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SPECIES OF SPHENOPHORUS (COLEOPTERA: DRYOPHTHORIDAE) ASSOCIATED WITH GOLF COURSES IN MEXICO

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The construction of golf courses in Mexico has increased dramatically within the past 2 decades. This has led to a corresponding increase in pest problems associated with turfgrass, especially billbugs, Sphenophorus (Coleoptera: Dryophthoridae) which are considered one of the most damaging of turfgrass pests (Buss & Huang 2009; Johnson-Cicalese et al. 1990). The genus is diverse and widely distributed with 66 species reported from the United States and 29 from Mexico (Vaurie 1951, 1954; O'Brien & Wibmer 1986). However, there is little information concerning the species and distribution of Sphenophorus attacking turfgrass in Mexico. This situation has been further complicated by the importation of billbug infested turfgrass from the U.S., usually shipped as turf rolls from the states of Alabama, California, Georgia and Florida. Turf rolls from the U.S. infested with larvae of the eastern U.S. subspecies, Sphenophorus venatus vestitus Chittenden, have been intercepted by Mexican quarantine officials which prompted the need for information regarding the identification of the species involved (Vergara-Pineda & Muñiz-Vélez 2003). Evidence that populations of this species have become established in Mexico is presented by León-García et al. (2012) who reported S. venatus vestitus from golf courses in the state Quintana Roo. Other than this report, little information exists concerning the present distribution and possible new introductions of Sphenophorus in golf courses of Mexico. The objective of the present study was to determine the species and incidence of Sphenophorus associated with golf courses in Mexico from several geographic regions of the country.

Twelve golf courses were visited in 7 states from distinct geographic regions of Mexico from July of 2012 to March of 2013 (Fig. 1). Sampling of *Sphenophorus* was accomplished by flooding a defined area for a period of 3 to 5 min or until adult weevils were observed on the grass surface. These individuals were collected in labeled vials in 70% alcohol. Specimens were determined using the key in Vaurie (1951) and through comparison with specimens deposited in Entomology Collection of the Universidad de Querétaro (UAQE). Photographs of specimens were taken by a stereoscope Carl Zeiss III with a PaxCam III digital camara.

Five species of Sphenophorus were found in golf courses from 7 states of Mexico; Sphenophorus arizonensis Horn, Sphenophorus cicatristriatus Fahraeus, Sphenophorus incurrens Gyllenhal, Sphenophorus rectus (Say), and Sphenophorus venatus vestitus Chittenden.

Sphenophorus arizonensis (Horn) was found from Paspalum vaginatum Swartz in the state of Puebla (N 18° 28' 58.83" -W 97° 24' 34.99") representing a new state and new host plant record for Mexico (Figs. 2A and 2B). Sphenophorus cicatristriatus (Fahraeus) was collected from C. dactylon in golf courses in Puebla, Puebla (N 19° 00' 46.05" -W 98° 14' 54.44") (Figs. 2C and 2D). Sphenophorus rectus (Say) (Fig. 2E and 2F) was collected in turfgrass of Paspalum vaginatum on the coast of Veracruz (N 19° 03' 56.91" -W 96° 05' 32.80"), which represents a new host plant record for the species. Specimens of Sphenophorus incurrens (Gyllenhal) were collected on Pennisetum clandestinum in Querétaro, Querétaro (N 20° 37' 09.03"



Fig. 1. Distribution of species of Sphenophorus collected from golf courses in Mexico.

-W 100° 20' 29.86") (Figs. 2I and 2J) representing a new state record for the insect.

The Sphenophorus venatus (Say) individuals collected were all identified as the subspecies Sphenophorus venatus vestitus Chittenden (Figs. 2G and 2H). This subspecies was the most abundant species and subspecies on the golf courses visited, and was found on 10 of the 12 golf courses that were sampled. This subspecies was found infesting P. vaginatum in Tehuacán, Puebla (N 18° 28' 58.83" -W 97° 24' 34.99"); from Boca del Río, Veracruz (N 19° 03' 56.91" - W 96° 05' 32.80"); Acapulco, Guerrero (N 16° 47' 43.67" -W 99° 49' 12.69") and San José del Cabo, Baja California Sur (N 23° 02' 30.54" -W 109° 42' 54.49" and N 23° 04' 21.75" -W 109° 39' 11.15"). This subspecies was also collected from the turfgrass, Cynodon dactylon, in Acapulco, Guerrero (N 16° 46' 26.41" -W 99° 47' 28.67" and N 16° 47' 43.43" -W 99° 48' 44.86"), San José del Cabo, B.C. S. (N 23° 02' 50.60" -W 109° 41' 52.02") and San Pedro Garza García, Nuevo León (N 25° 38' 46.19" -W 100° 20' 46.22"). Individuals were also collected on the turfgrass, Lollium perenne in León, Guanajuato (N 21° 11' 57.38" -W 101° 41' 43.46"). These collection data considerably expand the known distribution of this species and subspecies within Mexico, as well as, providing new host plant records.

Species of Sphenophorus were often found together in the same golf course. For example, S. arizonensis and S. rectus were associated together in turf grass, Paspalum vaginatum, in the states of Puebla and Veracruz but always in the presence of S. venatus vestitus. Whether the presence of S. arizonensis and S. rectus at these sites was the result of invasion from local populations or from recent foreign introductions, as suggested for S. venatus vestitus, is unknown. In contrast, S. incurrens from Queretaro associated with Pennisetum clandestinum and S. cicatristriatus from the turfgrass Cynodon dactylon in Puebla were not found associated with other Sphenophorus species suggesting these may be local invading populations, especially in the case of S. incurrens which does not occur in the United States.

SUMMARY

Five species of Sphenophorus were found in golf courses from 7 states of Mexico on various host plants; Sphenophorus arizonensis Horn from the state of Puebla on Paspalum vaginatum Swartz (new state and host record); Sphenophorus cicatristriatus Fahraeus was collected in Puebla on Cynodon dactylon (L.) Pers.; Sphenophorus incurrens Gyllenhal was collected in Querétaro on Pennisetum clandestinum Hochst. (new state



Fig. 2. A. dorsal, and B. lateral view of *Sphenophorus arizonensis*, (\mathcal{P}) ; C. Dorsal, and D. lateral view of *Sphenophorus cicatristriatus* (\mathcal{P}) ; E dorsal, and F, lateral view of *Sphenophorus rectus* (\mathcal{P}) . G. dorsal, and H. lateral view of *Sphenophorus venatus vestitus* (\mathcal{F}) ; I. dorsal, and J. lateral view of *Sphenophorus incurrens* (\mathcal{F}) . Scale indicates 3mm in all figures.

record); Sphenophorus rectus (Say) was collected in Veracruz on *P. clandestinum* (new host plant record); and Sphenophorus venatus vestitus Chittenden was collected in Puebla, Veracruz, Guerrero, Baja California Sur and Nuevo León on *C. dactylon* and in Guanajuato on *Lolium perenne* L. (new host record). This information will aid in the development of improved management tactics for *Sphenophorus* species attacking turfgrass in México.

Key Words: Sphenophorus, turfgrass, pest, distribution, Mexico

RESUMEN

Se encontraron cinco especies de Sphenophorus asociadas a campos de golf en 7 estados de México en varias plantas hospederas; Sphenophorus arizonensis Horn en el estado de Puebla en Paspalum vaginatum Swartz (nuevo registro estatal y de hospedero); Sphenophorus cicatristriatus Fahraeus se colectó en Puebla en Cynodon dactylon (L.) Pers.; Sphenophorus incurrens Gyllenhal fue colectado en Querétaro en Pennisetum clandestinum Hochst. (nuevo registro estatal); Sphenophorus rectus (Say) se colectó en Veracruz en P. clandestinum (Nuevo hospedero); y Sphenophorus venatus vestitus Chittenden que fue colectado en Puebla, Veracruz, Guerrero, Baja California Sur y Nuevo León en C. dactylon y en Guanajuato en Lolium perenne L. (nuevo hospedero). Esta información generada contribuirá en el mejoramiento de las técnicas de manejo de especies de Sphenophorus que atacan pastos en los campos de golf en México.

Palabras Clave: *Sphenophorus*, pastos de campos de golf, plaga, distribución, México

References Cited

- BUSS, E. A., AND T. HUANG. 2009. Seasonality, development and cultural control of the hunting billbug. Environmental Institute for Golf. Golf Course Mgt. Magazine, Oct 2009. 5 pp.
- JOHNSON-CICALESE, J. M., WOLFE, G. W., AND FUNK, C. R. 1990. Biology, distribution, and taxonomy of billbug turf pests (Coleoptera: Curculionidae). Environ. Entomol. 19: 1037-1046.
- LEÓN-GARCÍA, I. E., RODRÍGUEZ, L., EQUIHUA M., A., VALDEZ, J. M., AND JONES, R. W. 2012. First record of the billbug, *Sphenophorus venatus* (Say) (Coleoptera: Curculionidae: Dryophthorinae), on Turfgrass in Quintana Roo, México. Coleopt. Bull. 66(1): 34-36.
- O'BRIEN, C. W., AND WIBMER, G. J. 1982. Annotated Checklist of the Weevils (Curculionidae *sensu lato*) of North America, Central America and the West Indies (Coleoptera, Curculionidae). Mem. American Entomol. Inst. 34: 1-382.
- SALAS-ARAIZA, M. D., O'BRIEN, C. W., AND ROMERO-NA-POLES, J. 2001. Curculionidae (Insecta: Coleoptera) from the state of Guanajuato, México. Insecta Mundi 15: 45-57.
- VAURIE, P. 1951. Revision of the genus *Calendra* (formerly *Sphenophorus*) in the United States and Mexico (Coleoptera, Curculionidae). Bull. American Mus. Nat. Hist. 98(2): 35-186.
- VAURIE, P. 1954. New Species of Calendra from Mexico, with Notes on Others (Coleoptera, Curculionidae). American Museum Novitates 1681: 1-8.
- VERGARA-PINEDA, S., AND MUÑIZ-VÉLEZ, R. 2004. Descripción Morfológica del "Picudo del Pasto" Sphenophorus venatus vestita (Chitt.) (Coleoptera: Dryopthoridae). Entomol. Mexicana 3: 830-835