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The scentless plant bug, *Liorhyssus hyalinus* (Fabricius) (Hemiptera: Heteroptera: Rhopalidae): Description of immature stages and notes on its life history

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Abstract

Instars I–V and eggs of *Liorhyssus hyalinus* (Fabricius) (Heteroptera: Rhopalidae) are described and illustrated based on specimens from La Pampa, Argentina. Host plant and parasite data are given for this species.

Keywords: Heteroptera, Rhopalidae, Nymphs, Host plant, *Sonchus oleraceus* L, Hymenoptera, Argentina

Introduction

The family Rhopalidae, often called scentless plant bugs, is a member of the superfamily Coreoidea, and includes 209 species in 21 genera (Henry 2009). The family consists of two subfamilies: Rhopalinae and Serinethinae. The family was formerly treated as a subfamily of the Coreidae, usually with the name Corizinae. Chopra (1967) presented a revision of the higher classification of this family and included keys to subfamilies, tribes and genera, Göllner- Scheiding (1983) published a world-catalog of the family. Rhopalids are found in all major faunal regions.

Until now, contributions on instars included *Arhyssus lateralis* Say (Paskewitz & McPherson 1983), *A. hirtus* Torre-Bueno (Wheeler & Henry 1984), *Rhopalus* (*Brachycarenum*) *trigrinus* Schilling (Wheeler & Hoebeke 1988), *R. parumpunctatus* Schill (Stroyan 1954), *Niesthrea louisianica* Sailer (Wheeler 1977), *Harmostes reflexulus* Say (Yonke & Walker 1970), and *Corizus lateralis* Say (Hambleton 1909). Readio (1928) described the eggs, biology, and some host plants of the nymphs of *Liorhyssus hyalinus* (Fabricius).

Plant associations of Rhopalidae were recorded by Schaefer & Chopra (1982) in Compositae. Additional plant records were given by Yonke & Walker (1970), Paskewitz & McPherson (1983), Wheeler & Henry (1984), while Mead & Fasulo (2000) added hosts plants of Sapindaceae.

Scentless plant bugs are of little economic importance except for *Leptocoris augur* and *L. hyalinus* which occasionally attack certain crops (Schaefer & Kotulski 2000). In Chile, Gonzalez (1989) mentions *A. tricostatus* (in vineyards) and *L. lineaventris* (in raspberry groves) as economically important and suggested that quarantine may be required.

La Pampa Province is in the Chaco Domain (Cabrera & Willink 1973) and is characterized by grass-savannas. The climate in La Pampa is warm-temperate, with a regular annual rainfall ranging from 500 to 700 mm; the average annual temperature ranges between 8 and 25 °C (Cano *et al.* 1980).

The purpose of this study is to describe the nymphs of *Liorhyssus hyalinus* (Fabricius) (Heteroptera: Rhopalidae).

Materials and Methods

Specimens were collected in December 2 to 29 of 2010 on the host plant *Sonchus oleraceus* L. (Asteraceae), on the campus of the School of Agriculture, University of La Pampa, Santa Rosa, La Pampa Argentina (36°33'24.15"S 64°18'2.33"W). The measurements are expressed in mm. All stages, including eggs, nymphs and copulating adults were found on the same plant.

Specific identification was possible because the material studied was collected and associated with adults. The record from La Pampa, Argentina, is new for this species.

The material is deposited in the collection of the Museo de La Plata, Argentina.

The genus *Liorhyssus* Stål belongs to the Rhopalini. *Liorhyssus hyalinus* (Fabricius) also known as hyaline grass bugs.

Liorhyssus hyalinus (Fabricius) 1794

Distribution: Göllner-Scheiding (1983) in her world catalogue of Rhopalidae mentions *L. hyalinus* as inhabiting all the major faunal regions of the world. In Argentina (Coscarón, submitted) mention: Buenos Aires: Tandil; Córdoba: Carlos Paz; Corrientes; Patagonia.

Descriptions of immature stages

Instar I (Fig. 1a, 3b): General coloration dark brown: head, pronotum, coxa, trochanter, femur and tibia; abdomen brown and tarsi light brown. Surface covered with dark brown hairs. Length 0.95–1.03 (mean = 0.98; n = 5). Head: length 0.33–0.38 (mean = 0.35), width 0.24–0.27 (mean = 0.25); eye width 0.08–0.09 (mean = 0.085), interocular width 0.13–0.15 (mean = 0.138). Rostrum reaching or nearly reaching edge of abdomen, ratio of segment lengths about 1: 1.08 : 1.02 : 1.72. Antennal ratio of segment lengths ca. 1: 2.03 : 2.18 : 3.77. Abdominal length 0.53–0.58 (mean = 0.55), width 0.31–0.36 (mean = 0.33).

Instar II (Fig. 1b): General coloration brown, abdomen medially light brown (in some specimens with whitish dots on portion half). Length 1.50–1.56 (mean = 1.53; n = 5). Head: length 0.50–0.53 (mean = 0.51), width 0.38–0.40 (mean = 0.39), abundant whitish pilosity over the surface and sparse long brown hairs; eyes width 0.16–0.18 (mean = 0.17), interocular width 0.26–0.28 (mean = 0.27). Rostrum passing beyond metacoxae, ratio of segment lengths about 1: 1.12 : 1.08 : 1.66. Antennae brown, with sparse hairs, ratio of segment lengths ca. 1: 2.49 : 2.56 : 3.66. Pronotum brown, pale on external edges, continuing to the wing pads, with two dark brown stripes on anterior half, granulated with whitish pilosity; length 0.10–0.13 (mean = 0.11), width 0.49–0.51 (mean = 0.50). Wing pad length 0.11–0.13 (mean = 0.12). Abdomen: length 0.90–1.01 (mean = 0.93), width 0.66–0.71 (mean = 0.68). Legs pale brown; trochanter pale; femur basally light brown, the rest pale with small brown spots; tibia light brown; tarsi, light brown basally, dark brown distally. In some specimens the same pattern but darker.

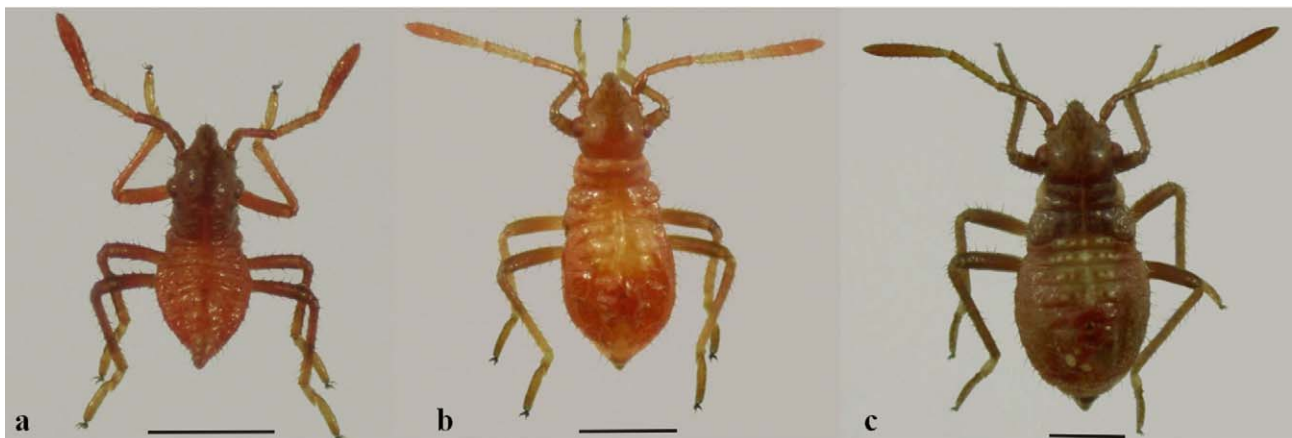


FIGURE 1. *L. hyalinus*, dorsal view; first instar (a), second instar (b), third instar (c), scale line: 0.5mm.

Instar III (Fig. 1c): General coloration light brown with reddish dots. Head, pro-, meso- and metasternum, pleura and abdomen, light brown. Ventrally brown. Length 1.95–2.23 (mean = 2.05; n = 5). Head: length 0.57–0.60 (mean = 0.59), width 0.53–0.57 (mean = 0.55), light brown and brown, abundant whitish pilosity over the surface and sparse long brown hairs; eye width 0.12–0.14 (mean = 0.13), interocular width 0.30–0.33 (mean = 0.31). Rostrum surpassing metacoxae, ratio of segment lengths ca. 1 : 1.04 : 0.95 : 1.42. Antenna: light brown, segment IV darker distally, with sparse hairs, ratio of segment lengths ca. 1 : 2.36 : 2.41 : 3.61. Pronotum brown, pale on external edges, this continuing to the wing pads, with two dark brown stripes on anterior half, granulated, with whitish pilosity; length 0.20–0.23 (mean = 0.22), width 0.70–0.73 (mean = 0.71). Wing pad length 0.28–0.31 (mean = 0.30), creamy. Abdominal length 1.30–1.35 (mean = 1.32), width 0.93–1.08 (mean = 1.01), light brown with reddish dots, except totally red medially on the posterior half and two, 1 + 1 whitish spots aside of the glands and one longer medially; anterior half with white dots medially and pale surface. Legs brown, trochanter lighter. Some specimens are darker.

Instar IV (Fig. 2a): General coloration pale with reddish dots. Head, pro-, meso- and metasternum, pleura and abdomen ventrally with palid. Length 3.46–3.78 (mean = 3.65; n = 5). Head length 0.75–0.10 (mean = 0.86), width 0.83–1.05 (mean = 0.95); pale and brown; abundant whitish pilosity on surface, with sparse long brown hairs; eye width 0.15–0.22 (mean = 0.18), interocular width 0.56–0.65 (mean = 0.61). Rostrum surpassing metacoxae, ratio of segment lengths about 1 : 0.88 : 0.83 : 1.06. Antennae light, except distally darker segment IV, with sparse hairs, ratio of segments ca. 1 : 2.94 : 3.04 : 4.76. Pronotum pale, tinged with brown, this continuing on to the wing pads, with two dark brown stripes on anterior half, granulated, with whitish pilosity and dark brown hairs; length 0.33–0.42 (mean = 0.36), width 1.05–1.15 (mean = 1.09). Scutellum pale tinged with brown, with whitish pilosity. Wing pad length 0.77–0.87 (mean = 0.81), pale tinged with brown, cream-colored externally. Abdominal length 2.13–2.2 (mean = 2.16), width 1.50–1.69 (mean = 1.58), pale with whitish dots, tinged with brown, but entirely red medially on posterior half, with two (1 + 1) whitish spots aside the glands and a medial longer one. Legs: coxa light brown; trochanter, tibia basally, and tarsi pale, tibia distally light brown; femur and tibia with small reddish spots. In some specimen the same pattern is darker.

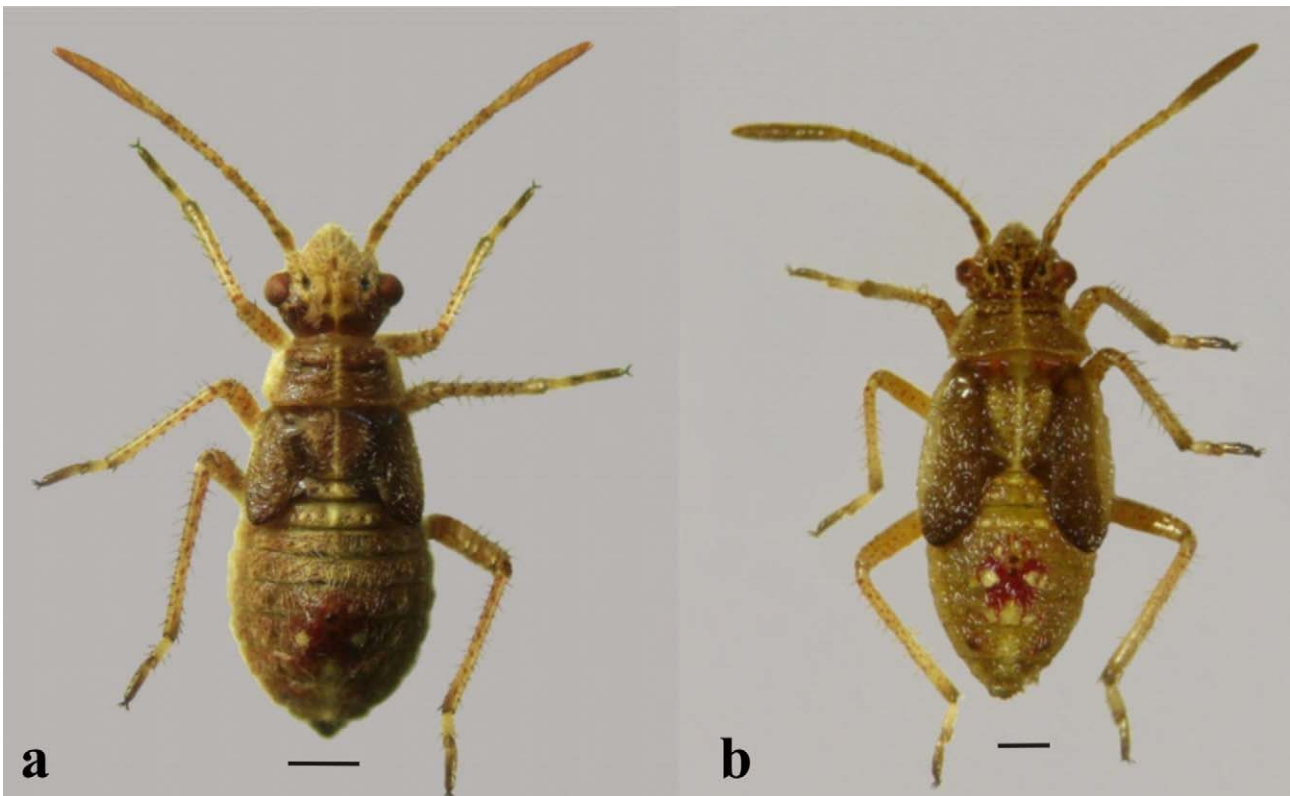


FIGURE 2. *L. hyalinus*, dorsal view; fourth instar (a), fifth instar (b), scale line: 0.5mm.

Instar V (Fig. 2b; 3g): General coloration pale with reddish dots. Head, pro-, meso- and metasternum, pleura, and abdomen ventrally pale, expressed is small brown spots. Length 4.32–5.25 (mean = 4.62; n = 5). Head length 0.88–1.09 (mean = 0.96), width 1.01–1.30 (mean = 1.17); pale and brown, surface covered with abundant whitish pilosity and sparse long brown hairs; eye width 0.25–0.39 (mean = 0.32), interocular width 0.672–0.756 (mean = 0.73). Rostrum: reaching metacoxae, ratio of segment lengths about 1: 0.91 : 0.76 : 1.03. Antennae brown, with sparse hairs, ratio of segments ca. 1: 2.66 : 2.71 : 4.17. Pronotum brown, pale on external edges, this continuing onto wing pads, with two dark brown stripes on anterior half, granulated, with whitish pilosity, length 0.48–0.66 (mean = 0.56), width 1.34–1.66 (mean = 1.48). Scutellum pale, tinged with brown, with whitish pilosity. Wing pad length 1.68–1.73 (mean = 1.70), dark brown, except externally creamy. Abdominal length 2.92–3.23 (mean = 3.08), width 1.76–2.23 (mean = 1.62); pale with reddish dots, posterior half totally red medially and two (1 + 1) whitish spots aside of glands, one longer medially (in some specimens an extra 1 + 1 in the following segment). Legs pale and brown, trochanter pale, femur basally light brown, the rest pale with small brown spots, tibia light brown, tarsi light brown basally, dark brown distally.

Descriptions of eggs

Eggs: Oval reddish. Length 0.84–0.88 (mean = 0.85; n = 10), width 0.53–0.59 (mean = 0.57; n = 10). The average number of eggs in masses or clusters was 21 (range 10–40) (Fig. 3a,b,c,d).

Eggs masses are deposited mainly on sepals of flowers of the host plant (Fig. 3a), but occasionally observed on stems and leaves.



FIGURE 3. *L. hyalinus* on *S. oleraceus*.3—a. Egg mass on reproductive structure. b—Eggs and first instar nymph. c—Microhymenopteran parasitizing eggs. d—Hatched eggs. e,f—Aggregations of nymphs. g—Fifth instar nymph.

Host plant: Table 1.

Liorhyssus hyalinus is cosmopolitan species that feeds on various cultivated and wild plants.

TABLE 1. Host plant of *L. hyalinus*

Plant species	Plant genus	Plant family	Plant order	Plant Subclass	Reference
<i>Lactuca scariolae</i> L.	<i>Lactuca</i>	Compositae	Asterales	Asteridae	Readio 1928 Costa Lima 1940 D'Araujo <i>et al.</i> 1968 Cermeli <i>et al.</i> 2004
<i>Lactuca sativa</i> L.	<i>Lactuca</i>	Compositae	Asterales	Asteridae	Ballou 1945 Carlson 1959
<i>Sonchus oleraceus</i> L.	<i>Sonchus</i>	Compositae	Asterales	Asteridae	Cermeli <i>et al.</i> 2004
<i>Solanum tuberosum</i> L.	<i>Solanum</i>	Solanaceae	Solanales	Asteridae	Cermeli <i>et al.</i> 2004
<i>Abutilon theophrasti</i> M.	<i>Abutilon</i>	Malvaceae	Malvales	Rosidae	Readio 1928 Dupuis 1953
<i>Medicago sativa</i> L.	<i>Medicago</i>	Fabaceae	Fabales	Rosidae	Cermeli <i>et al.</i> 2004 Michailides <i>et al.</i> 1987;
<i>Pistacia vera</i> L.	<i>Pistacia</i>	Anacardiaceae	Sapindales	Rosidae	1988
	<i>Euphorbia</i>	Euphorbiaceae	Euphorbiales	Rosidae	Readio 1928 Dupuis 1953
	<i>Gossypium</i> L.	Malvaceae	Malvales	Rosidae	Costa Lima 1940 D'Araujo <i>et al.</i> 1968
<i>Sorghum vulgare</i> P.	<i>Sorghum</i>	Poaceae	Poales	Commelinidae	Cermeli <i>et al.</i> 2004
<i>Oryza sativa</i> L.	<i>Oryza</i>	Poaceae	Poales	Commelinidae	Costa Lima 1940 D'Araujo <i>et al.</i> 1968

Biology

Aggregation behavior was observed mainly in early nymph instars (Fig. 3e,f).

Parasites

Previously, Diptera (Tachynidae: *Leucostoma acirostre* Reinhard) and Hymenoptera (Scelionidae: *Telenomus sp.*) (Yonke & Walker 1970) and a Nematode (unidentified) (Yonke & Medler 1967) have been recorded as parasites. Herein (Video 1) we record another hymenopteran: a member of Platygastridae identified as being in the *Telenomus podisi* species group, which was observed parasitizing the egg masses (Fig. 3c). The lack of males limited more specific identification at present.

Acknowledgements

We express our gratitude to Dr. R. Packauskas and Dr. D. Rider for their critical reading of the manuscript; to Dra. M. Loíacono and Dra. C. Margaría (Museo de Ciencias Naturales de La Plata, Argentina) for the identification of the parasite, to Dr. M. Griffin for reviewing the English. This work was supported by the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina.

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