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Research article

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First record of the millipede family Haplodesmidae (Diplopoda: Polydesmida) from Colombia: two new species of *Inodesmus* Cook, 1896 from the Northern Andes

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Abstract. The millipede family Haplodesmidae is reported from Colombia for the first time, represented by *Inodesmus mesibovi* sp. nov. and *Inodesmus miconiae* sp. nov. Their presence in primary and secondary oak forests suggests their native origin in Colombia. This discovery represents the first record of the genus *Inodesmus* Cook, 1896 in South America, with potential implications of further records of the genus and family from the continent. We also present the first record of teratologies in haplodesmid millipedes.

Keywords. South America, endemism, new records, taxonomy, teratologies.

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Introduction

The family Haplodesmidae Cook, 1895 currently comprises seven genera and over 70 species (Golovatch 2018; Srisonchai *et al.* 2020). Its distribution spans East Asia, Australasia, and the Greater Antilles (Golovatch *et al.* 2009, 2010; Golovatch & VandenSpiegel 2014; Romero-Rincon & Alvear 2024). However, some haplodesmids are distributed in the Pantropical region as a result of human introduction, e.g., *Cylindrodesmus hirsutus* Pocock, 1889, *Prosopodesmus jacobsoni* Silvestri, 1910, and *P. panporus* Blower & Rundle, 1980 (Golovatch *et al.* 2001; Mesibov 2012; Golovatch & VandenSpiegel 2014).

Inodesmus Cook, 1896 is a genus of small polydesmidans that possess a gonopod with neither a cannula nor a prostatic groove, while the telopodite is sharply bent at midway (Mesibov 2009, 2013; Romero-Rincon & Alvear 2024). The recently revised genus comprises 24 accepted species from Australia, New Caledonia, and Jamaica, exhibiting a puzzling disjunct distribution (Romero-Rincon & Alvear 2024).

Material and methods

Specimens of *I. mesibovi* sp. nov. were hand-collected at the Parque Natural Chicaque, Cundinamarca, Colombia during the months of April to September 2022 and January 2023, while specimens of *I. miconiae* sp. nov. were hand-collected at the Hacienda Río Blanco, Popayán, Cauca, Colombia from September to October 2023. All specimens are preserved in 75 and 96% ethanol. Photographs of the habitus of the specimens were taken using a Canon D90 camera, equipped with a Canon EF 100 mm f/2.8 L macro lens. Scanning electron microscopy (SEM) was performed using a Tescan Vega3 microscope on 99% gold-coated specimens. After examination, the material was returned from SEM stubs to ethanol. Drawings were prepared for publication using Adobe Illustrator 2022 and the resulting micrographs were processed and assembled using Adobe Photoshop CS6. A distribution map was created in QGIS Desktop ver. 3.6.0. To describe colors, we used the standard names of the 267 color centroids of the NBS/IBCC Color System, as proposed by Centore (2016).

The terminology used for the description of the gonopods and somatic structures follows Akkari & Enghoff (2011), Mesibov (2009, 2013), and Romero-Rincon & Alvear (2024).

Abbreviations

a = anterior part of prozonite
at = apical tab
b = posterior part of prozonite
cx = gonocoxa
dp = distal portion of telopodite
L = limbus
lo = lobe
mab = main branch of distal portion of telopodite
meb = median branch of distal portion of telopodite
o = ozopore
pp = proximal portion of telopodite
r = ridge
s = spherical knobs
t = tooth-like lobe

Acronyms for repositories

ICN-MD = Diplopoda Collection, Instituto de Ciencias Naturales, Facultad de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá, Colombia
MHNUC-MD = Diplopoda Collection, Museo de Historia Natural, Universidad del Cauca, Popayán, Colombia
MHN-UPN-MD = Diplopoda Collection, Museo de Historia Natural, Universidad Pedagógica Nacional, Bogotá, Colombia

Results

Class Diplopoda de Blainville in Gervais, 1844
Order Polydesmida Pocock, 1887
Suborder Polydesmidea Pocock, 1887
Superfamily Haplodesmoidea Cook, 1895
Family Haplodesmidae Cook, 1895

Genus ***Inodesmus*** Cook, 1896

Inodesmus Cook, 1896: 25.
Agathodesmus Silvestri, 1910: 362.
Atopogonus Carl, 1926: 386.

Inodesmus – Attems 1898: 255. — Jeekel 1971: 310. — Loomis 1975: 172. — Hoffman 1980: 184; 1999: 483.
Agathodesmus – Attems 1914: 282; 1940: 487. — Brölemann 1916: 547, 587. — Jeekel 1971: 310; 1982: 11; 1983: 146; 1985: 51; 1986: 6. — Hoffman 1980: 184. — Mesibov 2009: 92; 2013: 35. — Romero-Rincon & Douch 2024: 3. — Romero-Rincon & Alvear 2024: 435 (synonymized).
Atopogonus – Attems 1940: 477. — Verhoeff 1941: 406. — Jeekel 1971: 314; 1984: 88; 1986: 46. — Hoffman 1980: 186; 1999: 480. — Golovatch *et al.* 2001: 185; 2009: 2, 44. — Mesibov 2009: 92 (synonymized).

Type species

Inodesmus jamaicensis Cook, 1896, by monotypy.

Composition

I. adelphus (Mesibov, 2013), *I. aenigmaticus* (Mesibov, 2013), *I. agnus* Mesibov, 2013, *I. anici* (Mesibov, 2013), *I. baccatus* (Carl, 1926), *I. bonang* (Mesibov, 2013), *I. bucculentus* (Jeekel, 1986), *I. carorum* (Mesibov, 2013), *I. chandleri* (Mesibov, 2013), *I. gayundah* (Mesibov, 2013), *I. hahnensis* (Mesibov, 2013), *I. jamaicensis* Cook, 1896, *I. johnsi* (Mesibov, 2009), *I. kerensis* (Mesibov, 2013), *I. kirrama* (Mesibov, 2013), *I. mesibovi* sp. nov., *I. miconiae* sp. nov., *I. millaa* (Mesibov), 2013, *I. morwellensis* (Mesibov, 2013), *I. parapholeus* (Mesibov, 2013), *I. quintanus* (Mesibov, 2013), *I. sagma* (Mesibov, 2013), *I. steeli* (Silvestri, 1910), *I. summus (*Mesibov, 2013), *I. urbanus* (Romero-Rincon & Douch, 2024), *I. yuccabinensis (*Mesibov, 2013).

Inodesmus mesibovi sp. nov.
urn:lsid:zoobank.org:act:945A115E-0BE9-484A-9581-FF7E09C59803
Figs 1–4, 8

Diagnosis

Males with head + 19 rings, females with head + 20 rings. This species differs from its congeners in having a coxal projection on male leg 6. Telopodite (Fig. 2) with **pp** straight; **at** in transverse plane, large, somewhat fusiform, and slightly bent posteriorly; **dp** directed laterobasally, basal portion of the **dp** linguiform; **meb** curving strongly behind **mab**, bifurcated basally, with a long, acuminate axial process, and a hook-shaped process, with another, small process at midlength; **mab** concave medially, broad distally, curved outward, and with a small subtriangular process distally.

Etymology

The specific epithet, *mesobovi* (noun, genetive case), is a patronym, honoring Dr. Robert Mesibov for his valuable contributions to the knowledge of the Australian millipede fauna.

Material examined

Holotype

COLOMBIA • ♂; Cundinamarca, San Antonio del Tequendama, Parque Natural Chicaque, oak forest; [04º37.028′ N, 74°18.830′ W]; 2232–2275 m a.s.l.; 12 Jan. 2023; J. Romero-Rincon and J. Veloza leg.; under a decaying fallen log; daytime hand collection; ICN-MD-2913.

Paratypes (11 ♂♂, 15 ♀♀, 17 immatures)

COLOMBIA • 1 ♂ (fragmented), 1 ♀; same data as for holotype; MHN-UPN-MD-168 • 1 ♂ (fragmented); same data as for holotype; MHN-UPN-MD-176 • 1 ♂, 1 ♀; same data as for holotype; MHNUC-MD-276 • 1 ♀; same data as for holotype; with teratologies; MHN-UPN-MD-177 • 1 ♂, 3 ♀♀, 7 immatures; same data as for holotype; MHN-UPN-MD-178 • 2 ♂♂, 2 ♀♀; same data as for holotype; ICN-MD-3130 • 1 ♂; same locality as for holotype; 26–29 Sep. 2022; J. Romero-Rincon and L. Poveda leg.; under decaying log; daytime hand collection; MHN-UPN-MD-92 • 1 ♀, 1 immature (fragmented); same data as for preceding; MHN-UPN-94 • 1 ♀; same locality as for preceding; 29

Fig. 1. Habitus of *Inodesmus mesibovi* sp. nov., male paratype (above; MHNUC-MD-276) and female paratype (below; MHNUC-MD-276). Scale bar: 1 mm.

May 2022; J. Romero-Rincon and R. De La Cruz leg.; inside a decaying fallen log; daytime hand collection; MHN-UPN-MD-96 • 1 ♀; same locality as for preceding; 29 Apr. 2022; J. Romero-Rincon leg.; under a decaying fallen log; night time hand collection; MHN-UPN-MD-99 • 1 ♂, 1 ♀, 4 immatures; same locality as for preceding; 25–26 Jun. 2022; J. Romero-Rincon and R. De La Cruz leg.; inside a decaying fallen log; night time hand collection; MHN-UPN-MD-98 • 1 ♂, 1 immature; same locality as for preceding; 25–26 Jun. 2022; J. Romero-Rincon and R. De La Cruz leg.; under a decaying fallen log; daytime hand collection; MHNUC-MD-412 • 2 ♀♀, 1 immature; same locality as for preceding; 19 Jun. 2023; J. Romero-Rincon leg.; under a decaying fallen log; night time hand collection; MHN-UPN-MD-163 • 1 ♂, 3 immatures; same locality as for preceding; 16 Aug. 2023; J. Romero-Rincon and H. Reip leg.; under a decaying fallen log; daytime hand collection; MHN-UPN-MD-169 • 1 ♀; Cundinamarca, San Antonio del Tequendama, Parque Natural Chicaque, secondary forest; [04º36.854′ N, 74°18.859′ W]; 2155 m a.s.l.; 28–29 Apr. 2022; J. Romero-Rincon leg.; under bark of fallen log; daytime hand collection; MHN-UPN-MD-97 • 1 ♂; same locality as for preceding; 30–31 Jul. 2022; J. Romero-Rincon leg.; under a decaying fallen log; night time hand collection; MHN-UPN-MD-95.

Description

Measurements. Male with head + 19 rings, female with head + 20 rings (Fig. 1). Average measurement of adult type specimens: male/female ca 10/11.5 mm long; maximum width ca 0.9/1.2 mm.

Coloration. Metazonites, prozonites, and collum deep reddish brown 41 to deep brown 56; head, legs (prefemur and coxa pale greenish yellow 104), and antennae light reddish brown 42.

Head. Wider than high; narrower than collum; facing downwards (Fig. 3A–C); setose clypeus (Fig. 3A). Vertex microvillose and microgranulate. Antennae (Fig. 3A–C) short, stout, clavate, densely setose, and held close to head. Antennomere relative lengths as follows: 6>1>5>4=2>3>7. Antennae with 4 sensory apical cones.

Trunk. Anterior and posterior margins of collum broadly convex; corners rounded and hidden under paranota of second ring, collum with an irregular pattern of two groups of rounded tubercles. At first

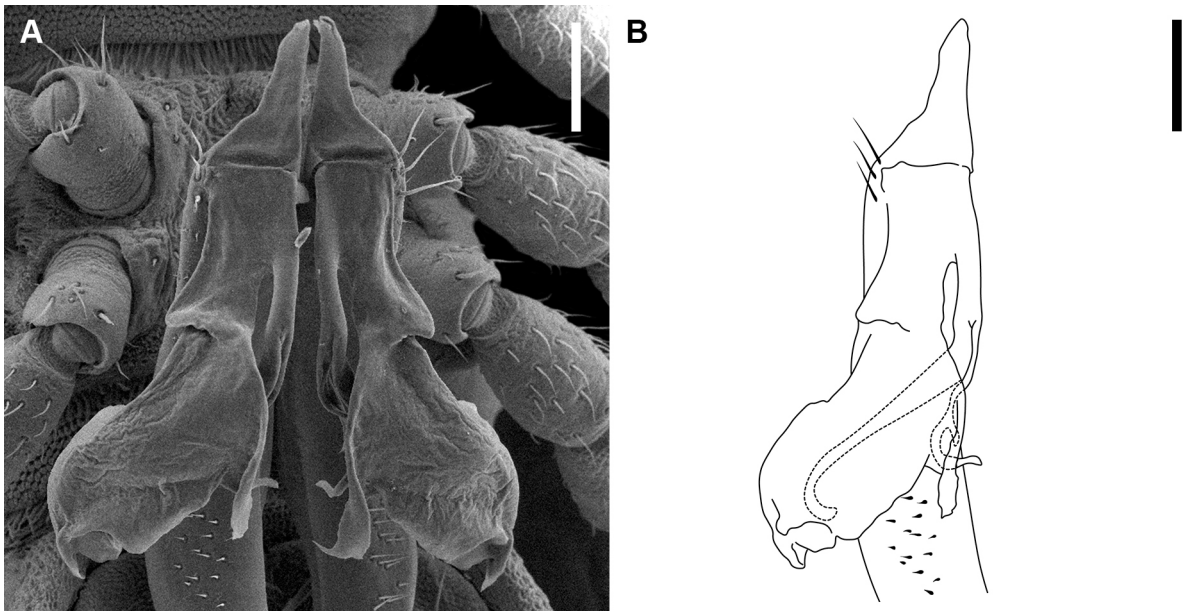

Fig. 2. *Inodesmus mesibovi* sp. nov., male holotype (ICN-MD-2913). **A**. Ventral view of the gonopods. **B**. Left gonopod in ventral view. Scale bars: 0.1 mm.

glance, pattern continues on remaining body rings, with a supposed transverse medial separation on each tergite (Fig. 3B–C). Ring 2 tergite largest, extending basally, laterally, and posteriorly; extension of paranota of ring 2 incrassate without well-defined tubercles (Fig. 3B–C). Posterior rings (Fig. 3G), up to ring 18, with a lateral row of three small tubercles, neither enlarged nor forming pseudo-paranota. Ozopores (Fig. 3F) very small, internal closing not evident, located just above or in middle of last lateral row of tubercles (Fig. 3G). Ozopores internally and externally bordered by microtubercules, with

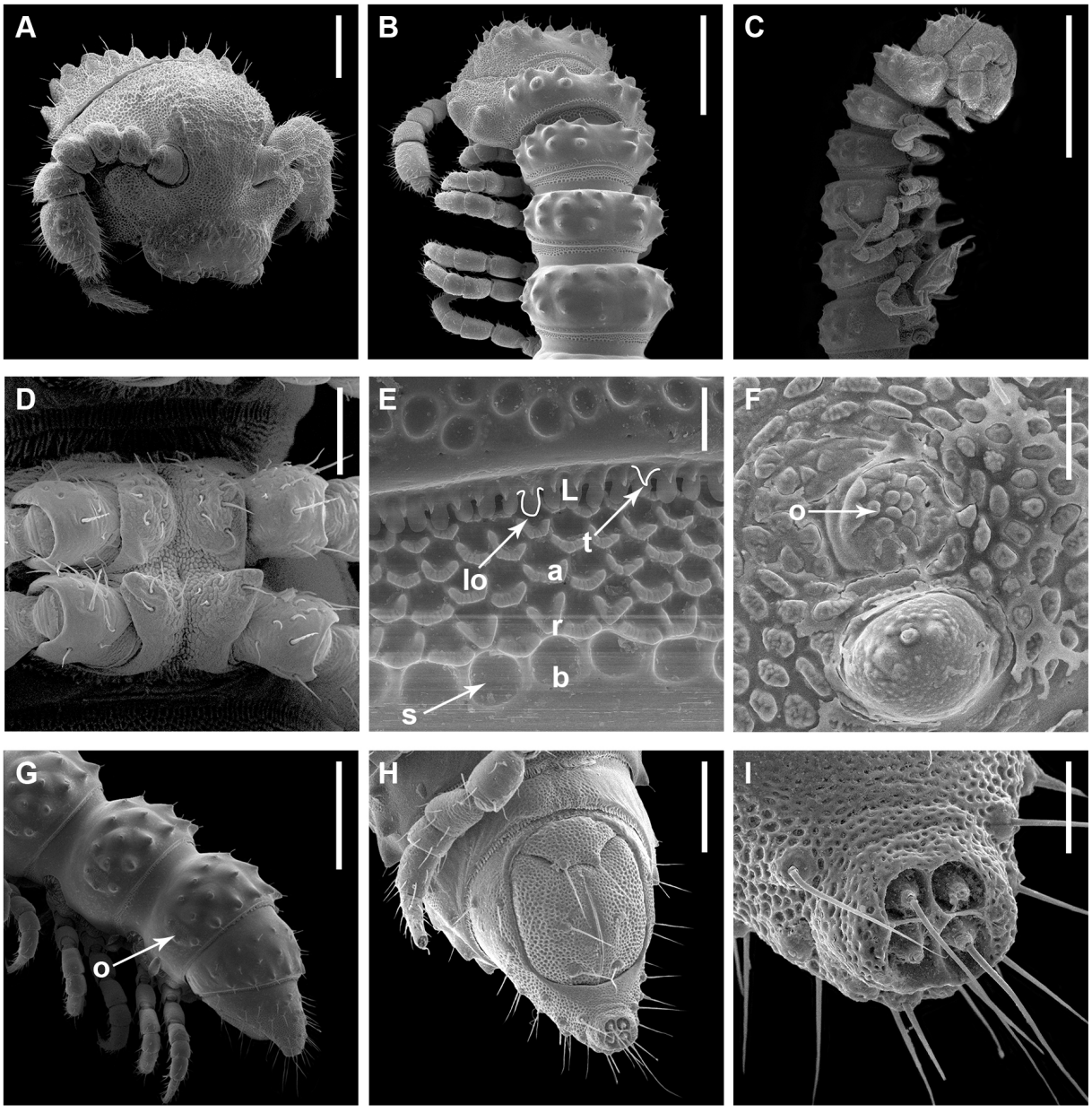

Fig. 3. *Inodesmus mesibovi* sp. nov., male holotype (A, C–D, H–I; ICN-MD-2913) and male paratype (B, E–G; MHN-UPN-MD-168). **A**. Ventrolateral view of head. **B**. Dorsolateral view of the anterior part of the body. **C**. Lateral view of the anterior part of the body. **D**. Midbody sternite. **E**. Sculpture of the prozonite. **F**. Ozopore. **G**. Lateral view of the posterior part of the body. **H**. Ventral view of telson. **I**. Spinnerets. Abbreviations: **a** = anterior part of prozonite; **b** = posterior part of prozonite; **L** = limbus; **lo** = lobe; **o** = ozopore; **r** = ridge; **s** = spherical knobs; **t** = tooth-like lobe. Scale bars: A, H = 0.2 mm; B, G = 0.5 mm; C = 1 mm; D = 0.1 mm; E–F = 0.02 mm; I = 0.05 mm.

neither evident elevation nor porostele. Pore formula normal (5, 7, 9, 10, 12, 13, 15–19). Diplosternites (Fig. 3D) with transverse impression deeper than longitudinal impression, anterior sternites with eight acicular setae, posterior sternites on ring 5 with bumps bearing six acicular setae each. Legs (Fig. 3B–C, G–H) short and stout; relative lengths of podomeres: tarsus > (prefemur ≥ femur) > tibia > postfemur; claw about as long as postfemur. Spiracles not evident. Telson facing downwards. Paraprocts parallel to substrate and almost flat (Fig. 3G–H). Epiproct (Fig. 3H–I) distally projected, but short, flattened dorsoventrally, with four inconspicuous setae (spinnerets), each spinneret with a single low sheath, each seta inside a circular, deep, walled depression (Fig. 3I). Hypoproct (Fig. 3H) subtrapeziform with a slightly convex anterior margin. Tegument with microsculpture, especially along posterior edge of metazonite, anterior edge of prozonite, head, collum, lateral part of metazonite of second ring, edges of ozopores, and posterior area of telson (Fig. 3). Microsculpture mostly as a cellular mesh with narrow irregular folds. Integument further elevated into tubercles of different sizes and shapes on head, collum, tergites, metatergites, and telson (Fig. 3A–C, G–H); some tubercles with a single small and acicular seta. Cell boundaries in posterior part of metazonite not extending basally past limbus (Fig. 3E). Primary limbus element with a regular set of rounded lobes and tooth-like lobes on the secondary element (Fig. 3E). Prozonites sharply demarcated from metazonites (Fig. 3B–C, G). Anterior part of prozonite (**a**) with small irregular subcardiform units arranged in transverse "rows" placed on a smooth background. A transverse ridge (**r**) is marked by a row of cell-like units. Posterior part of the prozonite (**b**) with a smooth surface and lacking spherical knobs.

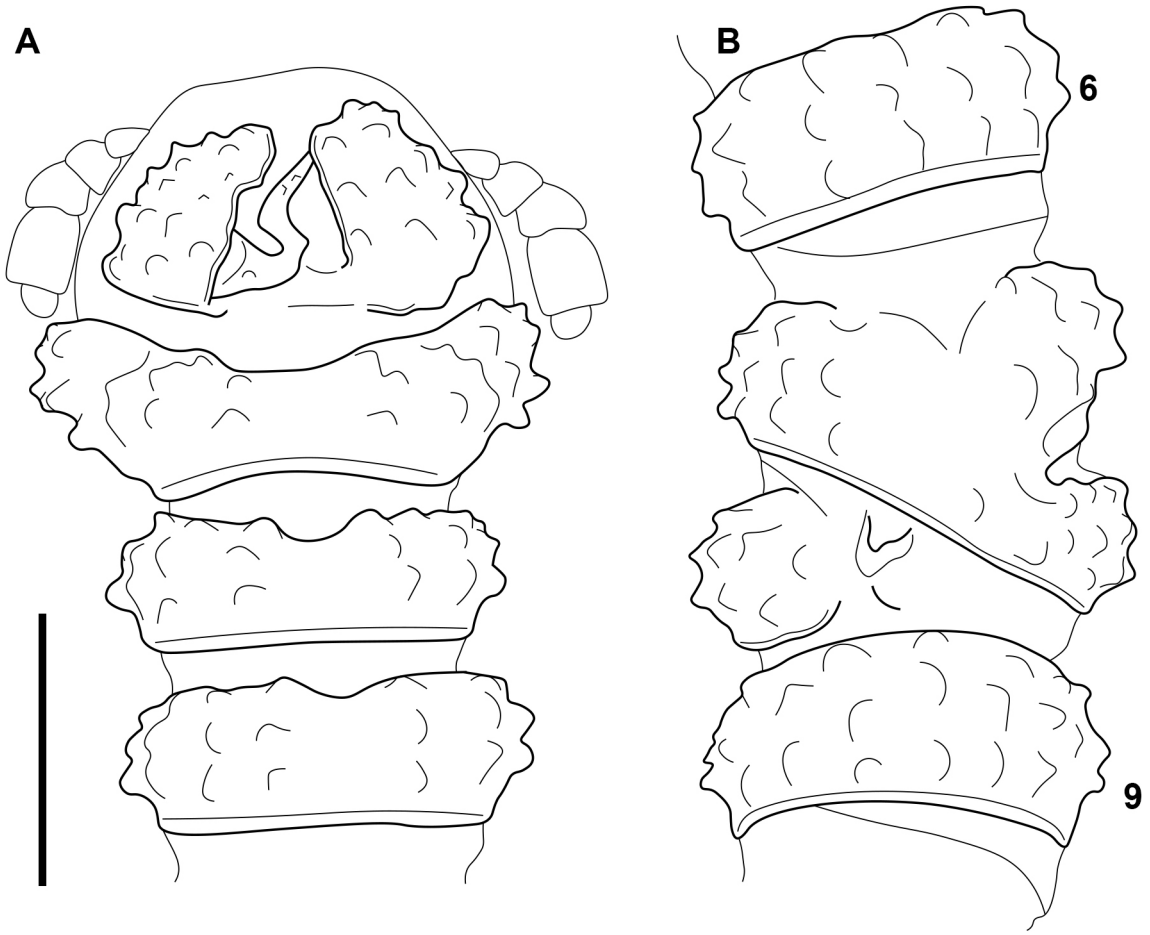

Fig. 4. Teratologies in *Inodesmus mesibovi* sp. nov., female paratype (MHN-UPN-MD-177). **A**. Anterior part of body. **B**. Middle part of the body. The numbers 6 and 9 correspond to the body ring number. Scale bar: 0.5 mm.

Gonopod. Oval aperture, rim widely raised laterally. Telopodite (Fig. 2) long, reaching base of leg pair 5 (Fig. 3C). Basal portion of telopodite with a blunt, basally directed projection arising posteromedially to junction with **cx**, several short setae in basal portion of telopodite, and three large setae in a row on lateral edge of apical tab (Fig. 2).

Remarks

A notable case of "helicomerism" was observed in a female of *I. mesibovi* sp. nov. in which the segmental anomaly breaks the serial arrangement of the body rings (Demange & Pereira 1980; Minelli & Pasqual 1986; Leśniewska *et al*. 2009). In this specimen (MHN-UPN-MD-177), the tergite of ring 8 is entirely divided into two sections, a smaller isolated portion on the left and one on the right side of the metazonite that is completely fused with ring 7, giving a diagonal shape to the posterior part of the segment (Fig. 4B). Additionally, another teratological feature is observed in the collum, in which an abnormal longitudinal transverse partition is evident (Fig. 4A). However, it cannot be dismissed that the damage may have been influenced by external factors beyond the scope of development.

Distribution

Only known from Parque Natural Chicaque, Cundinamarca, Colombia (Fig. 8).

Inodesmus miconiae sp. nov.
urn:lsid:zoobank.org:act:1DF9788E-9651-4D3A-89FE-825CC7662F34
Figs 5–8

Diagnosis

Males with head + 19 rings, females with head + 20 rings. Differs from other species of *Inodesmus* in the following telopodite features: **pp** straight; **at** large, pointed, and bent posteriorly; **dp** triangular and concave, directed laterobasally; **mab** partially curved behind **meb** (lateral process only), divided into two large processes; the medial process is directed laterally and shows strong torsion, bifurcated distally with two subtriangular processes; lateral process flattened and divided into two processes; the lateral process is formed by three small subtriangular processes, one trifurcated sub-process, and a simple medial process directed mediobasally; **meb** wide and flattened at its base, directed laterobasally with acuminate apex (Fig. 6).

Fig. 5. Habitus of *Inodesmus miconiae* sp. nov., male holotype (above; MHNUC-MD-170) and female paratype (below; MHNUC-MD- 175). Scale bar: 2 mm.

Etymology

The specific epithet, *miconiae* (noun, genetive case), is derived from the abundance of flowering plants of the genus *Miconia* in the only known habitat of the species.

Material examined

Holotype

COLOMBIA • ♂; Cauca, Popayán, Hacienda Río Blanco, oak forest; [02°29.235′ N, 76°32.101′ W]; 1993 m a.s.l.; 9 Sep. 2023; A.S. Alvear leg.; under bark of decaying branch; daytime hand collection; MHNUC-MD-170.

Paratypes (total: 3 ♂♂, 4 ♀♀, 1 immature)

COLOMBIA • 1 ♂; same data as for holotype; MHNUC-MD-176 • 1 ♂; same data as for holotype; MHN-UPN-MD-198 • 1 ♀, 1 immature; same data as for holotype; MHNUC-MD-177 • 1 ♂; same locality as for holotype; 10 Sep. 2023; A.S. Alvear and D. Dueñas leg.; ICN-MD-2914 • 3 ♀♀; same locality as for holotype; 2 Sep. 2023; A.S. Alvear and D. Pancho leg.; MHNUC-MD-175.

Description

Measurements. Male with head + 19 rings, female with head + 20 rings (Fig. 5). Average measurement of adult type specimens: male/female ca 7/9 mm long; maximum width ca 0.5/0.8 mm.

Coloration. Collum and pleurotergites deep reddish brown 41 to dark reddish brown 44; prefemora moderate yellowish brown 77; remaining podomeres, head, sternites, and antennae yellowish white 92 to moderate yellowish pink 29.

Head. Head wider than high; narrower than collum; facing downwards (Fig. 7A–C); clypeus microvillous, with needle-like setae; frons, epicranium, and genae microgranulate (Fig. 7A). Antennae (Fig. 7A–C) short, stout, clavate, densely setose, and held close to head. Antennomere relative lengths as follows: 6>5>1>4>2>3>7. Antennae with 4 sensory apical cones.

Trunk. Anterior and posterior margins of collum broadly convex; corners rounded and hidden by paranota of second segment (Fig. 7B–C). Ring 2 tergite largest, extending laterally and anteriorly;

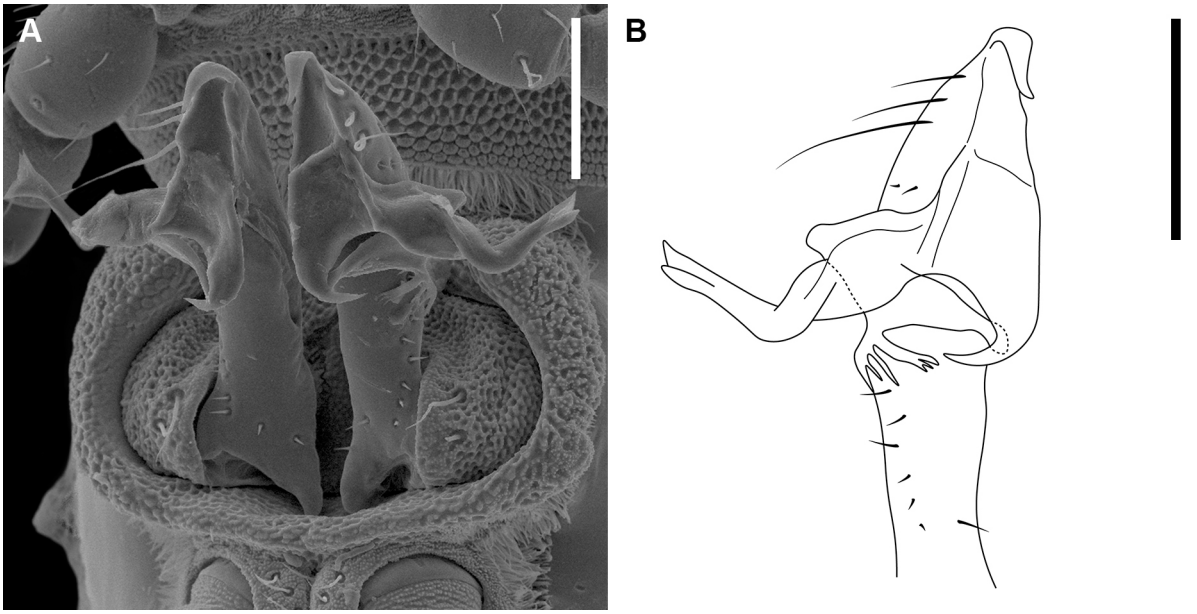

Fig. 6. *Inodesmus miconiae* sp. nov., male paratype (MHN-UPN-MD-198). **A**. Ventral view of the gonopods. **B**. Left gonopod in ventral view. Scale bars: 0.1 mm.

paranota of ring 2 with three faintly defined tubercles (Fig. 7B–C). Posterior rings (Fig. 7C, G), up to ring 18, with a lateral row of 3 small tubercles, neither enlarged nor forming pseudo-paranota. Ozopore (Fig. 7F) very small, of irregular shape, and with double aperture. Internal closing of ozopore traceable, with neither evident elevation nor porostele. Pores internally and externally bordered by microtubercules, located just above or in middle of last lateral row of tubercles (Fig. 7G). Pore formula normal (5, 7, 9–10, 12–13, 15–19). Diplosternites (Fig. 7D) with a longitudinal impression slightly deeper than transverse impression. Ring 5 with eight acicular setae on anterior sternites and six on posterior sternites.

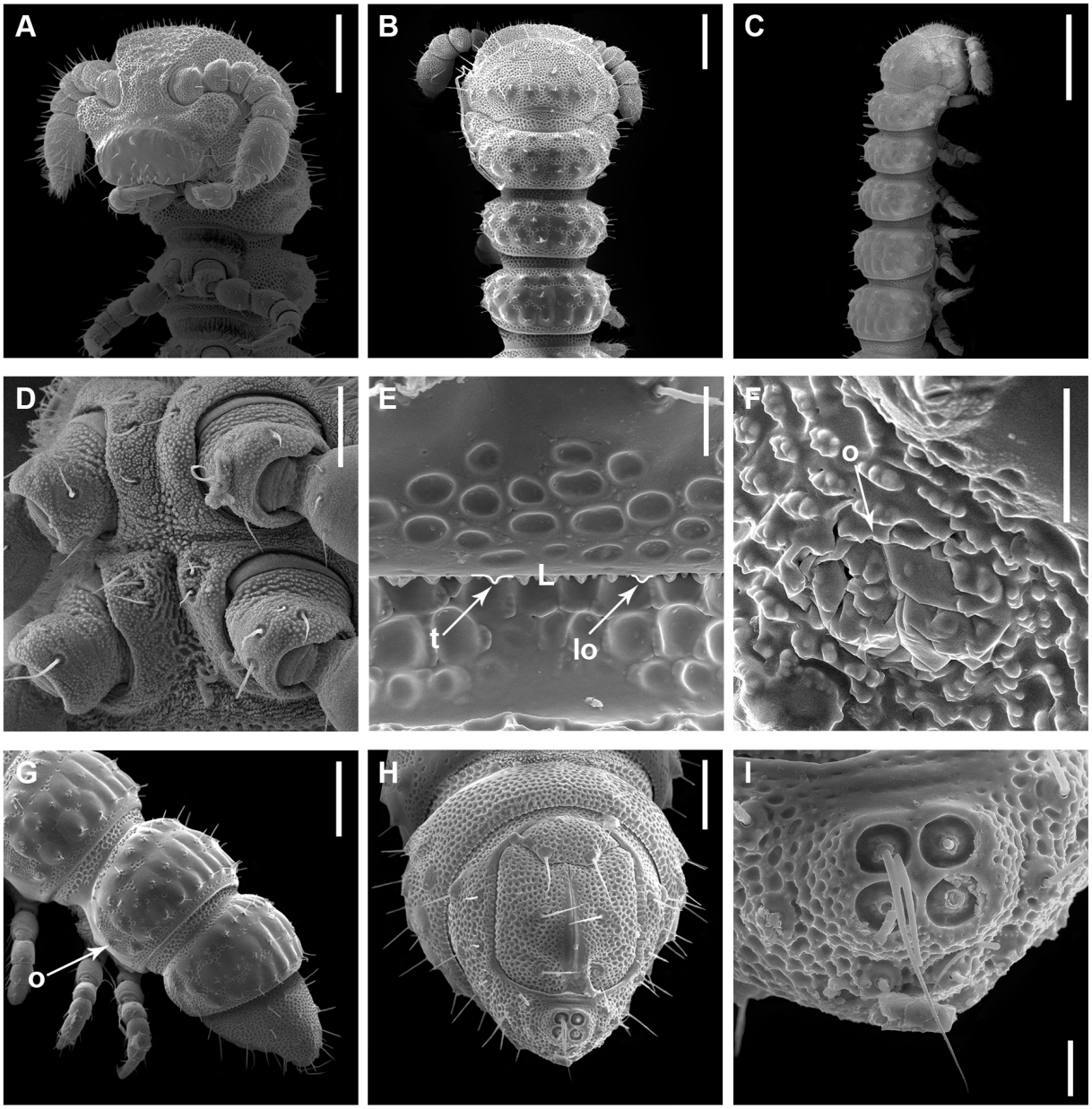

Fig. 7. *Inodesmus miconiae* sp. nov., male paratype (A, D, H–I; ICN-MD-2914) and male paratype (B–C, E–G; MHN-UPN-MD-198). **A**. Ventrolateral view of head. **B**. Dorsal view of the anterior part of the body. **C**. Lateral view of the anterior part of the body. **D**. Midbody sternite. **E**. Sculpture of the prozonite. **F**. Ozopore. **G**. Lateral view of the posterior part of the body. **H**. Ventral view of telson. **I**. Spinnerets. Abbreviations: **L =** limbus; **lo =** lobe; **o** = ozopore; **t =** tooth-like lobe. Scale bars: A–B, G = 0.2 mm; C = 0.5 mm; D = 0.05 mm; E–F, I = 0.02 mm; H = 0.1 mm.

Legs (Fig. 7A, C, G) short and stout; relative lengths of podomeres: tarsus > (prefemur ≥ femur) > (tibia ≥ postfemur); claw about half length of postfemur. Spiracles not evident. Telson facing downwards. Paraprocts parallel to substrate and almost flat (Fig. 7G–H). Epiproct (Fig. 7H–I) distally projected, but short, flattened dorsoventrally, with four inconspicuous setae (spinnerets), each spinneret with a single low sheath, each seta inside a circular, deep, walled depression (Fig. 7I). Hypoproct (Fig. 7H) subtrapeziform with a slightly convex anterior margin. Tegument with microsculpture, especially along posterior edge of metazonites, anterior edge of head, collum, prozonites, lateral part of metazonite of second ring, and telson (Fig. 7), mostly as a cellular mesh with narrow irregular folds. Integument further raised into subcircular tubercles of different sizes arranged in three transverse rows on collum and metatergites in rings 3–18 (Fig. 7B–C, G); all tubercles with a single short, acicular seta. Cell boundaries in posterior part of metazonite not extending basally past limbus (Fig. 7E). Primary limbus element with a regular set of rounded lobes and on secondary limbus element lobes more tooth-like (Fig. 7E). Prozonites sharply demarcated from metazonites (Fig. 7B–C, G). Anterior part of prozonite (**a**), transverse ridge (**r**) and posterior part of prozonite (**b**) not traceable (Fig. 7E).

Gonopod. Oval aperture, rim slightly raised laterally and posteriorly. **Cx** (Fig. 6) with microgranular integumental sculpture and two large setae. Telopodite (Fig. 6) short, not reaching metazonite of segment 6 (Fig. 5A). Basal portion of telopodite with blunt, posteriorly directed projection arising posteromedially to junction with **cx**; with three large setae basally, increasing in size, positioned in a row on lateral edge of apical tab (Fig. 6).

Remarks

Although the type locality of the species has been widely sampled, all specimens originate from a single location within a depression in the oak forest. The specimens were collected in an area measuring about 1.5 × 3.0 m that featured a notable abundance of plants of the genus *Miconia* (Melastomataceae). All specimens were discovered beneath the bark of small decomposing branches.

Distribution

Only known from the Hacienda Río Blanco in Popayán, Cauca, Colombia (Fig. 8).

Discussion

The two new species from the northern Andes described here (Fig. 8) represent a significant deviation from the distribution pattern of most congeners. *Inodesmus mesibovi* sp. nov. and *I. miconiae* sp. nov. do not appear to have been introduced in their known range, both species being found in primary *Quercus humboldtii* Bonpl. oak forests and secondary forests, while absent from nearby disturbed habitats.

The unexpected distribution pattern of genus *Inodesmus* has been questioned by Jeekel (1986), Hoffman (1999), and more recently by Romero-Rincon & Alvear (2024), opening a latent possibility for research in the phylogeny and biogeography of this group, to accurately understand the origin of these organisms in the Americas. In Jamaica, the genus has been documented in cave habitats, while in Colombia it has been found in native oak forests; yet, it is apparently absent in nearby disturbed ecosystems where other pantropical species thrive instead. The only known species of *Inodesmus* regarded as synanthropic is *I. urbanus* (Romero-Rincon & Douch, 2024) from Sydney, Australia, with no record elsewhere to date (Romero-Rincon & Douch 2024).

Considering that the known distribution of millipedes of the genus *Inodesmus* is Southeast Asia, Australasia, and the West Indies, they possibly represent a "Gondwanan remnant" distribution pattern, so it is possible that there is a greater diversity of species in the Americas that could not be found due to under-sampling of micro-polydesmidans, limited research in other Andean and sub-Andean regions, and a shortage of local specialists in the group.

Fig. 8. Distribution map of the known species of *Inodesmus* Cook, 1896 in Colombia.

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