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RESEARCH ARTICLE

A new species of *Ischnus* from Mexico (Hymenoptera: Ichneumonidae: Cryptinae: Cryptini)

Новый вид рода *Ischnus* из Мексики (Hymenoptera: Ichneumonidae: Cryptinae: Cryptini)

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Abstract. A new species, *Ischnus coxalis* **sp. nov.**, is described from Mexico and compared with the closely related *I. laevifrons* Townes, 1962. Sexual dimorphism of the new species is discussed.

Резюме. Новый вид *Ischnus coxalis* **sp. nov.** описан из Мексики. Дано сравнение нового вида с близкородственным видом *I. laevifrons* Townes, 1962. Обсуждается половой диморфизм нового вида.

Key words: taxonomy, Mexico, North America, Ichneumonidae, Cryptinae, *Ischnus*, new species

Ключевые слова: систематика, Мексика, Северная Америка, Ichneumonidae, Cryptinae, *Ischnus*, новый вид

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Introduction

The genus *Ischnus* Gravenhorst, 1829 (Hymenoptera: Ichneumonidae: Cryptinae) is almost worldwide in distribution (unknown from Australia) and comprises about 40 species (Yu et al., 2016). In the New World, 18 species occur in North America (Canada, USA and Mexico) and only two species, *I. leucomelas* (Brullé, 1846) and *I. variegatus* (Szépligeti, 1916), are known from South America (Townes & Townes, 1966).

Eleven Nearctic species of *Ischnus* were recognised after the revision by Townes & Townes (1962). Recently ten species from Mexico were reviewed by the senior author (Kasparyan & Ruíz-Cancino, 2005; Kasparyan, 2009). Three species, *I. laevifrons* Townes, 1962, *I. velutinus* Townes, 1965 and *I. inquisitorius* (Müller, 1776), occur both in the USA and Mexico. Beyond Mexico, the former two species are known only from Arizona, and *I. inquisitorius* is widely distributed within the Holarctic Region.

The aim of this article is to describe a new species of *Ischnus* from Mexico.

Material and methods

This work is based on the rich ichneumonid material collected by M. Ortéga-Lopez in Xalapa [Unidad de Servicios Bibliotecarios y de Información (USBI), State of Veracruz, Mexico]

in 2015–2018 using Malaise traps. The type material of the new species is deposited in the following collections: Instituto de Biología, Universidad Nacional Autónoma de México, D.F., Mexico (UNAM); Universidad Autónoma de Tamaulipas, Cd. Victoria, Tamaulipas, Mexico (UAT); and Zoological Institute of the Russian Academy of Sciences, St Petersburg, Russia (ZIN).

Morphological terminology mainly follows that of Townes (1970). The South American species *I. leucomelas* and *I. variegatus* are known to us only from their original descriptions (Brullé, 1846; Szépligeti, 1916). Layer photographs were taken in ZIN with an Olympus OM-D digital camera attached to an Olympus SZX10 stereomicroscope. Partially focused images were assembled with Helicon Focus Pro (v. 7.6.6) software.

Taxonomic part

Order **Hymenoptera**

Family **Ichneumonidae**

Subfamily **Cryptinae**

Tribe **Cryptini**

Genus ***Ischnus*** Gravenhorst, 1829

Ischnus coxalis Kasparyan, **sp. nov.**
(Figs 1–9)

Holotype. Female; **Mexico**, *State of Veracruz*, Xalapa, Unidad de Servicios Bibliotecarios y de Información (USBI), Malaise trap T1, September 2017, coll. M. López-Ortega (UNAM).

Paratypes. **Mexico**, same locality and collector as for holotype: 13 April 2016, 1 male (UAT); 13 July 2016, 1 male (UNAM); November 2016, 1 male (ZIN); December 2016, 1 male (UNAM); July 2017, 1 female (ZIN).

Description. *Female* (holotype). Fore wing 3.8 mm long.

Flagellum with 22 flagellomeres; flagellomeres 1 and 2 combined about 1.3 times as long as maximum diameter of eye. Head in dorsal view strongly and roundly narrowed behind eyes towards occipital carina. Frons evenly and finely granulate, with thin polished median longitudinal stripe (Fig. 3). Face and malar space coarsely granulate, strongly matt. Malar space about as long as basal mandibular width. Clypeus strongly convex in profile, with narrow polished groove just above sharp lower margin. Occipital carina joining hypostomal carina behind lower corner of mandible at distance 0.3 times the basal mandibular width.

Pronotum with short epomia, laterally evenly granulate, without any rugosity. Notaulus strong, extending to anterior 0.7 of mesoscutum (Fig. 3). Mesoscutum and scutellum matt, evenly granulate, with sparse indistinct punctures. Scutellum with lateral longitudinal carinae extending at least in its basal half. Mesopleuron distinctly granulate; in upper third of mesopleuron (before speculum) granulae confluent into fine, arched upward longitudinal striation; speculum and epimeron polished (Fig. 4). Metapleuron and propodeum evenly granulate. Propodeum with only anterior transverse carina; posterior transverse carina entirely absent (Fig. 5). Fore wing with nervulus interstitial and postnervulus intercepted in its upper 0.4. Hind wing with nervellus intercepted in lower 0.4; brachiella entirely reduced.

First metasomal tergite basally without distinct lateral tooth, but with dorsolateral margin sharp, slightly rounded and weakly protruding (similar to that in males of *I. laevifrons*). Metasomal tergites 1–3 evenly granulate, tergites 4 and 5 with shallow granulation, tergites 6–7 subpolished. Postpetiole behind spiracles 1.15 times as long as wide. Second tergite about as long as wide posteriorly, with scarce short setae, with indistinct superficial (though rather large on lateral parts of tergite) punctures. Ovipositor as long as hind tibia; its sheath about 0.7 times as long as hind tibia; apex of ovipositor sagittate (Fig. 1); tip of upper valve beyond nodus as long as second tarsomere of hind tarsus.

Antenna black with flagellomeres 6–9 dorsally white; scape and pedicel pale reddish brown ventrally, blackish brown dorsally. Head predominantly dull yellowish white; ocellar area black; vertex reddish brown (except for whitish orbits). Mesosoma reddish with yellowish white propleura, anterior and dorsolateral margins of pronotum, anterior margin of mesopleuron, subtegular ridge, tegula and mesosternum; mesosoma with black lateral spots behind base of wings, dorsal part of groove between metanotum and propodeum, and entire metasternum. Pterostigma yellowish brown. All coxae and trochantelli

white (hind trochantellus with small black mark anteriorly); hind coxa black at extreme base anteriorly, with large dorsoapical black spot (this spot wider at anterior edge) (Fig. 4); trochanters white ventrally and darkened dorsally (Fig. 4). Femora, tibiae and tarsi predominantly pale reddish brown with femora more reddish, tibiae and tarsi more brownish (Fig. 1). First metasomal segment reddish with basal half of petiole black (Figs 4 and 5); tergites 2–7 yellowish to pale reddish, with large triangular blackish mark dorsally at base of each tergite (Figs 1 and 5). All sternites pale yellowish.

Male. Fore wing 4.0–4.4 mm long; antenna with 24 or 25 flagellomeres; flagellomeres 12 to 14 (or 15) with fine linear tyloids. Coloration distinctly different from that in female: flagellum completely black (Fig. 9), all metasomal tergites black with white posterior margins (Fig. 7), all femora predominantly white (hind femur dorsally black, fore and mid femora brownish; Fig. 6). Head and thorax of male whitish (*vs.* yellowish in female) with black marks stronger, i.e. lateral areas of mesonotum and metanotum sometimes completely black and propodeum before anterior transverse carina with large black median mark or almost completely black. Granulation on frons, mesopleuron and anterior part of propodeum shallower than in female; frons subpolished. All tergites matt, with longer and more distinct pubescence than in female.

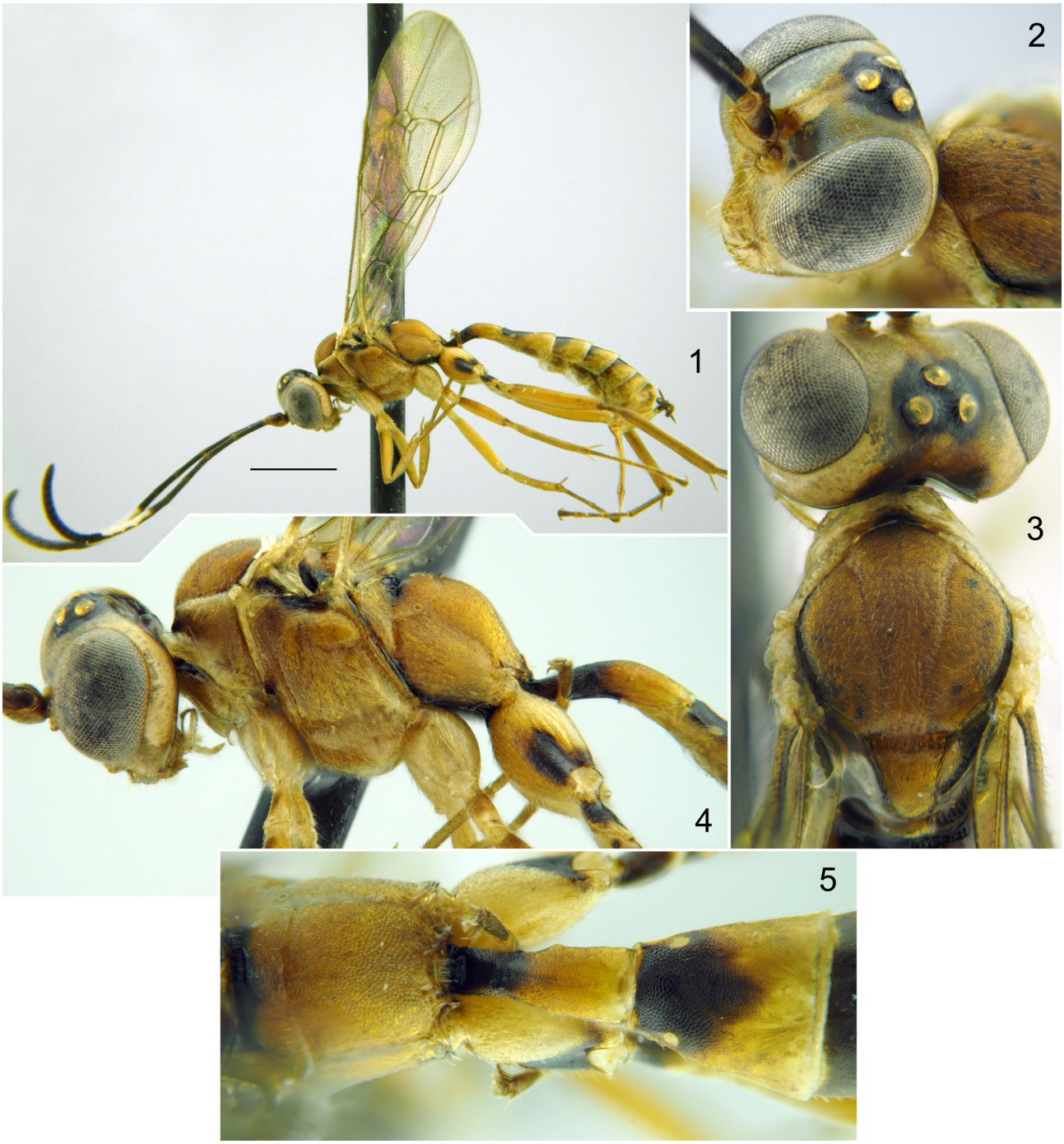
Variation. In female paratype, tergites 3–7 blackish in basal 0.7–0.9.

Comparison. Ischnus coxalis **sp. nov.** is similar to the Nearctic species *I. laevifrons* as both the species possess the propodeum lacking the posterior transverse carina, smooth frons without median scabrosity, red mesoscutum and propodeum, and are rather small with fore wing length 3.8–6.0 mm. By the combination of the characters listed above, these two species differ clearly from all their New World congeners. *Ischnus coxalis* **sp. nov.** can be distinguished from *I. laevifrons* by the characters listed in Table 1.

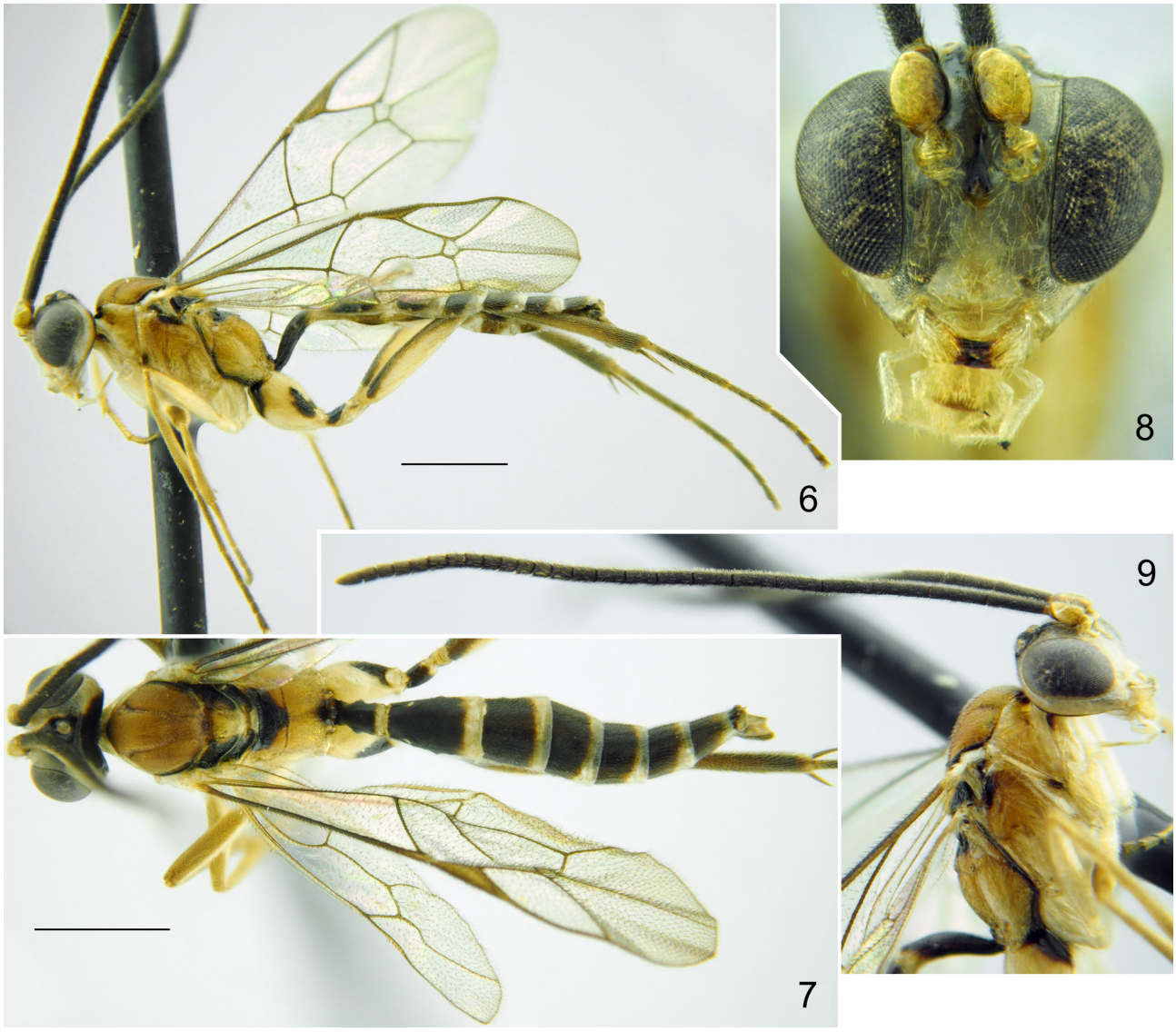
The South American species *Ischnus leucomelas* and *I. variegatus* are clearly larger than

Table 1. Morphological differences between *Ischnus coxalis* **sp. nov.** and *I. laevifrons*.

Characters	*I. coxalis* **sp. nov.**	*I. laevifrons*
Male:		
1. Flagellum	entirely black (Fig. 9)	with white band (Fig. 11)
2. Hind coxa, trochanters and femur	white with black dorsal marks (Fig. 6)	entirely reddish (Fig. 10)
3. Metasoma	dorsally blackish; tergites with whitish hind margins (Fig. 7)	entirely reddish (Fig. 10)
Female:		
1. Body	distinctly granulate; granulation smoothed only on temple, mesosternum and apical tergites	with granulation only on mesoscutum, propodeum and tergites 1 and 2
2. Pronotum	predominantly reddish	whitish with black lateral mark
3. Hind coxa and trochanters	yellowish red with dorsal whitish and black marks	uniformly reddish
4. Hind tibia and tarsus	reddish with brownish tinge, more infuscate basally	entirely reddish or with tarsomeres 2–4 whitish
5. Metasomal tergites	black anteriorly and yellow posteriorly (Fig. 1)	uniformly reddish



Figs 1–5. *Ischnus coxalis* **sp. nov.**, female, holotype. **1**, habitus, lateral view; **2**, head, dorsolateral view; **3**, head and thorax, dorsal view; **4**, head, mesosoma, coxae and base of metasoma, lateral view; **5**, propodeum and base of metasoma, dorsal view. Scale bar: 2.0 mm.



Figs 6–9. *Ischnus coxalis* **sp. nov.**, male, paratype. **6**, habitus (without apices of antennae), lateral view; **7**, body, dorsal view; **8**, head, front view; **9**, head with antenna and mesosoma, lateral view. Scale bars: 2.0 mm.

the North American species (body length about 10.0 mm *vs.* 4.0–8.0 mm in the North American species) and differ from *I. coxalis* **sp. nov.** also in their colour pattern. The mesosoma of *I. leucomelas* is predominantly black with white marks and the metasoma has white petiole, while in *I. coxalis* **sp. nov.** the mesosoma is predominantly reddish and the petiole is black (Fig. 4). *Ischnus variegatus* has the prothorax and mesonotum black, scutellum white, and metasomal tergites tricolourous, i.e. with reddish basal band, black median band and white apex, while in *I. coxalis* **sp. nov.** the mesosoma is nearly completely reddish with the scutellum yellowish at the apex and metasomal tergites blackish at base (Figs 1 and 5).

Remarks. The new species is characterised by a strong sexual dimorphism. Females possess an antennal flagellum with a white band (Fig. 1), distinctly granulate frons (Figs 2 and 3), reddish and granulate mesopleuron and mesosternum (Fig. 4), uniformly reddish hind femur, and metasomal tergites 1–7 predominantly pale reddish with a large blackish basal mark on each tergite (Figs 1 and 5), while males have an entirely black flagellum (Fig. 9; in other species of *Ischnus*,

Figs 10, 11. *Ischnus laevifrons*, male (Mexico). **10**, habitus, lateral view; **11**, head with antenna, dorsolateral view. Scale bar: 2.0 mm.

the flagellum is always white-banded both in males and females), polished frons, mesopleuron and mesosternum predominantly whitish and almost entirely polished (Fig. 6), hind femur whitish ventrally and brown to blackish dorsally (Fig. 6), and metasomal tergites dorsally blackish with hind margins whitish (Figs 6 and 7).

Etymology. The species name is a Latin adjective referring to the remarkable coloration of the hind coxae.

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