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Source: Florida Entomologist, 95(4) : 877-881

Published By: Florida Entomological Society

URL: https://doi.org/10.1653/024.095.0409
DESCRIPTION OF A NEW SPECIES OF ARBORIDIA (HEMIPTERA: AUCHENORRHYNCHA: CICADELLIDAE: TYPHLOCYBINAE) FROM CHINA

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A pdf file with supplementary material for this article in Florida Entomologist 95(4) (2012) is online at http://purl.fcla.edu/fcla/entomologist/browse

ABSTRACT

A new species of leafhopper, Arboridia sinensis sp. nov., belonging to the subgenus Arboridia Zachvatkin, 1946 s. str. and closely related to Arboridia (Arboridia) gaurii Thapa, 1989, A. cerna Dworakowska, 1977, and A. soror Dworakowska, 1977, is described from Yunnan, China. It differs from A. gaurii in the body coloration and aedeagus shape, and from A. cerna and A. soror also in the shape of its pygofer process. In Yunnan, China the new species lives on Zanthoxylum bungeanum Maximowicz (Rutaceae).

Key Words: Arboridia sinensis, taxonomy, Zanthoxylum bungeanum, natural enemies, pest damage.

RESUMEN

Se describe una nueva especie de chicharrita (saltahoja) de Yunnan, China, Arboridia sinensis, sp. nov., que pertenece al subgénero Arboridia y es cercana a las especies Arboridia (Arboridia) gaurii, Thapa 1989, A. cerna Dworakowska, 1977 y A. soror Dworakowska, 1977. Esta especie se diferencia de A. gaurii por la coloración del cuerpo y la forma del aedeago, y de A. cerna y A. soror por la forma del proceso del pygofer. La nueva especie reside en Zanthoxylum bungeanum Maximowicz (Rutaceae) en Yunnan, China.

Palabras Clave: Arboridia sinensis, taxonomía, Zanthoxylum bungeanum, enemigos naturales, daños de plagas
indales: Rutaceae), a condiment and medicinal plant known as Chinese prickly-ash and Sichuan pepper tree. On the basis of their external appearance and the morphology of the male genitalia, we describe them as a new species of Arboridia (Arboridia).

**Material and Methods**

The specimens were collected with entomological nets and aspirators, and preserved in 70% ethanol.

All material studied in this paper is deposited in the following collections: SCAU: The Hymenoptera Collection of South China Agricultural University, Department of Entomology, Guangzhou, Guangdong, P.R. China, GC: Department of Agriculture, Forests, Nature and Energy, University of Tuscia, Viterbo, Italy (Guglielmino’s collection), and SMT: Senckenberg Naturhistorische Sammlungen Dresden, Museum für Tierkunde, Germany.

**Systematics**

*Arboridia (Arboridia) sinensis* Guglielmino, Xu, Bückle and Dong, **sp. nov.**

**Diagnosis**

*Arboridia (Arboridia) sinensis* **sp. nov.** is probably closely related to *A. cerna* Dworakowska, *A. gaurii* Thapa and *A. soror* Dworakowska for the bifurcate and apically not widened genital styles. In addition, those species show, except for *A. soror*, a particularly elongate pygofer appendage, the distal part of which is almost straight and directed caudad in *A. cerna*, whereas it is coiled over its whole length in *A. gaurii* and *A. sinensis*. *A. sinensis* shares with *A. gaurii* most characters of its genital apparatus, but is distinguished by its different aedeagus shape, which presents a more elongate shaft and a smaller ventral spur, and by its yellow or light greyish brown coloration.

**Description**

Body length: Males: 3.30-3.80 mm (Holotype 3.45 mm); females: 3.40-3.85 mm. Body yellow or light greyish-brown. Vertex (Fig. 4C in Supplementary Material) yellow or light greyish-brown with 2 broad dark brown bands of irregular shape and unsharply delimited outline, anteriorly diverging and posteriorly fused in a black triangular spot touching hind margin of vertex. Face yellow or light greyish-brown. Pronotum (Figs. 4B, C, E in Supplementary Material) yellow or light greyish-brown. Scutellum (Figs. 4A-E in Supplementary Material) yellow or light greyish-brown with a black, tongue shaped spot on each side. Ventrally, prothorax dark brown, meso- and metathorax yellow or light greyish-brown. Legs yellow or light greyish-brown. Forewing light yellow or greyish-yellow, infumated in basal (in particular on clavus) and apical parts, hyaline in middle area (Figs. 4B-E in Supplementary Material). Hindwing membrane fuliginous, veins uniformly brown. Abdominal segments dark brown.

**Distribution**

The species is so far known only from the Yunnan Province, Yonghsan Co., Huanghua Town, China.

**Biological Data**

Adult specimens of *Arboridia sinensis* **sp. nov.** were collected on *Z. bungeanum* at 1500 m, in Oct 2010. Postembryonic development consists of 5 immature instars (Figs 3A-F in Supplementary Material), that were observed during Sep and Oct 2010. Immature instars of *A. sinensis* **sp. nov.** live usually on the lower surface of the leaves of *Z. bungeanum* (Chinese prickly-ash, Sichuan pepper tree), whereas adults were observed also on other green parts of the host plant, such as leafstalks...
Fig. 1. *Arboridia (Arboridia) sinensis* sp. nov.: A: Pygofer, lateral view; B: Right pygofer process, lateral view; C: Left genital plates, dorsal view; D: Connective, mediadorsal view; E: Right genital style, mediadorsal view; F: Right genital style, lateradorsal view.
and fruits (Figs. 4A-F in Supplementary Material). Nymphs and adults are mesophyll feeders and their feeding cause symptomatic white-silver dechlorophyllation punctures on the leaves (Figs. 4B, 4C, 5C, 5D in Supplementary Material). The adults are attracted by yellow sticky traps (Fig. 5B in Supplementary Material). The host plant is economically important, because the bark and the berries of *Z. bungeanum* (Fig. 5A in Supplementary Material) are used for medicinal purposes. In particular, the fruit has remarkable anaesthetic, antihelmintic, astringent, diuretic and vasodilatory property. In addition, the dried fruit follicles of *Z. bungeanum* are used as a culinary spice and are particularly popular in Sichuan cuisine.

Nothing is known about the number of generations per year. In the natural environment, the populations of *A. sinensis* sp. nov. are controlled by natural enemies, among which are predators, such as spiders (Araneae), and parasitoids, such as *Aphelopus alebroides* Xu, Olmi, Guglielmino and Dong (Hymenoptera: Dryinidae) (Xu et al. 2011) (Figs. 6A, B in Supplementary Material). *A. sinensis* sp. nov. cohabits on *Z. bungeanum* with *Empoasca* (Matsumurasca) quadrialata Qin and Zhang, 2011 (Hemiptera: Cicadellidae).

Fig. 2. *Arboridia (Arboridia) sinensis* sp. nov.: A: Aedeagus, lateral view; B: Aedeagus, ventral view.
Remarks

Based on a similar shape of the pygofer process and the genital styles, *A. sinensis* sp. nov. has probably a close relationship with *A. gaurii* Thapa, 1989 described from Nepal and recorded on *Zanthoxylum armatum* (Thapa, 1989). In addition, both species feed on plants belonging to the same genus. The main differences between them consist in the coloration and markings of body (orange-brown in *A. gaurii*) and the aedeagus shape (see Thapa 1989, Figs. 7a, b, p. 118). The new species is probably related also to *Arboridia cerna* Dworakowska, 1977, and *A. soror* Dworakowska, 1977; both latter species were recorded in India. *Arboridia cerna* lives on Chinese cinnamon, *Cassia* sp. (Fabales: Fabaceae) and *A. soror* has been found on wormwood, *Artemisia* sp. (Asterales: Asteraceae) and on the orchid tree, *Bauhinia* sp. (Fabales: Fabaceae). In addition to the features mentioned above, the main difference between *A. sinensis* and the 2 Indian species concerns the shape of the pygofer process (see Dworakowska, 1977, Figs. 208-211, 216, 217, 221, 222, p. 302).

Acknowledgments

We are grateful to Dr. Irena Dworakowska for her important suggestions and help in the identification of the new species. We thank also Mr. Massimo Vollaro (University of Tuscia, Viterbo) for his assistance in preparing the plates. This study was supported by the Natural Science Foundation of China (No. U0936601).

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