Contribution to the knowledge of the Argentinean species of Lepidura Townes (Ichneumonidae: Mesochorinae), with description of the male of L. patagonica Araujo & Vivallo

ARAUJO, Rodrigo O.1,2,*, VIVALLO, Felipe3 & MARTÍNEZ, Juan J.4

1 Centro de Investigación de Estudios Avanzados del Maule, Vicerrectoría de Investigación y Postgrado, Universidad Católica del Maule. Talca, Chile. * E-mail: araujorodrigodeoliveira@gmail.com
2 Laboratorio de Ecología de Abejas, Departamento de Ciencias Biológicas y Químicas, Facultad de Ciencias Básicas, Universidad Católica del Maule. Talca, Chile.
3 HYMN Laboratório de Hymenoptera, Departamento de Entomologia, Museu Nacional, Universidade Federal do Rio de Janeiro. Rio de Janeiro, Brazil.
4 CONICET - Departamento de Ciencias Biológicas, Facultad de Ciencias Exactas y Naturales, Universidad Nacional de La Pampa. Santa Rosa, La Pampa, Argentina.

INTRODUCTION

Mesochorinae is a moderately large species-rich group of specialized hyperparasitoids (Broad et al., 2018), with approximately 880 species (Yu et al., 2016). Mesochorines are distinguished from other ichneumonid wasps by the following synapomorphies: glymmae long and deep; male gonoforceps apically well-developed,
resembling a long rod; female hypopygium large and triangular in lateral view; ovipositor sheath rigid, and ovipositor short and needle-like (Wahl, 1993; Araujo et al., 2018).

*Lepidura* Townes, 1971 is a small genus, currently including fourteen species distributed in the southern Andean biogeographic region *sensu* Morrone (2015) (Araujo & Vivallo, 2018). As well as in other Andean genera of the Mesochorinae, knowledge about biology and behavior of the species of *Lepidura* is scarce. Recently, Araujo & Vivallo (2018) provided an updated taxonomic revision for the genus and described *L. nigricephala*, *L. patagonica* and *L. seminitida* based on female specimens. The males of these species remain unknown.

Herein we describe the male of *L. patagonica* and provide a new distribution record of *L. olivacea* in Argentina.

**MATERIAL AND METHODS**

General morphological terminology is according to Gauld et al. (2002), except for the wing venation and the cuticular microsculptures which follow Sharkey & Wharton (1997) and Broad et al. (2018), respectively. The information contained in the section “Material examined” corresponds to the specimen label *verbatim*. To describe the adult male of *L. patagonica* and compare its morphology with female’s characteristics, specimens deposited at the following institutions were examined (curators in parentheses): FSCA: Florida State Collection of Arthropods, Gainesville, United States (Elijah Talamas) and MACN: Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”, Buenos Aires, Argentina (Arturo Roig-Alsina).

Photographs were obtained using a Zeiss Axiocam ERC5s camera attached to a Zeiss Stemi 508 stereomicroscope. All images were treated using Adobe Photoshop® (v. CS5). All measurements were rounded to the nearest 0.05. The abbreviation “T” was used for Tergite, followed by the number of the corresponding tergite.

**RESULTS**

**Lepidura Townes, 1971**

*Lepidura* Townes, 1971. 85. Type species: *Lepidura collaris* Townes, by original designation.

**Diagnosis.** Araujo & Vivallo (2018) provided the most recent revision of the genus, which can be identified by the combination of the following character states: ovipositor sheath stout, scale-shaped; head mostly greenish (except in *L. rubicunda*, *L. tuberosa*, *L. variegata* and *L. nigricephala*); fore wing with large rhombic areole; hind wing vein CU1b present, usually spectral; vein CU1a twice as long as cu-a; median longitudinal carina of propodeum present, but incomplete (except in *L. improcera* and *L. nigricephala*); and glymma occupying 0.3 of petiole.

**Distribution.** Distribution restricted to the Andean biogeographic zone (*sensu* Morrone, 2015), with species occurring in Chile and Argentina.

**Included species.** *L. abbreviata* Dasch (Chile), *L. callaina* Dasch (Chile), *L. collaris* Townes (Argentina and Chile), *L. improcera* Dasch (Argentina and Chile), *L. malleoensis* Dasch (Chile), *L. nigricephala* Araujo & Vivallo (Chile), *L. olivacea* Dasch (Argentina and Chile), *L. patagonica* Araujo & Vivallo (Argentina), *L. rubicunda* Dasch (Chile), *L. seminitida* Araujo & Vivallo (Chile), *L. tenebrosa* Dasch (Chile), *L. tuberosa* Dasch (Chile), *L. variegata* Dasch (Chile) and *L. viridis* Dasch (Argentina and Chile).

**Lepidura olivacea** Dasch, 1974

**Material examined:** 1 female: RA Neuquén, S. Martin Andes, Pucará, Jan’70, Schajovskoy Coll (FSCA), 2 females and 1 male: ARGENTINA: Neuquén, Villa la Angostura, PN Arrayanes, 20.II.2007 S 40° 47’ 02,4” O 71° 39’ 59,6” alt. 661,9 m. J. Martinez A. Ojanguren L. Compagnucci L. Piacentini (MACN).

**Previous geographic distribution:** ARGENTINA: Neuquén: San Martín de Los Andes (Araujo & Vivallo, 2018). CHILE: Región de la Araucanía: Malleco (Termas Tolhuaca) (Dasch, 1974). Región de Aysén del General Carlos Ibáñez del Campo: Puerto Cisnes (Dasch, 1974), Región de Bio-Bio: Los Cabras, Pichinahuel (Dasch, 1974). Región de Los Lagos: Caremaipú, Ensenada, Pucatríhue, Río Carihuieco, Río Gol Gol (Dasch, 1974). Región de Los Ríos: Puerto Fuy (Dasch, 1974). Región de Magallanes y de la Antártica Chilena: Río Tres Pasos (Dasch, 1974; Lanfranco, 1974). **New record:** ARGENTINA: Neuquén: Villa La Angostura, Parque Nacional Arrayanes.

**Lepidura patagonica** Araujo & Vivallo, 2018

**Material examined:** 1 female: Holotype, ARGENTINA: Neuquén, Villa La Angostura, PN Arrayanes, 20.II.2007 S 40° 47’ 02,4” O 71° 39’ 59,6” alt. 661,9 m. J. Martinez A. Ojanguren L. Compagnucci L. Piacentini (MACN). 5 females: Paratypes with the same label information (MACN). 3 males: ARGENTINA: Neuquén, Villa La Angostura, PN Arrayanes, 20.II.2007 S 40°47’02,4” O 71°39’59,6” alt. 661,9m. J. Martinez A. Ojanguren L. Compagnucci L. Piacentini (MACN).

**Diagnosis:** White pubescence covering the entire body, denser on head and most of mesosoma, sparser on metapleuron and most of metasoma. Body almost completely turquoise green, except antenna dark brown, mandible yellow with well developed, dark brown teeth; mesoscutum, mesothorax, anterior and posterior margins of T2, anterior margin of T3, posterior half of T5 and T6–9, dark brown; parameres light brown; anterior margin of femora, and anterior and posterior margins of tibiae and tarsi brown.

**Description:** Male (Figs. 1–3). Approximate body length: 8.5 (mm). Fore wing length: 6.4 (mm); antenna
length: 8.1 (mm); number of flagellomeres: 40–42; head 1.20× as wide as high (frontal view); head punctate with sparse whitish setae (Fig. 1); distance between eye and lateral ocellus 1.00× as long as the diameter of lateral ocellus; frons smooth; clypeus 3.00× as wide as high; clypeal sulcus weakly discernible; mandible 2.85× as long as its maximum width; T2 4.10× as long as its maximum punctures; glymma deep; postpetiole 1.95× as long as postero-externa discernible; T1 smooth, with isolated carina (Fig. 2); area externa, lateralis, petiolaris and incomplete anterior transverse and median longitudinal and posterior transverse carina and subpentagonal area delimited by complete lateral smooth, with isolated punctures; areola absent, but with subpentagonal area delimited by complete lateral longitudinal and posterior transverse carina and incomplete anterior transverse and median longitudinal carina (Fig. 2); area externa, lateralis, petiolaris and postero-externa discernible; T1 smooth, with isolated punctures; glymma deep; postpetiole 1.95× as long as its maximum width; T2 4.10× as long as its maximum height (lateral view); T2–T7 similarly sculptured; Parameres elongated, needle-shaped (Fig. 3).

Type material: Holotype female: ARGENTINA: Neuquén: Villa La Angostura, PN Arrayanes, 20.II.2007 S 40° 47’ 02,4” O 71° 39’ 59,6” alt. 661,9 m. J. Martinez A. Ojanguren L. Compagnucci L. Piacentini. (MACN). 5 paratypes females with the same label information (MACN).

Type locality: ARGENTINA: Neuquén: Villa La Angostura.

Distribution: ARGENTINA: Neuquén: Villa La Angostura.

Comments: Coloration as in female except dark brown on the posterior half of T5. The male of L. patagonica is similar to L. viridis by the absence of vein CU/1b on the hind wing but it differs by the presence of the costula and the anterior transverse carina of propodeum, both absent in the latter species.

ACKNOWLEDGEMENTS

We thank Arturo Roig-Alsina (MACN) for the specimens loaned and for the information provided on the specimens deposited in his collection, and to Elijah Talamas for his help. We thank the Vicerrectoria de Investigación y Postgrado, Universidad Católica del Maule, for providing the necessary resources for the realization of this research. This study is part of the SIGMA project N°21565 MN/ UFRJ and the contribution number 34 from the HYMN.

LITERATURE CITED

Araujo, R.O., & Vivallo, F. (2018) Taxonomic revision of Lepidura Townes, 1971 (Hymenoptera: Ichneumonidae: Mesochorinae) with the description of three new species, new distribution records and a key to the all known species. Zootaxa, 4514, 215-229.

Araujo, R.O., Vivallo, F., & Santos, B.F. (2018) Ichneumonid wasps of the subfamily Mesochorinae: new replacement names, combinations and an updated key to the World genera (Hymenoptera: Ichneumonidae). Zootaxa, 4521(1), 52-60.

Broad, G.R., Shaw M.R., & Fitton, M.G. (2018) Ichneumonid wasps (Hymenoptera: Ichneumonidae): their classification and biology. Vol. 7. Royal Entomological Society, London.

Dasch, C.E. (1974) Neotropical Mesochorinae (Hymenoptera: Ichneumonidae). Memoirs of the American Entomological Institute, 22, 1-509.

Gauld, I.D., Sithole, R., Gomez, J.U., & Godoy, C. (2002) The Ichneumonidae of Costa Rica 4. Memoirs of the American Entomological Institute, 66, 1-768.

Lanfranco, L.D. (1974) Contribución al conocimiento de la ichneumonofauna de la Región de Magallanes (Hymenoptera-Ichneumonidae). Anales del Instituto de la Patagonia, 5, 199-208.

Morrone, J.J. (2015) Biogeographical regionalisation of the Andean region. Zootaxa, 3936, 207-236.

Sharkey, M.J., & Wharton, R.A. (1997) Morphology and terminology. Manual of the New World Genera of the Family Braconidae (Hymenoptera) (ed. Wharton, R.A., Marsh, P.M., & Sharkey, M.J.), pp. 85-118. International Society of Hymenopterists, Washington.

Townes, H.K. (1971) The genera of Ichneumonidae, Part 4. Memoirs of the American Entomological Institute, 17, 1-372.

Wahl, D.B. (1993) Cladistics of the genera of Mesochorinae (Hymenoptera: Ichneumonidae). Systematic Entomology, 18, 371-387.

Yu, D.S., van Achterberg, C., & Horstmann, K. (2016) Taxapad 2016, Ichneumonoidea 2015. Database on flash-drive. Nepean, Ontario, Canada. Available in: http://www.taxapad.com (accessed 11 March 2019).