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Two new species of *Gonatopus* Ljungh from Ecuador (Hymenoptera: Dryinidae)

Два новых вида рода *Gonatopus* Ljungh из Эквадора (Hymenoptera: Dryinidae)

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Ключевые слова: Chrysidoidea, *Gonatopus leleji*, *Gonatopus tapiai*, определительные таблицы, Неотропический регион.

Abstract. Two new species of the genus *Gonatopus* Ljungh, 1810 are described from Ecuador, *G. leleji* Olmi et Guglielmino, **sp.n.** from Napo Province and *G. tapiai* Olmi et Guglielmino, **sp.n.** from Cotopaxi Province, increasing the number of *Gonatopus* species reported from this country to 32.

Резюме. Дано описание 2 новых видов рода *Gonatopus* Ljungh из Эквадора — *G. leleji* Olmi et Guglielmino, **sp.n.** из провинции Напо и *G. tapiai* Olmi et Guglielmino, **sp.n.** из провинции Котопакси. Число обнаруженных в Эквадоре видов *Gonatopus* увеличено до 32.

Introduction

Dryinidae (Hymenoptera: Chrysidoidea) are parasitoids of Hemiptera Auchenorrhyncha [Guglielmino, Bückle, 2003, 2010; Guglielmino et al., 2013; Guglielmino, Virla, 1998]. The biology of this small group of wasps is still poorly known [Carcupino et al., 1998; Guglielmino, 2000; Guglielmino et al., 2006, 2008, 2015].

The genus *Gonatopus* Ljungh, 1810 is present in all zoogeographical regions. About 440 species have been described from all continents [Guglielmino, Olmi, 2014; Olmi, Guglielmino, 2013; Olmi, Xu, 2015].

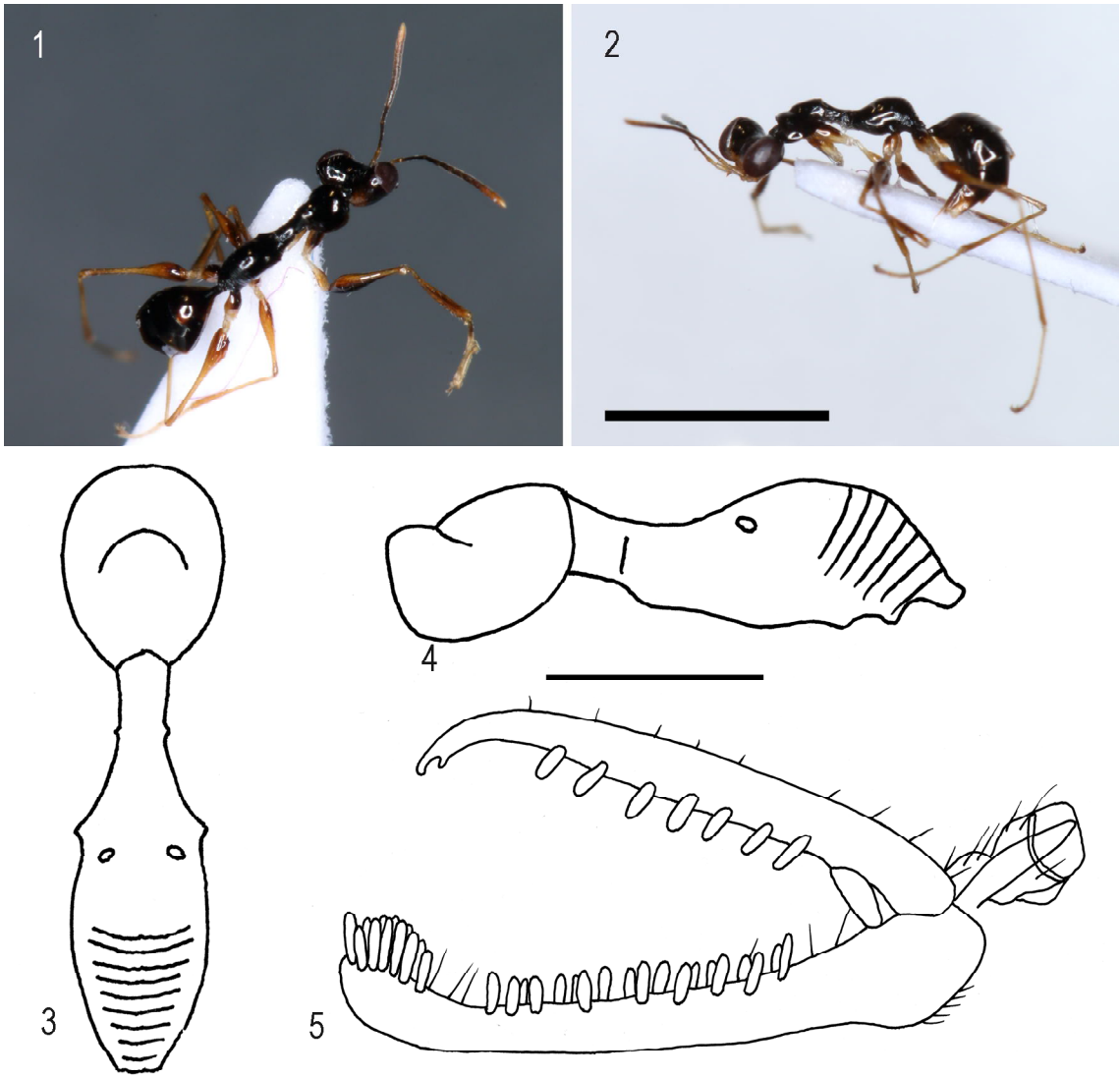
The genus was revised at world level by Olmi [1984, 1991], but more recently by Xu et al. [2013] for the Oriental Region, Olmi and Virla [2014] for the Neotropics and Olmi and Xu [2015] for the Eastern Palaearctic. One hundred and twenty three species of *Gonatopus* are known from the Neotropical Region [Olmi, Virla, 2014].

According to Olmi and Virla [2014], the genus *Gonatopus* is divided into twelve groups.

A KEY TO *GONATOPUS* SPECIES GROUP

1. Fully winged (not found in the Neotropical Region) ..... Group 11
— Apterous (Figs 1, 2, 6, 7) 2
2. Enlarged claw without subapical tooth or sometimes with one very small subapical tooth (Plate 181A in Olmi, Virla, 2014) 3
— Enlarged claw with one large subapical tooth (Figs 5, 10) 6
3. Distal apex of enlarged claw with group of lamellae (not found in the Neotropical Region) ..... Group 8
— Distal apex of enlarged claw without lamellae (Plates 181A, E, 182E–G, 183C, D in Olmi, Virla, 2014) 4
4. Pronotum crossed by strong transverse impression (Plates 181C, D, 182A–D, 183A, B in Olmi, Virla, 2014) ..... Group 7
— Pronotum not crossed by transverse impression or sometimes slightly impressed (Plates 202, 203A, C in Olmi, Virla, 2014) 5
5. Palpal formula 6/3 ..... Group 12
— Palpal formula different ..... Group 6
6. Pronotum not crossed by transverse impression or slightly impressed (Plate 172B in Olmi, Virla, 2014) 7
— Pronotum crossed by strong transverse impression (Figs 2, 7) 8
7. Labial palpi 3-segmented (not found in the Neotropical Region) ..... Group 9
— Labial palpi 2-segmented ..... Group 5
8. Enlarged claw without lamellae, with or without bristles or peg-like hairs (Plate 153B, D in Olmi, Virla, 2014) ..... Group 1
— Enlarged claw with lamellae (Figs 2, 7) 9
9. Labial palpus 2-segmented 10
— Labial palpus 3-segmented 11
10. Maxillary palpus with 2–4 segments ..... Group 2
— Maxillary palpus 5-segmented ..... Group 10
11. Maxillary palpus 6-segmented ..... Group 4
— Maxillary palpus with 4–5 segments 12
12. Maxillary palpus 5-segmented ..... Group 3
— Maxillary palpus 4-segmented ..... Group 10

We examined additional specimens of *Gonatopus* from Ecuador and found the new species described herein.



Figs 1–5. *Gonatopus leleji*, **sp.n.**, holotype, female: 1 — dorsal view (scale bar: 2.26 mm); 2 — lateral view (scale bar: 2.35 mm); 3 — mesosoma, dorsal view (scale bar: 0.55 mm); 4 — mesosoma, lateral view (scale bar: 0.58 mm); 5 — chela (scale bar: 0.17 mm).

Рис. 1–5. *Gonatopus leleji*, **sp.n.**, голотип, самка: 1 — вид сверху (масштабная линейка: 2,26 мм); 2 — вид сбоку (масштабная линейка: 2,35 мм); 3 — мезосома, вид сверху (масштабная линейка: 0,55 мм); 4 — мезосома, вид сбоку (масштабная линейка: 0,58 мм); 5 — клешня (масштабная линейка: 0,17 мм).

Material and methods

The descriptions follow the terminology used by Olmi [1984], Olmi, Guglielmino [2010], and Olmi, Virla [2014]. The measurements reported are relative, except for the total length (head to abdominal tip, without the antennae), which is expressed in millimeters. In the descriptions, POL is the distance between the inner edges of the two lateral ocelli; OL is the distance between the inner edges of a lateral ocellus and the median ocellus; OOL is the distance from the outer edge of a lateral ocellus to the compound eye; OPL is the distance from the posterior edge of a lateral ocellus to the occipital carina; and TL is the distance from the posterior edge of an eye to the occipital carina. The material studied in this paper is deposited in the following collections: Pontificia Universidad Católica del Ecuador, Quito, Ecuador (QCAZ); U.W. Insect Museum, University of Wyoming, Laramie, Wyoming, USA (UWIM).

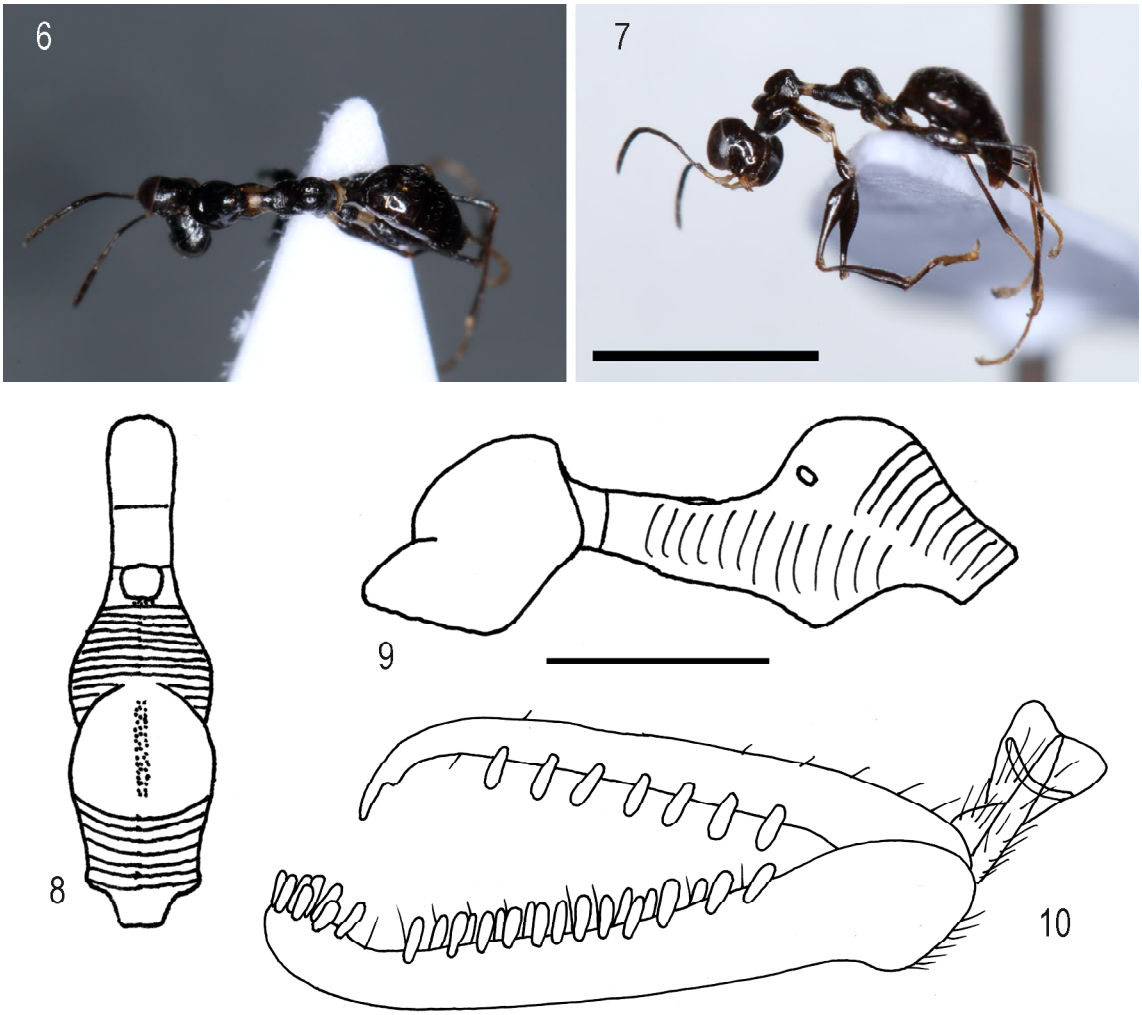
Results

Gonatopus leleji Olmi et Guglielmino, **sp.n.**

Figs 1–5.

Material examined. ♀ holotype: ECUADOR: Napo Province, Yanayacu Biological Station, 00°35.9'S 77°53.4'W, 2163 m, VI–XII.2011, canopy, Chusquea, Malaise trap, NSF-DEB-10-20751 (UWIM).

Description of female. Apterous. Length 2.9 mm. Head black, except mandible, clypeus, gena and anterior third of face testaceous; antenna brown, except segments 1 and



Figs 6–10. *Gonatopus tapiai*, **sp.n.**, holotype, female: 6 — dorsal view (scale bar: 2.31 mm); 7 — lateral view (scale bar: 2.49 mm); 8 — mesothorax and metathorax + propodeum, dorsal view (scale bar: 0.4 mm); 9 — mesosoma, lateral view (scale bar: 0.5 mm); 10 — chela (scale bar: 0.16 mm).

Рис. 6–10. *Gonatopus tapiai*, **sp.n.**, голотип, самка: 6 — вид сверху (масштабная линейка: 2,31 мм); 7 — вид сбоку (масштабная линейка: 2,49 мм); 8 — мезоторакс, метаторакс + проподеум, вид сверху (масштабная линейка 0,4 мм); 9 — мезосома, вид сбоку (масштабная линейка: 0,5 мм); 10 — клешня (масштабная линейка: 0,16 мм).

2 and part of 10 testaceous; mesosoma and metasoma black; legs testaceous, except metacoxa partly black and clubs of femora partly brownish. Antenna clavate; antennal segments in following proportions: 9 : 5 : 14 : 8 : 6 : 6 : 5 : 5 : 5 : 9; rhinaria present in segments 8–10. Head excavated, shiny, unsculptured; frontal line complete; occipital carina absent; POL = 1; OL = 1; OOL = 7. Palpal formula 4/2. Pronotum crossed by strong transverse impression, shiny, unsculptured. Scutum shiny, unsculptured, with two small lateral pointed apophyses (Figs 1, 3). Mesopleuron shiny, unsculptured. Metanotum shiny, smooth, not hollow behind scutellum (Figs 2, 4), with sides laterally protruding; protrusions pointed (Figs 1, 3). Metathorax + propodeum shiny, unsculptured, except posterior surface and metapleuron transversely striate. Meso-metapleural suture obsolete. Protarsal segments in following proportions: 15 : 3 : 4 : 14 : 19. Enlarged claw (Fig. 5) with one large subapical tooth and one row of seven lamellae. Segment 5 of protarsus (Fig. 5) with two rows of 19 lamellae; distal apex with at least 12 lamellae. Tibial spurs 1/0/1.

Male. Unknown.

Hosts. Unknown.

Etymology. The species is named after Professor Arkadiy S. Lelej on the occasion of his seventieth birthday.

Diagnosis. Because of the palpal formula 4/2, pronotum crossed by strong transverse furrow (Figs 2, 4), missing wings (Figs 1, 2), enlarged claw with one large subapical tooth and one row of lamellae (Fig. 5), *G. lelejі* belongs to *Gonatopus* group 2. Because of the small lateral pointed apophyses of the scutum (Figs 1, 3), metanotum with pointed lateral protrusions (Figs 1, 3) and obsolete meso-metapleural suture, the new species is similar to *G. delphacidis* (Olmi, 1984), *G. finnamorei* Olmi, 1995 and *G. lauti* Virla, 1998. However, in *G. lelejі* the lateral protrusions of the metanotum are pointed (Figs 1, 3), whereas in the other species, they are rounded (Plates 157D, 161E in Olmi, Virla, 2014). Following the above description, the new species can be included in the key to the Neotropical species of *Gonatopus* group 2 presented by Olmi, Virla [2014] by replacing couplets 6 and 7 as follows:

6. Metanotum with sides laterally protruding, protrusions rounded or pointed (Plates 157D, 161E in Olmi, Virla, 2014) 7
— Metanotum with sides rounded, not protruding (Plates 154H, I, 156C, 163E in Olmi, Virla, 2014) 9
7. Lateral protrusions of metanotum pointed (Figs 1, 3) ... . *G. leleji* sp.n.
— Lateral protrusions of metanotum rounded (Plates 157D, 161E in Olmi, Virla, 2014) ..... 7'
7'. Body partly black and partly testaceous .... *G. delphacidis* (Olmi, 1984)
— Body testaceous, except petiole black 8
8. Head with OOL more than 5.0 times as long as POL .... *G. finnamorei* Olmi, 1995
— Head with OOL less than 5.0 times as long as POL .... *G. lauti* Virla, 1998

Gonatopus tapiai Olmi et Guglielmino, **sp.n.**

Figs 6–10.

Material examined. ♀ holotype: ECUADOR: Cotopaxi Province, San Francisco de las Pampas, 1500 m, 30.VI.1997, 00°25.16'S 78°57.04'W, C5, El Pasto, I.G. Tapia, P. Ponce leg. (QCAZ).

Description of female. Apterous. Length 3.2 mm. Head black, except mandible testaceous; antenna black, except segments 1 and 2 testaceous; mesosoma black, except posterior half of scutum and posterior extremity of propodeum yellow; metasoma brown; legs brown, except articulations, part of protrochanter, part of metatibia and tarsi testaceous. Antenna clavate; antennal segments in following proportions: 9 : 6 : 16 : 9 : 9 : 7 : 7 : 6 : 6 : 9. Head excavated, shiny, unsculptured; frontal line complete; occipital carina absent; POL = 2; OL = 2; OOL = 8. Palpal formula 4/2. Pronotum crossed by strong transverse impression, shiny, unsculptured. Scutum dull, granulate, without lateral pointed apophyses (Figs 6, 8). Metanotum flat, not hollow behind scutellum (Figs 7, 9), strongly transversely striate, with sides protruding; lateral protrusions rounded (Figs 6, 8). Mesopleuron and metapleuron transversely striate. Metathorax + propodeum shiny, with anterior surface unsculptured; disc with deep median longitudinal furrow (Figs 6, 8); posterior surface sculptured by strong transverse striae. Meso-metapleural suture obsolete. Protarsal segments in following proportions: 16 : 3 : 5 : 14 : 22. Enlarged claw (Fig. 10) with one large subapical tooth and one row of seven lamellae. Segment 5 of protarsus (Fig. 10) with two rows of 19 lamellae; distal apex with about nine lamellae. Tibial spurs 1/0/1.

Male. Unknown.

Hosts. Unknown.

Etymology. The species is named after one of the two collectors, Mr. Italo Germanico Tapia.

Diagnosis. Because of the palpal formula 4/2, pronotum crossed by strong transverse furrow (Figs 7, 9), missing wings (Figs 6, 7), enlarged claw with one large subapical tooth and one row of lamellae (Fig. 10), *G. tapiai* belongs to *Gonatopus* group 2. Because of the mostly yellow scutum (Fig. 6), scutum without lateral pointed apophyses (Figs 6, 8), black metathorax + propodeum (Fig. 6), posterior surface of propodeum transversely striate (Figs 8, 9), unsculptured anterior surface of metathorax + propodeum (Fig. 6), lateral rounded protrusions of metanotum (Figs 6, 8), obsolete meso-metapleural suture, the new species is similar to *G. villamilensis* Olmi et Virla, 2014. However, in *G. tapiai* the metathorax + propodeum shows an evident and deep median longitudinal furrow (Fig. 6), which is not presented in *G. villamilensis*. Following the above description, a new species can be included in the key to the Neotropical species of *Gonatopus* group 2 presented by Olmi, Virla [2014] by replacing couplet 14 as follows:

14. Anterior surface of metathorax + propodeum granulate, not sculptured by fine longitudinal striae; scutum black ..... *G. canadensis* (Olmi, 1984)
— Anterior surface of metathorax + propodeum unsculptured or sculptured by many fine longitudinal striae; scutum mostly yellow (Fig. 6) ..... 14'
14'. Disc of metathorax + propodeum without median longitudinal furrow (Plate 163I in Olmi, Virla, 2014) .... *G. villamilensis* Olmi et Virla, 2014
— Disc of metathorax + propodeum with deep median longitudinal furrow (Fig. 6) ..... *G. tapiai* sp.n.

Discussion

Olmi and Virla [2014] recorded 30 species of *Gonatopus* from the small Ecuador (283,561 km^2). Following the above descriptions, this number increases to 32 and more than in the closest countries, Colombia (1,141,748 km^2) and Peru (1,285,220 km^2), where are known 18 and 15 *Gonatopus* species respectively [Olmi, Virla, 2014]. In Ecuador, the hosts are known only for ten of 32 species, but only for five species they were discovered in that country.

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