

First record of phytophagous insects in *Arundo pugnax* (L.). 1753 (Poaceae) in Irapuato, Guanajuato, Mexico

Abstract

Arundo pugnax is a very aggressive grass due to its ability to cover humid areas and its difficult eradication, it invades irrigation canals and stops the flow of water. In order to contribute to the knowledge of insects associated with this Poaceae, leaves of *A. pugnax* were collected in the municipality of Irapuato, Gto. Mexico. The plum aphid *Hyalopterus pruni*, the sugarcane lace bug *Leptodictya tabida* and the hesperid *Euphyes vestris* are reported for the first time from Mexico.

Keywords: *Arundo pugnax*, *Hyalopterus*, *Leptodictya*, *Euphyes*

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Introduction

The giant reed *A. pugnax* is one of the 100 most aggressive invasive plant species in the world, it has a great capacity for reproduction, it invades canals and streams, preventing the flow of water. In Mexico it is present in Chihuahua, Coahuila, Nuevo León and Tamaulipas,¹ in the state of Guanajuato it invades streams and irrigation canals, particularly in the municipality of Irapuato; it is native to Asia and is a reservoir of diseases.² It was introduced in California in the 1800s and reproduces only asexually through rhizome fragments, it has low genetic diversity and adapts easily to the human environment.³ There is no research related to phytophagous insects associated with the giant reed *Arundo pugnax*; Therefore, the objective of this study was to report for the first time the presence of phytophagous insects in *Arundo pugnax* in Irapuato, Gto. Mexico.

Materials and method

The collections were made in the municipality of Irapuato, Gto. Mexico (1750 masl; 750 mm annual precipitation; 20.5°C mean temperature) in the towns of Los Arcos (20°C 42' 27" N, 101°C 20' 03" W) and El Copal (20°C 44' 41" N; 101°C 19' 46" W). The leaf where the colony was cut and placed in 70% alcohol. The insects were observed with the help of a Stemi DV6C stereoscope C. ZEISS.

The aphids were identified following the guide of Blackman and Eastop,⁴ the tinged was identified according to Bissonnet al.,⁵ and for the larvae of Hesperidae the guide suggested by Warren et al.,⁶ was used. All the material is in the collection of the "Leopoldo Tinoco Corona" Entomological Collection of the Department of Agronomy of the University of Guanajuato.

Results and discussion

The plum aphid *Hyalopterus pruni* (Geoffray) (Hemiptera: Aphididae), the sugarcane lace bug *Leptodictya tabida* (Herrich-Schaeffer) (Hemiptera: Tingidae) and *Euphyes vestris* (Boisduval) (Lepidoptera: Hesperidae) were identified.

Hyalopterus pruni

It was collected in the town of Los Arcos. It has an elongated shape covered with more or less abundant waxy powder, the wingless individuals measured around 1.5 to 2.6mm. Short black siphunculi,

brown tail. They have wax-secreting glands on each side of the abdominal tergi, more evident in the aptera. The wings are pale green with dark green longitudinal bands on the back of the abdomen. 10 leaves were collected, with a colony on each leaf with around 15 individuals/colony; they make a yellowish discoloration with abundant excrement in the form of dark spots. It is a primary pest on peach and plum.⁷ It has a cosmopolitan distribution. It is reported as a secondary pest in red reed *Phragmites communis* (Poaceae), and a vector of important viruses in agriculture.⁴ The life cycle is apparently anholocyclic in the study area.⁸

Leptodictya tabida

It is known as the sugarcane lace bug. In Florida, USA, it was reported on this crop for the first time in 1990. Adults have webbed wings, a flat body, and capitate antennae. They measure about 3mm long, hyaline in color, with three well-defined longitudinal carinae on the back of the thorax, the nymphs have spines on the dorsal area. The bugs were collected in El Copal, Irapuato. Gto. Mexico. 19 leaves of *A. pugnax* were reviewed, registering an average of 0.47 adults and 3.57 nymphs/leaf, necrotic areas were observed where the colony was. One of its hosts is corn, which is why it is considered a potential pest of this crop in the study area. 70 years ago, sugar cane was grown in the municipality of Irapuato and possibly due to the lack of this host, the lace bug migrated to *A. pugnax*. In Florida and Texas it feeds on *Saccharum officinarum* and is considered an important pest, with an average of 100 individuals/leaf, it affects mainly in dry years, the life cycle is 20 to 30 days in Hawaii during the summer.⁹

Euphyes vestris

The larvae have a protruding head, with two dark lines on the sides of the head capsule and a transverse line on the prothorax. The dark brown adults with two short parallel yellow spots on the forewings, the wingspan is 2.9-3.5 cm, feed on the nectar of *Vicia americana*, *Prunella vulgaris*, *Mentha piperita*, *Apocynum cannabinum* and *Echium vulgare*.¹⁰ Females oviposit in isolation on the host plant. Adults have been collected in flight at Cerro San Vicente, Valle de Santiago, Guanajuato (15/X/2011) and in wheat at Pénjamo, Guanajuato (5/V/2018). They hibernate as third instar larvae; it is distributed from the eastern United States to southern Texas.¹¹ An average of 0.5 larva/leaf was observed (n=20); making circular cuts

in the bundle, joining the edge of the leaf with silk threads to form a tube and pupate. It is the first record of this species in Mexico. Adults are found on the edges of humid forests; larvae have been reported feeding on *Cyperus esculentus* and *Carex heliophila*.¹²

Conclusions

Three species of insects associated with *Arundo pugnax* were determined; *Leptodictya tabida* stands out due to the damage and abundance in the plant, which has potential for biological control, although it also feeds on corn. The aphid *Hyalopterus pruni* is less abundant but stands out as a vector of diseases in this species of grass; the hesperid *Euphyes vestris* was the least abundant. The three species are new records for reed in Mexico.

Acknowledgments

None.

Conflicts of interest

The authors declare no conflicts of interest regarding the publication of this paper.

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