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Source: Florida Entomologist, 102(3) : 642-644

Published By: Florida Entomological Society

URL: <https://doi.org/10.1653/024.102.0314>

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First report of *Caulotops distanti* Reuter (Hemiptera: Miridae: Bryocorinae) feeding on two species of mezcal agave (Asparagaceae) in Guerrero, Mexico

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Mexico is a faunistically rich country with a great diversity of Asparagaceae (= Agavaceae), including a high number of endemic species (Espejo 2012). Many species of the genus *Agave* are particularly valuable ecologically and economically, some of them with a long tradition of cultivation (Granados 1993; García-Moya et al. 2011). In the state of Guerrero, 2 mezcal agave species are especially important economically: “espadín” (*Agave vivipara* L.) and “papalote” (*Agave cupreata* Trel. & Berger), which are used for producing mezcal, an important distilled Mexican drink (Barrios et al. 2006).

The agave weevil, *Scyphophorus acupunctatus* Gyllenhal (Coleoptera: Dryophthoridae), is the primary insect pest associated with *A. vivipara* and *A. cupreata* in Guerrero (Barrios et al. 2006), where its damage is most significant in mature plantations. Agave species used for production of mezcal are perennial crops, requiring more than 5 yr of cultivation before they are harvested (Núñez et al. 2011). This long period of cultivation allows for the potential development of several insect pests.

During a long-term survey of the insects associated with mezcal agaves in Guerrero, an unknown plant bug (Miridae) came to our attention. This species was observed on young to medium-aged *Agave angustifolia* Haw. (Asparagaceae) and *A. cupreata* plants (1–4 yr old), where it caused severe chlorosis: numerous small, irregular, yellowish spots (Fig. 1A, B) clearly visible on the leaves.

Similar damage was previously observed on agave in Jalisco. González-Hernández et al. (2007) and Pérez-Domínguez & Rubio-Cortés (2007) reported *Caulotops agavis* Reuter (Hemiptera: Miridae) damaging blue agave (*Agave tequilana* F.A.C. Weber; Asparagaceae) and González-Castillo et al. (2011) observed a *Caulotops* sp. feeding on *Agave duranguensis* Gentry (Asparagaceae).

With the objective to determine the correct taxonomic status of this plant bug, we established a survey to sample *Agave* plantations and nurseries in Guerrero. Adults were collected with an aspirator, killed, and preserved in 70% ethyl alcohol, point mounted, and identi-

fied by Harry Brailovsky (Instituto de Biología, Universidad Nacional Autónoma de México) and Thomas J. Henry (Systematic Entomology Laboratory, USDA-ARS). All specimens were determined as *Caulotops distanti* Reuter (Hemiptera: Miridae: Bryocorinae) (Fig. 2). *Caulotops distanti* is a Neotropical species with a wide distribution, from Costa Rica, Mexico, and Venezuela (Henry 1985). In the US, it is considered an invasive species in Texas on *Yucca* (Asparagaceae) plants, and in Florida it is associated with imported potted plants of *Yucca gigantea* Lem. (= *Yucca elephantipes* Regel ex Trel.) (Asparagaceae) (Henry 1985). Carvalho (1948) gave the first Mexican report of this plant bug (as *Caulotops rufoscutellatus major* Carvalho) based on specimens from Yucatan.

Material examined. MÉXICO. Guerrero. During field surveys for pests on agave annually from 2013 to 2017, *C. distanti* was observed in some mezcal agave plantations in Guerrero. It was detected in 2 plantations of papalote mezcal agave (*A. cupreata* Trel. & Berger) located in Xochipala (17.754301°N, 99.713319°W; 1,911 masl) and in Quetzalapa (18.355608°N, 99.181216°W; 957 masl). It also was detected in 4 plantations of espadín mezcal agave (*A. angustifolia* Haw.) in “La Minilla” (18.355906°N, 99.181400°W; 962 masl), “El Rancho frío” (18.388102°N, 99.169001°W; 1,114 masl), “El Llano” (18.379902°N, 99.154601°W; 1,155 masl), and “El Horno” (18.390106°N, 99.160403°W; 1,140 masl) located in Quetzalapa, Municipality of Huitzuco de los Figueroa, Guerrero. We collected (18–20 Mar; 5–7, 13–15 Apr, and 6 Jun 2015) adult bugs on mezcal agave espadín (*A. angustifolia* Haw.) and mezcal agave papalote (*A. cupreata* Trel. & Berger) in plantations in “La Minilla”, “El Llano,” and “El Horno.” Additional specimens also were detected in a nursery (18.339303°N, 99.185136°W; 913 masl) in Quetzalapa, Guerrero. Voucher specimens from this study have been deposited in Departamento de Zoología, Instituto de Biología, Universidad Nacional Autónoma de México, Ciudad de México, Mexico and the Smithsonian Institution, National Museum of Natural History, Washington, DC, USA.

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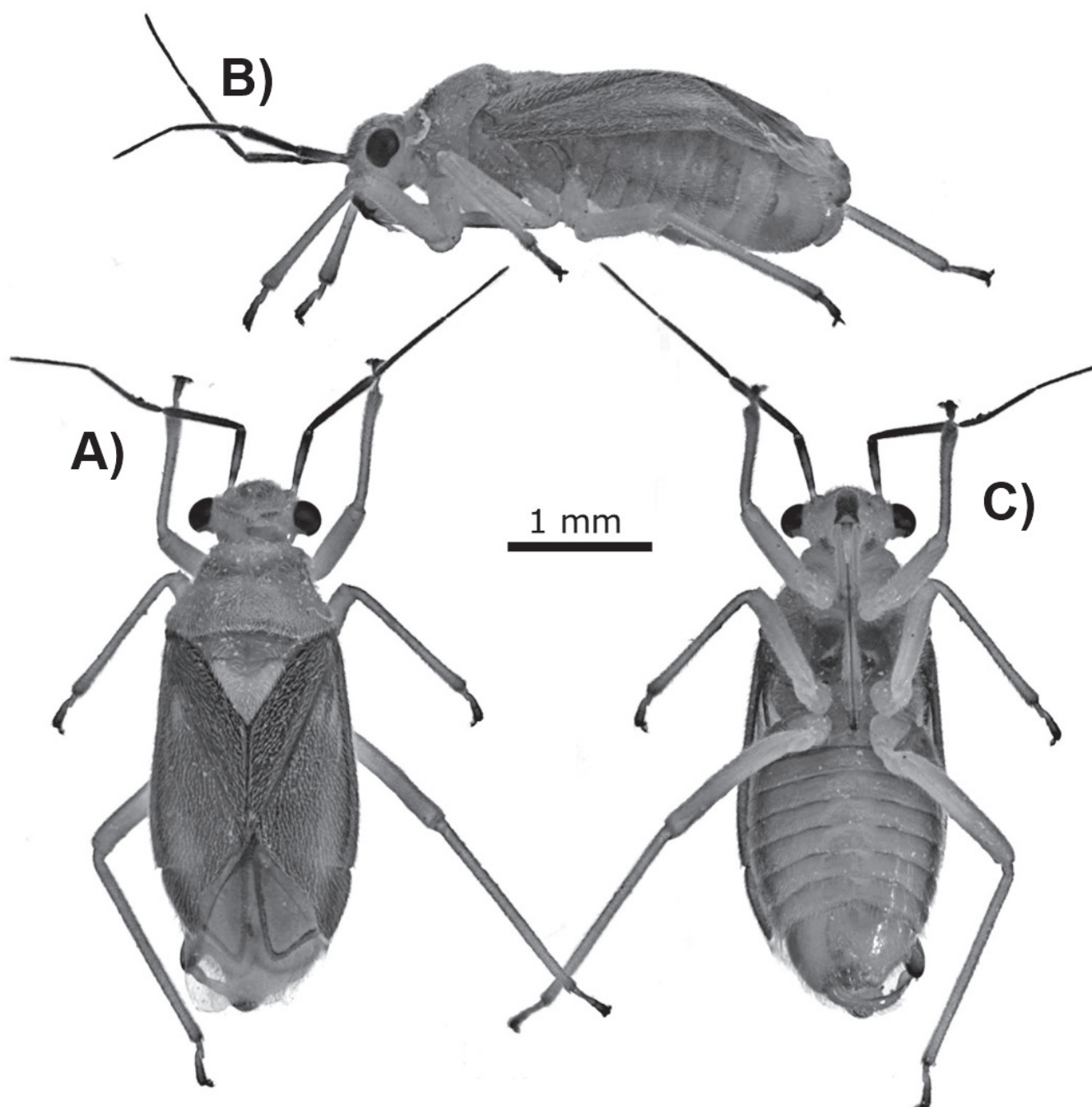


Fig. 2. Adult male of *Caulotops distanti* Reuter dorsal (A), lateral (B), and ventral view (C).

Currently, 8 species of *Caulotops* are known, 5 of which occur in Mexico, including *C. distanti* (Schuh 2002–2013). *Caulotops distanti* can be distinguished from other known species of the genus by the following combination of characters (Henry 1985): body length 4.1 mm or less, first antennal segment pale with apex and sub-basal ring fuscous, and central area of corium usually with yellow or orange wedge-shaped streak. In the field, this species may be found on heart leaves and the basal parts of leaves, generally feeding in the afternoon (between 7:00 P.M. and 9:00 P.M.; sunset at 7:00 P.M.). Most of the feeding occurs on the upper surface (adaxial) of the leaf, but some specimens also feed on the lower leaf surface (abaxial).

At this time, the impact of damage by *C. distanti* does not appear serious on mezcal agaves “espadín” and “papalote” in Guerrero, but it is important to implement additional studies to determine its behavior, habits, population dynamics, distribution, and to further evaluate the magnitude of damage caused by this plant bug on wild and cultivated agaves. Although it is possible that *C. distanti* could transmit plant pathogens or toxins that might affect agave, Wheeler (2001) documented that Miridae are poor disease vectors.

We extend our thanks to Daniel Castro Rodríguez and Luis Figueroa Ocampo (producers of mezcal maguey) for access to their maguey plantations in Quetzalapa, Guerrero, and to Jorge M. Valdes-Carrasco (Colegio de Postgraduados) for some of the images used in this paper. We also



Fig. 1. Damage caused by adults of *Caulotops distanti* Reuter on leaves of *Agave cupreata* Trel. & Berger (A), and *Agave vivipara* L. (B).

thank Consejo Nacional de Ciencia y Tecnología (CONACYT) for providing a Postdoctoral scholarship for the first author at the Facultad de Ciencias Agropecuarias, Universidad Autónoma del Estado de Morelos.

Summary

An agave bug *Caulotops distanti* Reuter (Hemiptera: Miridae) is considered a potential pest of agaves in Guerrero, Mexico. Specimens were collected on the leaves of mezcal agave (*Agave vivipara* L., and *Agave cupreata* Trel & Berger) (Asparagaceae) in plantations in Quetzalapa, Huitzuco de los Figueroa, Guerrero, Mexico. This is

the first report *C. distanti* attacking *Agave cupreata* and *A. vivipara*. Observations on damage and feeding symptoms of this plant bugs are presented.

Key Words: agave bug; pest; mezcal maguey

Sumario

La chinche del agave, *Caulotops distanti* Reuter (Hemiptera: Miridae) es insecto una plaga de las hojas de plantas de agaves. Con un aspirador hecho se colectaron especímenes de esta chinche en hojas de plantas de agave de plantaciones de magueyes mezcaleros *Agave vivipara* L., y *Agave cupreata* Trel & Berger (Asparagaceae) en Quetzalapa, Huitzuco de los Figueroa, Guerrero, México. Este es el primer reporte de *C. distanti* para México atacando plantas de *Agave cupreata* y *A. vivipara*. Adicionalmente se observaron y describieron los daños y síntomas ocasionados por esta plaga.

Palabras Clave: chinche del maguey; plaga; mezcal maguey

References Cited

- Barrios AA, Ariza Flores R, Molina Muñoz JM, Espinosa Paz H, Bravo Mosqueda E. 2006. Manejo de la Fertilización en Magueyes Mezcaleros Cultivados (*Agave* spp.) de Guerrero. INIFAP. Iguala, México.
- Carvalho JCM. 1948. Mirídeos neotropicales, XXXV: Géneros "*Corcovadocola*" n. g., "*Guanabarea*" n. g. e "*Caulotops*" Bergroth (Hemiptera). Revista Brasileira de Biología 8: 525–533.
- Espejo A. 2012. El endemismo en las Liliopsida mexicanas. Acta Botánica Mexicana 100: 195–257.
- García-Moya E, Romero-manzanares A, Nobel PS. 2011. Highlights for *Agave* productivity. GCB Bioenergy 3: 4–14.
- González-Hernández H, Solís-Aguilar JF, Pacheco-Sánchez C, Flores-Mendoza FJ, Rubio-Cortés R, Rojas JC. 2007. Insectos chupadores y del follaje del agave, pp. 68–78 In González-Hernández H, del Real-Laborde JI, Solís-Aguilar JF [eds.], Manejo de Plagas del Agave Tequilero. Colegio de Postgraduados and Tequila Sauza S.A. de C.V., Zapopan, México.
- González-Castillo MP, Quintos EM, Castaño-Meneses G. 2011. Arthropods in natural communities in mescal agave (*Agave durangensis* Gentry) in an arid zone. American Journal of Applied Science 8: 933–944.
- Granados SD. 1993. Los Agaves en México. Universidad Autónoma Chapingo. Chapingo, México.
- Henry TH. 1985. *Caulotops distanti* (Miridae: Heteroptera), a potential yucca pest newly discovered in the United States. Florida Entomologist 68: 320–323.
- Núñez HM, Rodríguez LF, Khann M. 2011. Agave for tequila and biofuels: an economic assessment and potential opportunities. GCB Bioenergy 3: 43–57.
- Pérez-Domínguez JF, Rubio-Cortés R. 2007. Tecnología de manejo y control de plagas del agave, pp. 135–168 In Pérez Domínguez JF, del Real Laborde JI [eds.], Conocimiento y Prácticas Agronómicas para la Producción de *Agave tequilana* Weber en la Zona de Denominación de Origen del Tequila. Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias. Centro de Investigación Regional del Pacífico Centro. Guadalajara, México.
- Schuh RT. 2002–2013. On-line systematic catalog of plant bugs (Insecta: Heteroptera: Miridae), <http://research.amnh.org/pbi/catalog/> (last accessed 18 May 2019).
- Wheeler Jr AG. 2001. Biology of the Plant Bugs (Hemiptera: Miridae). Pests, Predators, Opportunist. Cornell University Press, Ithaca, New York, USA.