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## A new species of *Anchylorhynchus* Schoenherr (Coleoptera: Curculionidae) from the Amazon, with a record of a new host palm for the genus

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### Abstract

*Anchylorhynchus vanini* sp. nov. from the Amazon is described, including the mouthparts and male genitalia. The new species is compared with similar species within the genus and the key to the species of *Anchylorhynchus* provided by Vaurie (1954) is modified to include the new species. Adult specimens were collected in flowers of the palm *Syagrus vermicularis* Noblick and additional collections in other palms species suggest that this association is specific. This is the first record of the palm *Syagrus vermicularis* as host for a species of *Anchylorhynchus*.

**Key words:** Acalyptini, Derelomina, Weevil, Neotropical

### Introduction

The genus *Anchylorhynchus* Schoenherr currently has 22 valid species distributed in the Neotropical region from Panama to Argentina (de Medeiros & Núñez-Avellaneda 2013; O'Brien & Wibmer 1982; Vanin 1995; Wibmer & O'Brien 1986), and was last revised by Vaurie (1954). Since then, five new species have been described and the genus was moved from the Petalochilinae to the Acalyptini, subtribe Derelomina (Bouchard *et al.* 2011; Franz 2006). Most of the described species are found in the Cerrado and Mata Atlântica biomes in southeastern Brazil, with only seven species recorded from the Amazonian region (*A. amazonicus* Voss; *A. tricarinatus* Vaurie; *A. bicarinatus* O'Brien; *A. gottsbergerorum* Vanin; *A. pinnocchio* de Medeiros & Núñez-Avellaneda; *A. centrosquamatus* de Medeiros & Núñez-Avellaneda; and *A. luteobrunneus* de Medeiros & Núñez-Avellaneda). Remarkably, all the new species of *Anchylorhynchus* described since Vaurie (1954) are from the Amazon or Central America, indicating that the diversity of *Anchylorhynchus* in the region has just started to be explored. Adults of *Anchylorhynchus* are associated with and often collected in palm flowers, mostly in species of *Cocos* L., *Butia* (Becc.) Becc., *Syagrus* Mart. and *Oenocarpus* Mart. (de Medeiros & Núñez-Avellaneda 2013; Franz & Valente 2005; Vaurie 1954). Adults feed on pollen (de Medeiros & Núñez-Avellaneda 2013; Bondar 1940; Silberbauer-Gottsberger 1990) and oviposit in female flowers (de Medeiros & Núñez-Avellaneda 2013; Silberbauer-Gottsberger 1990), with larvae feeding internally on female flowers and maturing fruits (da Silva *et al.* 2011).

The first author conducted a survey of weevils associated with palms in the area of the mining project “Níquel Vermelho (Canaã dos Carajás, Pará, Brazil) in the Brazilian Amazon between 2004 and 2005 and found specimens of *Anchylorhynchus* in the flowers of *Syagrus vermicularis* Noblick. Also in the Brazilian Amazon, additional specimens were collected from the same host in the Serra das Andorinhas State Park (São Geraldo do Araguaia, Pará, Brazil) in 2011. The specimens from both localities turned out to be a new species of *Anchylorhynchus* from the Amazonian region, which we describe and illustrate here.

## Material and methods

Insects visiting palm inflorescences of *Syagrus vermicularis* in two localities (Canaã dos Carajás and São Geraldo do Araguaia, Pará State) in the Brazilian Amazon were collected by wrapping inflorescences in anthesis with a plastic bag. The weevils were sorted and pinned. Specimens identified as a new species of *Anchylyorhynchus* were compared with specimens from other species of the genus (including types observed by the second author).

External morphology of 152 specimens was analyzed under a ZEISS Discovery V20 stereomicroscope, and pictures of the holotype and a paratype female were taken with a Leica M125 Automontage. For dissections, five specimens (3 ♂, 2 ♀) were first softened for some minutes in hot water. Following this, mouthparts and the abdomen were dissected, with genitalia being held for some minutes in a hot 10% solution of KOH for removing soft tissues. Genitalia and mouthparts were illustrated using a camera lucida attached to an optical microscope LEICA DM 1000. The terminology follows Morimoto & Kojima (2003), Marvaldi & Lanteri (2005), Franz (2006) and Davis (2009).

The label information is provided exactly as seen on the specimens, with the following conventions: a backslash indicates a line break, square brackets enclose the contents of a single label and double quotes enclose all the labels for a given specimen. For paratypes, we also list in brackets the number and gender of specimens and their voucher numbers. Specimens are labeled with their type status, gender, genus name and species epithet and the author and year, e.g., "Holotype male, *Anchylyorhynchus vanini* Valente & de Medeiros, 2013". The labels are rectangular, printed and red for the holotype and yellow for paratypes. The repeated information is removed and indicated by "same as holotype" or "same date". The holotype is deposited in the entomological collection of the Museu Paraense Emílio Goeldi (MPEG). The paratypes are deposited in the MPEG, Museu de Zoologia da Universidade de São Paulo (MZUSP), in the collection of Curculionidae of Universidade Federal do Pará (UFPA), American Museum of Natural History, New York, U.S.A. (AMNH) and the Canadian Museum of Nature, Ottawa, Canada (CMNC).

## Description

### *Anchylyorhynchus vanini* sp. nov.

Figs. 1–2

**Male (Figs. 1A, 2B–F).** Length of pronotum + elytra: 4.9–7.0mm. **Integument** brown, densely covered by yellowishbrown, spatulate, non-overlapping scales, revealing punctures, especially along median line of pronotum; rostrum, head and scutellum dark brown and covered by scales smaller than on other dorsal surfaces; antennae, legs and ventral surface covered by pale setae. **Rostrum** 1.2–1.4 times as long as pronotum, with seven carinae (including the pair along scrobe) well-defined to base. **Mouthparts:** **Mandibles** slightly asymmetrical; apically with two distinct obtuse incisors; dorsally convex and with two long setae, ventrally concave and glabrous; molar region subtruncate, articular region slightly sinuate. **Maxillae** elongated, moving in vertical axis; mala with an anterior lobe, almost reaching apex of palpomere I, setation: apical region covered by numerous long setae, subapical region with a small projection and five spatulate setae, region adjacent to stipes with five long dorsal setae; palpiger with seven long lateral setae and ca. 15 dorsal short setae, ventrally glabrous; palpomere I 1.2 times longer than wide, with three setae on apicolateral edge of outer margin; palpomere II 1.6 times longer than wide, with three setae on apicolateral edge of outer margin; palpomere III 1.6 longer than wide, with one very small seta along inner margin and numerous apical sensilla; stipes with one very long lateroventral seta; cardo with four short lateroventral setae. **Labium:** prementum subquadrate, anteriorly concave, with dorsal region covered by numerous setae, lateral margin with ca. nine long setae; anterior tendon (ligula) elongate, narrow, sparsely covered by short setae; palpomere I as long as wide, with five long setae on centrolateral region (towards outer margin) and one ventral seta longer than three palpomeres together; palpomere II 1.4 times longer than wide, with two short setae on centrolateral edge of outer margin; palpomere III 1.6 longer than wide, with a very small seta along inner margin and numerous apical sensilla. **Antennae:** scape 1.2–1.3 times as long as funicle, reaching distal margin of eye; funicle: article I 1.2–1.3 times as long as article II, article II 1.3–1.4 times as long as article III; article III 1.4–1.5 times as long as article IV; articles IV–VI subequal in length; club four-articulated, with suture between apical

articles indistinct, 3.3–3.4 times longer than wide. **Pronotum** trapezoidal, 2.1–2.4 times wider than long; covered by scales directed obliquely to center-apex on disc and backward on sides; anterior margin darkbrown and concave, without constriction (collar) in dorsal view; lateral margins, subparallel from base to middle, then convergent to apex, prominent and forming a strong acute angle with hypomerum in lateral view; posterior margin slightly bisinuate and as wide as humeri; scales longer in lateral and basal margins than on disc. **Protibiae** curved toward apex. **Elytra** 1.5–1.6 times longer than wide, 4.0–4.5 times longer than pronotum; wider in basal 1/2, lateral margins subparallel from base to middle, then slightly convergent to apex; epipleuron with inflexion well marked along interval IX, prominent and forming an acute angle with side in lateral view; humeri not prominent. **Prosternum** convex, densely covered by scales, anterior margin concave and with row of long scales, collar evident; hypomeron strongly concave; sternellum very narrow. **Meso- and metasternum** densely covered by scales on sides; metasternum in middle shining and with a concavity demarcated by acute lateral margins. **Ventrates** shining, covered by fine sparse scales; ventrites I–II depressed in median region; posterior margin of ventrites II–IV straight; ventrite V trapezoidal, plane in median region, with subtruncate posterior margin. **Aedeagus.** **Median lobe** 2.8–3.0 longer than wide; dorsally convex; with subparallel lateral margins, slightly constricted in anterior region; distal margin rounded, with an obtuse median projection; orificial plates large, basal margin with sparse spiniform projections and curved sclerite with a bifid posterior projection. **Apodemes of aedeagus** 1.6–1.7 times as long as median lobe.

**Females** (Figs. 1B, 2A). **Length of pronotum + elytra:** 4.7–6.7mm. Females differ from males in having **pronotal disc** with a large dark brown triangular area, densely punctate, each puncture with a small seta; lateral areas of pronotum with integument paler than disc and covered by yellowish-brown spatulate scales. **Pronotum** more trapezoidal, with lateral margins parallel in basal 1/3 then strongly converging to apex, basal margin distinctly narrower than humeri, with a wider median process. **Hypomeron** less concave than in male. **Protibiae** straight toward apex. **Elytra** more round and convex. **Metasternum** convex. **Ventrates** I–II only slightly concave; ventrites III and IV narrower, retracted, separately angulate, with posterior margin of each segment distinctly projecting and bisinuate; **ventrite V** concave in median region. **Body part ratios:** length rostrum/length pronotum: 1.2–1.4 times; pronotum width/length: 1.9–2.1 times; elytron length/width: 1.4–1.5 times; length elytron/length pronotum: 4.4–4.8 times.

**Variation.** Rostrum from light-brown to red-brown, sometimes lighter in middle of dorsal region. Scales of head and scutellum sometimes very small, apparently lacking. Dark area of pronotal disc (♀) with color from dark brown to black. Punctures of elytral striae sometimes darker. Mandibular teeth vary from obtuse to acute. Setae may be decumbent in labium and maxillae.

**Etymology.** Named after Dr. Sergio Antonio Vanin, who mentored both authors and for his friendship and dedication to the study of Neotropical Curculionidae. As a side note, a species of *Anchylorhynchus*, *A. bucki* Vanin, happens to be the first species described by him.

**Remarks.** *Anchylorhynchus vanini* sp. nov. is very similar to *Anchylorhynchus aegrotus* Fahraeus and both can be easily distinguished from most other species of *Anchylorhynchus* by the elytra covered by completely yellowish brown scales and variably reduced scales on head and pronotum revealing the punctures. The yellow morphs of *Anchylorhynchus variabilis* Gyllenhal are further distinguished by having all the scales on the underside and epipleura transformed to hairs. The shape of the pronotum, very wide in males and with a distinct inflexion in females, is also shared between *A. aegrotus* and *A. vanini* sp. nov. Females can be distinguished from *A. aegrotus* by the dark area on the pronotum. Both males and females of *A. vanini* sp. nov. (4.7–7.0 mm) are generally larger than *A. aegrotus* (4.3–5.5 mm). The aedeagus of *A. vanini* sp. nov. is slightly wider at the apex, while it is slightly narrower in *A. aegrotus*. Finally, *A. vanini* sp. nov. is the only species of *Anchylorhynchus* with two long setae on the mandibles. Most species have only one long external seta, while *A. tricarinatus* has three setae. *A. aegrotus* is distributed along the Cerrado and Mata Atlântica biomes in Brazil, and has been collected only from *Syagrus romanzoffiana* (Cham.) Glassman, while *A. vanini* sp. nov. is distributed in the Brazilian Amazon and has been collected only from *Syagrus vermicularis*.

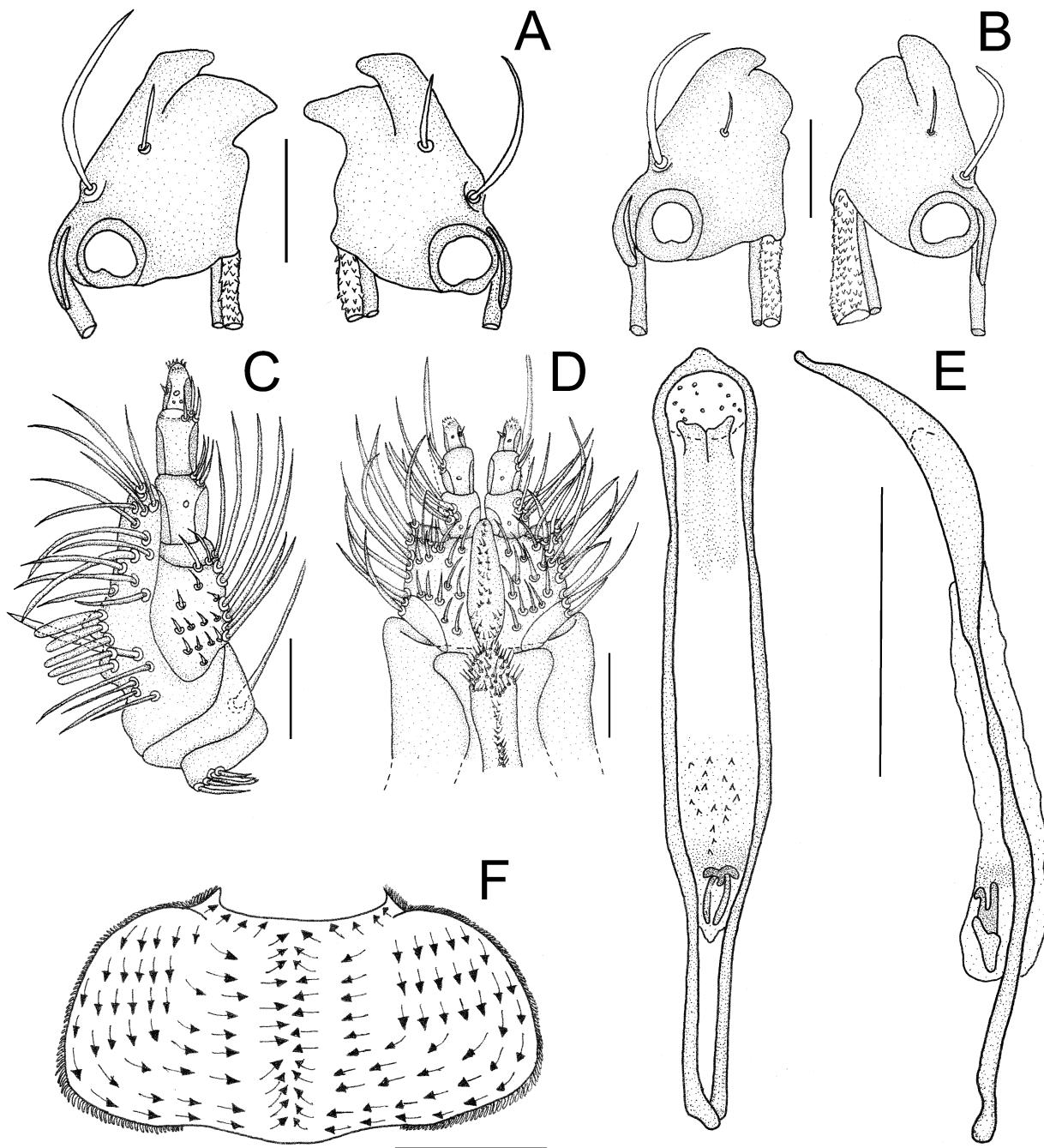
The key to the species of *Anchylorhynchus* provided by Vaurie (1954: 13–14) may be modified as follows to include the new species:

- |    |  |     |
|----|--|-----|
| 14 | Beak from apex to front of eye at most 1.4 times as long as pronotum; pronotum in male at least twice as wide at base as long, in female narrower than elytra and with sharp angulation or tubercle on sides at middle; punctures on pronotal disc usually visible, especially along the median line . . . . . | 14a |
|----|--|-----|

- 14a Body length generally larger, 4.7–7.0 mm. Pronotum in male more trapezoidal and wider, 2.0–2.4 times wider than long, entirely covered by yellowish-brown scales; in female pronotal disc with distinct dark area covered by tiny setae. Median lobe with distal margin rounded and with an obtuse median projection. Mandibles with two long setae ..... *A. vanini* sp. nov.
- Body length generally smaller, 4.3–5.5 mm. Pronotum in male less wide, 1.9–2.0 times wider than long; in both male and female entirely covered by large scales or covered by large scales in the sides and tiny setae in the disc; scales either uniformly yellowish-brown or forming a central longitudinal band of brown scales continuing in the scutellum and base of elytra. Median lobe with distal margin constricted. Mandibles with only one long external seta ..... *A. aegrotus*



**FIGURE 1.** *Anchyloynchus vanini* sp. nov., habitus, dorsal, lateral and ventral view. **A** Male, Holotype. **B** Female, Paratype, MZUSP. Scale bars: 2 mm.



**FIGURE 2.** *Anchylorhynchus vanini* sp. nov. A Female mandibles, dorsal view. B–F Male: B Mandibles, dorsal view. C Maxilla, dorsal view. D Labium, dorsal view. E Aedeagus, dorsal and lateral view. F Pronotum (arrows indicate the direction of the scales). Scales bars: A–D,  $2\mu$ ; E, 0.01mm, F, 1mm.

**Natural history.** Adults were collected by the first author in flowers of *Syagrus vermicularis*, locally known as “gueroba”. This palm is distributed in transition zones between Amazon forest and Cerrado in the Brazilian states of Pará, Tocantins and Maranhão, so it is likely that *A. vanini* sp. nov. is also found elsewhere. This is the first record of *S. vermicularis* as a host for a species of *Anchylorhynchus*. In the two localities studied, insects were also collected from flowers of *Syagrus inajai* (Spruce) Becc. and *Syagrus cocoides* Mart., in addition to a number of others palms (*Acrocomia aculeata* (Jacq.) Lodd. ex. Mart., *Attalea maripa* Mart. Aubl., *Attalea phalerata* Mart. ex. Spreng., *Astrocaryum vulgare* Mart., *Mauritia flexuosa* L. f. and *Oenocarpus distichus* Mart.). Specimens of *Anchylorhynchus vanini* sp. nov. were only found in *S. vermicularis*, suggesting that the association is specific at least locally. Besides, supporting the specificity of the association, *A. vanini* sp. nov. was not collected in similar

studies conducted elsewhere in the Brazilian Amazon where *S. vermicularis* was not recorded: Caxiuanã, Pará (Valente 2000), Querência, Mato Grosso (Valente & Guimarães 2010) and in the region of the middle Xingu River in a number of palms (*Syagrus cocoides*, *Syagrus inajai*, *Attalea maripa*, *Attalea phalerata*, *Astrocaryum gynacanthum* Mart., *Astrocaryum aculeatum* G Mey, *Astrocaryum murumuru* Mart., *Astrocaryum paramaca* Mart., *Astrocaryum vulgare* Mart., *Bactris acanthocarpa* Mart., *Bactris brongniartii* Mart., *Bactris campestris* Poepp. ex Mart., *Euterpe longebracteata* Barb. Rodr., *Euterpe oleracea* Mart., *Geonoma maxima* (Poit.) Kunth, *Mauritia flexuosa*, *Mauritiella armata* (Mart.) Burret, *Oenocarpus distichus* and *Socratea ezorrhiza* (Mart.) H. Wendl.).

**Geographical distribution.** Lowland rainforests, in open forests in Pará (Canaã dos Carajás and São Geraldo do Araguaia), Brazil, in elevations ranging from 210 to 500 m.

**Type material.** Holotype male deposited in MPEG: “Brasil–PA–Canaã dos Carajás\ Projeto Níquel Vermelho\ -6°28'32”/-49°52'27”\ 27–XI–2005\ R.M Valente col. [label 1], Em inflorescência de\ *Syagrus vermicularis*\ amostra 03 [label 2]”. Paratypes: same as holotype (15 ♂ [2 dissected], 15 ♀ UFPA; 1 ♂, 1 ♀ MZUSP); same as holotype but, “amostra 01”(9 ♂, 16 ♀ UFPA; 2 ♂ MZUSP, 3 ♂, 3 ♀ CMNC); “amostra 02” (1 ♀ MPEG; 1 ♂ MZUSP); same as holotype but, “02–V–2004, amostra 01” (4 ♂ MPEG); “07–V–2004, amostra 02” (2 ♂, 2 ♀ [1 dissected] UFPA); “26–VIII–2004, amostra 01” (3 ♂, 1 ♀ MPEG) “25–XI–2005, amostra 01”(2 ♂, 7 ♀ MPEG); “25–XI–2005, amostra 03” (3 ♂, 4 ♀ MPEG), “25–XI–2005, amostra 04” (11 ♂ [1 dissected], 8 ♀ UFPA; 1 ♀ MZUSP); “25–XI–2005, amostra 05” (2 ♂, 3 ♀ AMNH); “25–XI–2005, amostra 06” (2 ♂, 2 ♀ MPEG); “25–XI–2005, amostra 07” (1 ♂, 1 ♀ MPEG); “25–XI–2005, amostra 08” (4 ♀ [1 dissected] UFPA; 2 ♀ MZUSP). “Brasil–PA–São Geraldo do Araguaia\ Serra das Andorinhas\ Fazenda do Cunha, Córrego Jatobá\ 25–X–2011 [label 1], Em inflorescência de\ *Syagrus vermicularis*\ amostra 01, 9:00 horas\ Guimarães, J.R. Col”. [label 2] (1 ♂, 2 ♀ UFPA); same date but, “amostra 02, 9:27 horas” (1 ♂, 4 ♀ MPEG); “amostra 03, 9:48 horas” (1 ♂, 4 ♀ MPEG); “amostra 04, 10:10 horas” (1 ♂, 2 ♀ MPEG); “28–X–2011, amostra 05, 10:12 horas” (1 ♂, 1 ♀ UFPA).

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