

New species and new record in Lamiinae from Espírito Santo (Brazil) (Coleoptera: Cerambycidae)

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Abstract. Four new species are described from Brazil (Espírito Santo): *Xylergates quinquetuberculatus* (Acanthocinini); *Trichonius w-notatus* (Acanthocinini); *Pseudobeta casariae* (Onciderini); *Xenofrea mariae* (Xenofreini). Additionally, *Nyssodrycina infima* (Bates, 1885) is recorded for the Brazilian state of Espírito Santo for the first time.

Key-Words. Longhorned beetles; Neotropical region; South America; Taxonomy.

INTRODUCTION

The Brazilian state of Espírito Santo has a territorial area of 45,597 km², which corresponds to 0.53% of the national territory, making it one of the smallest Brazilian states. It is located on the Atlantic coast between the parallels 17°53'29"S and 21°18'03"S and the meridians 39°41'18"W and 41°52'45"W (Lederman & Padovan, 2005). Despite its size, this state still has a significant part of its territory covered by the Atlantic Forest (about 12.6% – see Fundação SOS Mata Atlântica, 2019), which is one of the most diverse and threatened biomes on the planet (Ribeiro *et al.*, 2011).

This work deals with the subfamily Lamiinae, the most diverse in the family Cerambycidae. Recently, Santos-Silva *et al.* (2020) published a study on the Cerambycidae from Espírito Santo, based on specimens deposited in many collections of the state, and gathered by the last author. The species here described comprise a second contribution result from this material. Accordingly, we describe: *Xylergates quinquetuberculatus* (Acanthocinini); *Trichonius w-notatus* (Acanthocinini); *Pseudobeta casariae* (Onciderini) and *Xenofrea mariae* (Xenofreini). Additionally, *Nyssodrycina infima* (Bates, 1885) is recorded for Espírito Santo and for Atlantic forest for the first time.

MATERIAL AND METHODS

Photographs were taken in the MZSP with a Canon EOS Rebel T3i DSLR camera, Canon MP-E 65mm f/2.8 1-5X macro lens, controlled by Zerene Stacker AutoMontage software. Measurements were taken in "mm" using measuring ocular Hensoldt/Wetzlar – Mess 10 in the Leica MZ6 stereomicroscope, also used in the study of the specimens.

The collection acronyms used in the text are as follows: **MZSP** = Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil; **RNV** = Reserva Natural Vale, Linhares, Espírito Santo, Brazil; **SSA** = Suzano S.A., Aracruz, Espírito Santo, Brazil; **UFES** = Entomological Collection of Universidade Federal do Espírito Santo, Espírito Santo, Brazil; **INCAPER** = Instituto Capixaba de Pesquisa, Assistência Técnica e Extensão Rural, Vitória, Espírito Santo, Brazil.

RESULTS

Acanthocinini Blanchard, 1845 *Nyssodrycina infima* (Bates, 1885) (Figs. 1A-1D)

Nyssodrycina infima Bates, 1885: 412; Aurivillius, 1923: 425 (cat.); Blackwelder, 1946: 618 (checklist).

Pap. Avulsos Zool., 2020; v.60: e20206052

<http://doi.org/10.11606/1807-0205/2020.60.52>

<http://www.revistas.usp.br/paz>

<http://www.scielo.br/paz>

Edited by: Simone Policena Rosa

Received: 20/08/2020

Accepted: 05/10/2020

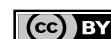
Published: 20/10/2020

<http://zoobank.org/60CCFC22-D858-40F3-9B24-F3251F441270>

ISSN On-Line: 1807-0205

ISSN Printed: 0031-1049

ISNI: 0000-0004-0384-1825



Nyssodrystes infima; Gilmour, 1965: 599 (cat.).
Nyssodrysinia infima; Monné, 1985: 547; Chemsak et al., 1992: 143 (checklist); Monné & Giesbert, 1994: 257 (checklist); Monné, 1995: 135 (cat.); Ødegaard, 2004: 86 (hosts); Monné, 2005: 101 (cat.); Wappes et al., 2006: 36 (distr.); Swift et al., 2010: 41 (distr.); Bezark, 2013: 47 (distr.); Monné, 2020: 141 (cat.).

This species was described based on a single specimen from Panama (Chiriquí). Gilmour (1965) transferred it to *Nyssodrystes* Gilmour, 1963, a genus currently in the synonymy of *Nyssodrysternum* Gilmour, 1960. Monné (1985) transferred *Nyssodrysinia infima* to *Nyssodrysinia* Casey, 1913. Currently, the species is also known from Costa Rica (Swift et al., 2010), Bolivia (Wappes et al., 2006), and Brazil (Rondônia) (Bezark, 2013).

The species was registered by Ødegaard (2004) in *Brosimum utile* (Kunth) Oken (Moraceae). This species of tree is present in Central America and widely distributed in Amazonian regions of South America. Most likely, the current records of *N. infima* underestimate its actual distribution, which must be similar to that of its host plant. The presence of *N. infima* in the state of Espírito Santo, raises the question if the species uses other trees of the genus *Brosimum* as host plant or was introduced in the region. According to Machado & Pederneiras (2007), there are six species of trees of this genus occurring in state of Espírito Santo.

Material examined: BRAZIL, *Espírito Santo* (new state record): Aracruz (Tupiniquim 19°49'05"S 40°09'45"W), 04.V.1988, Jurandir Floriano Ramos col. (# 4086), (SSA).

Xylergates quinquetuberculatus sp. nov. (Figs. 1E-1H)

Description: Holotype female: Integument mostly dark brown, almost black; mouthparts reddish-brown except dark brown palpomeres; basal $\frac{2}{3}$ of antennomeres III-VII brown, gradually lighter toward VII; about basal half of antennomeres VIII-XI orangish, and remaining surface brown.

Head: Frons (Fig. 1E) finely, abundantly punctate; with yellowish-brown pubescence partially obscuring integument; with two long, erect yellowish-brown setae on each side close to eyes. Median groove distinct from clypeus to area posterior to the upper eye lobes (obliterated by the pronotum). Area between antennal tubercles and upper eye lobes depressed, with fine transverse sulcus (crossing the median groove). Vertex and area behind upper eye lobes finely, abundantly punctate, punctures poorly marked close to prothorax; with yellowish-brown pubescence partially obscuring integument (forming nearly golden, slight delimited macula on each side of vertex close to eyes), absent close to prothorax, sparser on triangular-shaped area close to prothorax. Area behind lower eye lobes finely punctate close to eye, smooth close to prothorax, slightly longitudinally striate at limit between

these two regions; with pale yellowish-brown pubescence close to eye, except triangular, nearly glabrous area after middle, smooth close to prothorax. Genae about as long as lower eye lobe; finely, densely punctate, except smooth apex; with yellowish-brown pubescence not obscuring integument, longer, slightly denser close to smooth area. Postclypeus nearly smooth on wide central area, smooth laterally; with somewhat bristly yellowish-brown pubescence on wide central area, with long, erect, sparse yellowish-brown setae interspersed, glabrous laterally. Labrum with yellowish-white pubescence posteriorly, with sparse yellowish-brown setae interspersed, nearly glabrous anteriorly. Antennal tubercles moderately elevated; with yellowish-white pubescence anteriorly, nearly golden posteriorly. Gula mentum smooth, shining, glabrous posteriorly, depressed, opaque anteriorly; with a few long, erect brownish setae close to anterior margin. Distance between upper eye lobes 0.22 times length of scape (0.25 times distance between outer margins of eyes); in frontal view, distance between lower eye lobes 0.51 length of scape (0.59 times distance between outer margins of eyes). Antennae 2.0 times elytral length, reaching elytral apex near apex of antennomere V. Scape with yellowish-white pubescence, with several small, irregular glabrous areas, except apical area with yellowish-brown pubescence, especially dorsally; with a few long, erect yellowish-brown setae ventrally near apex. Pedicel with yellowish-brown pubescence and whitish pubescence interspersed; with a few short, erect, thick dark setae ventrally. Antennomere III with dense yellowish-white pubescence on basal $\frac{2}{3}$ (whiter depending on light intensity), shorter yellowish-white pubescence on posterior third (slightly conspicuous, appearing to be darker due to integument color); with a few short, erect, thick dark setae ventrally. Antennomere IV with two yellowish-white pubescent rings, one basally, another starting about middle (whiter depending on light intensity); with short, erect, thick dark seta ventrally about middle, and a few similar setae at apex; dark areas with pubescence as on dark area of ventrite III; remaining antennomeres with yellowish-white pubescence on lighter area, shorter, less conspicuous on dark area; with a few short, erect, thick dark setae on ventral apex, except antennomeres X-XI. Antennal formula (ratio) based on length of antennomere III: scape = 1.23; pedicel = 0.13; IV = 0.94; V = 0.77; VI = 0.65; VII = 0.57; VIII = 0.52; IX = 0.48; X = 0.38; XI = 0.40.

Thorax: Prothorax transverse, 1.6 wider than long; sides with acute tubercle near posterior third, gradually widened from anterolateral angles to lateral tubercle, distinctly narrowed, parallel-sided on posterior quarter. Pronotum with five tubercles, two almost conical on each side of anterior third, two rounded and blunt on each side about middle, more distant from each other than anterior ones, another slightly elongated on center of posterior area; with transverse row of coarse, deep punctures near posterior margin, coarse, shallow punctures on sides of anterior half, and near anterior margin; remaining surface nearly smooth; wide central area with yellowish-brown pubescence except on top of anterior



Figure 1. (A-D) *Nyssodrycina infima* (Bates, 1885), male: (A) Dorsal habitus; (B) Ventral habitus; (C) Lateral habitus; (D) Head, frontal view. (E-H) *Xylergates quinque-tuberculatus* sp. nov., holotype female: (E) Head, frontal view; (F) Dorsal habitus; (G) Ventral habitus; (H) Lateral habitus.

tubercles, and remaining surface with yellowish-white pubescence (whiter depending on light intensity); with a few long, erect brownish setae on sides of posterior area. Sides of prothorax coarsely, moderately abundantly punctate on central area, almost impunctate on remaining surface; with dense yellowish-white pubescence centrally close to pronotum, yellowish-brown on remaining surface, distinctly sparser, toward postcoxal process. Prosternum and prosternal process densely micropunctate; with yellowish-white pubescence not obscuring integument; narrowest area of prosternal process 0.35 times width of procoxal cavity. Mesoventrite with yellowish-white pubescence not obscuring integument, except denser, yellowish-brown pubescence on apex of sides. Mesanepisternum and mesepimeron with yellowish-brown pubescence not obscuring integument, denser on mesanepisternum close to mesepimeron and superiorly close to elytra. Apex of mesoventral process almost as wide as mesocoxal cavity. Metanepisternum with yellowish-brown pubescence not obscuring integument on anterior half, dense, yellowish-white with yellowish-brown pubescence interspersed on posterior half. Metaventrite with dense pale yellowish-brown pubescence on sides, with small, irregular glabrous areas interspersed, darker and sparser close to anterior half of metanepisternum, abundant, shorter, yellowish-white on central area (whiter depending on light intensity). Scutellum with dense yellowish-brown pubescence centrally (this area widened toward apex), and shorter, sparser pubescence of same color on remaining surface (appearing to be darker due to integument color). **Elytra:** Parallel-sided on anterior $\frac{2}{3}$, gradually convergent on posterior third; apex truncate, slightly oblique toward sutural angle; humeri rounded, somewhat projected forward; humeral carina irregular, somewhat distinct on anterior half; with oblique, moderately distinct carina dorsally from near humerus to beyond middle, with sparse tubercles dorsally; surface somewhat irregular, moderately coarsely punctate on anterior $\frac{2}{3}$, finely, sparsely punctate on posterior third; elytral pubescence mostly yellowish-brown with yellowish-white pubescence interspersed, except V-shaped band on center of dorsal anterior third, wide, longitudinal white pubescent band about middle, obliquely narrowed on its anterior margin, narrowly projected forward along suture, arched, projected sideward on its posterior apex, oblique, wide dark pubescent band close to apex of white band, and transverse, irregular white pubescent band on posterior quarter, tubercles on anterior two thirds surrounded by dark yellowish-brown pubescence; entire surface with short, sparse, suberect black setae. **Legs:** Femora pedunculate-clavate; with distinctly short yellowish-white pubescence not obscuring integument on peduncle, dense yellowish-white pubescence on club, yellower on some areas, with small, circular glabrous areas interspersed. Tibiae with dense yellowish-white pubescence obscuring integument, with small, circular glabrous areas interspersed, except two rings with sparser, shorter yellowish-brown pubescence, one slightly before middle, another on posterior third (ventral surface of protib-

iae with dense brownish pubescence on posterior half). Tarsomeres I-II with dense yellowish-white pubescence, and remaining segments with predominantly brown pubescence.

Abdomen: Apex of last tergite strongly notched. Ventricle V trunco-conical, distinctly longer than IV, surpassing elytral apex, with apex truncate, sides spiniform. Ventricle I with dense yellowish-white pubescence on posterior area of sides, remaining surface of sides with short, slightly conspicuous yellowish-brown pubescence, remaining surface with whitish pubescence; ventrites II-IV with dense yellowish-white pubescence laterally, with small glabrous areas interspersed, remaining surface with whitish pubescence; ventrite V with dense yellowish-white pubescence, with small glabrous areas interspersed, except inverted V-shaped central area with sparser whitish pubescence.

Dimensions in mm (holotype): Total length, 11.20; prothoracic length, 2.00; anterior prothoracic width, 2.40; posterior prothoracic width, 2.60; maximum prothoracic width, 3.20; humeral width, 4.10; elytral length, 7.90.

Type material: Holotype female from BRAZIL, *Espírito Santo*: Linhares (Reserva Natural Vale, Col. 1190), 30.XI.2016, Martins & Fiuza col. (MZSP, formerly INCAPER).

Etymology: The epithet refers to the number of pronotal tubercles.

Remarks: By the general appearance, especially the pattern of the elytral pubescence, *Xylergates quinquetuberculatus* is similar to *X. capixaba* Giorgi & Corbett, 2005, but differs as follows: antennomere IV biannulate; pronotum with five tubercles; white pubescent band on center of the elytra narrower and with sides regular; oblique dark band on elytra beyond middle projected upward from sides toward suture; white pubescent band on posterior quarter of the elytra narrow and projected upward from sides to suture. In *X. capixaba* (see photographs on Bezark, 2020), antennomere IV not biannulate, pronotum with three tubercles, white pubescent band on center of the elytra is distinctly wider and with sides irregular, oblique dark band on elytra beyond middle is projected downward from sides toward suture, white pubescent band on posterior quarter of the elytra wide and projected downward from sides to suture.

Xylergates quinquetuberculatus can be included in the alternative of couplet "3" from Giorgi & Corbett (2005) (translated, modified):

- 3(2). Elytra with a small projected spine on outer margin of the apex; scutellum unicolorous, with brownish pubescence; elytra with distinct narrow white pubescent lines. Venezuela, Colombia, Ecuador, Suriname, Guyana, French Guiana, Brazil (Acre, Amazonas, Pará, Rondônia, Mato Grosso, Maranhão), Peru, Bolivia (Beni, Pando, Santa Cruz) *X. lacteus* Bates, 1864
— Elytra not spiniform on outer margin of the apex; scutellum bicolorous; elytra lacking narrow pubescent lines 3'

- 3'(3). Elytra with wide, arched white pubescent band on anterior half; elytra with longitudinal dark band on posterior half; white pubescent band on posterior quarter of the elytra projected downward from sides to suture. Ecuador, Guyana, French Guiana, Colombia (Amazonas), Brazil (Amazonas, Pará, Rondônia, Mato Grosso), Peru, Bolivia (Pando)
..... *X. elaineae* Gilmour, 1962
- Elytra lacking wide, arched white pubescent band on anterior half; elytra with oblique dark band on posterior half; white pubescent band on posterior quarter of the elytra projected upward from sides to suture. Brazil (Espírito Santo) *X. quinetuberculatus* sp. nov.

***Trichonius w-notatus* sp. nov.**
(Figs. 2A-2D)

Description: Holotype female: Integument mostly dark brown, with some reddish-brown areas; mouthparts mostly reddish-brown, except palpomeres blackish with

apex yellowish, especially last palpomere; base of antennomeres reddish-brown, especially from IV; apex of antennal tubercles pale yellow; elytra dark reddish-brown on basal half, gradually darker on posterior half; with a wide dark triangle shape band apically; meso- and metafemora dark reddish-brown, especially metafemora; basal half of tibiae dark reddish-brown.

Head: Frons (Fig. 4D) minutely, densely punctate; with yellowish-white pubescence partially obscuring integument, slightly yellower close to eyes and centrally toward vertex; with a few long, erect brownish setae close to eyes. Median groove distinct from clypeus to area between antennal tubercles and upper eye lobes, slightly distinct from this region to near prothoracic margin. Area between antennal tubercles and upper eye lobes depressed. Vertex and area behind eyes with dense pale yellowish-brown pubescence, sparser on central area of ver-



Figure 2. *Trichonius w-notatus* sp. nov., holotype female: (A) Dorsal habitus; (B) Ventral habitus; (C) Lateral habitus; (D) Head, frontal view.

tex close to prothorax, and slightly darker on vertex close to eyes. Genae slightly longer than half of lower eye lobe; minutely, abundantly punctate, except smooth narrow area at apex; with yellowish-white pubescence not obscuring integument, with long, erect, sparse dark setae interspersed, except glabrous narrow apex. Postclypeus with bristly yellowish-white pubescence on wide central area, with long, erect dark setae interspersed, glabrous laterally. Labrum coplanar with anteclypeus posteriorly, oblique anteriorly; with yellowish-white pubescence not obscuring integument on coplanar area, almost glabrous on oblique area; with long, sparse brownish setae directed forward on coplanar area; with short fringe of yellowish setae on anterior margin. Antennal tubercles moderately elevated; with yellowish-white pubescence partially obscuring integument. Distance between upper eye lobes 0.29 times length of scape (0.28 times distance between outer margins of eyes); in frontal view, distance between lower eye lobes 0.59 length of scape (0.58 times distance between outer margins of eyes). Antennae 3.0 times elytral length, reaching elytral apex at base of antennomere VI. Scape with yellowish-white pubescence not obscuring integument, whiter laterally and ventrally. Pedicel with white pubescence basally, yellowish-white, less conspicuous toward apex; with long, erect, thick black setae ventrally. Antennomeres with white pubescence basally, yellowish-white, less conspicuous on remaining surface; antennomeres III-X with long, erect, sparse, thick black setae throughout, sparser from VIII. Antennal formula (ratio) based on length of antennomere III: scape = 1.08; pedicel = 0.12; IV = 1.15; V = 1.17; VI = 1.08; VII = 1.03; VIII = 0.98; IX = 0.95; X = 0.92; XI = 0.94.

Thorax: Prothorax transverse, 1.6 wider than long; sides with distinct tubercle with acute apex on posterior third, gradually widened from anterolateral angles to lateral tubercle, then distinctly narrowed. Pronotum convex, abundantly micropunctate; with transverse row of coarse, deep punctures near posterior margin; with dense pale yellow pubescence except seven longitudinal bands with yellowish-brown pubescence, one longitudinal on each side, from near anterolateral angle to level of posterior area of lateral tubercle, one inverted L-shaped on each side of central area, almost reaching posterior punctures, one longitudinal between lateral band and inverted L-shaped band, another transverse on area of coarse punctures; with a few long, erect dark setae on posterior sides. Sides of prothorax with abundant pale-yellow pubescence partially obscuring integument (whiter depending on light intensity). Prosternum and prosternal process with grayish-white pubescence not obscuring integument, denser laterally; narrowest area of prosternal process 0.55 times width of procoxal cavity. Mesoventrite with grayish-white pubescence not obscuring integument, denser laterally. Mesanepisternum and mesepimeron with yellowish pubescence partially obscuring integument, except grayish-white pubescence on mesanepisternum close to metaventricle. Metanepisternum and sides of metaventricle with dense

yellowish-white pubescence; central area of metaventricle with grayish-white pubescence not obscuring integument. Scutellum with yellowish-white pubescence centrally, glabrous on each side of anterior half, with yellowish-brown pubescence on lateral margins. **Elytra:** Nearly parallel-sided on anterior $\frac{3}{4}$, narrowed on posterior quarter; apex obliquely truncate; with yellowish-white pubescence on anterior quarter, gradually grayish-white toward apex, except abundant, small circular areas with yellowish-brown pubescence (surrounding punctures), fragmented W-shaped band with yellowish-brown pubescence on anterior half, and wide, transverse band with yellowish-brown pubescence on posterior third; with moderately coarse, sparse punctures from which emerge long, erect, thick black setae. **Legs:** Profemora almost fusiform; meso- and metafemora clavate; femora with yellowish-white pubescence partially obscuring integument, with long, erect, sparse black setae on posterior half. Tibiae with yellowish-white pubescence on about basal $\frac{2}{3}$, brownish, slightly conspicuous on posterior third; with long, erect, sparse, thick black setae.

Abdomen: Apex of last tergite truncate, with rounded angles. Ventrite V trunco-conical, distinctly longer than IV, surpassing elytral apex, with apex concave. Ventrite I with moderately dense grayish-white pubescence on posterior area of sides, remaining surface with pubescence of same color not obscuring integument; ventrites II-V with grayish-white pubescence, dense, obscuring integument laterally, not obscuring integument centrally.

Dimensions in mm (holotype): Total length, 7.25; prothoracic length, 1.35; anterior prothoracic width, 1.55; posterior prothoracic width, 1.65; maximum prothoracic width, 2.20; humeral width, 2.45; elytral length, 5.05.

Type material: Holotype female from BRAZIL, *Espírito Santo*: Aracruz (Tupiniquim, 19°52'22"S 40°12'27"W), 14.VII.1991, João Bosco da Silva col. (# 10134), (MZSP, formerly SSA).

Etymology: The epithet refers to the (W-shaped) form of elytral pubescence.

Remarks: *Trichonius w-notatus* sp. nov. is similar to *T. affinis* Monné & Mermudes, 2008, and *T. atlanticus* Monné & Mermudes, 2008, but differs as follows: elytra with light pubescence on sutural area of the basal third; all femora with long, thick and erect dark setae dorsally. In *T. affinis* and *T. atlanticus*, the elytra lack light pubescence on sutural area of the basal third, and femora lacking long dark setae dorsally.

Trichonius w-notatus can be included in the alternative of couplet "1" from Monné & Mermudes (2008) (translated, modified):

1. All femora with long and erect setae.....1'
- Femora with long and erect setae only on metafemora or all femora lacking these setae.....2

- 1'(1). Scape with long and erect setae; basal quarter of the elytra with wide and oblique dark macula, and with transverse dark macula about middle. French Guiana, Brazil (Amazonas, Pará)
.....*T. griseus* Monné & Mermudes, 2008
— Scape lacking long and erect setae; basal quarter of the elytra without wide and oblique dark macula, and posterior dark macula placed after middle. Brazil (Espírito Santo) *T. w-notatus* sp. nov.

Onciderini Thomson, 1860
***Pseudobeta casariae* sp. nov.**
(Figs. 3A-3E)

Description: Holotype male: Integument mostly dark brown, nearly black on some areas; mouthparts and anteclypeus dark reddish-brown (Fig. 3E); basal 3/4 of antennomere III brown; about basal 3/4 of antennomeres IV-X and of tarsomere V orangish-brown.

Head: Frons (Fig. 3D) slightly transverse; finely, shallowly, sparsely punctate; with pale-yellow pubescence nearly obscuring integument, yellower on narrow lateral band close to genae, and wide central area between eyes (this area narrowed toward its inferior area); with narrow, longitudinal glabrous band on each side, from about middle of eyes to clypeus, and glabrous median groove. Vertex and area behind upper eye lobes with dense yellow pubescence, except glabrous median groove. Area behind lower eye lobes with dense yellow pubescence on wide area close to eyes, except oblique glabrous band about middle, which reaches prothorax but does not reach eye; area close to prothorax, from oblique glabrous band to ventral surface, glabrous, finely, sparsely punctate superiorly, transversely striate inferiorly. Genae slightly shorter than lower eye lobe; with dense yellow pubescence, slightly paler toward clypeus, except glabrous apex. Postclypeus finely, somewhat sparsely punctate centrally, smooth

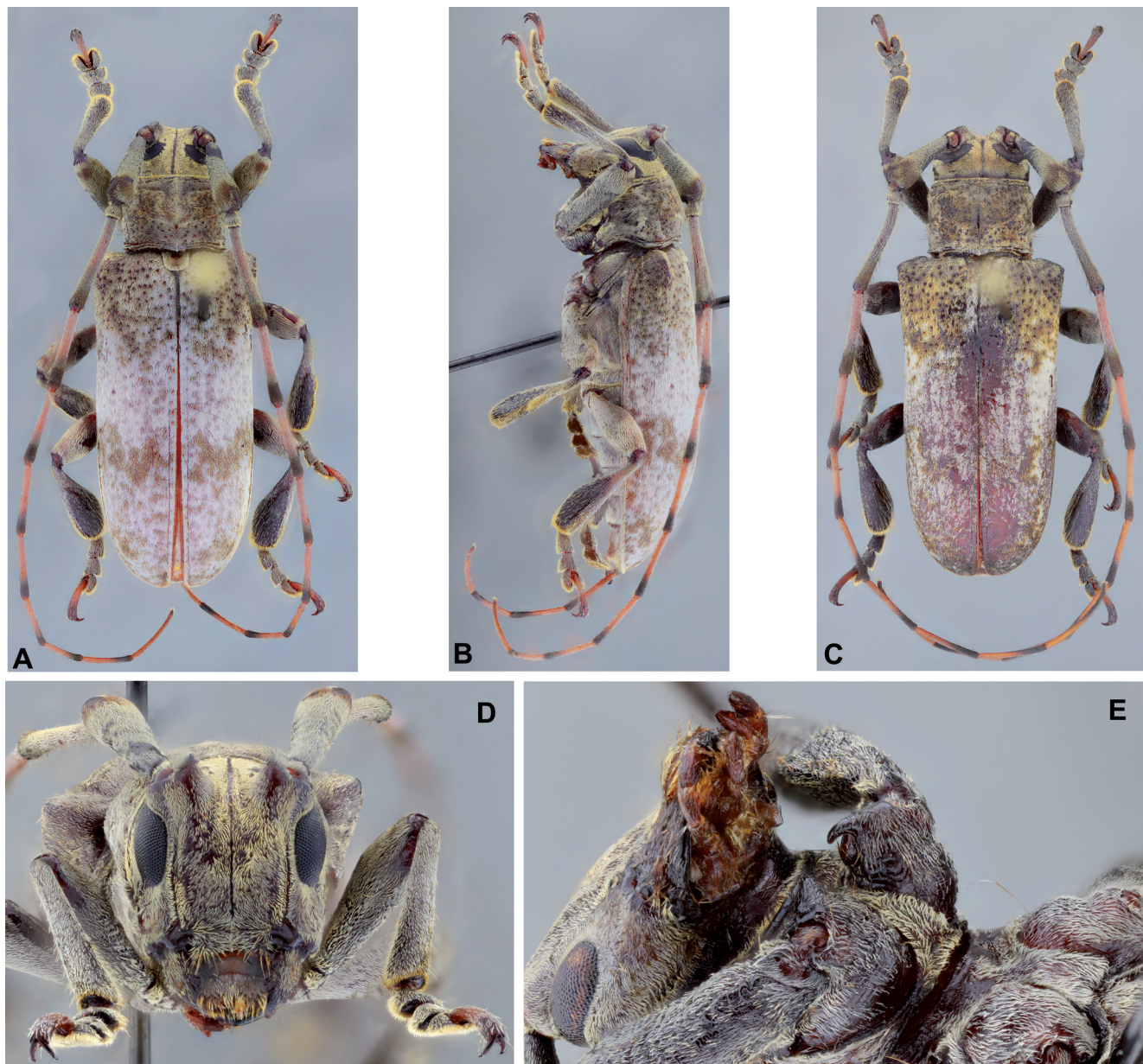


Figure 3. *Pseudobeta casariae* sp. nov.: (A) Dorsal habitus, holotype male; (B) Lateral habitus, holotype male; (C) Head, frontal view, holotype male; (D) Procoxae, holotype male.

laterally; with pale yellow pubescence on wide central area, with long, erect golden setae interspersed laterally, glabrous on smooth area. Labrum coplanar with anteclypeus at posterior half, oblique, somewhat depressed at anterior half; with pale-yellow pubescence on posterior half, partially obscuring integument, and long, abundant golden setae on anterior half, and short fringe of golden setae on anterior margin. Antennal tubercles abruptly elevated, well-separated, with inner apex forming moderately elevated horn with blunt apex; pubescence mostly pale-yellow, yellower on some areas. Gulamentum transversely striate centrally, smooth on remaining surface; glabrous except short, sparse pale-yellow pubescence on intermaxillary process. Area of connection of eye lobes as wide as upper eye lobe. Distance between upper eye lobes 0.28 times length of scape (0.23 times distance between outer margins of eyes); in frontal view, distance between lower eye lobes 0.78 length of scape (0.67 times distance between outer margins of eyes). Antennae 2.3 times elytral length, reaching elytral apex at basal third of antennomere VII. Scape gradually widened toward apex; wide central area coarsely, transversely rugose laterally and ventrally; with yellowish-white pubescence obscuring integument, except brownish pubescent macula on dorsal and lateral surfaces of posterior third (not reaching apex) (outer apex nearly glabrous, probably due to debridement). Pedicel and lighter area of antennomeres with yellowish-white pubescence, gradually finer, less conspicuous toward XI; dark apical area of antennomere III with yellowish-brown pubescence; dark area of antennomeres IV-X with yellowish-brown pubescence not obscuring integument (appearing to be darker due to integument color), gradually sparser, less conspicuous toward X; antennomere III slightly sinuous. Antennal formula (ratio) based on length of antennomere III: scape = 0.81; pedicel = 0.16; IV = 0.82; V = 0.80; VI = 0.74; VII = 0.74; VIII = 0.69; IX = 0.69; X = 0.67; XI = 0.70.

Thorax: Prothorax transverse and cylindrical, 1.45 wider than long; sides with somewhat small, rounded gibbosity close to anterior constriction, and small protuberance about middle (anterior margin abruptly expanded). Pronotum transversely tumid between anterior and posterior fifths; tumid area with irregular, slightly elevated gibbosities laterally, and longitudinal gibbosity centrally (this gibbosity prolonged toward anterior margin, but less elevated than on tumid area); posterior area of tumid area with oblique, slightly elevated carina on each side, fused centrally; tumid area with yellow pubescence, with yellowish-white pubescence interspersed (posterior area with oblique carinae more yellowish-white centrally); anterior and posterior fifths mostly with yellowish-white pubescence, except narrow yellow pubescent band centrally on anterior fifth; area between oblique carinae on tumid area and posterior margin with coarse, sparse, glabrous punctures. Sides of prothorax coarsely, transversely rugose, especially centrally; with yellowish-white pubescence, with yellow pubescence interspersed, except area close to anterior margin and part of area close to procoxae; with long, erect dark setae posteriorly close

to pronotum. Prosternum with abundant yellow pubescence laterally, and almost glabrous centrally. Prosternal process with dense yellow pubescence. Mesoventrite nearly glabrous, except yellowish-white pubescence close to mesocoxal cavities and apices. Mesoventral process with yellowish-white pubescence obscuring integument, except narrow, longitudinal central band partially glabrous. Mesanepisternum, mesepimeron, metanepisternum, and metaventrite with dense yellowish-white pubescence, with patches of yellow pubescence on some areas. Scutellum with yellowish-white pubescence close to margins, and yellowish-brown pubescence centrally, except glabrous, transverse band on anterocentral area. **Elytra:** Nearly parallel-sided on anterior $\frac{3}{4}$, uniformly rounded on posterior quarter; humerus tumid, slightly projected forward and sideward, with small glabrous tubercle at apex; coarsely, somewhat sparsely punctate on basal quarter (punctures near base scabrous), nearly absent on remaining surface; sides of basal quarter with yellowish-brown pubescence, with whitish pubescence interspersed (whitish pubescence more abundant toward central area); punctures on basal quarter with minute yellow seta arising from each one; central area of anterior quarter with dense white pubescence; remaining surface with dense white pubescence, with irregular patches of pale-yellow pubescence, except almost zig-zag, cross band of pale-yellow pubescence beyond middle. **Legs:** Procoxae with distinct, uncinat projection (Fig. 3E). Profemora wide basally, slightly widened toward apex; meso- and metafemora narrower basally, and slightly wider toward apex than profemora (especially metafemora); dorsally with dense yellowish pubescence (profemora with brownish pubescent patch near apex), and remaining surface with dense yellowish-white pubescence. Protibiae gradually widened toward apex; mesotibiae somewhat abruptly widened dorsally from basal third, with wide, distinct sulcus laterally from apex of anterior third to near apex (gradually shallower toward apex); metatibiae gradually, strongly widened on anterior $\frac{2}{3}$, slightly narrowed toward apex on posterior third, with wide, distinct sulcus laterally from apex of anterior third to near apex (gradually shallower toward apex, especially inferiorly); protibiae with yellowish-white pubescence partially obscuring integument, with short yellow setae interspersed, except dense, somewhat bristly yellow pubescence on posterior quarter of dorsal surface, posterior third of ventral surface, and entire apex; mesotibiae with pale-yellow pubescence dorsally on anterior third, yellowish-white pubescence laterally and ventrally on anterior third and almost entire ventral surface of posterior $\frac{2}{3}$, dense, bristly yellow pubescence on dorsal surface of posterior $\frac{2}{3}$ and apex of ventral surface, and short, decumbent, sparse yellow setae on sides of posterior $\frac{2}{3}$; metatibiae with yellowish-white pubescence on basal third (yellower dorsally), yellowish-white pubescence ventrally to about middle, yellowish-white pubescence dorsally to posterior third, dense, somewhat bristly yellow pubescence dorsally on posterior third, ventrally on about posterior half and entire apex, and short, decumbent yellow setae on sides of posterior $\frac{2}{3}$.

Abdomen: Ventrites with dense grayish-white pubescence, except apex of ventrite V with yellowish pubescence; apex of ventrite V nearly truncate, slightly, widely emarginate centrally.

Variation: Sides of basal quarter of elytra with yellow pubescence much more abundant than in the holotype, without whitish pubescence interspersed, except a few white pubescent maculae near apex of this area; white pubescence of elytra with yellowish-brown patches of pubescence interspersed.

Dimensions in mm (holotype/paratype): Total length, 18.90/20.00; prothoracic length, 2.95/3.25; anterior prothoracic width, 4.10/4.50; posterior prothoracic width, 4.25/4.65; humeral width, 6.70/7.30; elytral length, 13.70/14.25.

Type material: Holotype male from BRAZIL, *Espírito Santo*: Linhares (RFCVRD, 2218) [= RNV], 01.XI.1988, José Simplício dos Santos col. (MZSP, formerly RNV). Paratype male, same data as holotype except, # 2941, 20.X.1992 (RNV).

Etymology: This species is named for Professor Sônia A. Casari (MZSP) for her support and contributions to the study of Coleoptera.

Remarks: *Pseudobeta* Zajciw, 1972 (a synonym used as a replacement name for *Beta* Dillon & Dillon, 1945) is a problematic genus because the generic limits are not clear, and its separation from *Midamiella* Monné, 2005 (replacement name for *Midamus* Dillon & Dillon, 1945) is questionable.

Dillon & Dillon (1945) separated *Beta* from *Midamus* in the alternative of couplet "29": "Head with front transverse," leading to *Beta*; "Head with front subquadrate or elongate," leading to *Midamus*. However, the difference between transverse and subquadrate may be nonexistent. In addition, according to Zajciw (1972) the frons is subquadrate in *Pseudobeta* (the type species of *Beta* and *Pseudobeta* are synonyms). In fact, Dillon & Dillon (1945) compared *Beta* with *Midamus*: "Somewhat related to *Midamus* in the broad front, small eyes, short genae and cylindrical pronotum; distinct in having the eyes broader, more oblong; antennal tubercles more prominent; pronotum transverse, sides not excavated, distinctly tuberculate, disk with two tubercles; elytra more tapering, apices acute, base punctate, humeri more elevated; metatibiae subequal in length to metafemora." These differences are at least partially incorrect. For example, the prothorax is transverse in the two species currently placed in *Midamiella*, and according to Dillon & Dillon (1945), in the description of *Midamus*, the pronotum is transverse. We believe that *Pseudobeta* is the best genus to include the new species, however, a comprehensive review of this genus and *Midamiella* is necessary.

Pseudobeta casariae sp. nov. is similar to *P. ferruginea* Galileo & Martins, 1990, but differs as follows: dorsal pubescence mostly yellow and white; sides of prothorax

not distinctly widened centrally; antennomere III at most as wide as posterior margin of the prothorax; frons transverse. In *P. ferruginea*, the dorsal pubescence is mostly orangish, sides of prothorax are distinctly widened centrally, antennomere III wider than posterior margin of the prothorax, and the frons is elongate.

Xenofreini Aurivillius, 1923

***Xenofrea mariae* sp. nov.**

(Figs. 4A-4D)

Description: Holotype female: Integument mostly dark brown; about apical third of maxillary palpomere IV and labial palpomere III yellowish-brown; anterior area of anteclypeus and labrum reddish-brown; antennomeres III-IV reddish-brown on basal $\frac{2}{3}$, brown on apical third; antennomeres V-XI reddish-brown basally, brown posteriorly (reddish-brown area gradually shorter toward XI). Central area of prosternal process and mesoventral process mostly dark reddish-brown. Coxae mostly dark reddish-brown; trochanters mostly yellowish-brown; femoral peduncles mostly dark reddish-brown. Wide central area of abdominal ventrites I-IV reddish-brown; base of central area of abdominal ventrite V dark reddish-brown; ventral surface of posterior third of scape, and entire ventral surface of antennomeres with moderately long, erect, sparse yellowish setae (setae gradually shorter toward XI).

Head: Frons finely, sparsely punctate; with mixed white and pale-yellow pubescence, sparser centrally between eyes. Vertex finely, abundantly punctate between antennal tubercles and area just after posterior ocular margins, densely micropunctate close to prothorax; with yellow pubescence (more yellowish-brown depending on light intensity), slightly more abundant centrally between antennal tubercles and upper eye lobes, distinctly sparser on irregular areas, absent centrally close to prothorax, with short white setae interspersed. Area behind eyes densely micropunctate; with dense yellow pubescence close to eye, with short white setae interspersed; area behind upper eye lobes close to prothorax with a few short white setae; area behind lower eye lobes with somewhat abundant pale-yellow pubescence, not obscuring integument, with short white setae interspersed. Genae nearly glabrous in frontocentral area, with white pubescence close to clypeus, with yellow pubescence with short white setae interspersed toward posterior area; with a few long, erect brownish setae. Wide central area of post-clypeus with mixed white and pale-yellow pubescence not obscuring integument (mostly white anteriorly), with one long, erect dark seta on each side; sides glabrous. Labrum with a few whitish setae close to anteclypeus, with long, erect dark setae interspersed, glabrous on remaining surface, except fringe of short golden setae on anterior margin. Distance between upper eye lobes 0.70 times length of scape (0.41 times distance between outer margins of eyes); in frontal view, distance between lower eye lobes equal to length of scape (0.59 times distance

between outer margins of eyes). Antennae 1.6 times elytral length, reaching elytral apex at apex of antennomere VIII. Scape slightly widened on basal third, nearly parallel-sided on posterior $\frac{2}{3}$; with abundant mixed white and yellow decumbent setae not obscuring integument; pedicel with sparse white decumbent setae basally, and sparse, slightly distinctly yellowish decumbent setae on remaining surface; lighter area of antennomeres with white pubescence, and slightly conspicuous yellowish pubescence not obscuring integument, with white setae interspersed. Antennal formula (ratio) based on length of antennomere III: scape = 0.77; pedicel = 0.17; IV = 1.04; V = 0.69; VI = 0.57; VII = 0.54; VIII = 0.46; IX = 0.42; X = 0.38; XI = 0.42.

Thorax: Prothorax 1.5 wider than long; anterolateral angles rounded, projected; sides distinctly divergent from anterolateral angle to small, blunt central tubercle, then distinctly convergent toward posterolateral angle; with small setose tubercle behind central tubercle. Pronotum somewhat coarsely, abundantly punctate; with slight-

ly distinct gibbosity on each side of anterior third; with mixed white and yellow pubescence not obscuring integument, slightly denser on some irregular areas. Sides of prothorax with sculpturing and pubescence as on pronotum (pubescence slightly denser close to prosternum); with long, erect dark seta near posterior margin. Prosternal process glabrous on centrobasal area, with abundant white pubescence on remaining surface (bristly toward its apex). Center of mesoventrite and mesoventral process with abundant white pubescence partially obscuring integument; sides of mesoventrite with shorter, sparser mixed white and yellow pubescence. Mesanepisternum and mesepimeron with abundant mixed white and yellow pubescence, partially obscuring integument. Metanepisternum with sparse mixed white and yellow pubescence. Sides of metaventrite and area near metacoxal cavities with yellow pubescence and white pubescence interspersed, yellow pubescence slightly sparser close to metaventrite; remaining surface with abundant white pubescence partially obscuring integument. Scutellum with sparse yellow pu-

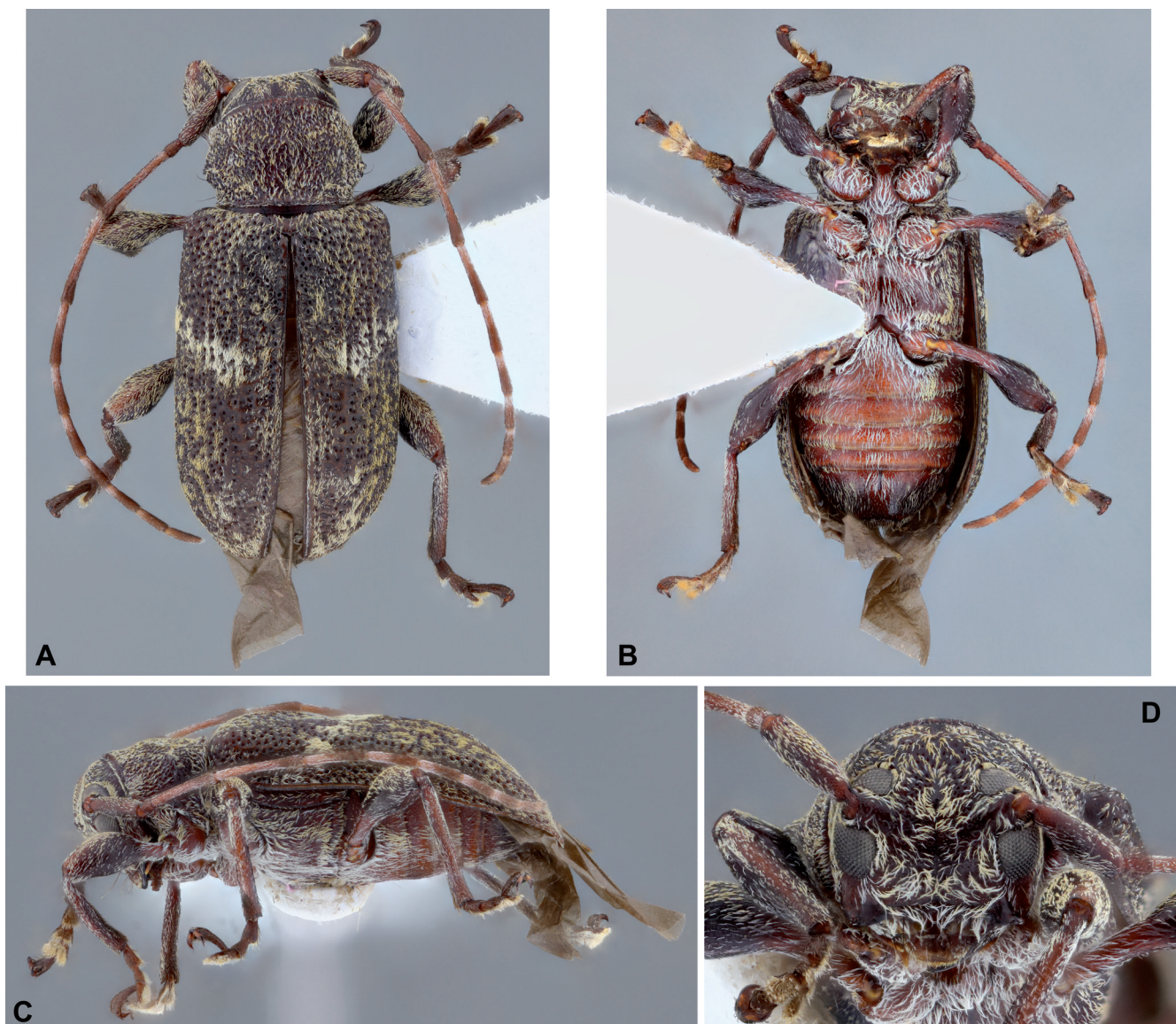


Figure 4. *Xenofrea mariae* sp. nov., holotype female: (A) Dorsal habitus; (B) Ventral habitus; (C) Lateral habitus (D) Head, frontal view.

bescence, with white pubescence interspersed. **Elytra:** Obliquely, widely, slightly sulcate dorsally near apex of anterior third (more distinctly in side view), convex from this point toward apex; coarsely, abundantly punctate on anterior half, punctures slightly finer, gradually sparser toward apex, especially dorsally; apices together rounded; with wide, oblique, partially fragmented pubescent band, from about anterior third to middle, not reaching suture or epipleural margin, pubescence mostly white centrally, yellow laterally, partially pale-yellow on some areas; area between base and oblique band with sparse yellow pubescence with short white setae interspersed; sides between oblique band and posterior seventh with yellow pubescence forming irregular patches (pubescence sparser toward epipleural margin); area along sutural margin, between oblique band and apex with yellowish-white pubescence, denser on apex (this pubescence involves the entire apex). **Legs:** Femora pedunculate-clavate, with dorsal area of club strongly, somewhat abruptly elevated; with mixed white and yellow pubescence dorsally and on sides of apex of club, sparser, finer, white on remaining surface. Tibiae with white pubescence not obscuring integument, sparser toward apex, except posterior $\frac{2}{3}$ of ventral surface with yellowish-brown pubescence.

Abdomen: Ventrites with white pubescence not obscuring integument, denser on abdominal process, partially yellow laterally (more distinctly on ventrite I); ventrite V longitudinally sulcate centrally on basal third, posterior margin slightly concave.

Dimensions in mm: Total length, 6.20; prothoracic length, 1.35; anterior prothoracic width, 1.85; posterior prothoracic width, 1.70; maximum prothoracic width, 2.10; humeral width, 2.60; elytral length, 4.50.

Type material: Holotype female from BRAZIL, *Espírito Santo*: Sooretama, Fazenda Cupido e Refúgio, 19°03'44"S, 39°58'36"W, 1 male, 16.XI.2015, M.T. Tavares, S. Freitas et al., col. (MZSP, formerly UFES).

Etymology: This species is dedicated to Dr. Maria Helena M. Galileo for her great contributions to the study of Cerambycidae.

Remarks: *Xenofrea mariae* sp. nov. is similar to *X. ayri* Santos-Silva & Galileo, 2016, but differs as follows: oblique pubescent band of the elytra placed near middle; narrowest area of the prosternal process wider than width of the base of the profemoral peduncle; narrowest area of mesoventral process wider than half of procoxal cavity. In *X. ayri*, the oblique pubescent band of the elytra is basal, starting near humerus; narrowest area of the prosternal process equal to half of width of the profemoral peduncle; narrowest area of mesoventral process slightly narrower than half of procoxal cavity. It differs from *X. fulgida* Galileo & Martins, 2001, by the scape shorter than antennomere III (about as long as III in *X. fulgida*), and elytral punctures distinctly finer (distinctly coarser in *X. fulgida*).

CONFLICT OF INTEREST

Authors declare there is not conflict of interest.

AUTHOR'S CONTRIBUTIONS

The four first authors contributed equally; the fifth author contributed by compiling the specimen data and gathering material from different institutions.

ACKNOWLEDGMENTS

We express our sincere thanks to Prof. Dr. Marcelo Teixeira Tavares, curator of the UFES entomological collection; José Simplício dos Santos, former curator of the RNV collection; the SSA team for the availability of Cerambycidae specimens for identification; Dr. Prof. Paulo Sérgio Fiuza Ferreira, from the Federal University of Viçosa, for his collaboration and technical support in conducting research on the entomofauna in the state of Espírito Santo; to the Confederação da Agricultura e Pecuária do Brasil (CNA), Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA), and Instituto Capixaba de Pesquisa Assistência Técnica e Extensão Rural (INCAPER) for the financial support to the Biomes of Brazil/Atlantic Forest Biome Project (Subproject MA 25). We are very grateful to our friend Mr. Larry Bezark, for the corrections in the manuscript draft. The first author is grateful for the grant 2017/15283-9, São Paulo Research Foundation (FAPESP). The third author thanks the "Fundação de Amparo à Pesquisa do Estado de São Paulo" (FAPESP) for a postdoctoral fellowship (process number 2017/17898-0).

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