



Acta zoológica mexicana

ISSN: 0065-1737

ISSN: 2448-8445

Instituto de Ecología A.C.

Pulgarín Díaz, John Alexander; Cano Gallego, Lucas Esteban;
Herrera-Florez, Andres Fabián; Quiroz Gamboa, Jhon Alveiro
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Acta zoológica mexicana, vol. 34, e3412119, 2018
Instituto de Ecología A.C.

DOI: 10.21829/azm.2018.3412119

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**FIRST REPORT OF *ZETHUS SCHADEI* (HYMENOPTERA: VESPIDAE) AS NATURAL
ENEMY OF *HYPSIPYLA GRANDELLA* ZELLER (LEPIDOPTERA: PYRALIDAE) FROM
COLOMBIA**

**PRIMER REPORTE DE *ZETHUS SCHADEI* (HYMENOPTERA: VESPIDAE) COMO ENEMIGO
NATURAL DE *HYPSIPYLA GRANDELLA* ZELLER (LEPIDOPTERA: PYRALIDAE) EN
COLOMBIA**

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Recibido: 23/10/2017; aceptado: 13/03/2018; publicado en línea: 29/10/2018

Editor responsable: Cuauhtémoc Deloya

Pulgarín, D. J. A., Cano, G. L. E., Herrera-Florez, A. F., Quiroz-Gambia, J. A. (2018) First report of *Zethus schadei* (Hymenoptera: Vespidae) as natural enemy of *Hypsipyla grandella* Zeller (Lepidoptera: Pyralidae) from Colombia. *Acta Zoológica Mexicana (nueva serie)*, 34, 1–3. DOI: <https://doi.org/10.21829/azm.2018.3412119>

ABSTRACT. *Zethus schadei* Bohart & Stange is reported for the first time for Colombia and as a natural enemy of *Hypsipyla grandella*. The specimens were obtained from terminal shoots of *Cedrela odorata* L. (Meliaceae) in a plantation in the municipality of San Roque, Antioquia, Colombia.

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RESUMEN. Se reporta por primera vez para Colombia a *Zethus schadei* Bohart & Stange, y como enemigo natural de *Hypsipyla grandella*. Los especímenes fueron obtenidos de brotes terminales de *Cedrela odorata* L. (Meliaceae) en una plantación del municipio de San Roque, Antioquia, Colombia.

Hypsipyla grandella, the Meliaceae shoot borer, is one of the most important forestry plague in the Neotropics. It attacks cryptically the apical meristem of species of Meliaceae, as *Cedrela*, *Swietenia* and *Carapa*. Its damages forks the trees and the most valuable log, with subsequent financial losses in forestry projects, reaching up to 100% trees of a forest plantation, making it unfeasible high-density plantations. Its distribution matches that of its hosts (Newton *et al.*, 1993).



Newton *et al.* (1993) reported cases where full control of *H. grandella* was accomplished with cultural practices, shading effects, fertilization and growth improvement; however, the mechanisms were not well understood. Integrated pest management (IPM) practices for *H. grandella* requires further knowledge on its biology, including interaction with its hosts and natural enemies. Some studies regarding the control of *H. grandella* were carried out in South America. In Colombia *M. hypsipylaphagous* Herrera-Florez was described and recorded as parasitoid of pupae of *H. grandella* (Herrera-Florez *et al.*, 2017). Sands & Murphy (2001) reported some natural enemies of *H. grandella*. It is register for the first time *Zethus schadei* as a predator of pupae and larvae of *H. grandella*.

Terminal shoots of *Cedrela odorata* bored by *H. grandella* were collected in a plantation established in a protective forest reserve called “Reserva Forestal Protectora Regional La Montaña” (06°28’48.18”N, 074°39’28.80” W) managed by Corpoica, Research Center “El Nus”, San Roque (Antioquia, Colombia), located in a humid tropical forest at 850 m.a.s.l. The mean multiannual precipitation is 2,223 mm, and temperature is 23 °C. *Cedrela odorata* was planted without shade with at 6 x 6 m. Shoots were collected on February 15th 2016 and 25 individuals of *H. grandella* (larvae and pupae) were obtained. Specimens were left inside the shoots in 15 x 2.5 cm glass Petri dishes at room temperature; various shoots were placed in the same dish. Larvae turned into pupae in few days (7 days), obtaining 15 adults of *H. grandella* and one adult-female of *Z. schadei*. The same process was repeated on October 10th and on November 15th 2016. Six *H. grandella* larvae and one *Z. schadei* adult-female were obtained on October; and four *H. grandella* larvae and one *Z. schadei* adult-female on November.

Voucher specimens are deposited in Museo Entomológico Francisco Luis Gallego. *H. grandella* specimens were identified with the description of Heinrich (1956) (catalogs number 27911 to 27924); *Z. schadei* specimens (Figure 1) were identified with the taxonomic keys by Bohart & Stange (1965) (catalogs number 36533 and 36534).



Figure 1. *Zethus schadei* Bohart & Stange 1965 (Photography by Eduardo Posada).

Little is known about the reared insects. One pupae of *Z. schadei* were found at the bottom of the shoots burrowed by *H. grandella*, with a membrane on its upper side (Figure 2). *Zethus* wasps are predators, mostly solitary, some subsocial. Females collect small caterpillars to take to their nests to feed their larvae. They are attracted by Compositae flowers; some species build extremely specialized nest with mud and masticated and salivated vegetal material, other species build their nest inside twigs, wood or in



the ground. *Zethus* is mainly distributed in tropical areas. *Z. schadei* has been reported in Peru and Paraguay (Bohart & Stange, 1965; Hermes, 2012). This is the first report of *Z. schadei* for Colombia.



Figure 2. *Zethus schadei* Bohart & Stange 1965 pupa at the bottom of a *Cedrela odorata* shoot bored by *Hypsipyla grandella*. A membrane in the upper side of *Z. schadei* was present.

Few days after *H. grandella* lays its eggs, the larvae hatch and start looking for a place to bore, usually the terminal shoot of the tree that later dies. Attacked terminal shoots and new ones must be pruned to ensure one leading terminal shoot in order to obtain the first log in good quality. When attacked branches are cut, usually its inhabitants die, i.e. *H. grandella* and its natural enemies. The presence in the forest of the natural enemies here reported indicates that the *H. grandella* population is being controlled, decreasing future attacks and the need for pruning; knowledge of its bionomics will provide information important to add to current IPM schemes.

ACKNOWLEDGMENTS. We are grateful to Corporación Colombiana de Investigación Agropecuaria – Corpoica, Centro de Investigación El Nus, and Ministerio de Agricultura y Desarrollo Rural - MADR, Colombia, for funding planting and maintenance activities in the forest plantation studied; and to Museo Entomológico Francisco Luis Gallego for providing laboratory facilities, equipment and the study material.

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