

Taxonomy and systematics

## **A new species of *Anthonomus* (Coleoptera: Curculioninae: Anthonomini) in the *Anthonomus squamosus* species group associated with Tiliaceae (Malvales)**

***Una especie nueva de Anthonomus (Coleoptera: Curculioninae: Anthonomini) en el grupo de especies Anthonomus squamosus asociado con Tiliaceae (Malvales)***

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### **Abstract**

*Anthonomus petrus* Soto-Hernández n. sp. is described based on specimens collected from Guatemala, Honduras, and Mexico (Chiapas, Michoacán and Zacatecas); it is associated with *Heliocarpus* and *Triumffeta* (Malvales: Tiliaceae). The species can be easily recognized by the following diagnostic characters: rostrum in both sexes with distinct, elongate scales present beyond point of antennal insertion; body elongate-oval, length 2.1-2.8 mm, body and rostrum with uniform vestiture of elongate, ochreous scales; rostrum toward apex slightly expanded; scape longer than funicle and club combined; scutellum convex and triangular.

**Keywords:** Morphology; Weevil; Distribution; Species discovery

### **Resumen**

Se describe a *Anthonomus petrus* Soto-Hernández n. sp. con base en especímenes colectados en Guatemala, Honduras y México (Chiapas, Michoacán y Zacatecas); está asociada con *Heliocarpus* y *Triumffeta* (Malvales: Tiliaceae). La especie puede ser reconocida fácilmente por los siguientes caracteres diagnósticos: rostro en ambos sexos, con escamas distintivas y elongadas más allá del punto de inserción de la antena; cuerpo elongado-oval, longitud de 2.1-2.8 mm, cuerpo y rostro con vestidura uniforme de escamas ocráceas, elongadas y agudas en el ápice; rostro

con el ápice ligeramente expandido; escapó más largo que el funículo y maza antenal combinados; escutelo convexo y triangular.

*Palabras clave:* Morfología; Gorgojo; Distribución; Descubrimiento de especies

## Introduction

The tribe Anthonomini (Curculionidae: Curculioninae) contains more than 800 described species in 43 genera (Soto-Hernández et al., 2013). Members of the tribe are associated with more than 35 plant families; however, for the majority of the described species the host plant are unknown (Anderson, 1993). *Anthonomus* Germar, the best known and most diverse genus, contains more than 500 species described worldwide with the majority of the diversity found in the New World (Clark, 2014). Species of *Anthonomus* are usually oligophagous; that is, each species feeds and develops on related species of plants in the same family. The *Anthonomus squamosus* species group contains 31 species in North America, which are characterized by the antenna with 7-jointed funicle and both the upper and lower surfaces of the body clothed with round to very elongate scales; which while dense in most of the species can be sparse and intermixed with a fine pubescence in some (Clark et al., 2019; Dietz, 1891). Known host plants are species of Asteraceae and Malvaceae (Clark et al., 2019)

Although the *Anthonomus squamosus* group was revised quite recently, examination of collections has revealed an undescribed and distinctive species of *Anthonomus* best placed in this group. This species is here described as *Anthonomus petrus* Soto-Hernández n. sp.

## Materials and methods

Morphological analysis and measurements were made with the aid of an ocular micrometer mounted in a dissecting microscope. Photographs were captured with a scanning electronic microscope JOEL, JSM 5600 L.V., and digital camera Nikon D7500.

Genital preparations were made heating dry specimens in water for some minutes to soften the tissues, after which the genitalia were removed from the abdomen, and heated in 10% potassium hydroxide solution (KOH) to disintegrate the fat and the soft tissues and subsequently in distilled water. The cleared genitalia were examined in glycerin using a stereomicroscope.

Specimens examined are deposited in the following collections: CMNC Entomology Collection, Canadian Museum of Nature, Gatineau, Canada; NHMUK The

Natural History Museum, London, England; TAMU Insect Collection, Texas A&M University, College Station, Texas, USA; USNM United States National Museum, Washington DC, USA; UAQE Facultad de Ciencias Naturales, Universidad Autónoma de Querétaro, Mexico; CUCBA Centro Universitario de Ciencias Biológicas y Agropecuarias, Universidad de Guadalajara, Mexico.

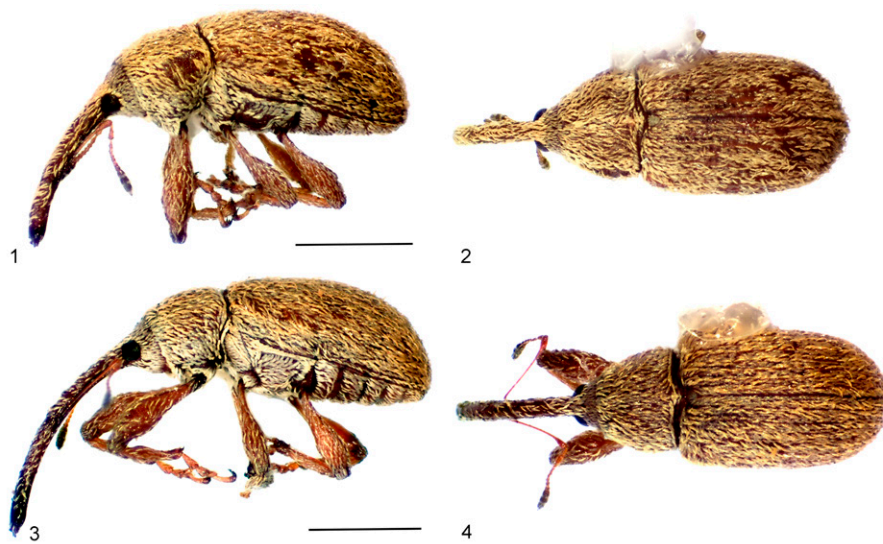
## Description

*Anthonomus petrus* Soto-Hernández, new species (Figs. 1-8)

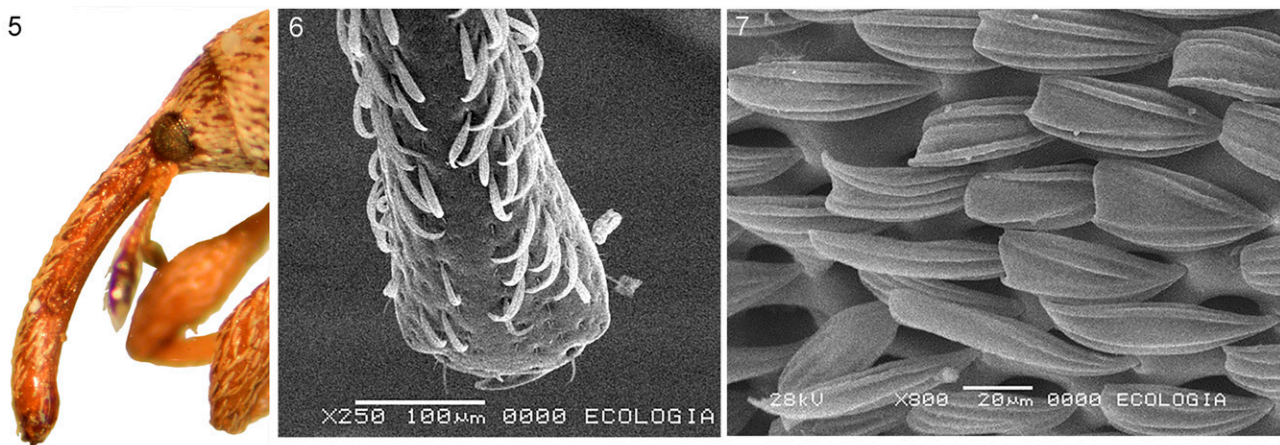
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*Diagnosis:* rostrum slightly expanded at apical 1/5, in both sexes with distinct elongate scales present beyond point of antennal insertion (Figs. 5, 6); scape longer than funicle and club combined; scutellum convex and triangular; and profemur with triangular tooth, sharply pointed and slightly curved toward tibiae.

Body elongate-oval; length 2.1-2.4 mm, width 0.9-1.1 mm (n = 8) (Figs. 1, 2); integument reddish brown, densely covered with elongate acute and finely striate scales (Fig. 7), except head and thorax where lateroventral surface has broad, truncate scales each with apex feebly emarginate. Rostrum long, curved, ca. 1.7x longer than prothorax along dorsal midline, clothed with dense elongate, acute scales from base to very near apex, slightly expanded at about apical 1/5; lateral groove well defined, carinate. Antenna attached just beyond middle of rostrum; scape longer than funicle and club combined, apical margin strongly widened; funicle of 7 segments, segment 1 longer than 2, segment 2 shorter than 3 and 4 combined, segments 3-6 ca. 1.2x longer than wide, segment 7 strongly clavate; club elongate-oval, densely clothed with fine pubescence, as long as preceding 5 funicular segments combined. Head transversally with fine striate. Eyes slightly convex, smaller than width of rostrum at base in dorsal view. Prothorax ca. 1.3x wider than long, dorsal margin densely covered with elongate scales, intermixed with narrower and semierect scales, lateroventral surface clothed by truncate scales with apex slightly emarginate, scales broader than those on dorsum, anterolateral margin straight; sides slightly rounded. Scutellum convex, triangular, densely covered with slenderer, shorter and whiter scales than those on



Figures 1-4. Habitus lateral and dorsal view. 1, 2) *Anthonomus petrus* male; 3, 4) *A. petrus* female. Scale = 1 mm.



Figures 5-7. Characters of *Anthonomus petrus*. 5) Rostrum, lateral view; 6) rostrum at 1/5, front view; 7) body scales finely striate.

elytra. Elytra at base slightly broader than prothorax, densely covered with elongate, acute scales, intermixed with narrower, semierect ones, scales finely striate, each interstriae with row of semierect scales uniformly arranged; humeri present, rounded; pygidium covered by the elytra. Pro-, meso- and metasterna clothed with slightly broader and whiter scales than dorsum; procoxae contiguous, mesocoxae separated by ca.  $\frac{1}{2}$  width of coxa. Abdomen with scales narrower than those on mesosterna, abdominal ventrites convex, ventrites 3 and 4 slightly narrower than

ventrite 5. Legs clothed with dense elongate, acute scales; profemur ca. 1.4x wider than metafémur, with triangular tooth, sharply pointed, slightly curved toward tibiae; tibiae with small mucro, scales narrower than on femur, protibiae with inner margin strongly sinuate, tarsal claw toothed, clothed with small sparse, fine setae, not obscuring integument. Aedeagus broad, symmetrical with sides subparallel, apex slightly acute (Fig. 8B-D); spiculum gastrale with plate bifurcate, sides slightly curved, apex progressively acute (Fig. 8F).

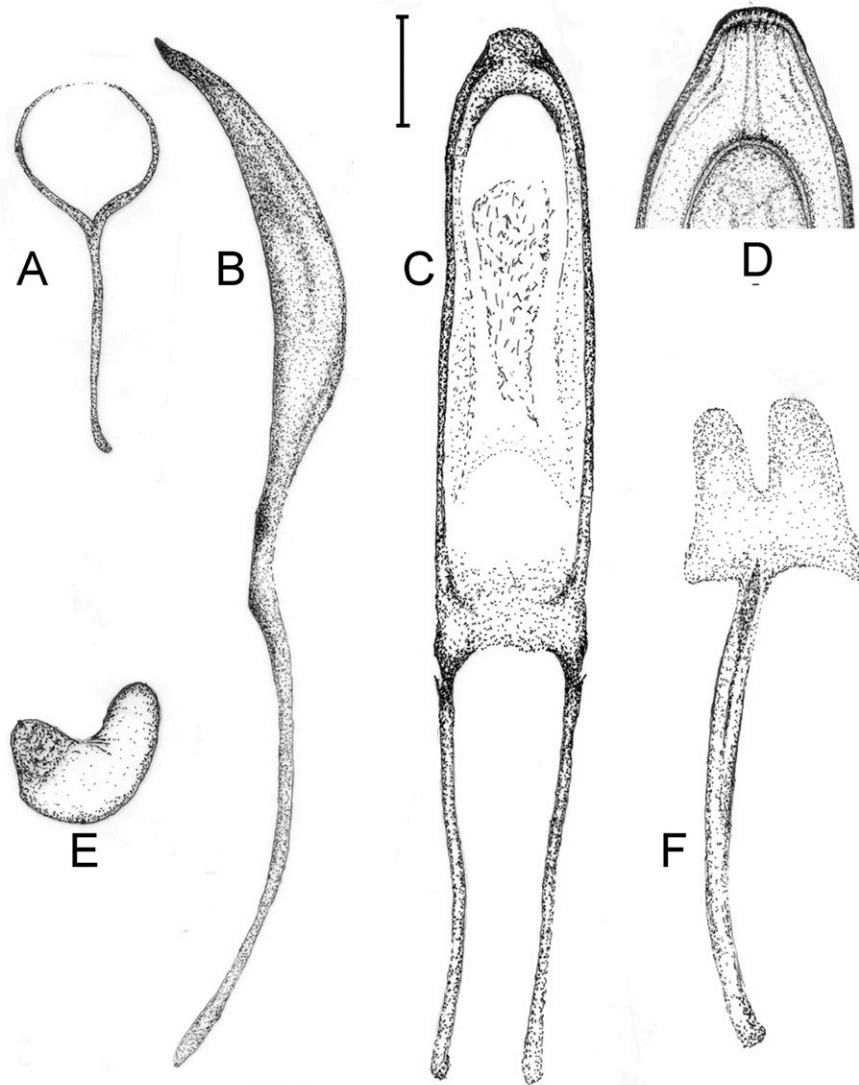


Figure 8. Genitalia of *Anthonomus petrus*, habitus lateral and dorsal view. A) Tegmen; B, C) aedeagus, habitus lateral and dorsal view; D) aedeagus apex, dorsal view; E) female genitalia, spermatheca; F, speculum gastrale plate and apodeme, dorsal view. Scale = 0.1 mm for A, B, C and F; scale = 0.05 mm for D and E.

Female. Similar to male (Figs. 3, 4), except for the following characters: length 2.1-2.8 mm, width 1.0-1.2 mm ( $\bar{x}$  = 2.5, n = 10); rostrum long and slender, ca. 2.3-2.7x longer than the prothorax along dorsal midline; antenna attached just before middle of rostrum. Spermatheca as in figure 8E.

#### Taxonomic summary

*Type series.* Holotype male, labeled, Mexico: Michoacán, Penjamillo. 24/III/2011. 20°06'14" N, 101°56'56" W, 1,760 m. collected by Soto H, M. (UAQE).

Paratypes. Guatemala: Guatemala City. Univ. Del Valle, 10.VI.1991, R. Anderson, oak pine/Mimosa forest, 91-57 (1 male, 1 female CMNC). Honduras: Francisco Morazán 4 km E. Zamorano, 12.VI. 1994, 900 m. R. Anderson, thorn scrub on *Triunffeta calderonii* Standl (Malvales: Tiliaceae): 16 males, 11 females CMNC; 2 males, 1 female NHMUK; 2 males, 1 female USNM). Mexico: (1 female: same data as holotype, UAQE); Chiapas, San Fernando, Cañada Muñiz, 04/IV/1995, R. Jones. 2 females UAQE. Tuxtla Gutiérrez, Cañón del Sumidero. 17/VI/1995. Col. Jones, R. 1 male, UAQE; Michoacán, Penjamillo, 24/III/2011, 20°06'14" N,

101°56'56" W, 1,760 m. Col. Soto H.M.11 females and 6 males UAQE; Álvaro Obregón, 3.6 km S. Chehuayito, 21/V/2011, 19°51'47" N, 101°07'59" W, 1,900 m. Col. Báez, J. and Guzmán, V. 6 females and 7 males UAQE; Morelia, Cuanajillo, Cerro del Águila, 17/X/2011, Báez, J.1 male UAQE; Alvarado Obregón, 3.6 km S. Chehuayito, 24/VIII/2011, 19°51'47" N, 101°07'59" W, 1,900 m. Col. Jones, R. On: *Heliocarpus terebinthinaceus*.1 male and 2 females UAQE; Zacatecas, Mezquital del Oro, camino a la Coronilla 2004/II/15, 21°10'29.6" N, 103°21'44.9" W, 1,215 m, BTC, J. Cortes-Aguilar, E. López. 1 female CUCBA-UDG.

*Distribution.* Guatemala, Honduras and Mexico (Chiapas, Michoacán and Zacatecas).

*Etymology.* This species is named in honor of the eminent Mexican Passalidologist Pedro Reyes Castillo, who was my professor and my friend; *Petrus* is the Latin name for Pedro.

*Plant associations.* Three specimens were collected on flowering heads of *Heliocarpus terebinthinaceus* (DC) Horchr. (Malvales:Tiliaceae) in the municipality of Álvaro Obregón, Michoacán, Mexico, and 33 specimens were collected on *Triunffeta calderonii* Standl (Malvales: Tiliaceae in Honduras.

## Remarks

*Anthonomus petrus* is easily recognized by the scales present on the rostrum beyond the point of antennal insertion. Aside from species of *Narberdia* Burke, I know of no other anthonomines with such large scales present beyond the point of antennal insertion. It apparently most closely resembles *A. testaceosquamosus* Linell but also differs in the pronotum with dorsomedian vittae of pallid ochreous scales, slightly darker ochreous scales in broad lateromedian vittae. In the *Anthonomus squamosus* species group, almost all species have the median lobe strongly attenuate at the apex (Clark et al., 2019), while that of *A. petrus* is broad, slightly narrowed apically in dorsal view, very similar to *A. curvicrus* (Fig. 8C).

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