 2 times wider than femur II, covered with short setae, 1 long anterior preapical seta, ventral surface with comb of short, stout and curved setae near base and inserted on short tubercle; posteroventral row of long, pale setae from base to apex. Tibia covered with sparse setae, becoming longer at apex; apex of anterior surface bearing comb of long, wavy setae, almost reaching apex of basitarsus; 1 strong posterodorsal claw-like spur at apex, about as long as $IIIt_1$; $IIIt_1$ strongly excavated ventrally, bearing 1 strong, hook-shaped bristle. $IIIt_{2-5}$ unmodified. **Abdomen** (Fig. 2A, B). Dark brown, without metallic reflections, wholly covered with coppery pruinosity and short vestiture of small setae, posterior edge of tergite 1 with long setae. **Hypopygium** (as in Fig. 6A, B). Dark brown to black. Epandrium suboval, with anteroventral indentation between epandrial lobe and ventral surstylus; epandrial foramen ranging from dorsal margin to middle. Surstylus divided into dorsal and ventral lobes. Ventral lobe of surstylus short and quadrate, with 2 long apical setae, about 5 times longer than ventral surstylar lobe. Dorsal lobe of surstylus somewhat digitiform, about 3X longer than high, bearing 3 subapical setae, 1 longer ventral preapical seta and some scattered punctuation apically. Phallus and phallus sheath long and mostly slender, except at base, harpoon-like at apex. Ejaculatory apodeme lever-like, articulated at base of phallus, with short nearly perpendicular projection at base. Postgonite about as long as phallus, encircling base of phallus, extending out from epandrium as pair of slender lobes; medially connected to hypandrial apodeme by thin duct. Hypandrial apodeme boot-like, connected with hypandrial arms on top, with basal sclerite of sperm pump below. Hypandrial arms bifid, basally broader and narrowed apically. Hypandrium straight. Basal sclerite of sperm pump quadrate. Cercus short, leaf-like, covered with vestiture of long yellow setae.

Female. Unknown.

Type material. HOLOTYPE ♂, labelled: "COLOMBIA, Caquetá, Florencia | Vda. Sucre. Fca. Nuevo Amanecer | N 01°52′12″ W 75°40′09″ 2292 m | 26–28-Sep-2023 Y. Ramos-Pastrana" "Captura com trampa Malaise | colocada sobre | sistema lótico" "HOLOTYPE | *Otorongo deinonychus* | Quevedo, Soares & Ramos-Pastrana [red label]" (LEUA). Holotype condition: good, not dissected, except right leg II broken off. **PARATYPES.** Same data as holotype (1 ♂ dissected, LEUA; 1 ♂ dissected, MZUSP); same data, except: 28.ix.-15.x.2023 (1 ♂, MZUSP).

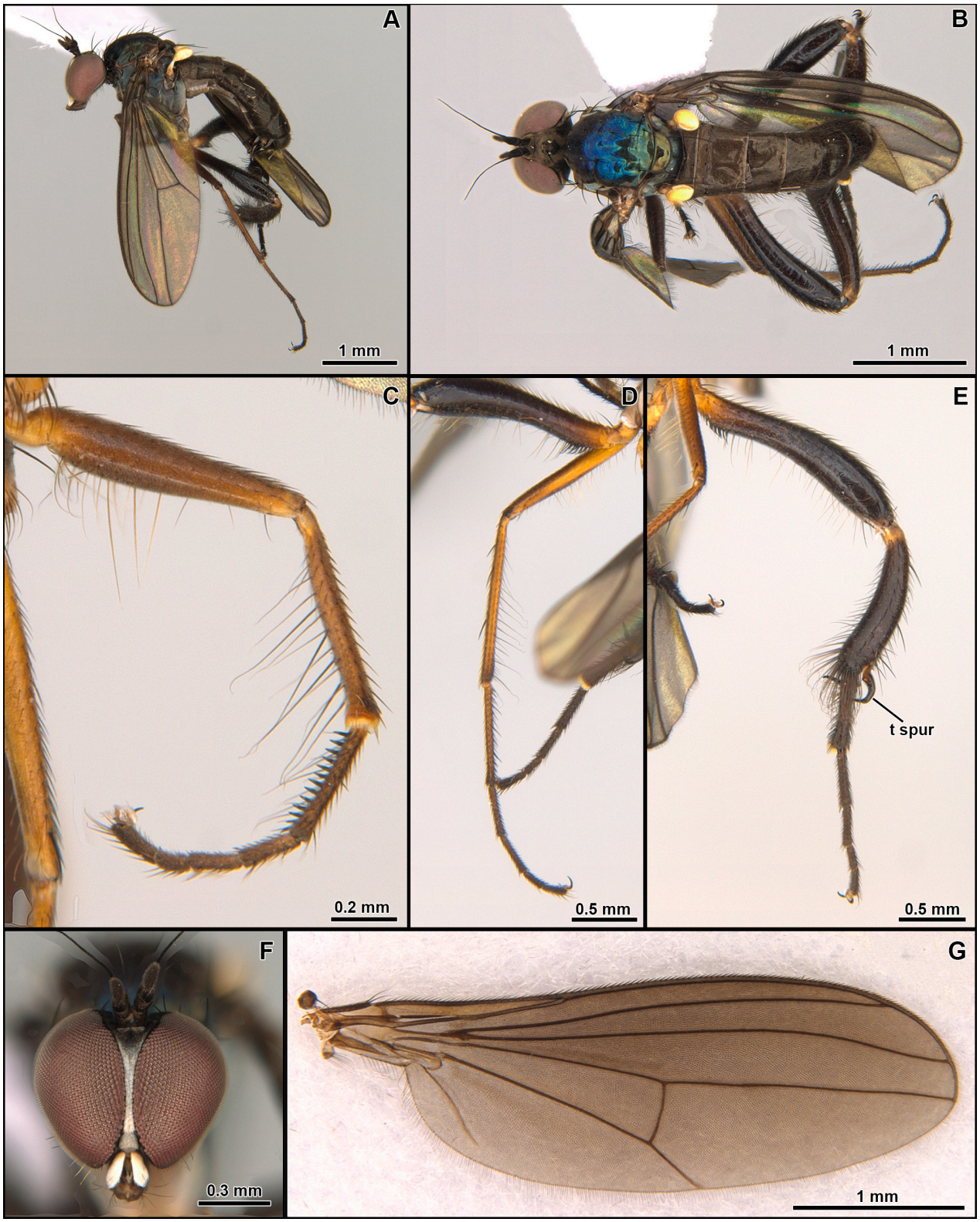

FIGURE 2. *Otorongo deinonychus* **sp. nov.**, paratype. **A–B.** Habitus in lateral and dorsal views, respectively. **C.** Leg I. **D.** Leg II. **E.** Leg III. **F.** Frontal head. **G.** Wing. Abbreviation list: **t spur**, tibial spur.

Remarks. *Otorongo deinonychus* **sp. nov.** is readily distinguished by femur III, which is entirely dark brown and bears a basal row of strong setae inserted on a tubercle (Figs 1A, 2E) and the dorsal lobe of the surstylus somewhat digitiform, about 3 times longer than high (Fig. 6A, B). The new species is further characterized by the presence of long, wavy setae between the apex of tibia III and tarsomere $IIIt_1$ (Figs 1B, 2E). This condition resembles that of *O. runyoni* **sp. nov.**, however, in *O. deinonychus* **sp. nov.** most of the long setae are concentrated at the apex of tibia III, whereas in *O. runyoni* **sp. nov.** they are primarily clustered on $IIIt_1$ (Fig. 1C).

Distribution. Only known from the type-locality in Florencia, Caquetá, Colombia.

Etymology. From the ancient Greek δεινός (deinós, "fearful, terrible") + ὄνυξ (ónux, "nail, claw, talon"). Referring to the strong spur and bristle on the hind tibia and basitarsus, respectively, that resembles a claw of a Dromaeosauridae dinosaur.

Otorongo piscator Quevedo, Soares & Ramos-Pastrana sp. nov.

(Figs 1E, 3, 6C, D)

Diagnosis (male). Face constricted at middle and narrower than ommatidia (Fig. 3E); femora mostly yellow, except dorsal surface of femora I and II, and apical half of femur III brownish (Fig. 3A, D); tibia I yellow (Fig. 3C); It_1 with ventral row of distinct stout setae, curved at apex (Fig. 3C); tibia III with rows of long, thin setae at apical 1/3, except on anterior surface; two long, slender and wavy anteroventral setae at apex; 1 anterior and 1 posterior claw-like apical spur (Fig. 3D); $IIIt_1$ 2 times wider than remaining tarsomeres, 1 stout ventral spur curved basally, 3 long ventral setae at apical 1/2 (Fig. 3D); abdomen with tergites 1 and 2 yellowish laterad (Fig. 3A); ventral surstylus longer than wide; dorsal surstylus 2 times longer than high, fishing hook-like (Fig. 6C, D).

Description. Male (Fig. 3A). Body length: 2.25 mm; wing length: 2.42 mm. **Head** (Fig. 3A, E). Similar to *O. deinonychus* **sp. nov.** except as noted: face narrower than ocellar tubercle, strongly constricted at middle, narrowest point shorter than width of ommatidia. **Legs** (Figs 1E, 3A, C, D). Mostly yellow, except for coxa II, dorsal surface of femora I and II, apical 1/2 of femur III brown to dark brown, apical half of tibia III dark yellow, tarsi dark brown, except basal 1/2 of It_1 and IIt_1 yellow. **Leg I** (Fig. 3C). Podomere ratio: 23/45/35/20/6/4/3/6. Anterior surface of coxa almost bare, only with a few short, slender pale setae at apical 1/2, and a few slightly longer setae at apical edge. Femur wider than femur II, slightly narrowing towards apex, covered with short vestiture of setae, except ventral surface mostly bare, with 3 long posteroventral setae at basal 1/2, about 2 times longer than width of femur at broadest point, followed by 4 short setae. Tibia covered with short vestiture of setae with 1 posteroventral row of long setae, about 2 times longer than width of tibia. It_1 with ventral row of stout setae, curved at apex. $It_{2–5}$ unmodified. **Leg II** (Fig. 3D). Podomere ratio: 20/55/48/20/9/7/5/6. Anterior surface of coxa almost bare, with 1 strong seta at middle of outer edge, apical edge with fringe of short setae. Femur homogeneously slender; bearing short vestiture of setae, ventral and anterior surfaces almost bare, both with 1 short anterior and posterior preapical seta, posteroventral row of 3 brown, long setae at basal 1/3, followed by 2 regular setae and row of 5 long, decreasing brown setae at apical 1/2, longest seta about 3X width of femur, apical 1/5 with row of about 3 short setae at antero- and posteroventral surfaces. Tibia with 2 anterodorsal strong setae at basal 1/4 and 1/2, 1 posterodorsal at basal 1/4. Tarsus unmodified. **Leg III** (Figs 1E, 3D). Podomere ratio: 19/65/55/18/11/9/6/8. Lateral surface of coxa with 1 long seta near middle. Femur strongly clavate, about 2 times wider than femur II at broadest point, with short anteroventral and preapical setae, bearing longer setae ventrally. Tibia with slender dorsal setae at basal 1/4, 2/4, 3/4 and preapical; rows of long, thin setae present on apical 1/3, except on anterior surface; 2 long, slender and wavy anteroventral setae at apex; 1 anterior and 1 posterior claw-like apical spur. $IIIt_1$ with ventral stout spur curved basally, 3 long ventral setae at apical 1/2, $IIIt_{2–5}$ unmodified. **Abdomen** (Fig. 3A). Tergites 1 and 2 yellowish laterad. **Hypopygium** (Fig. 6C, D). Ventral surstylus longer than wide, with two long setae, as long as ventral surstylar lobe. Dorsal surstylus approximately 2.5 times longer than high, bearing 3 long setae, with scattered punctures apically; apex curved dorsally and hook-like. Phallus and phallus sheath long and mostly slender, except at base; apex harpoon-like, curved ventrally. Hypandrial apodeme basally bulbous, slightly constricted on upper half, bearing short pair of arms and another pair of long hypandrial arms reaching apex of surstylus. Hypandrium curved ventrally. Basal sclerite of sperm pump quadrate.

Female. Unknown.

Type material. HOLOTYPE ♂, labelled as: "Peru, Cusco, 19rd km W | Quincemil, Rio Araza tributary, | 13º20′10″ S 70º50′57″ W, | 874m, 23–31.viii.2012, Malaise, | J.A. Rafael, R.R. Cavichioli, | D.M. Takiya";

"HOLOTYPE | *Otorongo piscator* | Quevedo, Soares & Ramos-Pastrana [red label]" (MZUSP). Holotype condition: good, not dissected, except tarsus of right leg III broken off. **PARATYPE.** Same data as holotype (dissected, 1 ♂, MZUSP).

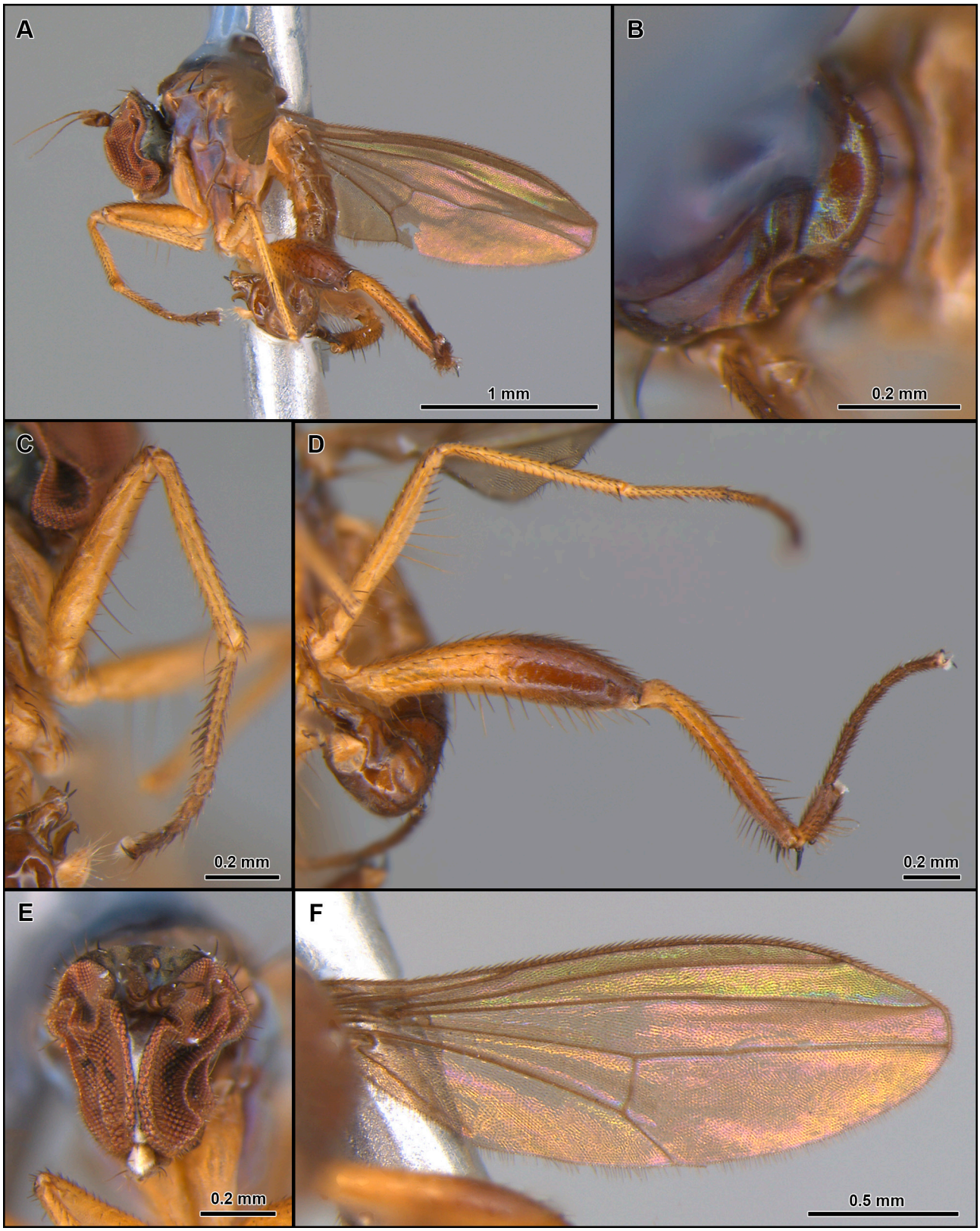

FIGURE 3. *Otorongo piscator* **sp. nov.**, holotype. **A.** Lateral habitus. **B.** Dorsal scutellum. **C.** Leg I. **D.** Legs II and III. **E.** Frontal head. **F.** Wing.

Remarks. Unlike the other species, the hook-like seta on $IIIt_1$ is considerably reduced in *Otorongo piscator* **sp. nov.**, while a conspicuous additional projection at the apex of tibia III is present (Fig. 1E). These same features are present–though less pronounced–in *O. deinonychus* **sp. nov.**, in which the seta on $IIIt_1$ is also reduced and a conspicuous intermediate seta is situated at the anteroventral apex of tibia III (Fig. 1B). The hooked surstylus (Fig. 6C, D) is also unique for *O. piscator* **sp. nov.** and easily segregates this species from the others.

Distribution. Only known from the type-locality in Cusco, Peru.

Etymology. The specific epithet is derived from the Latin *piscator* (= fisherman), referring to the shape of ventral surstylus (Fig. 1C, D), which resembles a fishing hook.

Otorongo runyoni Quevedo, Soares & Ramos-Pastrana sp. nov.

(Figs 1C, 4, 6E, F)

Diagnosis (male). Face constricted at middle and narrower than ommatidia (Fig. 4F); femora mostly yellow, except dorsal surface of femora I and II, and apical half of femur III (Fig. 4A); tibia I yellow, with posteroventral row of about 5 long, slender setae at apical half (Fig. 4D); It_1 with ventral row of about 7 stout, gradually shorter setae (Fig. 4D); tibia III with 2 long, posterior preapical setae, 1 ventral and 1 anteroventral seta, both short and preapical; 1 stout posterodorsal spur, slightly curved apically (Fig. 4C, E); $IIIt_1$ 2 times wider than remaining tarsomeres; 1 stout ventral spur basally curved; podomere covered with a tuft of long wavy setae, except for dorsal and anterodorsal surfaces (Fig. 4E); abdomen wholly dark brown to black (Fig. 4A); ventral surstylus subtriangular (Fig. 6E, F); dorsal surstylus thumb-like and about 2.5 times wider than high (Fig. 6E, F).

Description. Male (Fig. 4A). Body length: 2.77 mm; wing length: 2.71 mm. **Head** (Fig. 4A, F). Similar to *O. deinonychus* **sp. nov.** except as noted: face narrower than ocellar tubercle, strongly constricted at middle, narrowest point shorter than width of ommatidia. **Legs** (Figs 1C, 4A, C–E). Mostly yellow, except for coxa II laterad, dorsal surface of femora I and II, apical 1/3 of femur III, tip of tibia III, and tarsi, after extreme base of t_1, brown to dark brown. **Leg I** (Fig. 4D). Podomere ratio: 30/50/40/17/7/6/4/6. Anterior surface of coxa almost bare, only with a few short, slender pale setae at apical 1/2, and a few slightly longer setae at apical edge. Femur covered with short vestiture of setae, except ventral surface mostly bare; wider than femur II, slightly narrowing towards apex, bearing 5 long posterior setae at basal 1/2, about 2 times longer than width of femur at broadest point and 1 short, posterior preapical seta. Tibia covered with short vestiture of setae, 1 short posterior preapical seta and 1 posteroventral row of about 5 long thin setae, longest seta about 2 times longer than width of tibia. It_1 with 2 ventral rows of stout setae, curved at apex and decreasing in length towards apex (Fig. 4D). $It_{2–5}$ unmodified. **Leg II.** Podomere ratio: 25/56/60/24/13/10/6/8. Anterior surface of coxa almost bare, with 1 strong seta at middle of outer edge, apical edge with fringe of short setae. Femur homogeneously slender, clothed with short vestiture of setae, ventral and anterior surfaces almost bare, with 1 short anterior and 1 posterior preapical seta. Tibia with 1 short posterodorsal seta at basal 1/3, 1 short anterodorsal seta at basal 1/3 and apical 1/3; ventral surface wholly covered with row of long setae. IIt_2 with ventral row of long setae on all ventral surface, $IIt_{2–4}$ with posterior row of short, stout setae; IIt_5 unmodified. **Leg III** (Figs 1C, 4C, E). Podomere ratio: 15/80/65/15/13/11/6/8. Lateral surface of coxa with 1 short seta near middle. Femur slightly clavate; about 2 times wider than femur II at broadest point; with 1 long anteroventral preapical seta; 1 short ventral preapical seta; 1 ventral seta at basal 1/4 and another at 1/2; bearing ventral row of long setae along apical half. Tibia with 4 short dorsal setae at apical 1/2, 1 stout posterodorsal spur, slightly curved apically; 2 long posterior preapical setae; 1 ventral and 1 anteroventral seta, both short and preapical. $IIIt_1$ with ventral stout spur basally curved; podomere covered with tuft of long wavy setae, except on dorsal and anterodorsal surfaces. $IIIt_{2–5}$ unmodified. **Hypopygium** (Fig. 6E, F). Ventral surstylus subtriangular, with 2 long setae, as long as ventral surstylus, and thin extension basally connected with epandrium and dorsal surstylus. Dorsal surstylus thumb-like, about 2.5 times wider than high. Phallus and phallus sheath strongly sinuate apically, upward directed. Hypandrial apodeme boot-like, with two curved arms projecting posteriorly and two straight arms projecting anteriorly. Basal sclerite of sperm pump basally broad and rounded, tapered towards apex.

Female. Unknown.

Type material. HOLOTYPE ♂, labelled as: "COLOMBIA, Caquetá, Florencia | Vda. Sucre. Fca. Nuevo Amanecer | N 01°52′12″ W 75°40′09″ 2292 m | 26–28-Sep-2023 Y. Ramos-Pastrana" "Captura com trampa Malaise | colocada sobre | sistema lótico" "HOLOTYPE | *Otorongo runyoni* | Quevedo, Soares & Ramos-Pastrana [red

label]" (LEUA). Holotype condition: Good, not dissected, except right leg III broken off. **PARATYPE.** Same data as holotype (1 ♂ dissected, MZUSP).

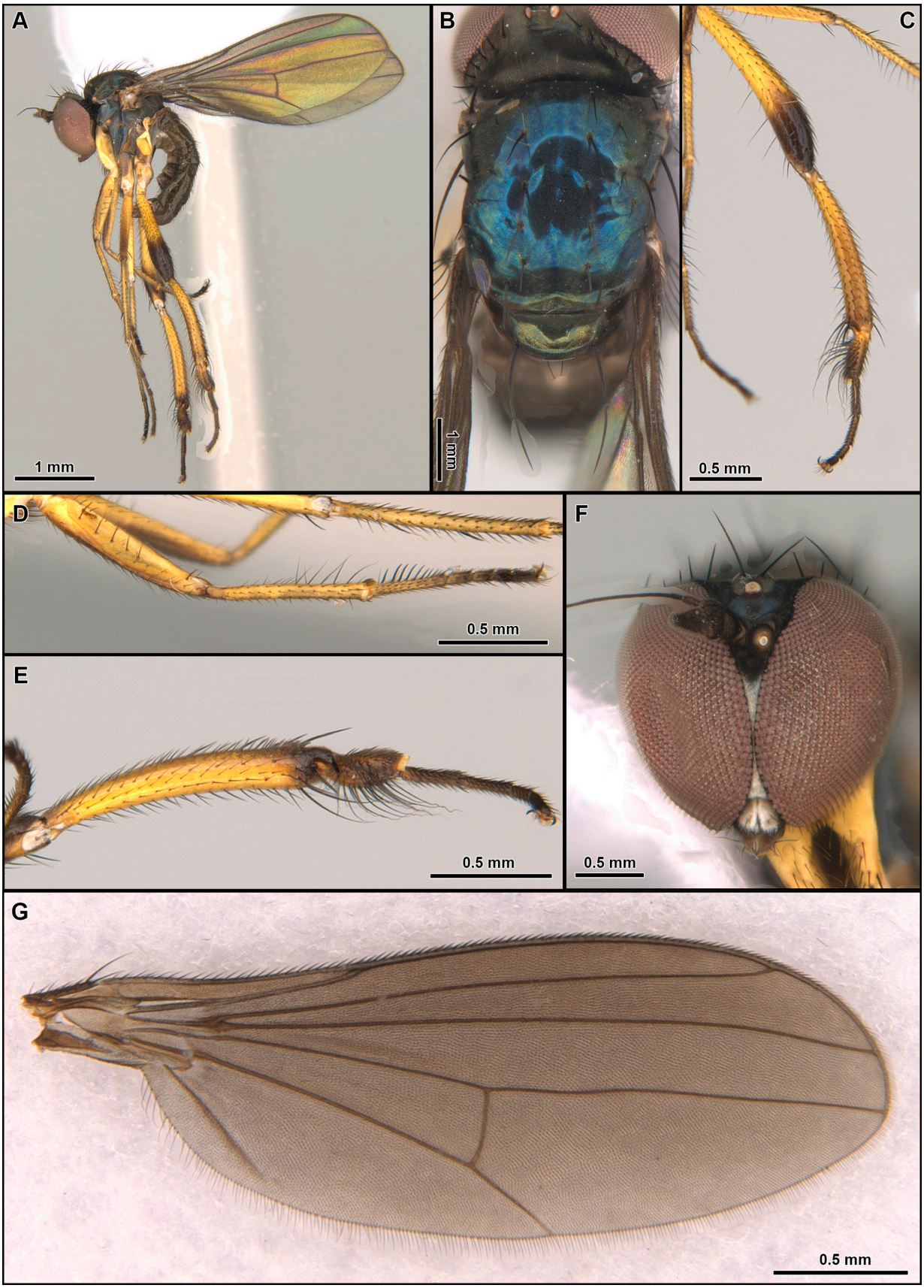

FIGURE 4. *Otorongo runyoni* **sp. nov.**, paratype. **A.** Lateral habitus. **B.** Dorsal thorax. **C.** Leg III. **D.** Leg I. **E.** Leg III. **F.** Frontal head. **G.** Wing.

Remarks. A particularly distinctive feature of this species is the row of strong ventral setae on It_1, decreasing in size from base towards the apex (Fig. 4D). *Otorongo runyoni* **sp. nov.** also exhibits a basal sclerite of the sperm pump (Fig. 6) markedly distinct from that of the other species, being much narrower in width, like a bridge connecting cerci, hypandrial apodeme, and basiphallus (Fig. 6E, F).

Distribution. Only known from the type-locality in Florencia, Caquetá, Colombia.

Etymology. Named in honor of the distinguished dipterist Justin Runyon (Montana Entomology Collection, Montana, USA), in recognition of his significant contributions to the knowledge of the family Dolichopodidae.

Otorongo terrificus Quevedo, Soares & Ramos-Pastrana sp. nov.

(Figs 1D, 5, 6G, H)

Diagnosis (male). Face strongly constricted at middle, narrowest point totally obliterated by contiguous eyes (Fig. 5E); femora mostly yellow, except dorsal surface of femora I and II, and apical half of femur III and dorsal surface of tibia III dark brown (Fig. 5A); tibia I yellow, with anterodorsal row of about 4 long, slender setae on apical 1/2 (Fig. 5B); It_1 with ventral row of stout setae, with curved tips; femur II bearing row with 5 long, brownish posteroventral setae at basal 1/2, and apical 1/4 with antero- and posteroventral rows of strong setae (Fig. 5B); tibia III with ventral setae about 3X longer than others, with posteroventral cuticular process at apex followed by a strong seta, preapical with ventral rows of short, stout setae, and some long pale scattered setae (Figs 1D, 5C); abdomen wholly dark brown to black (Fig. 5A); dorsal surstylus subrectangular and about 1.5 times wider than high, with subtriangular lateral process (Fig. 6G, H).

Description. Male (Fig. 5A). Body length: 2.47 mm; wing length: 2.29 mm. **Head** (Fig. 5A, E). Similar to *O. deinonychus* **sp. nov.** except as noted: face narrower than ocellar tubercle, strongly constricted at middle, narrowest point totally obliterated by contiguous eyes. **Legs** (Figs 1D, 5A–C). Mostly yellow, except for coxa II laterad, dorsal surfaces of femur I and II, apical 1/3 of femur III, tip of tibia III, and distal tarsi all brown to dark brown. **Leg I** (Fig. 5B). Podomere ratios: 34/56/49/21/6/5/4/4. Femur with 3 long ventral setae on basal 1/2, about 1.5 times longer than width of femur at broadest point, followed by a few short setae (Fig. 5B). Tibia with 1 dorsal seta at basal 2/5; anterodorsal row of about 4 conspicuously long setae on apical 1/2; posteroventral row of setae on apical 1/3 increasing in length towards apex, apicalmost about 2 times width of tibia (Fig. 5B). It_1 with 1 antero- and 1 posteroventral row of stout setae, some setae with curved apex (Fig. 5B); $It_{2\text{-}5}$ unmodified. **Leg II.** Podomere ratios: 23/44/41/19/10/8/5/5. Femur with 1 short anterior preapical seta; basal half with 5 long, brownish posteroventral setae, longest seta about 3 times the width of femur; apical 1/4 with antero- and posteroventral row of about 5 strong setae; 1 short posterior preapical seta (Fig. 5B). Tibia with 1 antero- and 1 posterodorsal seta near basal 1/6; 1 dorsal seta near apical 1/2; ventral setae about 3X longer than others. Tarsus unmodified. **Leg III** (Figs 1D, 5C). Podomere ratio: 26/80/65/20/15/10/6/10. Femur strongly clavate, about 2 times wider than femur II at broadest point, with short ventral tubercle near base, bearing a few short, stout posterior setae; 1 anterior preapical seta, 1 anteroventral row of seta from basal 1/3 to apex (length about 2/3 width of femur); posteroventral row of long, sparse setae from base to apex (Fig. 5C). Tibia with posteroventral cuticular process at apex followed by strong spur; preapically with ventral rows of short, stout setae and some long, pale scattered setae; 3 long posterodorsal setae at: basal 2/6, apical 4/6 and 5/6; 2–3 long, slender anteroventral setae at apex. $IIIt_1$ with 1 curved ventrobasal seta; basal 1/2 of ventral surface covered with long, wavy setae. $IIIt_{2\text{–}5}$ unmodified. **Hypopygium** (Fig. 6G, H). Ventral surstylus very small, and subrectangular, bearing 2 long setae about 5 times longer than ventral surstylus. Dorsal surstylus somewhat subtriangular, about 1.5 times wider than high, with acute lateral process. Phallus and phallus sheath strongly sinuate apically, upwardly directed. Hypandrial apodeme kidney-like, bearing two small arms projected anteriorly. Basal sclerite of sperm pump subrectangular, about 2 times wider than high.

Female. Unknown.

Type material. HOLOTYPE ♂, labelled as: "COLOMBIA, Caquetá, Florencia | Vda. Sucre. Fca. Nuevo Amanecer | N 01°52′12″ W 75°40′09″ 2292 m | 26–28-Sep-2023 Y. Ramos-Pastrana" "Captura com trampa Malaise | coloca sobre | sistema lótico" "HOLOTYPE | *Otorongo terrificus* | Quevedo, Soares & Ramos-Pastrana [red label]" (LEUA). Holotype condition: Good, not dissected, except right leg II broken off. **PARATYPES.** Same data as holotype (1 ♂ dissected, LEUA); same data, except: 28.ix.—15.x.2023 (1 ♂, MZUSP).

Remarks. The leg III morphology of *O. terrificus* **sp. nov.** is comparatively simpler than that observed in the remaining species of the genus, lacking wavy setae between the apex of tibia III and $IIIt_1$, and with a straight raptorial spur on tibia III (Fig. 1D). These features make *O. terrificus* **sp. nov.** readily distinguishable and provide insights into the character polarization within the evolutionary history of the clade formed by the other three species.

Distribution. Only known from the type-locality in Florencia, Caquetá, Colombia.

Etymology. The Latin word "*terrificus*" (= causing terror, dreadful, formidable), is used to emphasize the predatory capabilities and imposing characteristics of this predator fly.

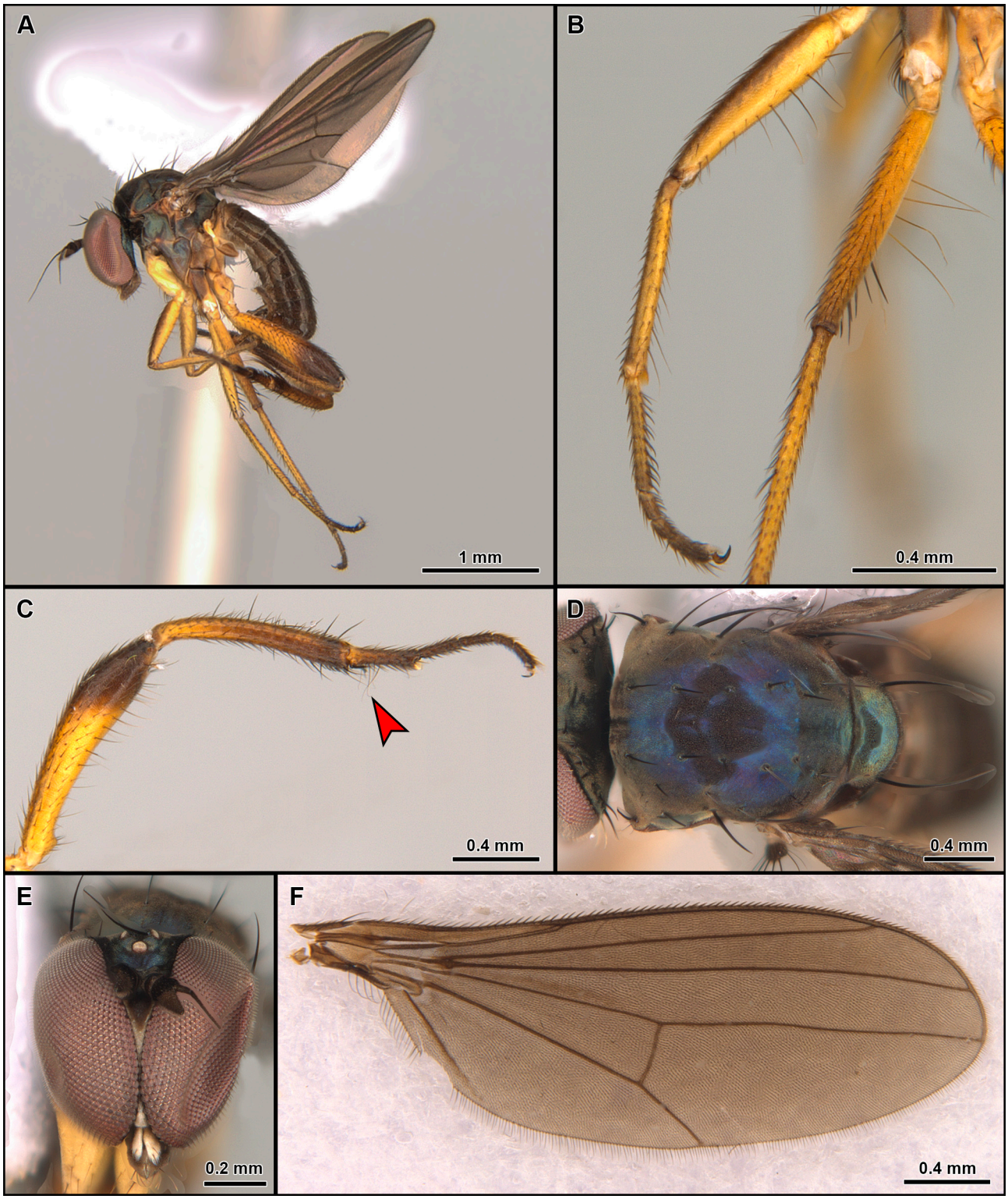

FIGURE 5. *Otorongo terrificus* **sp. nov.**, paratype. **A.** Lateral habitus. **B.** Leg I. **C.** Leg III (anteroventral long setae on $IIIt_1$ highlighted). **D.** Dorsal thorax. **E.** Frontal head. **F.** Wing.

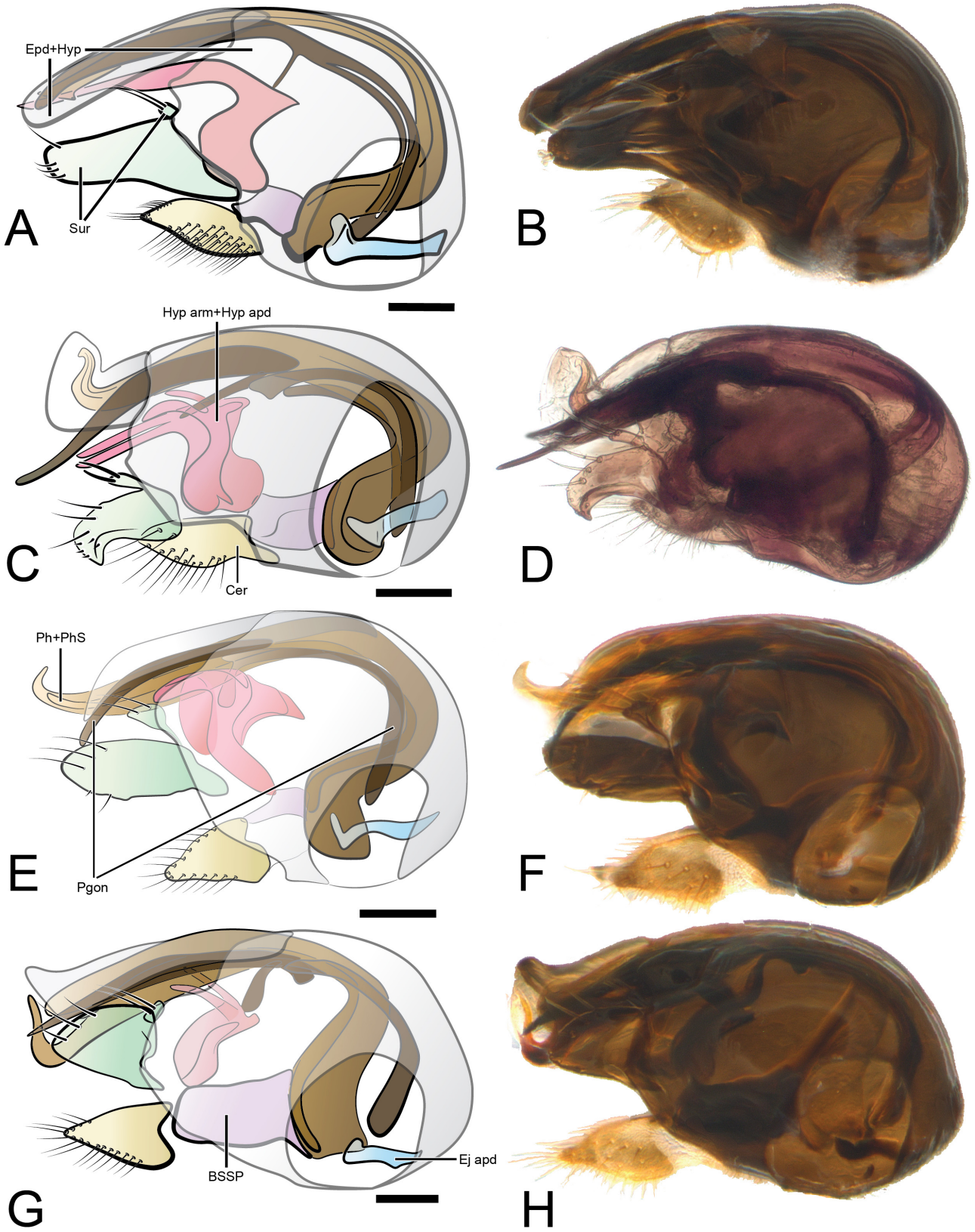

FIGURE 6. Illustration and photos of hypopygial structures of *Otorongo* **gen. nov.**, *O. deinonychus* **sp. nov.**: **A–B**; *O. piscator* **sp. nov.**: **C–D**; *O. runyoni* **sp. nov. E–F**; *O. terrificus* **sp. nov.**: **G–H.** Abbreviation list: **BSSP**, basal sclerite of sperm pump (purple); **Cer**, cercus (yellow); **Ej apd**, ejaculatory apodeme (blue); **Epd+Hyp**, epandrium (right) and hypandrium (left) (light grey); **Hyp arm+Hyp apd**, hypandrium arm and hypandrium apodeme (light red); **Pgon**, postgonite (dark brown); **Ph+Phs**, phallus and phallus sheath (light brown); **Sur**, surstylus (green). Scalebar: 0.1 mm.

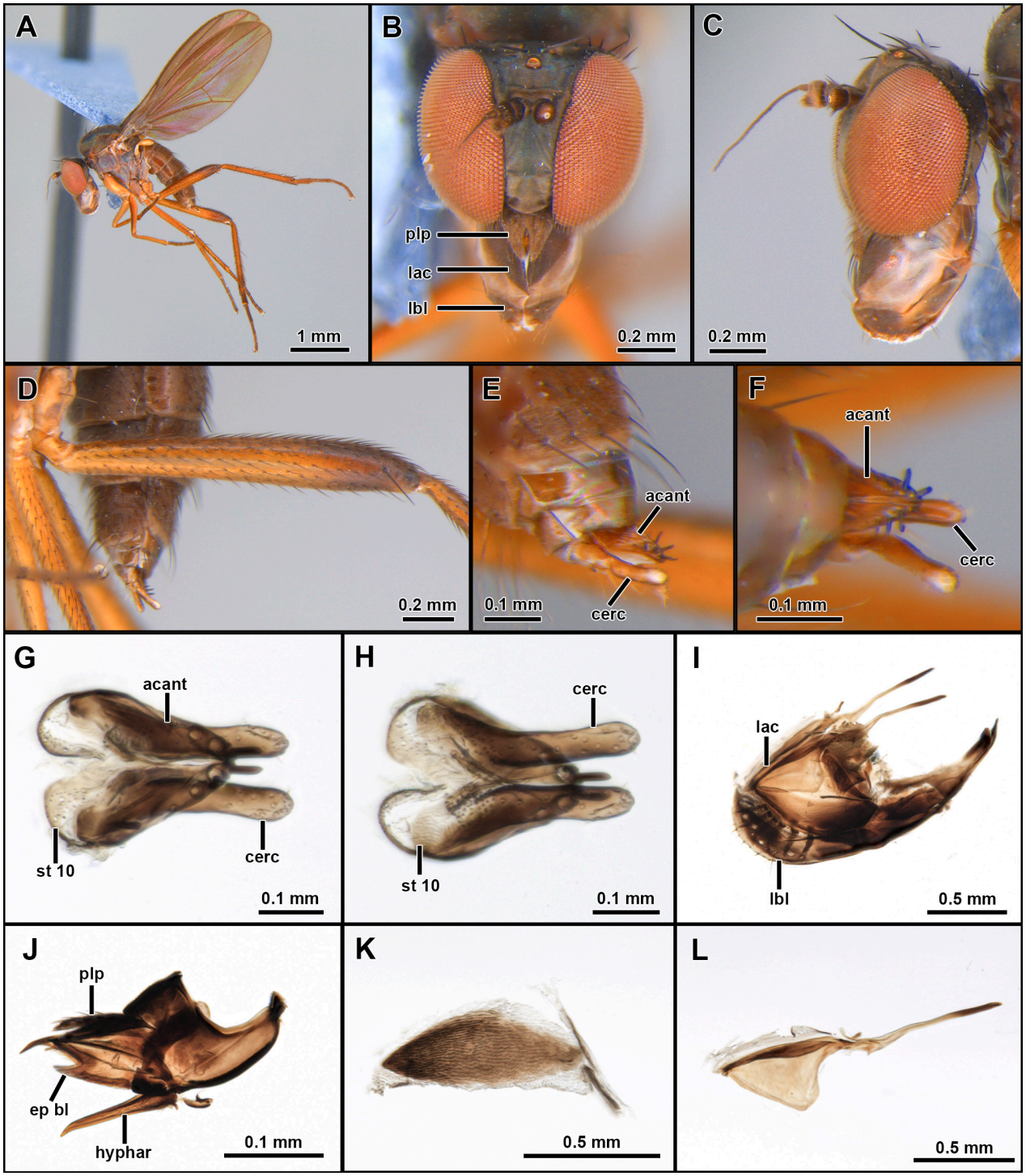

FIGURE 7. Identified female of *Otorongo* **gen. nov. A.** Lateral habitus. **B, C.** Head in anterior and lateral views, respectively. **D.** Femur III. **E, F.** Terminalia before dissection in lateral and dorsal views, respectively. **G, H.** Terminalia dissected in dorsal and ventral views, respectively. **I, J.** Mouthparts. **K.** Sclerite of lacinia. **L.** Lacinia. Abbreviations: acant—acanthophorite; cerc—cercus; ep bl—epipharyngeal blade; hyphar—hypopharynx; lac—lacinia; lbl—labellum; plp—palpus; st—sternite.

Otorongo sp. (unassociated females)

(Fig. 7)

Remarks. Two female specimens of *Otorongo* **gen. nov.** were identified from Huila, Garzón, Colombia and an additional female was collected at the same locality as the male specimens (Florencia, Caquetá, Colombia).

However, due to the sympatric occurrence of the Colombian species and the locality that differs from those of all known male specimens, it was not possible to confidently associate them based on morphology with any of the three species described herein from Colombia.

Material examined. "COLOMBIA: Huila, Garzoìn | Vda.[Vereda] Las Mercedes, Parque Regional Natural | Regional Cerro Paìramo de Miraflores, | 02°08′06″N 75°30′04″W, 2.074 m | 24.xi–08.xii.2022 Malaise, Ramos-Pastrana, Y. (LEUA)" (2 ♀, MZUSP); "COLOMBIA, Caquetá, Florencia | Vda. Sucre. Fca. Nuevo Amanecer | N 01°52′12″ W 75°40′09″ 2292 m | 26–28-Sep-2023 Y. Ramos-Pastrana" "Captura com trampa Malaise | coloca sobre | sistema lótico" (1 ♀, MZUSP).

Distribution. Colombia, Huila, Garzón.

Phylogenetic analysis and results

The characters and character state codings used in the analysis are listed below and appear in the character state matrix (Table 1). All characters are based on adult male specimens. Character statistics (L, length; ci, consistency index; ri, retention index) are provided after each character statement. Character polarization was performed *a posteriori*; therefore, no *a priori* hypothesis of character polarity was assumed, and state 0 should not be interpreted as plesiomorphic. Two characters are based on color patterns, which may be considered relatively weak, but can nonetheless be highly informative for the species-level phylogenies for Dolichopodidae, as demonstrated by Quevedo *et al*. (2026).

Head

0. Narrowest point on face (L = 3; ci = 0.66; ri = 0): (0) contiguous or nearly so (Figs 3E, 4F); (1) short, narrower than ocellar triangle (Fig. 2F); (2) broad, about as large as ocellar triangle or larger.

1. Postpedicel, size (L = 3; ci = 0.33; ri = 0): (0) small, about as long as scape+pedicel; (1) long, longer than scape+pedicel.

2. Insertion of arista-like stylus (L = 1; ci = 1; ri = uninformative): (0) arista apical or subapical; (1) dorsal (Figs 2A, F, 3A, E, 4A, F, 5A, F, 7B, C).

Thorax

3. Number of acrostichal rows (L = 3; ci = 0.66; ri = 0.66): (0) two, biserial; (1) one, uniserial; (2) none, acrostichals absent (Figs 2B, 4B, 5D).

4. Number of dorsocentral setae (L = 2; ci = 0.5; ri = 0): (0) four; (1) five; (2) six.

5. Relative position of last dorsocentral seta (L = 2; ci = 0.5; ri = 0): (0) aligned with preceding seta; (1) laterally offset from row (Figs 2B, 4B, 5D).

6. Number of pairs of lateral setae on scutellum (L = 2; ci = 0.5; ri = 0.66): (0) two pairs; (1) one pair (Figs 2B, 4B, 5D).

7. Chaetotaxy on margin of scutellum, excluding lateral setae (L = 1; ci = 1; ri = 1): (0) bare of setae; (1) bearing fringe of small, hair-like setae (Figs 2B, 4B, 5D).

Wing

8. Membrane wing color (L = 4; ci = 0.5; ri = 0): (0) mainly hyaline; (1) hyaline, slightly infuscate (Figs 2G, 3F, 4G, 5F); (2) distinctly infuscate.

9. Shape of vein R_{4+5} relative to M_1 (L = 2; ci = 0.5; ri = 0.66): (0) straight; (1) concave (Figs 2G, 3F, 4G, 5F).

10. Bosse Alaire occurrence (L = 2; ci = 0.5; ri = 0): (0) absent; (1) present.

Legs

11. Chaetotaxy on ventral surface of It_1 (L = 3; ci = 0.33; ri = 0): (0) all setae similar throughout podomere; (1) bearing ventral row of strong setae (Figs 2C, 3C, 4D, 5B).

12. Femur II, posteroventral chaetotaxy (L = 1; ci = 1; ri = 1): (0) without row of long setae; (1) bearing row of long setae, about one third of podomere's length (Figs 2D, E, 3D, 5B).

13. Tibia II, ventral chaetotaxy (L = 1; ci = 1; ri = 1): (0) without row of long setae (Fig. 5A, B); (1) bearing row of long setae, about one third of podomere's length (Fig. 2D).

14. Femur III, shape (L = 1; ci = 1; ri = 1): (0) straight; (1) bent (Figs 2D, E, 3D, 4C, 5C).

15. Femur III, width (L = 1; ci = 1; ri = 1): (0) about as wide as femur II; (1) about 2 times wider than femur II (Figs 2D, E, 3D, 4C, 5C).

16. Shape of setae between apex of FIII and $IIIt_1$ (L = 1; ci = 1; ri = 1): (0) not wavy, only with straight setae (Fig. 5C); (1) bearing tuft of long, wavy setae (Figs 2E, 3D, 4C, E).

17. Shape of posterodorsal apex of TIII (L = 1; ci = 1; ri = 1): (0) smooth and plain, without projections or ornaments; (1) with claw-like spur reaching base of $IIIt_1$ (Figs 1B–E, 2E, 3D, 4C, E, 5C).

18. Shape of setae in posteroventral view at apex of TIII (L = 1; ci = 1; ri = 1): (0) similar to other setae on podomere; (1) distinctly strong and stout (Fig. 1B, E).

19. Coxa III, colour pattern (L = 3; ci = 0.33; ri = 0.33): (0) yellow (Figs 3A, 4A, 5A); (1) dark brown.

20. Femur III, colour pattern (L = 5; ci = 0.6; ri = 0.33): (0) wholly yellow; (1) wholly dark brown (Fig. 2A, B, D, E); (2) yellow, but apical half brown (Figs 3A, D, 4A, C, 5A, C); (3) yellow, but apical 1/5 brown.

21. Row of long setae in posteroventral view on femur I, occurrence (L = 1; ci = 1; ri = 1): (0) absent; (1) present (Figs 2C, 3C, 4D, 5B).

22. $IIIt_1$, size of setae (L = 2; ci = 0.5; ri = 0): (0) short, shorter than podomere width (Fig. 1B, D); (1) long, about as long as or longer than podomere width (Fig. 1C, E).

23. $IIIt_1$, anterior hook-like bristle, occurrence (L = 1; ci = 1; ri = 1): (0) absent; (1) present (Fig. 1B–E).

24. Anterior hook-like bristle at $IIIt_1$, size (L = 1; ci = 1; ri = 1): (0) equal to or longer than claw-like spur on TIII (Fig. 1C, D); (1) shorter than claw-like spur on TIII (Fig. 1B, E).

Hypopygium

25. Epandrium shape (L = 2; ci = 0.5; ri = 0): (0) subrectangular; (1) suboval (Fig. 6).

26. Ventral surstylus size (L = 2; ci = 0.5; ri = 0.66): (0) broad, about same size as dorsal surstylus; (1) short, about half size of dorsal surstylus or shorter (Fig. 6).

27. Dorsal surstylus, chaetotaxy (L = 2; uninformative): (0) one apical seta (Fig. 6A, B); (1) two apical setae (2) three apical setae (Fig. 6C–H).

28. Dorsal surstylus, shape (L = 5; ci = 0.6; ri = 0): (0) rounded (Fig. 6E–H); (1) rectangular (Fig. 6A, B); (2) triangular (3) hook-like (Fig. 6C, D).

29. Basal sclerite of sperm pump, occurrence (L = 1; ci = 1; ri = 1): (0) absent; (1) present (Fig. 6).

30. Basal sclerite of sperm pump, anterodorsal shape (L = 2; ci = 0.5; ri = 0): (0) rounded (Fig. 6 C, D, G, H); (1) tapered (Fig. 6 A, B, G, H).

31. Cercus, shape (L = 2; uninformative): (0) leaf-like (Fig. 6); (1) whip-like.

32. Postgonite, size (L = 2; ci = 0.5; ri = 0.66): (0) short, reaching hypandrial arm; (1) long, reaching apex of phallus (Fig. 6).

33. Duct between postgonite and hypandrial arms, occurrence (L = 1; ci = 1; ri = 1): (0) absent; (1) present (Fig. 6).

34. Posterior postgonite near base of phallus, connection (L = 1; uninformative): (0) not fused around base of phallus; (1) fused and encircling base of phallus (Fig. 6).

35. Hypandrial arms, size (L = 2; ci = 0.5; ri = 0): (0) short, reaching dorsal surstylus (Fig. 6E–H); (1) long, reaching apex of phallus (Fig. 6 A–D).

36. Apex of hypandrium, shape (L = 2; ci = 0.5; ri = 0): (0) straight (Fig. 6A, B, E, F); (1) ventrally curved (Fig. 6C, D, G, H).

The analysis recovered eight most parsimonious trees (L = 68, CI = 67, RI = 68) using equal weight of characters, in all of them, *Otorongo* **gen. nov.** was recovered as a well-supported monophyletic group (Bremer support = 8) (Fig. 8). Analyses using implied weighting of characters yielded the same topology as equal weight analyses, regardless of the *k* value applied. The synapomorphies supporting the group are: [7:1] scutellum bearing a fringe of small hair-like setae (Figs 2B, 4B, 5D), [14:1] femur III bent (Figs 2D, E, 3D, 4C, 5C), [15:1] and about 2 times wider than femur II (Figs 2D, E, 3D, 4C, 5C), [17:1] posterodorsal apex of tibia III with a claw-like spur reaching the base of $IIIt_1$ (Figs 1B–E, 2E, 3D, 4C, E, 5C), [23:1] $IIIt_1$ with anterior hook-like bristle (Fig. 1B–E), and [29:1] occurrence of basal sclerite of sperm pump (Fig. 6). Character states [3:2], and [26:1] also support this group; however, those homoplasies are also observed with the genus *Sympycnus* (Fig. 8). *Pseudosympycnus bickeli* was recovered as the sister group to *Otorongo* **gen. nov.**, but this relationship should be interpreted with caution and is discussed further in the following section. The characters grouping this clade are: [9:1] vein R_{4+5} concave, relative

to M_1; [21:1] presence of a row of long setae in posteroventral view at the femur I (Figs 2C, 3C, 4D, 5B) and [32:1] well developed duct between postgonite and hypandrial arms (Fig. 6), in addition to the homoplasies [6:1] one pair of lateral setae on the scutellum (Figs 2B, 4B, 5D), [9:1] vein R_{4+5} concave, relative to M_1 (Figs 2G, 3F, 4G, 5F), and [32:1] postgonite long, reaching apex of phallus (Fig. 6).

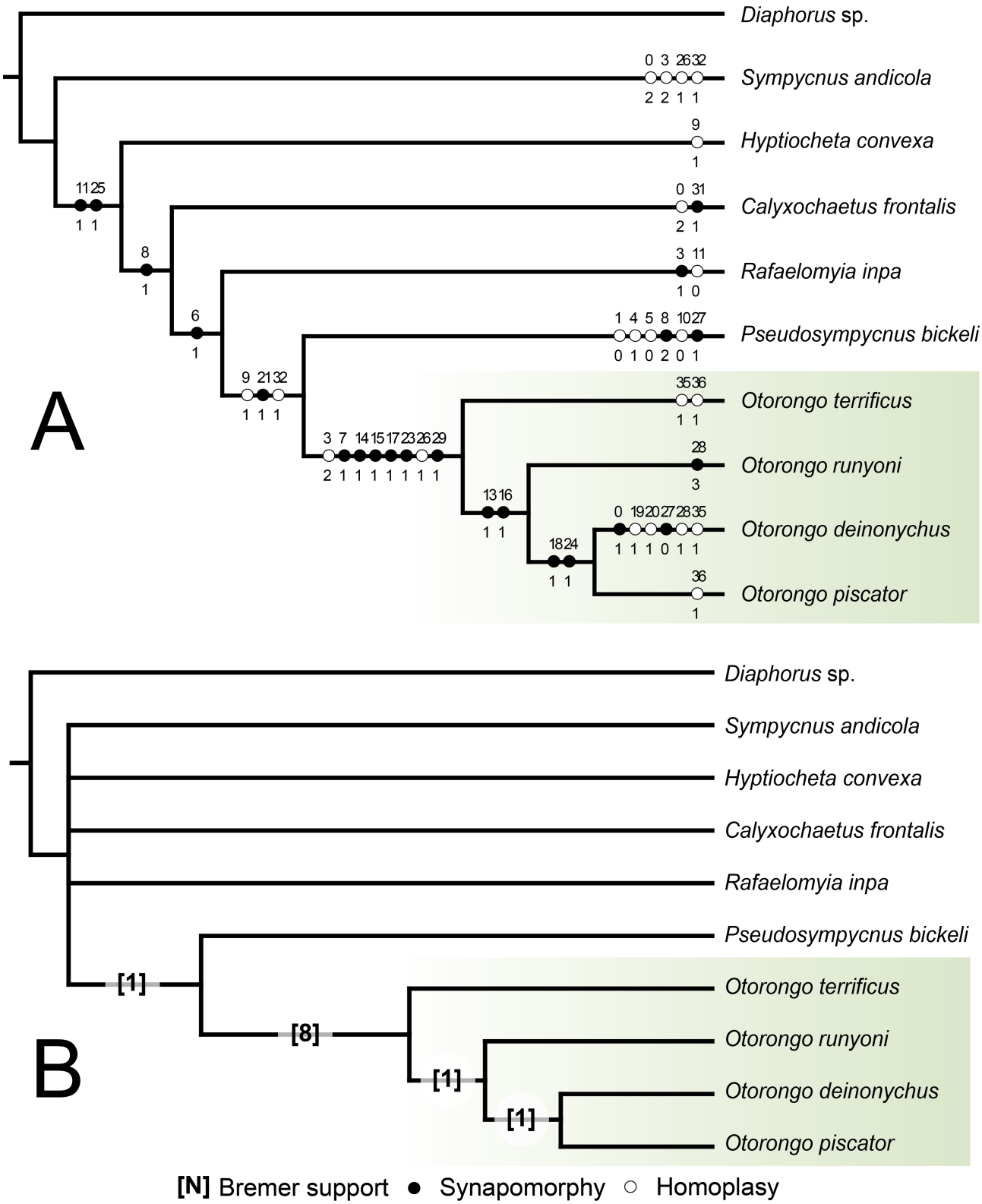

FIGURE 8. Phylogenetic analysis of *Otorongo* **gen. nov.** based on morphological characters. **A.** One of the most parsimonious trees (L = 68, CI = 67, RI = 68) with plotted characters and character states. **B.** Consensus tree (L = 73, CI = 63, RI = 61) obtained from eight most parsimonious trees. Numbers above and below circlets indicate character and character state numbers, respectively (see Table 1 for morphological matrix).

TABLE 1. Morphological matrix used for phylogenetic analysis. Structures not analyzed are indicated by "?".

Taxa/Character	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**3**	**3**
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**0**	**1**	**2**	**3**	**4**
Diaphorus sp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pseudosympycnus bickeli	0	0	1	0	1	0	1	0	2	1	0	1	0	0	0	1	3	0	1	0	0	1	0	0	1	0	0	?	0	1	1	?	0	0	0
Hyptiocheta convexa	2	1	1	2	2	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	2	?	0	?	0	1	?	1	0	0	0
Calyxochaetus frontalis	?	1	1	1	2	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	?	1	0	?	0	0	?	1	0	0	0
Rafaelomyia inpa	2	1	1	0	2	1	0	0	1	0	1	1	0	0	0	1	2	0	0	0	0	1	1	?	?	2	0	?	1	0	0	1	0	0	0
Otorongo deinonychus	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	0	1	1	1	1	0	0
Otorongo piscator	0	1	1	2	2	1	1	1	1	1	1	1	1	1	1	0	2	0	1	1	1	1	0	1	2	0	1	0	0	1	1	1	1	1	1
Otorongo terrificus	0	1	1	2	2	1	1	1	1	1	1	1	1	1	1	0	2	0	1	1	1	1	0	1	2	0	1	0	0	1	1	1	0	1	1
Otorongo runyoni	0	1	1	2	2	1	1	1	1	1	1	1	1	1	1	0	2	1	1	1	1	1	0	1	2	3	1	1	0	1	1	1	0	1	0

Considering only the inner group, *Otorongo terrificus* **sp. nov.** was recovered as the sister group to all the other species. The clade comprising *O. runyoni* **sp. nov.** and *O. deinonychus* **sp. nov.** + *O. piscator* **sp. nov.** is supported by the following combination of characters: [13:1] tibia II bearing a row of long setae, about one third of the podomere's length (Fig. 2D); and [16:1] tibia III and $IIIt_1$ bearing a tuft of long wavy setae (Figs 2E, 3D, 4C, E). After that, *O. deinonychus* **sp. nov.** and *O. piscator* **sp. nov.** are grouped by two synapomorphies: [18:1] posteroventral setae at the apex of tibia III distinctly strong and stout (Fig. 1B, E), and [24:1] anterior hook-like bristle at $IIIt_1$ shorter than claw-like spur on tibia III (Fig. 1B, E).

Discussion

In recent years, many studies have revealed that the remarkable diversity of Sympycninae in South America is concentrated in the Andean and Amazonian regions, including the discovery of new genera, such as *Rafaelomyia* Soares, Capellari & Ramos-Pastrana (Soares *et al*. 2023), as well as new species belonging to genera previously considered monotypic, such as *Hyptiocheta* Becker (Quevedo *et al*. in press).

The present analysis was primarily designed to resolve the internal relationships of *Otorongo* **gen. nov.** and is therefore insufficient to address broader questions concerning intergeneric relationships within Sympycninae. Nevertheless, during the examination of the morphological characters of *Pseudosympycnus* Robinson, it was observed that the postgonite curves around the phallus and fuses posteriorly. This state—fusion of the postgonite encircling the phallus—has been treated in recent works as a synapomorphy of Sympycninae (Sinclair & Cumming 2006; Hurley & Runyon 2009; Runyon 2012; Drake 2021; Soares *et al*. 2023; Quevedo *et al*. in press). However, an alternative explanation could be to treat this condition as a basal character, relating it to subfamilies of Dolichopodidae *lato sensu*, such as Microphorinae and Parathalassiinae, which exhibit a similar condition (Brooks 2005). This characteristic is also present in the genus *Pseudosympycnus* of the subfamily Stolidosomatinae (see Soares & Capellari 2020; Soares & Ale-Rocha 2022), recovered as a sister group of *Otorongo* **gen. nov.** in our analysis (Fig. 8). Without a more detailed investigation of character evolution within Sympycninae, multiple scenarios remain possible for reconstructing this feature: (1) plesiomorphic, having originated in a common ancestor of Sympycninae and Stolidosomatinae, given that both subfamilies branch at the base; (2) convergent apomorphy, having arisen independently in both subfamilies; or (3) an exclusive synapomorphy of Sympycninae, with Stolidosomatinae representing a lineage nested within Sympycninae that later diversified in the Americas. The only cladistic analysis that includes Stolidosomatinae supports hypothesis (3), as it places Stolidosomatinae within Sympycninae, as sister to a clade composed of *Neoparentia* Robinson and a lineage of *Sympycnus* Loew (Germann *et al.* 2011).

However, the diversity of Sympycninae in the Americas is considerable, and recent studies indicate that much remains to be discovered in terms of both species and genera. In this context, descriptive works play a critical role in building the foundation for a more comprehensive understanding of the group's diversity and evolutionary history. Within this framework, *Otorongo* **gen. nov.** emerges as yet another new genus for the region, characterized by highly conspicuous morphological traits and strongly supported by diagnostic features. The collected females exhibit highly distinctive characteristics, such as a relatively reduced abdomen, a pronounced development of the lacinia within the proboscis (resulting in a "swollen" appearance of the mouthparts) (Fig. 7B, C, I, L), and a strongly sclerotized cercus (Fig. 7E–H). Owing to the limited knowledge of the biology of these insects, it is difficult to infer the selective pressures that may have driven the evolution of such unusual traits, or even if there are any pressure for this trait, considering here the possibility of neutral selection (Leigh 2007).

On the other hand, the modifications observed in males are somewhat easier to hypothesize given what is typically observed in Dolichopodidae, the remarkable MSSC on the male legs are most likely used in courtship (Land 1993a, b; Lunau 1992, 1996; Zimmer 2000, 2003). It is also noteworthy that the presence of a robust and well-developed leg III is very common in Hybotidae (other family within Empidoidea), especially in Hybotinae and Ocydromiinae, where it is commonly used for predation (Barros *et al*. 2022, 2023; Soares *et al*. 2021). In *Otorongo* **gen. nov.**, however, this characteristic is more likely associated with courtship behavior, where the widening of femur III and the presence of spurs on tibia III likely assist the male in grasping the female during copulation.

Otorongo deinonychus **sp. nov.**, *O. runyoni* **sp. nov.** and *O. terrificus* **sp. nov.** were collected in the municipality of Florencia, Caquetá, together with a unassociated female specimen, while the other two females of *Otorongo* were collected in the PNR "Cerro Páramo de Miraflores" in the municipality of Garzón, Huila, all of which is part

of the Amazonian Piedmont or Andean Transition Corridor, which links the departments of Huila, Caquetá, Meta and Cundinamarca, connecting ecosystems of the Amazon, the Andes, and the upper Magdalena River Valley. It is important for the transit of medium and large fauna between these two large biogeographic regions of the country (IAVH, 2015). This Andean-Amazonian transition zone is considered to have a high level of endemism, and genera and species of long-legged flies have been described from this region (e.g., Soares *et al*. 2023; Ramos-Pastrana *et al*. 2024). The two locations where *Otorongo* **gen. nov.** was collected in Colombia, according to Holdridge (1967), are part of the low montane very humid forest. The climatic limits of this vegetation formation are a biotemperature between 12 and 18ºC and an average annual rainfall of 2,000 to 4,000 mm.

Otorongo piscator **sp. nov.** was the only species collected outside of Colombia. The two male specimens were collected in Cusco, Quincemil, in the Camanti-Marcapata Biological Corridor region of Peru, at an altitude of 630 meters, as defined by Salvador-Montoya *et al*. (2012), located between 13.2–13.26ºS and 70.77–70.54ºW. The region is characterized by extremely high precipitation (up to 7,000 mm per year) and an average annual temperature of 25ºC, with vegetation elements that include the upper limits of the Amazonian lowland humid forest and the Andean submontane and montane cloud forest. This area exhibits strong endemism, and several new species of long-legged flies have been described from there (e.g., Soares & Capellari 2020; Soares & Ale-Rocha 2022). Both localities, in Colombia and Peru, share similar phytophysiognomies and high precipitation, and the new genus is possibly endemic to this transition region between the Amazon and the mountain cloud forests. We emphasize that the number of specimens available is too small to predict suitable areas or climatic conditions for the occurrence of species of *Otorongo* **gen. nov.** However, we believe that this information may still be useful for guiding future efforts in studies with the genus.

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