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Field and laboratory biological observations on the uncommon *Cyrtocoris egeris* (Heteroptera: Pentatomidae: Cyrtocorinae)

Tiago Lucini[1] *and Antônio R. Panizzi*[2,*]

Cyrtocorids are heteropterans historically placed in the family Cyrtocoridae (Kormilev 1955; Rolston & McDonald 1979; Packauskas & Schaefer 1998), which is now considered a subfamily (Cyrtocorinae), a basal branch in the phylogeny of Pentatomidae (Grazia et al. 2008). It is a small and exclusively Neotropical subfamily comprising 11 species grouped in 4 genera, spread from Mexico to Argentina; these bugs are cryptic and oddly shaped, mimicking tree bark, and are rarely found in the field (Packauskas & Schaefer 1998; Grazia et al. 2015). The 3rd to 5th instar nymphs were described by Schaefer et al. (1998).

The aim of this study was to observe the occurrence of *Cyrtocoris egeris* Packauskas & Schaefer (Heteroptera: Pentatomidae) on its natural host, and to document its biology in the laboratory. On 5 occasions [2 during Mar to Apr 2015 and 2 during Jan to Feb 2016 in Francisco Beltrão Co. (26.07°S, 53.05°W), Paraná State, and 1 in Apr 2016 in Mato Castelhano Co. (28.27°S, 52.18°W), Rio Grande do Sul State, Brazil], we observed and collected eggs, nymphs, and adults of *C. egeris*. On all 5 occasions they were observed on the Brazilian orchid tree, *Bauhinia forficata* Link (Fabaceae). During these observations, we recorded at least 17 colonies composed of nymphs and adults (Fig. 1) on separate plants. Adults and nymphs of *C. egeris* were previously reported on this plant species in Mondaí (27.08°S, 53.43°W), Santa Catarina State, Brazil, by Bottega et al. (2015), but only a few individuals were collected in their study.

In Francisco Beltrão, in 2015, we observed 4 colonies, each composed of over 50 individuals, mostly nymphs in the 3rd to 5th stadia, and adults (Fig. 1a). In addition, masses of hatched eggs were observed on stems of the host plant. During 2016, we found several colonies, but these were smaller than those in the previous year (approx. 20–25 individuals each) (Fig. 1b), and were composed of nymphs (from 1st to 5th stadia), adults, and unhatched eggs (Fig. 2a).

In Mato Castelhano, in 2016, we observed 2 colonies (19 and 15 adults) and several egg masses with hatched eggs. We also found isolated individual adults on branches of the host plant, close to spines. We suspect that this positioning is a mimetic behavior because adults have a scutellar process that resembles these spines (Fig. 3). Also, on the branches we observed feeding damage that consisted of thickening of the branch with the bark showing cracks and with a rugose appearance, accompanied by hatched eggs (Fig. 4).

A strong gregarious behavior was observed for all colonies found during field samplings, with nymphs and adults remaining aggregated around the plant stems (Figs. 1 and 2) and near or on top of the egg masses. Moreover, when disturbed, they froze and fell to the ground. Brailovsky et al. (1988) reported the gregarious habits of adults and nymphs of *C. egeris* feeding on stems of *Acalypha diversifolia* Jacquin (Euphorbiaceae).

Bugs (nymphs and adults) collected in 2015 were taken to the laboratory at the Embrapa Research Unit at Passo Fundo, RS, Brazil (28.25°S, 52.40°W). Because we did not know the natural food for *C. egeris*, except for our observations of the bugs feeding on stems of the Brazilian orchid tree, we provided a mixture of foods utilized to keep colonies of stink bugs in our laboratory. Food items consisted of green bean pods, *Phaseolus vulgaris* L. (Fabaceae), raw shelled peanut, *Arachis hypogaea* L. (Fabaceae), mature seeds of soybean, *Glycine max* (L.) Merrill (Fabaceae), and stems with fruits (berries) of privet, *Ligustrum lucidum* Aiton (Oleaceae). They were placed in clear plastic rearing boxes (25 × 20 × 20 cm) lined with filter paper, and were kept in a walk-in chamber at 25 ± 1 °C temperature, 65 ± 5% RH, and a photoperiod of 14:10 h L:D.

During rearing under laboratory conditions, we observed that nymphs of *C. egeris* collected in the field reached the adult stage with low mortality. Stylet insertion by nymphs and adults into plant tissue was observed, mainly on stems of privet, but never on soybean or peanut; sometimes adults were observed to feed on green bean pods. The adults collected in the field in 2015 remained alive in the laboratory for a long time, approximately 6 mo; however, they never laid eggs during this time (Mar/Apr to Sep/Oct).

In 2016, we collected eggs, nymphs, and adults, which were also taken to the laboratory and placed in rearing boxes as described above. However, we provided as food only green bean pods and seedlings of the weed plant arrow leaf-sida, *Sida rhombifolia* L. (Malvaceae) kept in small pots (100 mL). The latter was provided because cyrtocorids were reported to feed on this weed (Schaefer et al. 2005).

From the eggs that were collected in the field (Fig. 2a), nymphs hatched in the laboratory and remained around the egg shell for some time (Fig. 2b); later, they spread to the stem of arrow leaf-sida, where they were observed to feed; they also spread to green bean pods, where they formed small groups but were not observed to feed. Females laid egg masses on stems of arrow leaf-sida and, sometimes, on the plastic wall of the rearing box; these eggs showed no hatch. In addition, the majority of nymphs that hatched from egg masses obtained in the field died before reaching the 3rd instar on the mixture of foods provided.

Nymphs and adults of *C. egeris* have been reported to feed on immature pods of soybean in Argentina; however, nymphs were unable to

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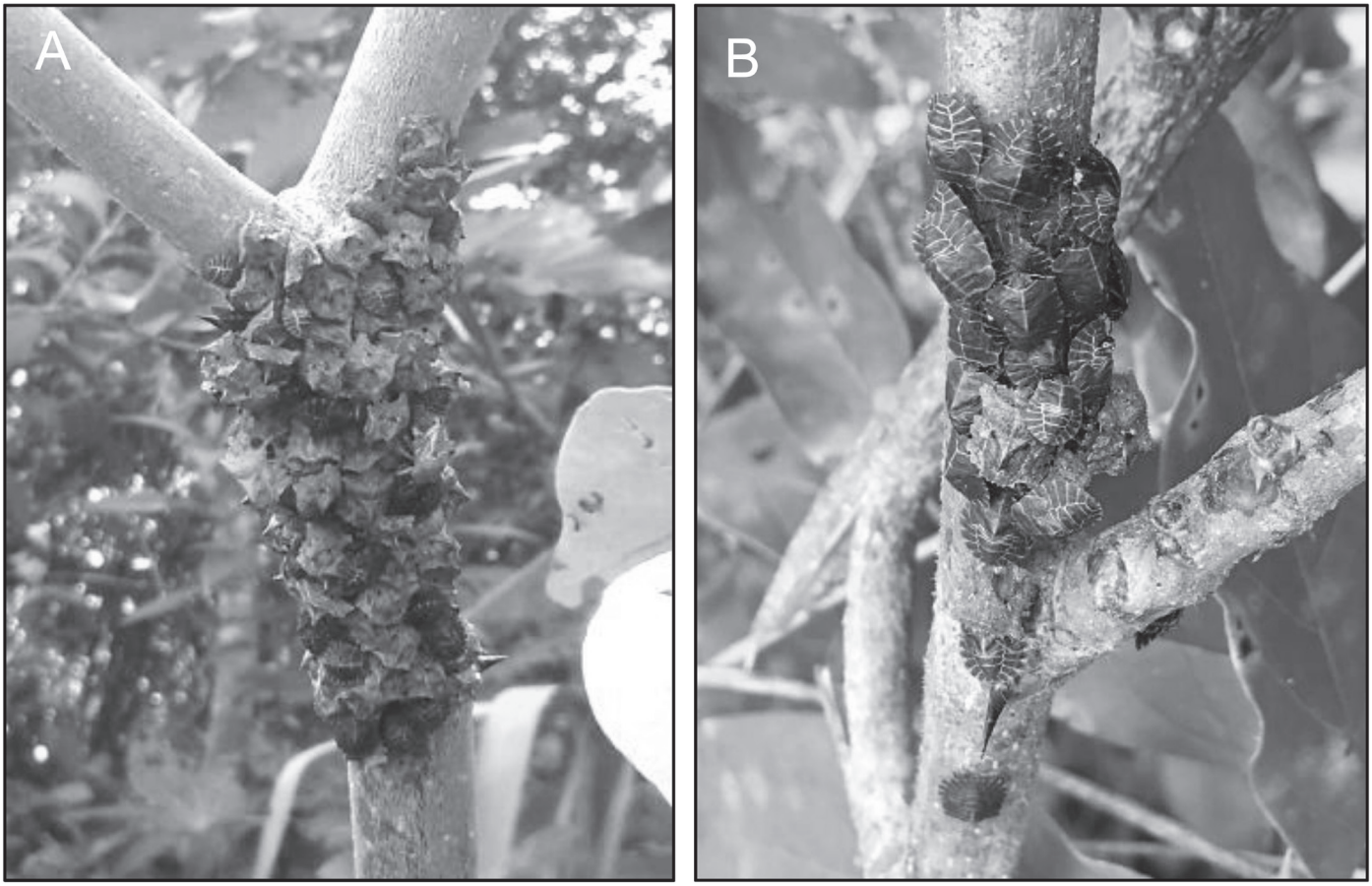


Fig. 1. Gregarious behavior of nymphs and adults of *Cyrtocoris egeris* on stems of the Brazilian orchid tree, *Bauhinia forficata*, observed at Francisco Beltrão Co., Paraná State, Brazil, in 2015 and 2016; **(A)** large colony of late instar nymphs and adults; **(B)** small colony of mostly late instar nymphs.

develop beyond the 3rd instar on this food under laboratory conditions (Schaefer et al. 2005). These authors reported that another species, *Cyrtocoris trigonus* (Germar), was found (4 individuals) feeding on stems of the arrow leaf-sida in the field, in Londrina (23.30°S, 51.15°W), Paraná State, Brazil, and females laid eggs in the laboratory, but all nymphs died when fed this plant. Therefore, we believe that *C. egeris* is not a potential pest of soybean or of any of the food sources used in the laboratory.

During the 2nd collecting day in Feb 2016, seedlings of the Brazilian orchid tree were picked, placed in small pots, taken to the laboratory, and placed in the rearing boxes; in this case, nymphs (mostly 5th instars) and adults remained on the stems forming aggregations, similar to what was observed in the field. We did observe nymphs and adults to feed on the stems of the Brazilian orchid tree. However, egg deposition by females was not observed. The habit of feeding on plant stems is common for cyrtocorids. For example, adults of *C. trigonus* were reported feeding on stems of *Syngonium podophyllum* Schott (Araceae), *Acalipha* sp. (Euphorbiaceae), *Piper* sp., and *Pothomorpha umbellatum* (L.) Miquel (Piperaceae) (Brailovsky et al. 1988); *C. gibbus* (F.) was reported to feed on stems of the legume trees *Acacia* sp. (Fabaceae) and *Mimosa scabrella* Bentham (Fabaceae) (known as "bracatinga") in Rio de Janeiro, Brazil (Costa Lima 1940; Silva et al. 1968).

In conclusion, our field observations suggest that *C. egeris* prefers to feed and to form large aggregations on branches of the legume Brazilian orchid tree, *B. forficata*. Our observations indicate that *C. egeris* nymphs do not develop well in the laboratory, even when feeding on stems of this preferred plant.

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Summary

The uncommon *Cyrtocoris egeris* Packauskas & Schaefer (Heteroptera: Pentatomidae) was collected in 2015 and 2016 in Francisco Beltrão Co. (26.07°S, 53.05°W), Paraná State, and in Mato Castelhano Co. (28.27°S, 52.18°W), Rio Grande do Sul State, Brazil. They fed and reproduced on plants of the Brazilian orchid tree, *Bauhinia forficata* Link (Fabaceae) and aggregated on branches. In the laboratory, nymphs did not develop on stems of seedlings of *B. forficata* or on a mixture of foods commonly used to rear stink bugs.

Key Words: Neotropics; biology; host plant

Sumário

O percevejo incomum *Cyrtocoris egeris* Packauskas & Schaefer (Heteroptera: Pentatomidae) foi coletado em 2015 e 2016, em Francisco Beltrão Co. (26.07°S, 53.05°W), estado do Paraná, e em Mato Castelhano Co. (28.27°S, 52.18°W), estado do Rio Grande do Sul, Brasil. Os percevejos se alimentam e se reproduzem na planta conhecida como árvore-orquídea brasileira, *Bauhinia forficata* Link (Fabaceae), mostrando um

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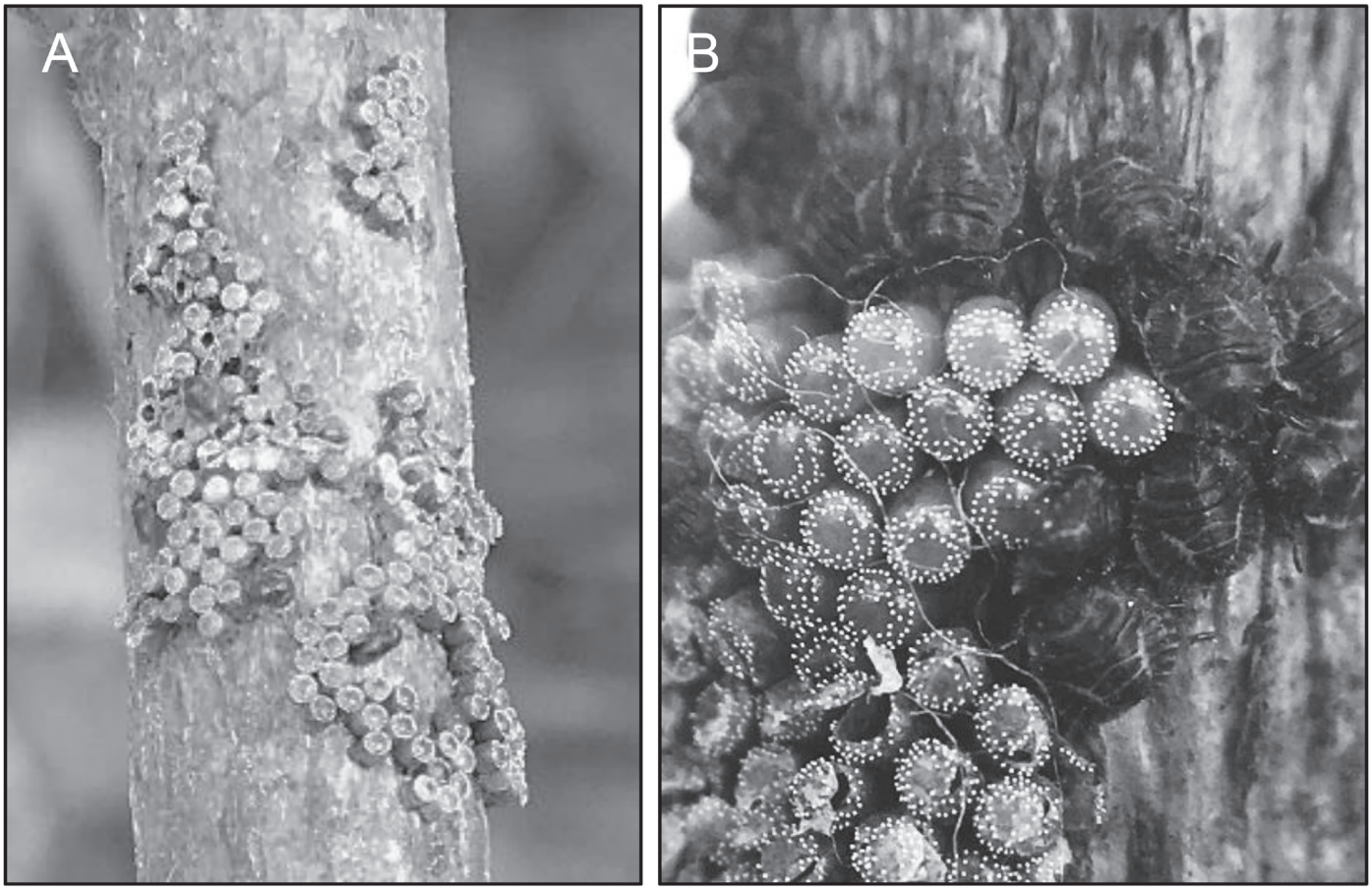


Fig. 2. (A) Egg masses, composed of hatched and unhatched eggs, of *Cyrtocoris egeris* on a stem of the Brazilian orchid tree, *Bauhinia forficata*, found in the field; **(B)** nymphs around the egg shells (chorions) and unhatched eggs (pinkish) shown in the upper part and hatched eggs in the lower part.

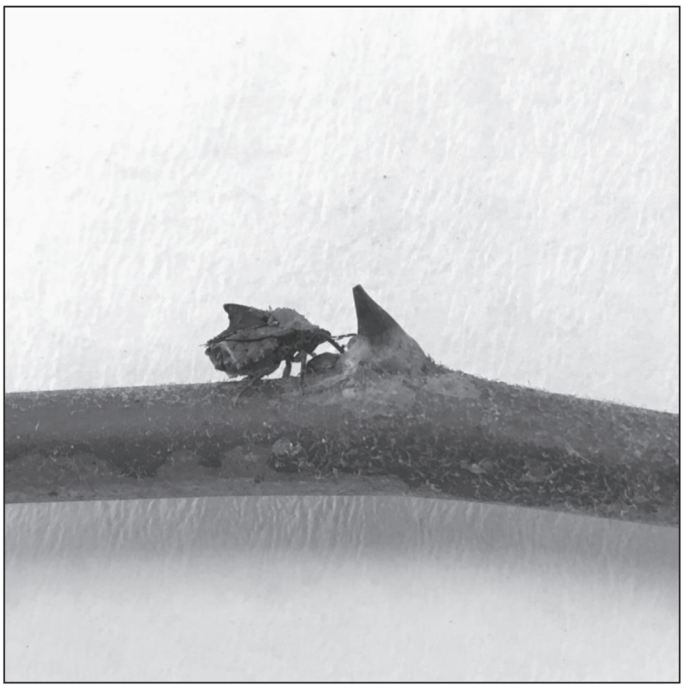


Fig. 3. Mimetic behavior of *Cyrtocoris egeris* on a stem of the Brazilian orchid tree, *Bauhinia forficata* (note the similarity of the bug scutellar process with the plant spine).

comportamento de agregação em seus ramos. No laboratório, as ninfas não se desenvolveram em hastes de mudas de *B. forficata* nem sobre uma mistura de alimentos comumente usada para criação de percevejos.

Palavras Chave: Neotrópicos; biologia; planta hospedeira



Fig. 4. Feeding damage of *Cyrtocoris egeris* on a stem of the Brazilian orchid tree, *Bauhinia forficata* (note thickening of the stem, outer bark cracked with a rugose appearance and accompanied by hatched eggs).

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References Cited

Bottega CH, Bianchi FM, Campos LA. 2015. Ontogeny of the dorsal abdominal gland external scent efferent system in Pentatomidae (Hemiptera: Heteroptera). Annals of the Entomological Society of America 108: 552–561.

Brailovsky HL, Cervantes L, Mayorga C. 1988. Hemiptera-Heteroptera de Mexico XL: La família Cyrtocoridae Distant en la Estacion de Biologia Tropical "Los Tuxtlas" (Pentatomoidea). Anales del Instituto de Biologia de la Universidad Nacional Autonoma de Mexico 58: 537–560.

Costa Lima AM. 1940. Insetos do Brasil. Escola Nacional de Agronomia, Série Didática n. 3, Rio de Janeiro, 2º Tomo, capítulo XXII, 351 p.

Grazia J, Schuh RT, Wheeler WV. 2008. Phylogenetic relationships of family groups in Pentatomoidea based on morphology and DNA sequences (Insecta: Heteroptera). Cladistics 24: 1–45.

Grazia J, Panizzi AR, Greve C, Schwertner F, Campos LA, Garbelotto TA, Fernandes JAM. 2015. Stink Bugs (Pentatomidae), p. 681–756 *In* Panizzi AR, Grazia J [eds.], True Bugs (Heteroptera) of the Neotropics. Springer, Dordrecht, The Netherlands.

Kormilev NA. 1955. La subfamilia Cyrtocorinae Distant en la Argentina, (Hemiptera Pentatomoidae [sic]). Revista Ecuatoriana de Entomologia y Parasitologia 2: 321–334.

Packauskas RJ, Schaefer CW. 1998. Revision of the Cyrtocoridae (Hemiptera: Pentatomoidea). Annals of the Entomological Society of America 91: 363–386.

Rolston LH, McDonald FJD. 1979. Keys and diagnoses for the families of western hemisphere Pentatomoidea, subfamilies of Pentatomidae and tribes of Pentatominae (Hemiptera). Journal of the New York Entomological Society 87: 189–207.

Schaefer CW, Packauskas RJ, Eger JE. 1998. Nymphs of *Cyrtocoris egeris* (Hemiptera: Pentatomoidea: Cyrtocoridae). Annals of the Entomological Society of America 91: 452–457.

Schaefer CW, Panizzi AR, Coscarón MC. 2005. New records of plants fed upon by the uncommon heteropterans *Cyrtocoris egeris* Packauskas & Schaefer and *C. trigonus* (Germar) (Hemiptera: Cyrtocoridae) in South America. Neotropical Entomology 34: 127–129.

Silva AGDA, Gonçalves CR, Galvão DM, Gonçalves AJL, Gomes J, Silva MN, Simoni L. 1968. Quarto Catálogo dos Insetos que Vivem nas Plantas do Brasil – seus Parasitas e Predadores. Parte II. Ministério da Agricultura, Rio de Janeiro, Brazil.

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