

Research Article

A new species of *Rileya* Ashmead (Hymenoptera: Eurytomidae) from Brazil associated with *Zalepidota* Rübsaamen (Diptera: Cecidomyiidae)

Una nueva especie de *Rileya* Ashmead (Hymenoptera: Eurytomidae) de Brasil asociada con *Zalepidota* Rübsaamen (Diptera: Cecidomyiidae)

Nelson Wanderley Perioto¹, Rogéria Inês Rosa Lara¹ and Valéria Cid Maia²

¹Laboratório de Sistemática e Bioecologia de Predadores e Parasitoides, Instituto Biológico, Ribeirão Preto, Av. Bandeirantes, 2419, 14030-670, Ribeirão Preto, SP, Brazil.

²Universidade Federal do Rio de Janeiro, Museu Nacional, Quinta da Boa Vista, 20940-040, Rio de Janeiro, RJ, Brazil.

Corresponding author. E-mail: nperioto2@gmail.com

ZooBank: urn:lsid:zoobank.org:pub: 210AD1DA-BA3D-41BB-8548-8FB4E4387B57
<https://doi.org/10.35249/rche.46.1.20.15>

Abstract. *Rileya priscillae* Perioto and Lara sp. nov. (Eurytomidae: Rileyinae) is described and illustrated. The new species was reared from galls induced by *Zalepidota* sp. (Diptera: Cecidomyiidae) in an unidentified species of plant collected at Estação Ecológica de Jataí, in Luiz Antônio, São Paulo, Brazil. *Zalepidota* Rübsaamen is newly confirmed as a host of *Rileya* which is also a new record to the state of São Paulo.

Key words: Extension of geographic range, galls, Rileyinae, *Zalepidota*.

Resumen. *Rileya priscillae* Perioto y Lara sp. nov. (Eurytomidae: Rileyinae) es descrita e ilustrada. La nueva especie fue criada a partir de agallas producidas por *Zalepidota* sp. (Diptera: Cecidomyiidae) en una especie de planta no identificada recolectada en la Estación Ecológica de Jataí, en Luiz Antônio, São Paulo, Brasil. *Zalepidota* Rübsaamen es confirmada por primera vez como huésped de *Rileya* Ashmead, género reportado por primera vez para el estado de São Paulo.

Palabras clave: Agallas, extensión del rango geográfico, Rileyinae, *Zalepidota*.

Introduction

Rileya Ashmead, 1888 (Hymenoptera: Eurytomidae), belonging to the subfamily Rileyinae, is represented by 65 species known from Holarctic, Australasian and Neotropical regions (Gates 2008; Noyes 2019). The genus is most speciose in the Neotropics, primarily in Central and South America where *Rileya* includes 55 species, 11 of them with recorded occurrence for Brazil (Gates 2008; Noyes 2019).

Species of *Rileya* are known to attack, as hosts, cecidomyiid (Diptera: Cecidomyiidae) gall formers in, at least, 27 plant families (Gates 2008).

Received 9 January 2020 / Accepted 28 February 2020 / Published online 27 March 2020
Responsible Editor: José Mondaca E.



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Cecidomyiidae is known from all zoogeographic regions and includes about 6500 species in about 800 genera (Gagné and Jaschhof 2014). The Neotropical fauna of Cecidomyiidae includes about 500 species in 170 genera, of which about 160 species of 75 genera are recorded for Brazil (Maia 2005).

Zalepidota Rübsaamen, 1908a (Diptera: Cecidomyiidae) has Neotropical distribution and four recognized species: *Z. ituensis* (Tavares, 1917), *Z. piperis* Rübsaamen, 1908b and *Z. tavaresi* (Kieffer, 1913) from Brazil; and *Z. reticulata* (Felt, 1915) from Guatemala (Gagné 1994; Roskov et al. 2019).

Monteiro and Oda (1999) reported that *Z. piperis* induces a spheroidal gall formation in branches of *Piper arboreum* Aubuq. (Piperaceae) in Atlantic Forest areas in Rio de Janeiro. Carneiro et al. (2009) reported *Z. ituensis* and *Z. tavaresi* as gall inducers respectively in stems and flowers of *Porophyllum* sp. (Asteraceae) and in stems of *Piper* sp.

Some specimens of *Rileya* reared from galls produced by *Zalepidota* sp. in an unidentified species of plant represent an undescribed species, clearly differentiated from all other species of the genus. This new species is described and illustrated herein.

Material and Methods

Galls of an unidentified species of plant were collected in area of riparian vegetation (21°37'25.35"S / 47°48'25.44"W, 525 m a.s.l.) at Estação Ecológica de Jataí, in Luiz Antônio, São Paulo, Brazil, in 12 February 2009.

In laboratory the galls were maintained in plastic containers (20 cm diameter, 25 cm high) covered with synthetic gauze and observed daily until gall inducers and/or parasitic wasps emerged. The emerged gallers and parasitoids were initially preserved in glass vials with 70% ethanol and later air dried and card mounted.

The cecidomyiids were identified by the third author using the key of Gagné (1994) and the parasitoid specimens by the first author using the key provided by Gates (2008). Morphological terms follow Gates (2008) and Hymenoptera Anatomy Ontology (Yoder et al. 2010). The abbreviations used in the description are: *An*, anelli (*n* = number of the anellus); *Fn*, funicular segments (*n* = number of the funicular segment); *Gtn*, gastral terga (*n* = number of the gastral tergum).

Images of parasitoids were taken with a Leica MC170 HD digital camera attached to a Leica M205C APO stereomicroscope with a Leica LED5000 HDI high diffuse dome illumination system, using the Leica Application Suite (LAS version 4.12.0) (Leica Microsystems, Germany). The images were focus stacked using Helicon Focus (version 5.3) (Helicon Soft, Kharkiv, Ukraine). The photomicroographies of the uncoated specimens were obtained with a FEI QUANTA 250 high resolution scanning electron microscope (Departamento de Ecologia e Biologia Evolutiva of the Universidade Federal de São Carlos, São Carlos, SP, Brazil), operated in low vacuum mode. The figures were prepared using Adobe Photoshop (version 11.0) (Adobe Inc., California, USA).

The information on the labels of the specimens examined was transcribed in the section of type material as follows: the symbol backslash (\) indicates the different lines on the label and two quotation marks (" ") indicate different labels on the same specimen. The acronyms of collection repository are indicated in square brackets ([]).

List of repositories:

LRRP - Coleção Entomológica do Laboratório de Sistemática e Bioecologia de Predadores e Parasitoides of the Instituto Biológico; Ribeirão Preto, São Paulo, Brazil; MZUSP - Museu de Zoologia da Universidade de São Paulo, São Paulo, São Paulo, Brazil.

The collecting event was carried out under a Brazilian Biodiversity Information and Authorization System (SISBIO) license# 16473-1.

Taxonomy

Rileya priscillae Perioto and Lara **sp. nov.**
(Figs. 1-15)

Type material. Holotype ♀ [MZUSP] labeled "BRAZIL, SP, Luiz Antônio \ Estação Ecológica de Jataí \ 21°37'25.3"S / 47°48'25.4"W \ riparian forest \ 12 / II / 2009 \ NW Perioto and team, legs."; "ex. *Zalepidota* sp. (Diptera, \ Cecidomyiidae) gall in an \ unidentified plant"; "HOLOTYPE \ *Rileya* \ *priscillae* sp. n. \ Perioto & Lara". Paratypes: same data as holotype, 8 ♀♀ and 1 ♂ [MZUSP], 6 ♀♀ [LRRP, # 19341-19346]. The holotype and paratypes examined are in good condition; holotype left wings mounted between coverslips. Additional specimens: same data as holotype, 3 ♀ and 1 ♂ [dissected to scanning electron microscopy, LRRP, #19947].

Etymology. This species is named after Priscilla Yoshi Serapião Hashimoto, cousin of the first author.

Diagnosis. Related to *R. hegeli* Girault, 1916 and *R. pallidipes* (Ashmead, 1894), from which it can be separated as follow: forewing with stigma not enlarged and Gt_3 asetose (vs. forewing with stigma swollen, circular or ovate and Gt_3 with short, transverse row of 2-4 setae subdorsally as in *R. hegeli*); head subtriangular, postorbital carina present, midlobe of mesoscutum about 0.8× as long as broad and color reddish brown with blackish brown areas on head, dorsum of propodeum, mesoscutum, axillae and, Gt_{1-3} and Gt_{4-6} (vs. head subovate, postorbital carina absent, midlobe of mesoscutum about 1.3× as long as broad and color light to dark brown as in *R. pallidipes*).

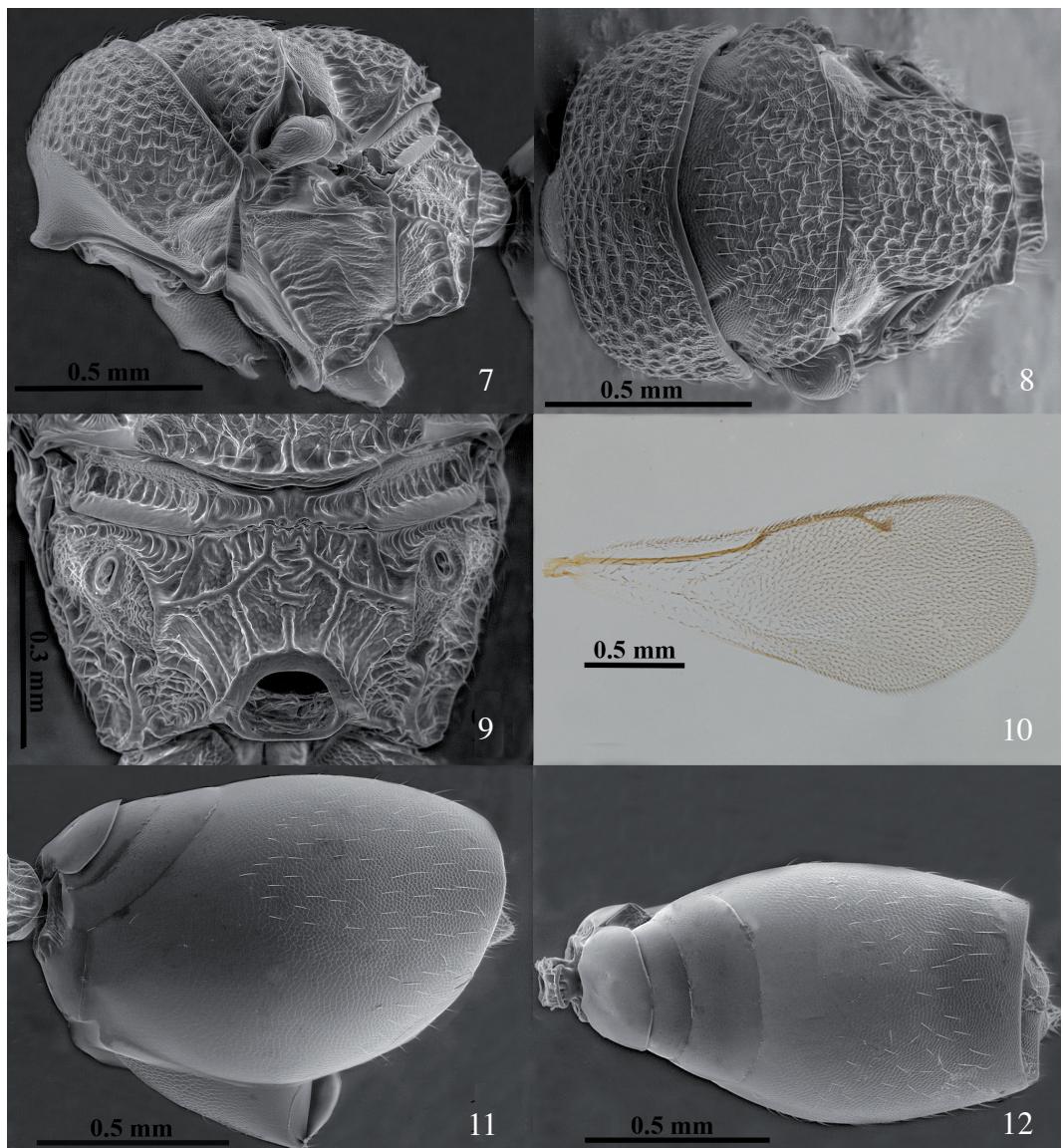
Description. Holotype female (Figs. 1-2). Body length 2.8 mm. **Color:** mainly body reddish brown except by: blackish brown on head, dorsum of propodeum, 2/3 anterior of mesoscutum, axillae, dorsal central portion Gt_{1-3} and Gt_{4-6} ; golden on: legs, tegula and scape. Wing hyaline, venation light brown. **Head:** subtriangular in frontal view, with few striae radiating from clypeus toward lower eye margin, face and frons with interstices finely reticulate (Fig. 3). Clypeus bilobate (Fig. 4); supraclypeal area at same level of remainder of face. Malar space 0.5× eye height, postorbital carina present (Fig. 5). Eye glabrous. Scrobal depression deep, margined (Fig. 3). Antenna (Fig. 6): scape 4.0× as long as broad, broadest basally; anelli transverse, A_{1-3} shorter than long; F1 1.2×, F2 1.0×, F3-4 0.9×, F5 0.8× as long as broad; clava 1.8× as long as broad, segmented, tapering apically. **Mesosoma** (Figs. 7-8): foveate reticulate. Midlobe of mesoscutum 0.8× as long as broad, notaulus complete, posteriorly faint. Mesoscutellum as long as broad, crudely carinate apically; lateral panel of axilla sparsely setose, imbricate. Mesepisternum and mesepimeron granulate with transverse and coarse striae. Propodeum carinate, with median panel granulate between carinae; median carina present in the posterior third; primary costula transversely oriented, incomplete medially, turning to intercept dorsellum submedially; four complete carinae connecting the primary costula to nucha; secondary costula absent; spiracle obliquely oriented, reniform, ~1.0× its length from dorsellum (Fig. 9). Forewing (Fig. 10) 2.4× as long as broad, stigma not enlarged and 0.4× as long as stigmal vein, marginal vein 1.1× as long as postmarginal vein, completely setose. **Metasoma** (Figs. 11-12). Petiole barely visible in dorsal view, transverse. Gaster not laterally flattened. Gt_{1-2} smooth, 2/3 basal of Gt_3 imbricated, with sculpture becoming faint toward the apical margin, remaining terga reticulate; Gt_{1-3} glabrate, foreshortened; Gt_1 2.0× as long as Gt_2 and 1.3× as long as Gt_3 , Gt_{1-3} 0.6 as long as Gt_4 ; Gt_{1-3} glabrate, Gt_{4-7+8} setose; Gt_5 not emarginate to expose Gt_6 spiracle; Gt_{7+8} triangular in dorsal view. **Variation:** body length 2.8-2.9 mm. Malar

space $0.5\text{-}0.6 \times$ eye height. Scape $3.9\text{-}4.0 \times$ as long as broad, F1 $1.1\text{-}1.3 \times$, F2 $0.9\text{-}1.1 \times$, F3-4 $0.9\text{-}1.1 \times$, clava $1.8\text{-}2.1 \times$ as long as broad. Midlobe of mesoscutum $0.7\text{-}0.8 \times$ as long as broad. Mesoscutellum $1.0\text{-}1.1 \times$ as long as broad. Stigma $0.4\text{-}0.5 \times$ as long as stigmal vein, marginal vein $1.0\text{-}1.2 \times$ as long as postmarginal vein. Gt₁ $2.0\text{-}2.5 \times$ as long as Gt₂ and $1.2\text{-}1.3 \times$ as long as Gt₃, Gt₁₋₃ $0.6\text{-}0.7 \times$ as long as Gt₄.

Male (Figs. 13-15). Length 2.5-2.8 mm. Very similar to female, except as follows: F1 $1.3\text{-}1.5 \times$, F2 $1.0\text{-}1.2 \times$, F3-4 $1.1 \times$, F5 $1.0 \times$ and, clava $2.7\text{-}2.9 \times$ as long as broad; petiole visible in dorsal view, $0.9\text{-}1.0 \times$ as long as broad, granulate and longitudinally rugose (Fig. 15). Gt₅ distinctly emarginate to expose Gt₆ spiracle, Gt₇₊₈ hemispherical in posterior view.



Figures 1-6. *Rileya priscillae* Perioto and Lara sp. nov., female. 1. Habitus, lateral. 2. Habitus, latero-dorsal. 3. Head, frontal. 4. Clypeus and mandibles. 5. Head, lateral. 6. Antenna.



Figures 7-12. *Rileya priscillae* Perioto and Lara sp. nov., female. 7. Mesosoma, lateral. 8. Mesosoma, dorsal. 9. Propodeum, dorsal. 10. Fore wing. 11. Metasoma, lateral. 12. Metasoma, dorsal.

Species identification. In the key provided by Gates (2008) this species runs to couplet 32' and can be separated by an additional couplet as follows:

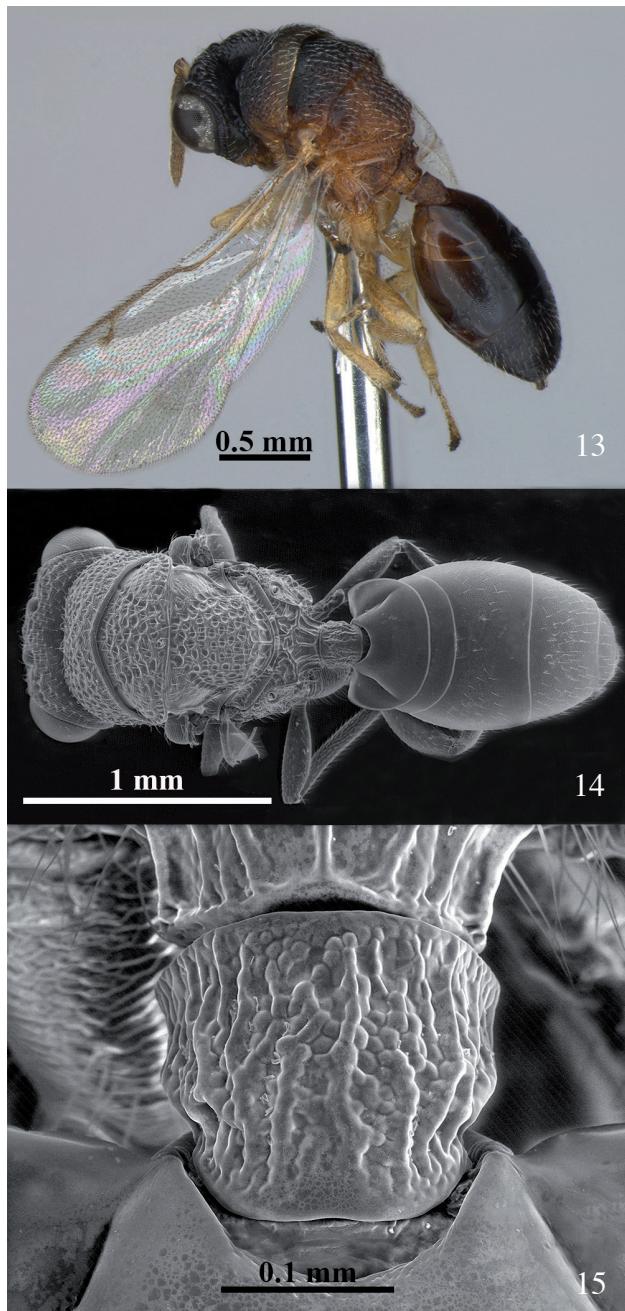
32'(31). Gt₃ asetose. Forewing with stigma never enlarged.

- Color light to dark brown [some females with darker dorsal spot on gaster, Fig. 251 in Gates, 2008]. Head subovate. Postorbital carina absent. Midlobe of mesoscutum about 1.3× as long as broad *Rileya pallidipes* (Ashmead, 1894)
- Color mainly reddish brown, blackish brown on head, dorsum of propodeum, anterior two-thirds of mesoscutum, axillae, dorsal central portion of Gt₁₋₃ and Gt₄₋₆ (Figs. 1-2, 13). Head subtriangular (Fig. 3). Postorbital carina present (Fig. 5). Midlobe of mesoscutum about 0.8× as long as broad (Fig. 8) *Rileya priscillae* Perioto and Lara sp. nov.

Distribution. BRAZIL, São Paulo state (**new record**).

Biology. Reared from galls of *Zalepidota* sp. (Diptera: Cecidomyiidae) in an unidentified plant species.

Comments. The genus *Zalepidota* is, for the first time, confirmed as a host of *Rileya*. *Rileya* is, for the first time, reported to state of São Paulo, Brazil.



Figures 13-15. *Rileya priscillae* Perioto and Lara sp. nov., male. 13. Habitus, latero dorsal. 14. Habitus, dorsal. 15. Petiole, dorsal.

Acknowledgements

We thank to Instituto Nacional de Ciência e Tecnologia dos Hymenoptera Parasitoides (INCT / Hympar - CNPq / Fapesp / Capes) for the financial support and Dra. Luciana Bueno dos Reis Fernandes (Universidade Federal de São Carlos) for her valuable help in operating the MEV.

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