



Three new species of *Anchylorhynchus* Schoenherr, 1836 from Colombia (Coleoptera: Curculionidae; Curculioninae; Acalyptini)

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Abstract

Three new species of the genus *Anchylorhynchus* from Colombia, are described: *Anchylorhynchus pinocchio* **sp. nov.**, *A. centrosquamatus* **sp. nov.** and *A. luteobrunneus* **sp. nov.**. A morphological description, including the male genitalia, is provided for each species as well as a comparison with similar species within the genus. All three species are found in inflorescences of species of *Syagrus* Mart. (Arecaceae). The adults are pollinators and the larvae develop inside fruits and feed on the endosperm, interrupting seed formation and causing fruit abortion.

Key words: palm, inflorescence, Arecaceae, Derelomina, biodiversity

Introduction

Anchylorhynchus Schoenherr, 1836 is a Neotropical genus distributed from Panama to Argentina. Among its 19 recognized species (O'Brien & Wibmer, 1982; Wibmer & O'Brien, 1986; Vanin, 1995), only four are found in the Amazon region (*Anchylorhynchus amazonicus* Voss, 1943; *A. bicarinatus* O'Brien, 1981; *A. gottsbergerorum* Vanin, 1995 and *A. tricarinatus* Vaurie, 1954), two of them (*A. tricarinatus* and *A. bicarinatus*) recorded from Colombia. They are classified within the subtribe Derelomina Lacordaire, 1865 (Franz, 2006), currently placed within the tribe Acalyptini, subfamily Curculioninae (Bourchard *et al.*, 2011). Following a general trend among the genera in the tribe (Franz, 2006; Franz & Valente, 2005), these weevils are pollinators specializing on palm flowers (Núñez-Avellaneda & Rojas-Robles, 2008), feeding and ovipositing in species of *Butia* (Becc.) Becc., *Cocos* L., *Oenocarpus* Mart. and *Syagrus* Mart. (Vaurie, 1954). The adults are pollinators and the larvae develop inside pistillate flowers. They consume the endosperm, causing fruit abortion and thus affecting the reproductive success of each palm. Species of *Anchylorhynchus* consume seeds which are suited for human consumption, and also reduce the reproductive potential of palms (Núñez *et al.*, unpublished data).

We have been conducting complementary research projects on the genus *Anchylorhynchus*. BASM is working on the taxonomic revision of the entire genus and LANA on the biology of these weevils and their role in palm pollination in Colombia. After getting in contact with each other, we exchanged material and recognized among the samples three new species from that country. Since there is a need for making the names available for an ongoing study of palm pollination, we consider that they deserve prompt description before the revisionary work is concluded. Herein we describe three new species of *Anchylorhynchus* from Colombia, and provide information on their biology and host plant species.

Material and methods

All specimens examined were collected by L. A. Núñez-Avellaneda, and deposited in the entomological collections of the Instituto de Ciencias Naturales, Universidad Nacional, Bogotá (ICN) and the Museu de Zoologia, Universidade de São Paulo (MZSP). Paratypes of *Anchylorhynchus centrosquamatus* sp. nov. and *A. luteobrunneus* sp. nov. will also be deposited in the following institutions: The Natural History Museum, London, England (BMNH), American Museum of Natural History, New York, U.S.A. (AMNH), the Canadian Museum of Nature, Ottawa, Canada (CMNC) and the Museum of Comparative Zoology, Harvard University, Cambridge, U.S.A. (MCZC). The weevils were collected from three localities in Orinoquia region, Colombia (Casanare, Meta and Guaviare). Insects visiting inflorescences of 20 palm species were collected by wrapping inflorescences with a plastic bag at the beginning of anthesis and were fixed in 76% ethanol.

Specimens identified as *Anchylorhynchus* were compared with specimens from other species of the genus currently under study by BASM (including types). The external morphology was analyzed under a stereo microscope, and pictures were taken under a Leica M125 Automontage. For dissections, male specimens were first softened for some minutes in hot water. Afterwards, the abdomens were dissected and the genitalia placed for some minutes in a hot KOH 10% solution for removing soft tissues. The genitalia were illustrated using a *camera lucida* attached to an optical microscope. These drawings were later digitalized following the “digital inking” method of Coleman (2003).

The ongoing revision of the genus will probably result in several new synonyms, as well as additional new species, so the current keys will require a thorough reformulation. Therefore, a simple modification to include these new species would soon become outdated, and we will not provide a key in this contribution. The descriptions and figures provided should easily separate the three new species from each other and from the two other species known to occur in Colombia.

Descriptions

Anchylorhynchus pinocchio sp. n.

Figs. 1A, 1B, 2A, 3A

Holotype: Male. Colombia, Casanare, Yopal, Corregimiento Morichal, 30/IX/2010, L. Núñez & J. Carreño col. In inflorescence of *Syagrus sancona*. Deposited in ICN.

Paratypes: Colombia, Casanare, Sabanalarga, Vereda Piñal, 20/VII/2010, L. A. Núñez col. (5♂ 2♀ MZSP); Colombia, Casanare, Yopal, Corregimiento Morichal, 11/VI/2008, L. A. Núñez col. (1♀ MZSP), 30/IX/2010, L. Núñez & J. Carreño col. (5♂ 5♀ ICN), 15/X/2010, L. Núñez & J. Carreño col. (10♂ 10♀ ICN).

Description. Length of pronotum + elytra: 4.8–5.7 mm (♂) or 4.5–5.1 mm (♀).

Rostrum 2.1–2.7 (♂) or 1.6–1.7 (♀) times as long as pronotum; 1.1–1.3 (♂) or 1.0 (♀) times wider at apex than at base; black; with seven longitudinal carinae, four outermost irregular near base. **Head** with yellowish-brown integument, distinctly lighter-colored than rostrum. **Antennae** with curved (♂) or straight (♀) scape, greatly (♂) or slightly (♀) extending beyond anterior margin of eye; with second antennomere of funicle longer than first and 1.5 times as long as third; with club shorter and just slightly wider than last antennomere of funicle. **Pronotum** 1.4–1.5 (♂) or 1.5–1.6 (♀) times wider than long, with lateral margins parallel from base to the median region, there with inflexion towards the apex (♂), or lateral margins convergent from base to apex, with a slight inflexion in the middle (♀); with yellowish brown integument entirely covered by yellow scales; with scales of the median basal area directed toward base. **Prolegs** distinctly longer than meso- and metalegs (♂) or similar in length to meso- and metalegs (♀); with protarsomere I more than three times as long as protarsomere III (♂) or slightly longer than protarsomere III (♀); with protarsomeres I and II longer than wide. **Elytra** 1.3–1.5 (♂) or 1.4–1.6 (♀) times as wide as pronotum and 3.4–3.6 (♂) or 3.7–4.0 (♀) times as long as pronotum; 1.6–1.9 (♂) or 1.6–1.7 (♀) times longer than wide; evenly covered by yellow scales; with lateral margins slightly more separated in the middle. **Aedeagus** 2.3 times longer than wide; parallel-sided; with constricted and rounded apex. **Apodemes** approximately 2.5 times as long as aedeagus.

Etymology. Named after the popular fictional character Pinocchio, because of the extremely elongate rostrum as compared to other species of the genus.

Remarks. The black seven-carinate rostrum with irregular carinae at base is shared with *Anchylorhynchus albidus* Bondar, 1943 and distinguishes *A. pinocchio* from other Colombian species (*A. tricarinatus* and *A. bicarinatus* have at most three carinae on the rostrum). *Anchylorhynchus pinocchio*, however, has an inflexion in the middle of the lateral pronotal margins, and scales of the median basal region are oriented backward, while *Anchylorhynchus albidus* has evenly curved pronotal margins, with scales directed forward or centrally. Males are further distinguished from this and other species of *Anchylorhynchus* by their extremely long rostrum, antennae and prolegs. Females can be distinguished by the rostrum not wider at apex than at base and by the antennal scape extending beyond the anterior margin of the eye.

This is the only species of *Anchylorhynchus* with a distinctly sexually dimorphic rostrum.

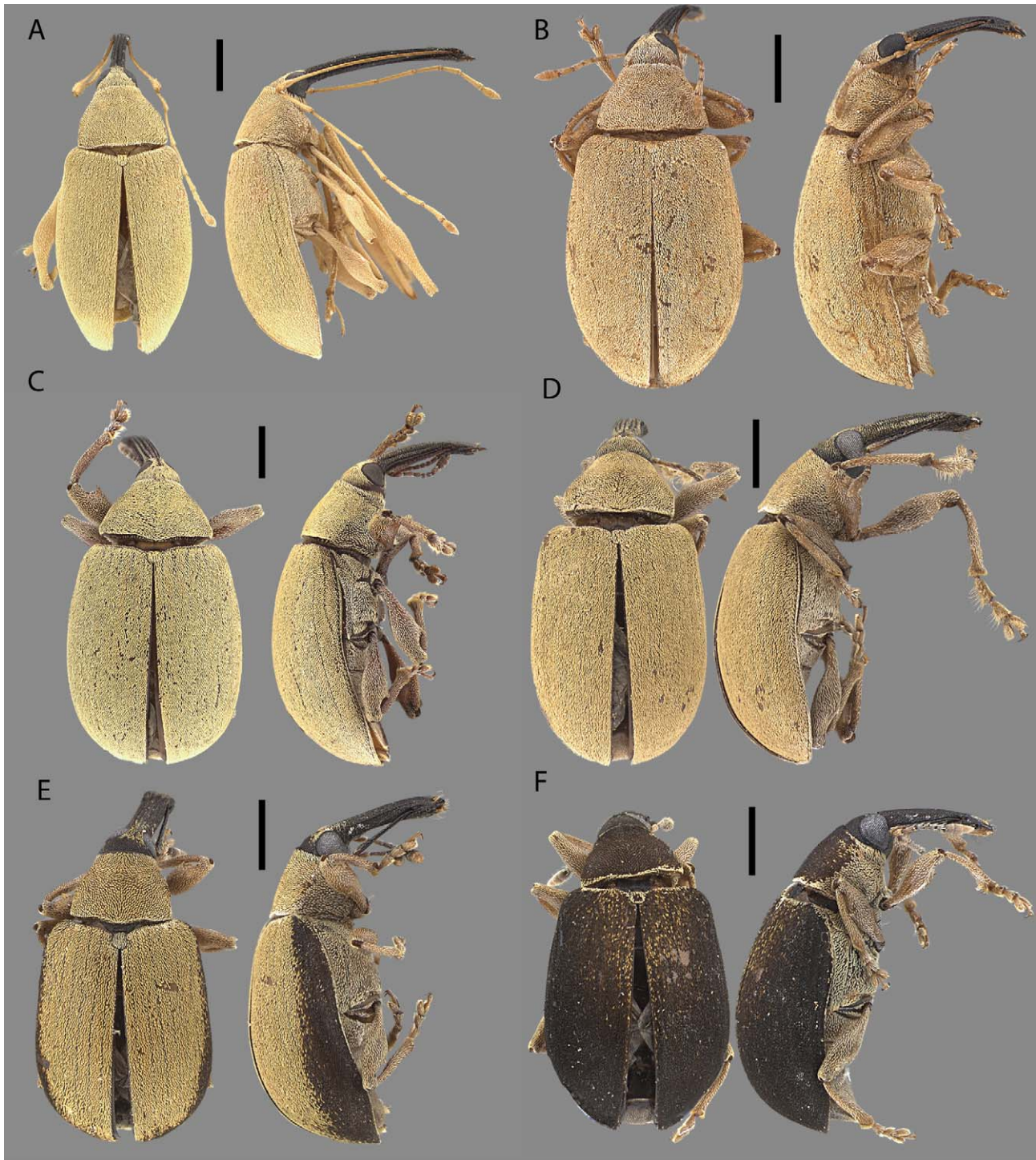


FIGURE 1. Dorsal and lateral view of the new species of *Anchylorhynchus*. Scale bar: 1 mm. **A** *A. pinocchio* (male). **B** *A. pinocchio* (female). **C** *A. centrosquamatus*. **D–F** *A. luteobrunneus*.

Biological information. Between 1–5 individuals of *A. pinocchio* were seen to visit staminate and pistillate flowers, consuming pollen and copulating among the flowers. Females lay their eggs on the pistillate flowers only.

Known host species. *Syagrus sancona* H. Karst. (Arecaceae).

Type locality. Colombia, Casanare, Municipio Yopal, Corregimiento Morichal

Geographical distribution. This species has been found in lowland rainforest and gallery forests of Colombia (Casanare), in elevations ranging from 150 to 500 m above sea level.

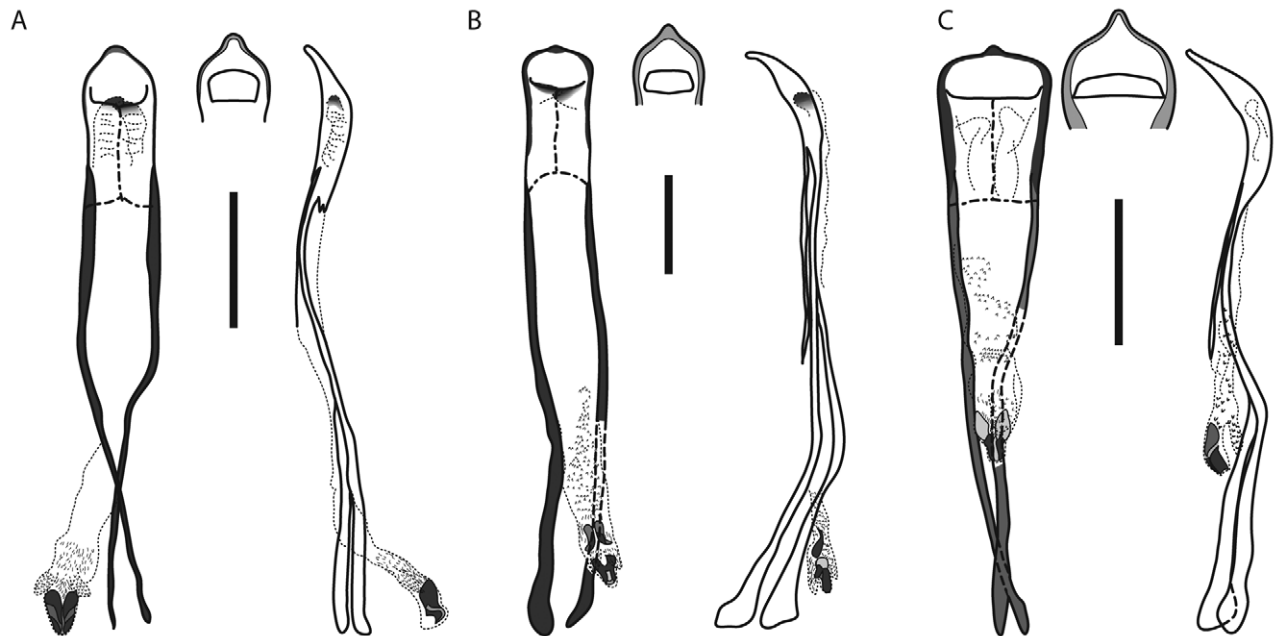


FIGURE 2. Dorsal, frontal and lateral view of male genitalia of species of *Anchylorhynchus*. In dorsal view, dark colors correspond to sclerotized areas. Dashed and dotted lines indicate the upper membranous surface of the aedeagus. Apodemes were drawn in thick dashed lines where they impede the view of the sclerites of internal sac. Thin lines correspond to the endophallus, with membranous structures dashed. Scale bar: 500 μ m **A** *A. pinocchio*. **B** *A. centrosquamatus*. **C** *A. luteobrunneus*.

***Anchylorhynchus centrosquamatus* sp. n.**

Figs. 1C, 2B, 3B, 4

Holotype: Male. Colombia, Casanare, Monterrey, Vereda la Tigrana, 07/VIII/2009, L. Núñez & J. Carreño col. In inflorescence of *Syagrus orinocensis*. Deposited in ICN.

Paratypes: Colombia, Casanare, Monterrey, Vereda la Tigrana, 15/VII/2008, L. A. Núñez col. (6♂ 5♀ MZSP), 07/VIII/2009, L. Núñez & J. Carreño col. (7♂ 25♀ ICN)

Description. **Length of pronotum + elytra:** 5.3–5.9 mm (♂) or 4.7–5.7 mm (♀).

Rostrum 1.5–1.6 (♂) or 1.6–1.7 (♀) times as long as pronotum; 1.3–1.4 (♂) or 1.2–1.4 (♀) times wider at apex than at base; brown to black; with seven longitudinal carinae, all well-defined at base. **Head** with brown integument, similar or slightly lighter-colored than rostrum. **Antennae** with straight scape, not reaching the anterior margin of eye; with second antennomere of funicle longer than first and 1.5 times as long as third; club approximately as long as last three funicular antennomeres and roughly as wide as last antennomere of funicle. **Pronotum** 1.7 (♂) or 1.7–1.8 (♀) times wider than long, with lateral margins evenly curved and convergent from base to apex; with brown integument entirely covered by yellow scales; with scales of the median basal area directed either to the center or obliquely to center-base. **Prolegs** similar in length to meso- and metalegs; with protarsomere I roughly as long as protarsomere III; with protarsomeres I and II slightly wider than long (♂) or as wide as long (♀). **Elytra** 1.4–1.5 (♂) or 1.5–1.6 (♀) times as wide as pronotum and 3.5–3.6 (♂) or 3.8–3.9 (♀) times as long as pronotum; 1.4–1.5 (♂) or 1.4 (♀) times longer than wide; evenly covered by yellow scales; with lateral margins clearly more separated in the middle. **Aedeagus** 1.9 times longer than wide; slightly wider at opening; with constricted and rounded apex. **Apodemes** approximately 4 times as long as aedeagus.

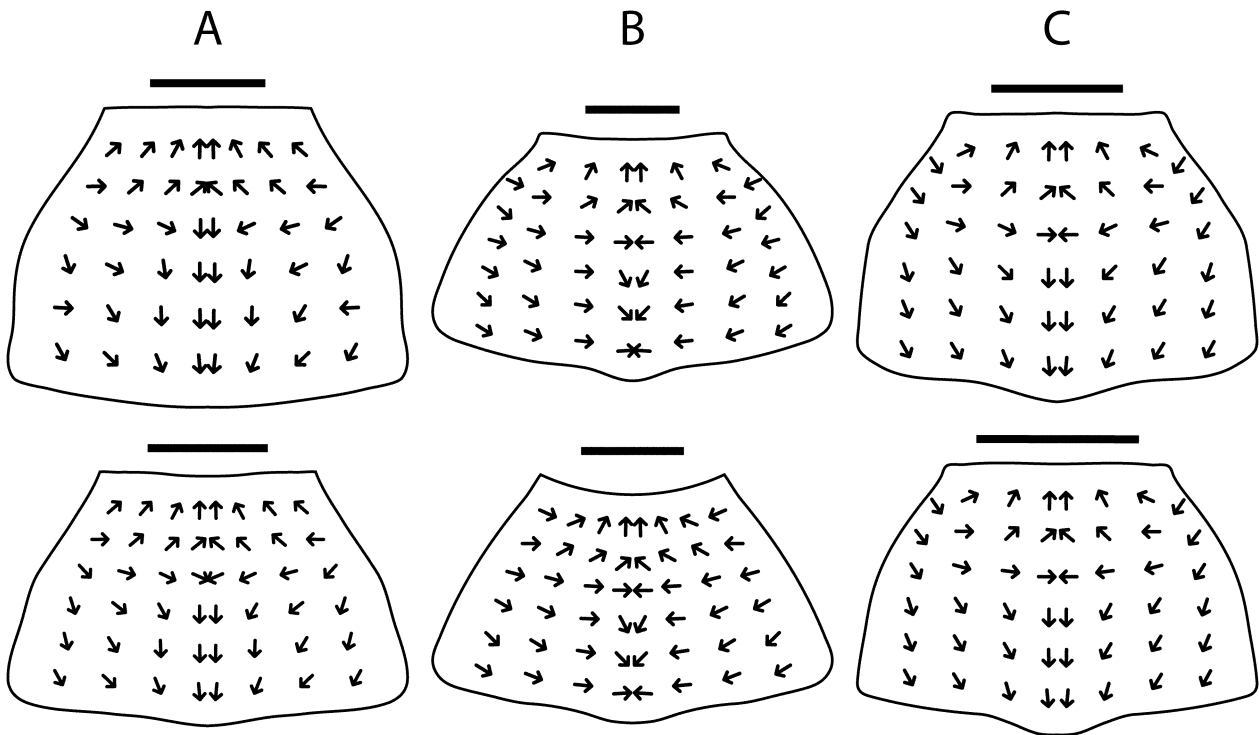


FIGURE 3. Pronota of species of *Anchylorhynchus*, with males at top and females at bottom. Arrows indicate the direction of the scales. Scale bar: 500 μm **A** *A. pinocchio*. **B** *A. centrosquamatus*. **C** *A. luteobrunneus*.



FIGURE 4. *Anchylorhynchus centrosquamatus* among flowers of *Syagrus orinocensis* in Vereda la Tigrana, Monterrey, Colombia. Collected by L. Núñez and J. Carreño.

Etymology. Named after one of the main diagnostic characters of the species: the pronotal scales directed centrally.

Remarks. This species is very similar in general appearance to *Anchylorhynchus amazonicus* Voss, 1943. Nonetheless, it can be distinguished by the median basal scales of pronotum obliquely directed toward center-base. In *A. amazonicus*, these scales are clearly directed backward.

It can also be mistaken for *Anchylorhynchus trapezicollis* Hustache, 1940 by the elytra distinctly wider at middle and the trapezoidal pronotum. In the latter species, however, the third antennomere of the funicle is about as long as the second, and the pronotal scales are directed forward. Finally, it can be separated from species currently known to occur in Colombia by the seven-carinate rostrum. *A. tricarinatus* and *A. bicarinatus* have at most three carinae.

Biological information. Between 5–30 individuals of *A. centrosquamatus* were seen to visit staminate and pistillate flowers of *Syagrus orinocensis* (Spruce) Burret (Fig. 4). They enter into the flowers, where they eat pollen and copulate. Females lay their eggs on the staminate and pistillate flowers, at the beginning of anthesis.

Known host species. *Syagrus orinocensis* (Spruce) Burret.

Type locality. Colombia, Casanare, Municipio Monterrey, Vereda Tigrana baja

Geographical distribution. Known only from the Orinoquia region of Colombia (Casanare, Meta & Guainía), in lowland rain forest or gallery forest in elevations ranging from 150 to 500 m.

Anchylorhynchus luteobrunneus sp. n.

Figs. 1D, 1E, 1F, 2C, 3C

Holotype: Male, Colombia, Casanare, Yopal, Corregimiento Morichal, 30/IX/2010, L. Núñez & J. Carreño col. In flowers of *Syagrus sancona*. Deposited in ICN.

Paratypes: Colombia, Casanare, Sabanalarga, Vereda Piñal, 15/VII/2008. L. A. Núñez col. (1♂ MZSP); 19/X/2009 (2♂ 6♀ MZSP); 10/VII/2010 (4♂ 8♀ MZSP). Colombia, Casanare, Yopal, Corregimiento Morichal, 11/VI/2008, L. A. Núñez col. (11♂ 5♀ MZSP); 17/VII/2010 (5♂ 1♀ MZSP), 30/IX/2010, L. Núñez & J. Carreño col. (5♂ 5♀ ICN), 15/X/2010, L. Núñez & J. Carreño col. (10♂ 10♀ ICN).

Description. Length of pronotum + elytra: 3.9–4.7 mm (♂) or 4.3–4.8 mm (♀).

Rostrum 1.4–1.6 times as long as pronotum; 1.2–1.3 times wider at apex than at base; brown to black; with seven longitudinal carinae, the two outermost indistinct near base. **Head** with brown to black integument, similar to the rostrum. **Antennae** with straight scape, reaching the anterior margin of the eye; with second antennomere of funicle longer than first and two times as long as third; with club approximately as long as the last four funicular antennomeres and wider than the last antennomere of funicle. **Pronotum** 1.4–1.5 times wider than long, with lateral margins parallel at base to the median region, there with inflexion towards the apex (♂) or parallel at base and evenly curved to the apex (♀); with brown integument entirely covered yellow or dark brown scales; with scales of the median basal area directed toward base. **Prolegs** similar in length to meso- and metalegs; with protarsomere I longer than protarsomere III; with protarsomeres I and II longer than wide. **Elytra** 1.4–1.6 (♂) or 1.5–1.6 (♀) times as wide as pronotum and 3.5–3.6 (♂) or 3.4–3.6 (♀) times as long as pronotum; 1.4–1.6 times longer than wide; evenly covered by scales, either entirely yellow, or yellow on the disc and dark brown on apical and lateral margins, or entirely dark brown with occasional yellowish scales; with lateral margins parallel, elytra not wider in the middle. **Aedeagus** 2.0 times longer than wide; slightly wider at opening; with constricted and pointed apex. **Apodemes** approximately 2.5 times as long as aedeagus.

Etymology. Named after two colors found in dorsal scales: yellow and brown

Remarks. When dark brown scales are present, this species can be distinguished from other congeneric species by the unique color pattern. The combination of wide (1.4–1.6 times longer than wide) elytra with parallel margins, median basal pronotal scales directed backward, seven rostral carinae (with those along the scrobe indistinct near base) and pronotal margins parallel at base may further distinguish the yellow-colored morphs from any other species of *Anchylorhynchus*. The sympatric *A. tricarinatus* and *A. bicarinatus* have at most three longitudinal carinae in the rostrum.

Biological information. Between 10–55 individuals of *A. luteobrunneus* were seen to visit staminate and pistillate flowers of *Syagrus sancona*. They enter into the flowers, where they eat pollen and copulate. Females lay their eggs on the staminate and pistillate flowers just at the beginning of anthesis. First instar larvae are exophytic and consume petals of staminate flowers. The larvae then enter the pistillate flowers, where they consume the

endosperm as this is formed. The entire life cycle can take between 3–5 months. This species is one of the main pollinators of the host palm *Syagrus sancona*.

Known host species. *Syagrus sancona* H. Karst. (Palmae).

Type locality. Colombia, Casanare, Municipio Sabanalarga, Vereda El Piñal

Geographical distribution. Lowland rainforests, gallery forest and piedmont forests in Colombia (Casanare, Meta and Guaviare), in elevations ranging from 100 to 1000 m.

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