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Source: Florida Entomologist, 97(4) : 1869-1872

Published By: Florida Entomological Society

URL: <https://doi.org/10.1653/024.097.0470>

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FIRST RECORD OF *ACALLES SABLENSIS* (COLEOPTERA: CURCULIONIDAE) IN *RHIZOPHORA MANGLE* (MALPIGHIALES: RHIZOPHORACEAE) ALONG THE GULF OF MEXICO

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Mangrove is an important tropical and subtropical vegetation type found along the edges of the continents and recognized as a habitat for a wide diversity of invertebrates, birds and fish (Nagelkerken & Velde 2004; Hogarth 2007). Mangroves are woody plants characterized by their common ability to grow and thrive along the length of coastlines protected from the tides. They grow perennially or seasonally in saline sediments, often in anaerobic conditions, that are subject to flooding by salt water (Yáñez et al. 2009). Mangrove trees range from 1 to 50 m in height and their wood is used as a fuel and in the construction of houses, boats, furniture, fishing gear and railroad ties. The bark is used to extract medicines and tannins (Jimenez 1985; Sánchez-Perera et al. 2010).

*Rhizophora* is a mangrove genus that is widely distributed in America, Africa, Asia and Australia (Juncosa & Tomlinson 1988). It includes 7 species worldwide, of which only one is found in Mexico, *Rhizophora mangle* L. (Malpighiales: Rhizophoraceae) (Jimenez 1985); it is one of the most common and widespread mangrove species, known as red mangrove and has an aerial structure that confers stability to the tree in permanently marshy soils (Menezes 2006). *Rhizophora mangle* is found in the tropics and subtropics and is native from southern Florida and Mexico, across Central America to Ecuador, Peru and Brazil in South America (Jimenez 1985). In Mexico, this species is found on the coasts of the Pacific Ocean and the Gulf of Mexico, including the Caribbean Sea (López-Portillo & Ezcurra 2002). In recent decades, mangrove forests have been rapidly degraded and destroyed in many countries (FAO 1994). Clearances and transformation have caused a loss in natural mangrove coverage, with an annual deforestation rate on the Gulf of Mexico of 3.9% and an annual deforestation rate of 5% at national level in Mexico (López-Portillo &

Ezcurra 2002). In order to reverse this process of deforestation, various recovery procedures have been proposed, including reforestation, rehabilitation and restoration (Lewis 2005). Reforestation combines activities of direct reforestation with *R. mangle* propagules, wild plants and/or seedlings from a temporary greenhouse and presents a recorded survival rate of more than 90% (SEMARNAT 1999). However, the propagules and seedlings used in reforestation are not necessarily free from disease and pests. The presence of *Coccotrypes rhizophorae* (Hopkins) (Coleoptera: Curculionidae: Scolytinae) has recently been detected in *R. mangle* propagules. This insect has been reported as a pest of the mangrove (Woodruff 1970; Rabinowitz 1977; Martínez-Zacarias et al. in preparation). The objective of this study is to report the presence of *Acalles sablensis* Blatchley, 1920 (Coleoptera: Curculionidae: Cryptorhynchinae) in *R. mangle* individuals for the first time on the Mexican coast of the Gulf of Mexico.

In March 2012, dead propagules from different zones of the Ramsar site No. 1602: Mangroves and Wetlands of Tuxpan were observed to have perforations. The propagules were opened in order to verify that they had been subjected to attack by *Coccotrypes rhizophorae*. However, adults of another species of Curculionidae were found in propagules collected from 3 mangrove sites at Tumlilco, Veracruz (N 20° 55' 35.1" W 97° 20' 58.5"; N 20° 55' 32.9" W 97° 21' 02.6"; N 20° 55' 36.4" W 97° 21' 03.2"). No specimens of the larval stage were found in any case. The specimens of Curculionidae found in the *R. mangle* propagules were preserved in flasks of alcohol and subsequently identified as *Acalles sablensis*. Voucher specimens were deposited in the personal collection quivoof the fourth autor Dr. Charles O'Brien, Green Valley, Arizona, USA.

Despite the wide global distribution of the genus *Acalles*, the biology of the majority of the

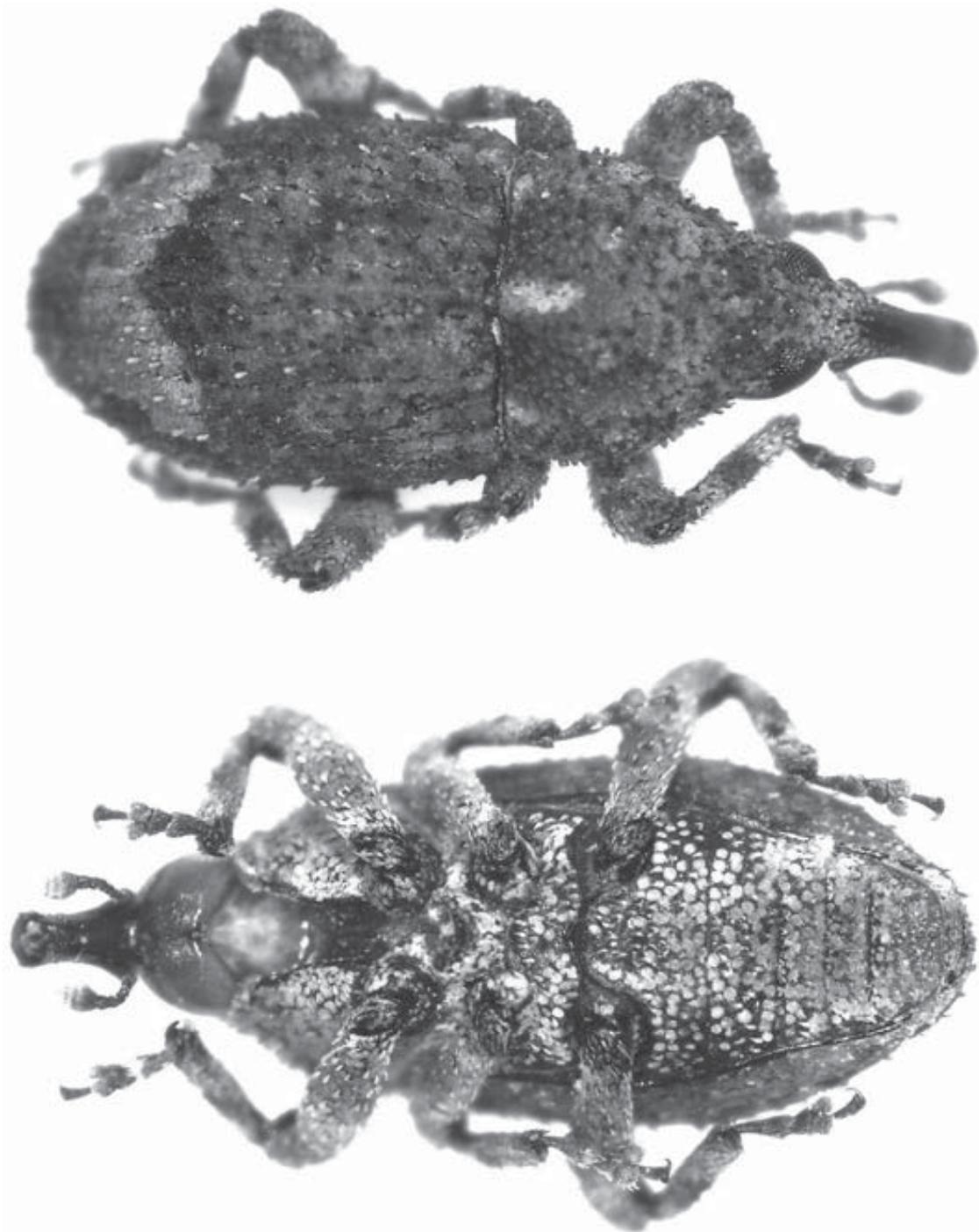


Fig. 1. *Acalles sablensis* adult; a) dorsal view and b) ventral view.

species of this genus is little known. Some studies reported the presence of larvae and adults in dead branches of deciduous species (Hoffmann 1958; Heijerman 2004). These species feed on the tissues of many different plant species, from

the roots of legumes to plant stems and even the dead wood of conifers or deciduous species (Verdugo 2008). Previously, *Acalles sablensis* has only been reported at Cape Sable and Chokoloskee, Florida, USA in dead branches of *Borrchia*

spp. (Asterales: Asteraceae) and *Sideroxylon celastrina* (Kunth) T. D. Penn (Ericales: Sapotaceae) (Blatchley 1920, 1922). Anderson (1992) also reported that *A. sablensis* was collected at other sites of South of Florida, such as Monroe Co., Bahía Honda St. Park; Big Pine Key, Long Beach, and Long Key State Recreation Area. To our knowledge, this is the first time the species has been reported in propagules of *R. mangle*. A total of 16 specimens of *A. sablensis* were found in these propagules in Jan 2012. Perhaps, *A. sablensis* arrived at Tumulco, Veracruz as result of winds produced by hurricanes from the coast of Florida on the Gulf of Mexico or, it's probably part of the original distribution of the species which could be tested with molecular genetic studies.

Adult *A. sablensis* are between 3 and 5 mm in length, with a robust, oval body that is reddish-brown in color. The dorsum is covered with grey, white and brown scales; forming vague bands at each side that unite in the middle of the base of the thorax, in the form of a "V" on the declivity of the elytra, edged by transverse irregular bands of brown scales, that also form dispersed patches on the disc of the thorax, the middle of the base of the elytra and a wide common band in the middle of the declivity. Individuals are densely covered by round, white scales. The rostrum is wide, flat, subspatulate, almost as long as the thorax, scale covered and carinate on the basal third. The thorax is slightly wider than long, sides rounded and strongly constricted apically. The elytra are oval, are distinctly wider at the base than the thorax, the sides are subparallel to the apical third, there they gradually converge to a rounded apex (Fig. 1a and 1b).

Future studies should be directed towards determining the geographic distribution of this species on the coasts of Mexico, as well as identifying its hosts and determining the type and extent of the damage it can inflict on them. This will in turn allow resource managers take appropriate measures to maximize propagule survival during reforestation efforts. Co-author Dr. Charles O'Brien has numerous specimens from southern Florida taken from twigs and propagules of *Rhizophora mangle* (unpublished observations).

#### SUMMARY

We present the first record of *Rhizophora mangle* (Malpighiales: Rhizophoraceae) as a host of *Acalles sablensis* Blatchley, 1920 (Coleoptera: Curculionidae: Cryptorhynchinae) in the Ramsar site No. 1602 of the Mangroves and Wetlands of Tuxpan. The presence was recorded of dead *Rhizophora mangle* propagules that presented perforations in the bark. Beetles of the family Curculionidae was found within the propagules and identified as *Acalles sablensis*.

This species has previously only been recorded in Cape Sable and Chokoloskee, Florida, USA, in 1920 and 1922 in dead branches of *Sideroxylon celastrina* (Kunth) T. D. Penn (Ericales: Sapotaceae) (Blatchley 1920, 1922). This study represents the first report of this curculionid species in Mexico.

Key Words: mangrove, propagule, curculionid

#### RESUMEN

Se presenta el primer registro de *Rhizophora mangle* (Malpighiales: Rhizophoraceae) como hospedero de *Acalles sablensis* Blatchley, 1920 (Coleoptera: Curculionidae: Cryptorhynchinae) en el sitio Ramsar 1602: Humedales y Manglares de Tuxpan. La presencia fue registrada en propágulos muertos de *Rhizophora mangle* que mostraban perforaciones en la corteza. Un escarabajo de la familia Curculionidae fue encontrado dentro de los propágulos e identificado como *Acalles sablensis*. Esta especie únicamente ha sido registrada en Cape Sable y Chokoloskee, Florida, USA, en 1920 y 1922 en ramas muertas de *Sideroxylon celastrina* (Kunth) T. D. Penn (Ericales: Sapotaceae) (Blatchley 1920, 1922). Este estudio representa el primer reporte de esta especie de curculiónido en México.

Palabras Clave: Manglar, propágulo, curculiónido

#### REFERENCES CITED

- ANDERSON, R. S. 1992. Curculionoidea of southern of Florida: An annotated checklist (Coleoptera: Curculionoidea [excluding Curculionidae, Scolytinae, Platypodinae]). *Insecta Mundi* 6: 193-248.
- BLATCHLEY, W. S. 1920. Some new *Rhynchophora* from eastern North America with additions to and corrections of the "*Rhynchophora* of northeastern America". *J. New York Entomol. Soc.* 28: 161-178.
- BLATCHLEY, W. S. 1922. Notes on *Rhynchophora* of eastern North America, with characterizations of new genera and descriptions of new species. *J. New York Entomol. Soc.* 30: 95-113.
- FAO (FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS). 1994. Mangrove Forest Management Guidelines. Forestry Paper 117. Rome.
- HEIJERMAN, T. 2004. The weevil genera *Acalles*, *Rutera* and *Kyklioacalles* in the Netherlands (Coleoptera: Curculionidae). *Nederlandse faunistische Mededelingen* 21: 61-78.
- HOFFMANN, A. 1958. Coléoptères Curculionides (Troisième Partie). *Faune de France* 62: 1207-1839.
- HOGARTH, P. 2007. The biology of mangroves and seagrasses. New York, Oxford University Press, 273 pp.
- JIMENEZ, J. A. 1985. *Rhizophora mangle* L. Red mangrove. Publication SO-ITF-SM-2. Rio Piedras, PR: U.S. Dept. Agric., Forest Service, Southern Forest Exp.Sta., Inst. Tropical Forestry. 7 pp.
- JUNCOSA, A. M., AND TOMLINSON, P. B. 1988. A historical and taxonomic synopsis of Rhizophoraceae and Anisophylleaceae. *Ann. Missouri Bot. Garden* 75: 1278-1295.

- LEWIS, R. R. 2005. Ecological engineering for successful management and restoration of mangroves forest. *Ecol.Eng.* 24: 403-418.
- LÓPEZ-PORTILLO, J., AND EZCURRA, E. 2002. Los manglares de México: una revisión. *Madera y Bosques* 8: 27-51.
- MENEZES, N. L. 2006. Rhizophores in *Rhizophora mangle* L: an alternative interpretation of so-called "aerial roots". *Ann. Brazilian Acad. Sci.* 78(2): 213-226.
- NAGELKERKEN, I., AND VAN DER VELDE, G. 2004. Are Caribbean mangroves important feeding grounds for juvenile reef fish from adjacent seagrass beds? *Marine Ecol. Prog. Ser.* 274: 143-151.
- RABINOWITZ, D. 1977. Effects of mangrove borer, *Poecilips rhizopherae* on propagules of *Rhizophora harri-sonii* Panamá. *Florida Entomol.* 60: 129-134.
- SÁNCHEZ-PERERA, L. M., ESCOBAR, A., SOUCCAR, C., REMIGIO, M. A., AND MANCEBO, B. 2010. Pharmacological and toxicological evaluation of *Rhizophora mangle* L., as a potential antiulcerogenic drug: Chemical composition of active extract. *J. Pharmacognosy and Phytotherapy* 2: 56-63.
- SEMARNAT. 1999. Norma Oficial Mexicana de Emergencia NOM-EM-001-RECNAT-1999. *Diario Oficial*, lunes 16 de agosto. Secretaría de Medio Ambiente, Recursos Naturales y Pesca.
- VERDUGO, A. 2008. Citas interesantes de *Camptorhinus* para la fauna de Andalucía (Coleoptera, Curculionidae, Cryptorhynchinae). *Bol. Soc. Entomol. Aragonesa* 43: 489-490.
- YÁÑEZ, L., ANGELES, J., LÓPEZ, J., AND BARRALES, S. 2009. Variación anatómica de la madera de *Avicennia germinans* en la laguna de la Mancha, Vera Cruz, México. *Bol. Soc. Bot. México.* 85:7-15.
- WOODRUFF, R. E. 1970. A mangrove borer, *Poecilips rhizopherae* (Hopkins) (Coleoptera: Scolytidae). *Div. Plant Industry, Florida Dept. Agric. Consumer Serv. Entomology Circular No. 98*, 2 pp.