First Report of Range Expansion of the Cactus Webworm, Loxomorpha flavidissimalis (Grote) (Pyraloidea: Crambidae), to Central Mexico and Central Texas, USA

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First report of range expansion of the cactus webworm, *Loxomorpha flavidissimalis* (Grote) (Pyraloidea: Crambidae), to central Mexico and central Texas, USA

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In Mexico, prickly pear cactus, *Opuntia ficus-indica* (L.) Mill. (Cactaceae), is widely cultivated for its nutritional (Hernández-Urbiola et al. 2011) and pharmaceutical value (Shetty et al. 2012). Its consumption as a fresh vegetable is a common element of Mexican culture (Russell and Felker 1987). Morelos State produces 30.9% of the edible nopalitos (young pads) of the country (3,905 ha) with an annual production of 367,836 tons (SIAP 2018). Traditional pests in the region are the cactus weevil, *Cactophagus spinolae* (Gyllenhall) (Coleoptera: Dryophthoridae) (López-Martínez et al. 2016), cochineal scale insect, *Dactylopius opuntiae* (Cockerell) (Hemiptera: Dactylopiidae) (Vanegas-Rico et al. 2010), and a thrips species, *Sericosthrips opuntiae* Hood (Thysanoptera: Thripidae) (Pérez et al. 2016). Their periodical damage requires control strategies to reduce their economic and environmental impact.

Recently, local prickly pear cactus farmers in Morelos brought to our attention a new pest problem that had not been reported previously. Larvae of an undetermined lepidopteran (covering themselves with a silken web) were reported to be feeding on young prickly pears. This new pest is tentatively identified as the cactus webworm, *Loxomorpha flavidissimalis* (Grote) (Pyraloidea: Crambidae).

**Fig 1.** Geographic distribution of *Loxomorpha flavidissimalis* (Grote) (Pyraloidea: Crambidae). (A) full distribution; (B) northern distribution details: white circles = previous records, black circles = new records for Texas; (C) southern distribution details: black squares = new records for Mexico. Gray polygons in Mexico represent municipalities where *Opuntia ficus-indica* (L.) is cultivated.

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Fig. 2. Adults and genitalia of *Laxomorpha flavidissimalis* (Grote) (Pyraloidea: Crambidae): (A) male, Brownsville, Texas, USA, Aug 1909; (B) female, Morelos, Mexico; (C) female genitalia, US National Museum slide #115749, Morelos, Mexico, Nov 2017; (D) male genitalia, US National Museum slide #115750, Morelos, Mexico; (E) male phallus, US National Museum slide #115750, Morelos, Mexico.
pads, resulting in reduction of quality and yield on those *Opuntia* (Cactaceae) plantations affected. Larval damage was similar to that of the cactus webworm, *Loxomorpha flavidissimalis* (Grote) (Lepidoptera: Crambidae), a minor lepidopterous pest, recently reported to feed on *O. ficus-indica* in Tamaulipas, Mexico; its distribution was reported to be central Texas south to northern Mexico (Lara-Villalón et al. 2016).

To confirm its presence and determine the taxonomic identity of this unknown larva, we conducted surveys in the 3 principal municipalities of nopalitos production in Morelos (Tepotztlán, Tlaltelpanntla, and Tlayacapan). Larvae were collected from infested young pads, and maintained in rearing cages with young *Opuntia* as food until adult emergence.

Collections from the following locations produced the following material: 11 specimens Mexico: Morelos, Tlaltelpanntla, La Vía, 18.996778°N, 98.979583°W, 14/11/2017, 2070 msnm, A. González Hernández coll., National Museum of Natural History; Tlaltelpanntla, Ahuacomulco, 8/11/2017 and 5/12/2017, 19.007861°N, 98.980022°W; Tlaltelpanntla, La Vía, 8/11/2017 and 5/12/2017, 18.996777°N, 98.979583°W; Tlayacapan, San José, 9/11/2017 and 7/12/2017, 18.973027°N, 99.007777°W; Tlayacapan, San Agustín, 9/11/2017 and 7/12/2017, 18.981111°N, 98.975750°W; Tepotztlán, San Juan, 13/05/2018, 19.015666°N, 99.085853°W; and included data from a specimen deposited in NMNH: Puebla, Tehuacán, 10/10 (USNMENT01464127), and from specimens at the University of Texas Insect Collection, Austin, Texas, USA: Dimmit Co., Catarina, 12 mi. E., 24 to 28 VII 76. 28.347500°N, 99.614722°W; Kendall Co., Boerne, Delmar Cain, photographer, 29.880779°N, 98.614313°N; Travis Co.: Austin, Brackenridge Field Lab, 30.284166°N, 97.773333°W, 24 Jul 1999, BB trap, J. E. Gillaspy coll.; same data, but 1 Aug 1999; same data but 21 Oct 1996; Val Verde Co., Dolan Falls, Devils River, 28 Oct 1995, J. Gillaspy coll., 29.88440°N, 100.993400°W. These localities are shown on the maps of Fig. 1.

Adults sent to author MAS were dissected following Brown et al. (2009). Male and female genitalia were compared with specimens of *Loxomorpha Amsel* (Lepidoptera: Crambidae) species from the Western Hemisphere, deposited in the National Museum of Natural History, Washington, DC, USA. Voucher specimens are deposited in Centro Nacional de Referencia Fitosanitaria, Mexico City, Mexico, and National Museum of Natural History, Washington, DC, USA.

The species was confirmed to be the cactus webworm, *L. flavidissimalis*, formerly reported to be restricted to southern Texas and northeastern Mexico by Lara-Villalón et al. (2016). The specimen from Tehuacán (USNMENT01464127) was collected in Oct 1910, and represents the oldest known Mexican record. It demonstrates that this species is native to Mexico and has expanded its distribution from central Texas to central Mexico, where it feeds naturally on *Opuntia engelmannii* subsp. *lindeiheri* (Engelm.) U. Guzmán & Mandujano (Cactaceae), and infrequently on *Cylindropuntia leptocaulis* (DC) F.M. Knuth (Cactaceae) (Mann 1969). As *Opuntia* monocultures expand in size, it is possible that the cactus webworm also will increase its population size, threatening the quality and yield of edible nopalitos on plantations.

Although many “yellow” pyralid species occur in several subfamilies of Crambidae, it is the Pyraustinae that is composed of these colored moths. However, *L. flavidissimalis* (Grote) (Lepidoptera: Crambidae) is composed of a distinctly more scalloped than males (Fig. 2A). Indeed, females (Fig. 2B) may have (or sometimes lack) a distinctive brown line along the Cu vein between the median and basal line, but this character is always lacking in males (2A). Furthermore, newly reared material provided an opportunity to photograph the genitalia of both sexes (Fig. 2C, D) to facilitate correct identification.

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**Summary**

Prickly pear cactus pads of *Opuntia ficus-indica* (L.) (Cactaceae) are cultivated in Mexico for fresh consumption. We report that *Loxomorpha flavidissimalis* (Grote) (Lepidoptera: Crambidae), the cactus webworm, was observed recently in farms in Morelos and has expanded its distribution south from its previously known distribution of northern to central Mexico. Female and male genitalia are fully illustrated to facilitate identification. The cactus webworm represents an additional potential pest to cultivated prickly pear cactus in central Mexico.

Key Words: prickly pear pads; pest; cactus webworm; Lepidoptera; Morelos

**Sumario**

El nopal verde *Opuntia ficus-indica* (L.) (Cactaceae) es cultivado en México para su consumo en fresco. Aquí, reportamos a *Loxomorpha flavidissimalis* (Grote) (Lepidoptera: Crambidae), el gusano telarañero, afectando a plantaciones en Morelos, ampliando su distribución al sur, desde sus registros previos al norte de México hasta la zona central del país. La genitalia de la hembra y macho es ilustrada para facilitar su identificación. El grueso telarañero representa una plaga potencial adicional a los nopalitos cultivados en el centro de México.

Palabras Clave: nopalitos; plaga; grueso telarañero; Lepidoptera; Morelos

**References Cited**

Brown RL, Lee S, MacGown JA. 2009. Video of the dissection of the male genitalia of the cactus moth, *Cactoblastis cactorum*. https://mississippiomologicalmuseum.org.msstate.edu/Researchtaxapages/Cactus-Moths/Cactoblastis_cactorum/VideoMaleGenitaliaDissection.html (last accessed 8 Mar 2019).

Hernández-Uribia ML, Pérez-Torrero E, Rodríguez-García ME. 2011. Chemical analysis of nutritional content of prickly pads (*Opuntia ficus-indica*) at varied ages in an organic harvest. International Journal of Environmental Research and Public Health 8: 1287–1295.

Lara-Villalón M, Solís MA, Sánchez-Ramos G, Mora-Olivo A. 2016. The cactus webworm, *Loxomorpha flavidissimalis* (Grote, 1878) (Pyraloidea, Crambidae): its distribution and potential as a pest of cultivated cactus (*Opuntia ficus-indica*) (L.) Mill., var. *Copena V-1* (Cactaceae) in Tamaulipas, Mexico. Proceedings of the Entomological Society of Washington 118: 109–114.
López-Martínez V, Pérez-De-la-O NB, Ramírez-Bustos II, Alia-Tejacal I, Jiménez-García D. 2016. Current and potential distribution of the cactus weevil, Cactophagus spinolae (Coleoptera: Curculionidae), in Mexico. The Coleopterists Bulletin 70: 327–334.

Mann J. 1969. Cactus-feeding insects and mites. United States National Museum Bulletin 256: 1–158.

Pérez JJ, Ortiz R, Ramírez ML, Olivares J, Ruiz D, Montiel D. 2016. Presence of organochlorine pesticides in xoconostle (Opuntia joconostle) in the central region of Mexico. International Journal of Food Contamination 3: 21. DOI: 10.1186/s40550-016-0044-4

Russell CE, Felker P. 1987. The prickly-pears (Opuntia spp., Cactaceae): a source of human and animal food in semiarid regions. Economic Botany 41: 433–445.

Shetty AA, Rana MK, Preetham SP. 2012. Cactus: a medicinal food. Journal of Food Science and Technology 49: 530–536.

SIAP (Servicio de Información Agroalimentaria y Pesquera). 2018. Anuario Estadístico de la Producción Agrícola. (online) http://nube.siap.gob.mx/cierre_agricola/ (last accessed 17 Feb 2019).

Vanegas-Rico JM, Lomeli-Flores JR, Rodríguez-Leyva E, Mora-Aguilera G, Valdez JM. 2010. Enemigos naturales de Dactylopius opuntiae (Cockerell) en Opuntia ficus-indica (L.) Miller en el centro de México. Acta Zoológica Mexicana (n.s.) 26: 415–433.