

2018

New records and combinations in Neotropical *Premnobius* Eichhoff (Coleoptera: Curculionidae: Scolytinae: Ipini) with an illustrated key to New World species

Thomas H. Atkinson
University of Texas at Austin, thatkinson.austin@gmail.com

Alexander V. Petrov
Institute of Forest Science, RAS, hylesinus@list.ru

Carlos A. H. Flechtmann
FEIS/UNESP

Follow this and additional works at: <http://digitalcommons.unl.edu/insectamundi>

 Part of the [Ecology and Evolutionary Biology Commons](#), and the [Entomology Commons](#)

Atkinson, Thomas H.; Petrov, Alexander V.; and Flechtmann, Carlos A. H., "New records and combinations in Neotropical *Premnobius* Eichhoff (Coleoptera: Curculionidae: Scolytinae: Ipini) with an illustrated key to New World species" (2018). *Insecta Mundi*. 1166.
<http://digitalcommons.unl.edu/insectamundi/1166>

This Article is brought to you for free and open access by the Center for Systematic Entomology, Gainesville, Florida at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Insecta Mundi by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

INSECTA MUNDI

A Journal of World Insect Systematics

0658

New records and combinations in Neotropical *Premnobius* Eichhoff
(Coleoptera: Curculionidae: Scolytinae: Ipini)
with an illustrated key to New World species

Thomas H. Atkinson
University of Texas Insect Collection, Biodiversity Center
University of Texas at Austin
Austin, Texas

Alexander V. Petrov
Institute of Forest Science, RAS
Sovetskaya St., 21
Uspenskoe, Moscow Region, 143030, Russia

Carlos A. H. Flechtmann
Department of Plant Protection, FEIS/UNESP
Av. Brasil 56, 15385-000
Ilha Solteira SP, Brazil

Date of issue: September 28, 2018

Thomas H. Atkinson, Alexander V. Petrov and Carlos A. H. Flechtmann
New records and combinations in Neotropical *Premnobi* Eichhoff (Coleoptera:
Curculionidae: Scolytinae: Ipini) with an illustrated key to New World species
Insecta Mundi 0658: 1–11

ZooBank Registered: urn:lsid:zoobank.org:pub:CDDCD9A3-4B67-4F99-89F1-C4F656CB91A8

Published in 2018 by

Center for Systematic Entomology, Inc.

P.O. Box 141874

Gainesville, FL 32614-1874 USA

<http://centerforsystematicentomology.org/>

Insecta Mundi is a journal primarily devoted to insect systematics, but articles can be published on any non-marine arthropod. Topics considered for publication include systematics, taxonomy, nomenclature, checklists, faunal works, and natural history. *Insecta Mundi* will not consider works in the applied sciences (i.e. medical entomology, pest control research, etc.), and no longer publishes book reviews or editorials. *Insecta Mundi* publishes original research or discoveries in an inexpensive and timely manner, distributing them free via open access on the internet on the date of publication.

Insecta Mundi is referenced or abstracted by several sources, including the Zoological Record and CAB Abstracts. *Insecta Mundi* is published irregularly throughout the year, with completed manuscripts assigned an individual number. Manuscripts must be peer reviewed prior to submission, after which they are reviewed by the editorial board to ensure quality. One author of each submitted manuscript must be a current member of the Center for Systematic Entomology.

Guidelines and requirements for the preparation of manuscripts are available on the *Insecta Mundi* website at <http://centerforsystematicentomology.org/insectamundi/>

Chief Editor: David Plotkin, insectamundi@gmail.com

Assistant Editor: Paul E. Skelley, insectamundi@gmail.com

Head Layout Editor: Robert G. Forsyth

Editorial Board: J. H. Frank, M. J. Paulsen, Michael C. Thomas

Review Editors: Listed on the *Insecta Mundi* webpage

Printed copies (ISSN 0749-6737) annually deposited in libraries

CSIRO, Canberra, ACT, Australia

Museu de Zoologia, São Paulo, Brazil

Agriculture and Agrifood Canada, Ottawa, ON, Canada

The Natural History Museum, London, UK

Muzeum i Instytut Zoologii PAN, Warsaw, Poland

National Taiwan University, Taipei, Taiwan

California Academy of Sciences, San Francisco, CA, USA

Florida Department of Agriculture and Consumer Services, Gainesville, FL, USA

Field Museum of Natural History, Chicago, IL, USA

National Museum of Natural History, Smithsonian Institution, Washington, DC, USA

Zoological Institute of Russian Academy of Sciences, Saint-Petersburg, Russia

Electronic copies (Online ISSN 1942-1354, CDROM ISSN 1942-1362) in PDF format

Printed CD or DVD mailed to all members at end of year. Archived digitally by Portico.

Florida Virtual Campus: <http://purl.fcla.edu/fcla/insectamundi>

University of Nebraska-Lincoln, Digital Commons: <http://digitalcommons.unl.edu/insectamundi/>

Goethe-Universität, Frankfurt am Main: <http://nbn-resolving.de/urn/resolver.pl?urn:nbn:de:hebis:30:3-135240>

Copyright held by the author(s). This is an open access article distributed under the terms of the Creative Commons, Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original author(s) and source are credited. <http://creativecommons.org/licenses/by-nc/3.0/>

Layout Editor for this article: Robert G. Forsyth

New records and combinations in Neotropical *Premnobius* Eichhoff (Coleoptera: Curculionidae: Scolytinae: Ipini) with an illustrated key to New World species

Thomas H. Atkinson

University of Texas Insect Collection, Biodiversity Center
University of Texas at Austin
Austin, Texas
thatkinson.austin@gmail.com

Alexander V. Petrov

Institute of Forest Science, RAS
Sovetskaya St., 21
Uspenskoe, Moscow Region, 143030, Russia
hylesinus@list.ru

Carlos A. H. Flechtmann

Department of Plant Protection, FEIS/UNESP
Av. Brasil 56, 15385-000
Ilha Solteira SP, Brazil

Abstract. Three Neotropical species are transferred to the genus *Premnobius* Eichhoff (Coleoptera: Curculionidae: Scolytinae: Ipini): *Premnobius assiduus* (Schedl, 1961, from *Xyleborus*), *P. flechtmanni* (Wood, 2007, from *Acanthotomicus*) and *P. neoadjunctus* (Schedl, 1967, from *Xyleborus*). An illustrated key is presented for the native and introduced species of the genus known from the New World.

Key words. *Acanthotomicus*, taxonomy, Central and South America, *Xyleborus*.

Introduction

Petrov and Atkinson (2018) described *Premnobius perezdelacrucei* (Fig. 1), found from southern Mexico to Brazil, the first Neotropical species in the genus. Until then, it had generally been assumed that all species of *Premnobius* were Afrotropical in origin including the two species previously reported from the New World, *P. cavipennis* Eichhoff, 1878 and *P. ambitiosus* (Schaufuss, 1897) (Browne 1961; Wood 1982, 2007; Wood and Bright 1992; Cognato 2013a). In a review of museum specimens and recent collections we realized that three other species previously described in other genera were congeneric with *P. perezdelacrucei*. Recent molecular data has confirmed that one of these, *Xyleborus assiduus* Schedl, belongs in the subtribe Premnobiina (A.I. Cognato, personal communication).

Cognato (2013a) removed *Premnobius* from the Xyleborini and placed it as a subtribe of Ipini and resurrected the genus *Premnophilus* Browne, 1961. As of this treatment the genus *Premnobius* consists of 23 species native to sub-Saharan Africa (Wood 1992; Wood and Bright 1992) and four species native to the Neotropics. Further study, especially with molecular techniques, may eventually require a new genus for the Neotropical species, though these resemble the African species *P. amphicranoides* Schedl, 1939 and *P. corruptus* (Schedl, 1962). The Neotropical Premnobiina represents another shared group between Africa and the Neotropics along with the genus *Phrixosoma* (Phrixosomatini) (Wood and Bright 1992; Jordal 2012), *Microborus* (Hexacolini) (Wood and Bright 1992), and the tribe Micracidini (Wood and Bright 1992; Jordal and Kaidel 2017). *Electroborus brighti* Cognato, 2013b (Hylesinini), a recently described species from Dominican amber is also more closely related to the extant Afrotropical fauna than to extant groups in the Neotropics.

New records and synonymy are provided for *Premnobius assiduus* (Schedl, 1961), *P. flechtmanni* (Wood, 2007) and *P. neoadjunctus* (Schedl, 1967). A redescription is provided for *P. assiduus* and an illustrated key to the native and introduced species of *Premnobius* in the New World is provided.

Materials and Methods

All specimens cited are deposited in the collections listed below. All specimens seen were females.

APP — Alexander Petrov Collection, Moscow, Russia

MEFEIS — Museu de Entomologia da FEIS/UNESP, Ilha Solteira, São Paulo State, Brazil

NMW — Naturhistorisches Museum Wien, Vienna, Austria

Results and Discussion

Premnobius assiduus (Schedl) new combination

(Fig. 2)

Xyleborus assiduus Schedl 1961: 228.

Coptoborus assiduus (Schedl). Wood and Bright 1992: 662. Combination.

Gnathotrupes assiduus (Schedl) Wood 2007: 671. Combination.

The head of the unique paratype of this species is hidden (Fig. 2C) and previous treatments did not contain detailed information on the structure of the head (Schedl 1961; Wood 2007). We redescribe *P. assiduus* on the basis of the paratype and specimens from Peru and Brazil.

Material examined. *Paratype* (NMW): VENEZUELA: Amazonas, Mt. Diuda, 4-XI-1928 (female); BRAZIL: Amapá: Tartarugalzinho, Comunidade Entre Rios, Retiro Paraíba, 51° 18' 2.4" W 1° 7' 59.6" N, 27-V-2015, ethanol-baited flight intercept trap at 22 m height, rain forest fragment, W.R. Silva (MEFEIS, 1); FRENCH GUIANA: Camopi: Mont Itoupé, Parc amazonien de Guyane, terra firme ombrophilous forest, 53° 05' 44" W 3° 1' 23" N, 570 m a.s.l., unbaited window trap, S. Brûlé (MEFEIS, 1); PERU: Junín: 15 km NW of Rio Venado vill., 1100 m a.s.l., 74°46'7.0" 11°11'35.2"S, 3.X.2014, window trap, A.V. Petrov (APP, 10).

Redescription. Female: 1.80–2.25 mm long, 3.6–4.4 times as long as wide. Body reddish-brown to brown, shining.

Head reddish-brown dull, frons convex, surface reticulate, punctured by sparse small rounded punctures, vestiture sparse on central part and more abundant in lateral sides and epistomal process. Eyes weakly emarginate, large, coarsely faceted. Antennae reddish brown, scape as long as club, club round, strongly flattened, with light short setae, sutures strongly procurved.

Pronotum reddish-brown elongate, cylindrical, 1.70–1.75 times as long as wide; sides straight and parallel on more than basal two-thirds, lateral margins curved ventrad in antero lateral area, anterior margin serrate, shallowly subemarginate in median area; disc of pronotum smooth, weakly shining, punctures small to minute, not close, anterior slope obscure, asperate on anterior third. Surface covered by erect brown setae. Scutellum small dark brown, triangular.

Elytra brown, 2.1 times as long as wide, 1.1–1.3 times as long as pronotum; lateral margins straight and parallel on more than basal two-thirds, anterior margin evenly rounded to apex. Disc smooth, striae straight, strial punctures very small, widely divided by distance of 4–5× the diameter of a puncture, interstriae flat, punctures of interstriae equal striae, each interstriae with a row of erect setae. Declivity broadly, deeply concave with a subacute crest on apical half, occupying 40 percent of elytra length; tubercle at base of interstriae 1 very small, on interstriae 3 there is a digitate spine on the lateral crest, slightly inclined towards the median line; a third subquadrate tubercle is located near the apex of the declivity, twice as long as its basal width, not displaced mesad; on the lateral crest there are very small tubercles between the first, second and third spines; face of excavated area smooth, shining, punctures small, most poorly defined. Vestiture in and near declivity longer and more abundant than that of disc. Metasternum and metepisternum reddish brown with short brown setae. Abdomen reddish brown, ventrites bearing erect short brown setae. Legs reddish-brown, unicolored, covered by short yellowish-brown hairs.

Male: Unknown.

Notes. Schedl (1961) described the female of this species in the genus *Xyleborus* Eichhoff, 1864. Wood and Bright (1992) treated it in *Coptoborus* Hopkins 1915 in their world catalog. Later Wood transferred this species from *Xyleborus* to the genus *Gnathotrupes* (Wood, 2007). In his description of *G. assiduus* he mistakenly treated the female as a male. Wood also pointed out that the holotype is not at the California Academy of Sciences as indicated by Schedl and that the “paratype” may in fact be the “holotype”. This “paratype” was examined by Atkinson and Petrov.

***Premnobius flechtmanni* (Wood) new combination**

(Fig. 3)

Acanthotomicus flechtmanni Wood 2007: 337.

The holotype of *Premnobius flechtmanni* was examined by all authors. By comparison with *P. assiduus* and *P. perezdelacrucei*, the pronotum is less elongate (by comparison with the elytra) and its elevated lateral margin is less strongly curved ventrad. The declivity is more abrupt, occupying about 25% of the elytra. There is a small tubercle at the base of declivital interstria 1 and another of similar size on the upper portion of the declivital face. A large tubercle is located near the middle of the declivital crest, subacuminate, and slightly displaced medially from the crest. The male is unknown.

Material examined. *Holotype female*: BRAZIL: Mato Grosso: Itiquira, 15.VIII.1992, ethanol-baited FIT, *Hevea brasiliensis* clone PR107 stand, O. Dall’Oglio (MEFEIS); Mato Grosso do Sul: Selvíria, UNESP Farm, cerrado fragment, 51°24.714’W 20°20.038’S, 7-VII-2012, ethanol-baited window trap (MEFEIS, 1); same data, 13-VII-2011 (UTIC, 1); São Paulo: Santana da Ponte Pensa, Sítio Nossa Senhora Aparecida, *Hevea brasiliensis* clone PB235 planted in 1987, 50°48’41.02”W 20°13’19.90”S, ethanol-baited FIT, 07-VII-2012, J.C.P. Silva (MEFEIS, 1).

***Premnobius neoadjunctus* (Schedl) new combination**

(Fig. 4)

Xyleborus neoadjunctus Schedl 1967:13.

Coptoborus neoadjunctus (Schedl) Wood and Bright 1992: 663. Combination.

Gnathotrupes neoadjunctus (Schedl) Wood 2007: 670. Combination.

The holotype of *Premnobius neoadjunctus* was examined by both authors. This is the largest of the Neotropical *Premnobius* treated here. It is more robust and the pronotum is less elongate with respect to the elytra (50%). Strial punctures and punctures on the basal portion of the declivity are coarser than those of the other species. The vestiture associated with the declivity is very long and dense.

Material examined. *Holotype* (NMW): BRAZIL: Santa Catarina: Nova Teutonia, VIII-1966, 300–500 m, F. Plaumann (female); Amazonas: INPA – Adolpho Ducke Reserve, terra firme ombrophilous forest, 60°12’40”W 2°35’45”S, ethanol-baited FIT, 27-I-1987, R.L.S. Abreu (MEFEIS, 1)

Notes. Schedl (1967) described the female of this species in *Xyleborus* Eichhoff, 1864. Later Wood (2007) transferred this species from *Xyleborus* to *Gnathotrupes*. In his description of *G. neoadjunctus* he mistakenly treated the female as a male. The holotype was examined by Atkinson and Petrov.

Key to females of *Premnobius* in the New World

The Neotropical native species of *Premnobius* are clearly unlike any other species of ambrosia beetles known from the Neotropics and are recognizable by the long slender body with a concave declivity with all prominences on the margins of the declivity. There is a superficial resemblance to *Dinoxyleborus* Smith (2017) (Xyleborini) because of the elongate, slender form, but are distinguishable because of the acute marginal spines, antennal characters and impressed submentum (Smith 2017). There is also a resemblance to some species of *Sampsonius* Eggers, 1933 (Xyleborini), but species in this genus typically have two prominent teeth on the anterior margin of the pronotum, and the elytral declivity is flattened, generally with teeth on the declivital face and the submentum is also impressed.

Neotropical *Premnobius* species differ from those of *Acanthotomicus* Blandford, 1894 (Ipini) by the elongate cylindrical pronotum which is at least 2/3 the length of the elytra with an elevated antero-lateral margin (Fig. 1–4). All species of *Premnobius* express strong sexual dimorphism, with flightless males, while in *Acanthotomicus* they are normal. The four species treated here have dense pubescence on the lateral margins of the declivity with the most prominent tubercles or projections on the lower part of the declivital crest. The pronotum of species *Acanthotomicus* is shorter, without the raised antero-lateral margin. The declivity of *Acanthotomicus* has numerous small tubercles on the lateral margins of excavated area; those of the declivity of the male are larger than those of the female. The largest tubercles are on the upper part of the declivity and abundant pubescence is lacking.

The following key will distinguish all females of all species of *Premnobius* known from the New World, both native and exotic.

1. Declivity with a pair of quadrate spines on lower lateral margins, their height subequal to width at base; spines on lateral margins often blunt or digitate (Fig. 1, 2, 3, 4) **2**
- Declivity without pair of quadrate spines on lower margins; all granules or spines on lateral margins acutely pointed (Fig. 5, 6) **4**
- 2(1). Quadrate elevation near middle of declivity in lateral view, slightly displaced medially from lateral crest (Fig. 3) ***P. flechtmanni* (Wood)**
- Quadrate elevations on posterior 1/3 of declivity in lateral view, on lateral crest (Fig. 1, 2, 4) **3**
- 3(2). Lateral margin of declivity with long slender, digitate projection on base of declivity; height of projections subequal to that of quadrate elevation on lower margin (Fig. 2) ***P. assiduus* (Schedl)**
- Lateral margins of declivity without projections on base of declivity; a pair of small pointed tubercles may be present on the declivital face, mesad of lateral margin (Fig. 1, 4) **4**
- 4(3). Prothorax elongate, length 1/3 of total body length; declivity more abrupt, occupying ¼ of elytral length in dorsal aspect; in lateral view quadrate elevation separated from lower margin by less than 3× its width (Fig. 1) ***P. perezdelacrucei* Petrov and Atkinson**
- Pronotum less elongate, length ¼ total body length; declivity more gradual, occupying 1/3 of elytral length in dorsal aspect; in lateral view quadrate elevation separated from lower margin by more than 5× its width (Fig. 4) ***P. neoadjunctus* (Schedl)**
- 5(1). Interstria 1 on declivity with a row of small pointed tubercles; raised lateral margin of declivity with small pointed granules; transition from elytral disc to declivity pronounced, not gradual (Fig. 6) ***P. cavipennis* Eichhoff**
- Interstria 1 on declivity without any granules; several large, pointed tubercles near base and midpoint of declivity on lateral margin; base of declivity extends gradually anteriorad at base along interstria 1 (Fig. 5) ***P. ambitiosus* (Schaufuss)**

Acknowledgments

The authors express their gratitude to Dr. Harald Schillhammer and Dr. Helen Shaverdo, (Naturhistorisches Museum Wien, Austria) for providing access and loans to the collection of Karl E. Schedl. Dr. Sarah M. Smith and Dr. Anthony I. Cognato for sharing unpublished results of DNA analysis of specimens of *Premnobius assiduus*, confirming its placement in Premnobiina. We thank Anthony Cognato, Robert J. Rabaglia, Sarah Smith and Demian Gómez for their reviews. A.V. Petrov's research was supported by a grant from the Russian Science Foundation (No. 17-04-00360).

Literature Cited

- Browne, F. G. 1961.** The generic characters, habits and taxonomic states of *Premnobius* Eichh. (Coleopt., Scolytidae). Report of the West African Timber Research Unit (4): 45–51.

- Cognato, A. I. 2013a.** Molecular phylogeny and taxonomic review of Premnobiini Browne, 1962 (Coleoptera: Curculionidae: Scolytinae). *Frontiers in Ecology and Evolution* 1: 1–11.
- Cognato, A. I. 2013b.** *Electroborus brighti*, n.gen. & n.sp.: the first Hylesinini bark beetle described from Dominican amber (Curculionidae: Scolytinae). *The Canadian Entomologist* 145: 501–508.
- Jordal, B. H. 2012.** *Phrixosoma concavifrons* – a sexually dimorphic Phrixosomatini (Coleoptera: Curculionidae) from the Udzungwa mountains in Tanzania. *Zootaxa* 3255: 52–56.
- Jordal, B. H., and J. Kaidel. 2017.** Phylogenetic analysis of Micracidini bark beetles (Coleoptera: Curculionidae) demonstrates a single trans-Atlantic disjunction and inclusion of *Cactopinus* in the New World clade. *Canadian Entomologist* 149: 8–25.
- Petrov, A. V., and T. H. Atkinson. 2018.** New species of Neotropical Ipini Bedel, 1888 (Coleoptera: Curculionidae: Scolytinae). *Russian Entomological Journal* 27: 41–45.
- Schedl, K. E. 1961.** New species of bark and timber beetles from the Neotropical region. 186. Contribution. *Pan-Pacific Entomologist* 37: 223–233.
- Schedl, K. E. 1967.** Neotropische Scolytoidea IX. 251. Beitrag. *Opuscula Zoologica* (99): 1–19.
- Smith, S. M. 2017.** *Dinoxyleborus* Smith, a new genus of Neotropical xyleborine ambrosia beetle (Coleoptera, Curculionidae: Scolytinae). *Zootaxa* 4303: 131–139.
- Wood, S. L. 1982.** The bark and ambrosia beetles of North America (Coleoptera: Scolytidae), a taxonomic monograph. *Great Basin Naturalist Memoirs* 6: 1–1359.
- Wood, S. L. 2007.** Bark and ambrosia beetles of South America (Coleoptera: Scolytidae). Monte L. Bean Science Museum, Brigham Young University; Provo, Utah. 900 p.
- Wood, S. L., and D. E. Bright. 1992.** A catalog of Scolytidae and Platypodidae (Coleoptera), Part 2: taxonomic index. *Great Basin Naturalist Memoirs* 13: 1–1553.

Received July 24, 2018; accepted August 18, 2018.

Review editor Oliver Keller.

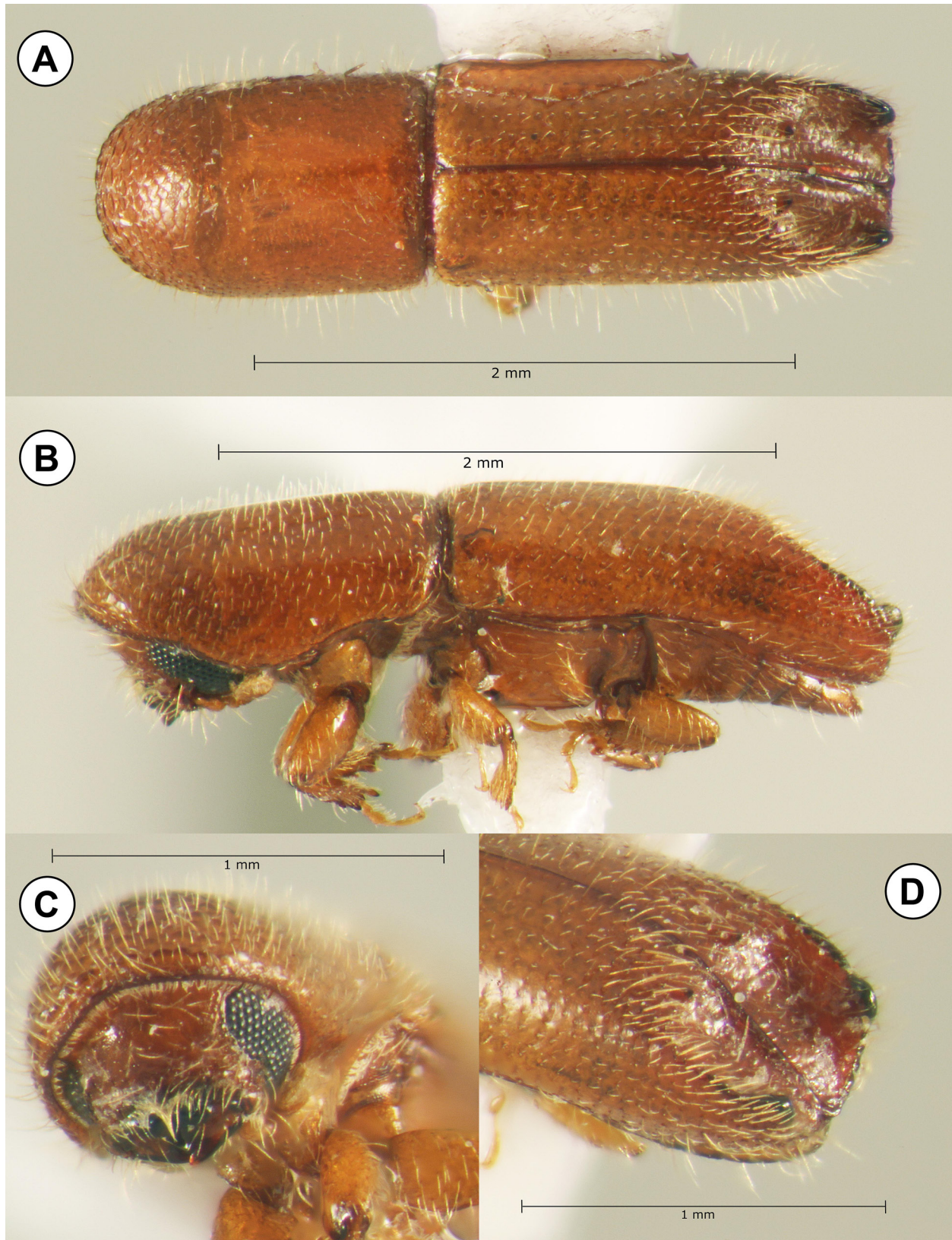


Figure 1. *Premnobius perezdelacrucei* Petrov and Atkinson, female paratype. **A)** Dorsal view. **B)** Lateral view. **C)** Frontal view. **D)** Declivity. Photos by T.H. Atkinson.

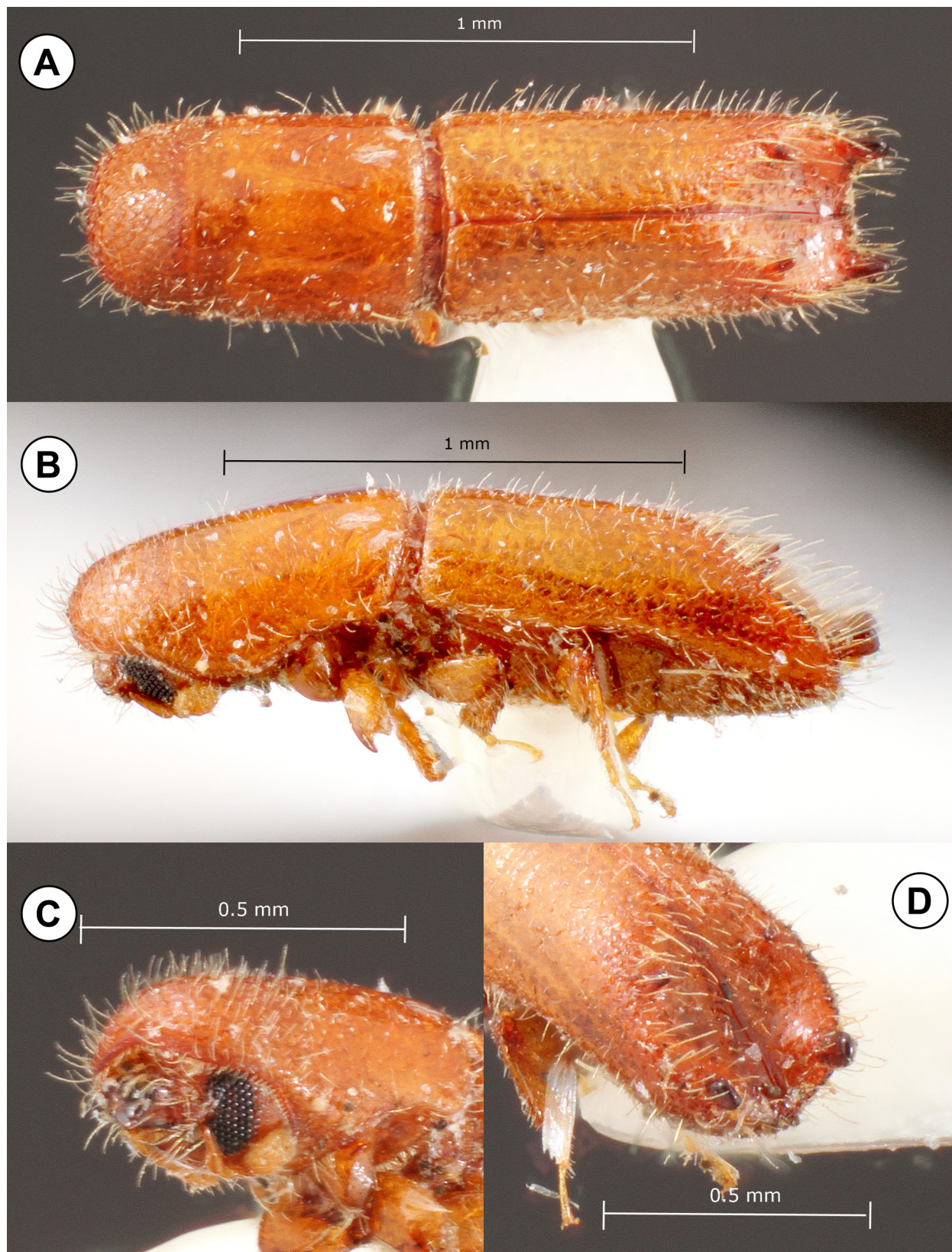


Figure 2. *Premnobius assiduus* (Schedl), female paratype. **A)** Dorsal view. **B)** Lateral view. **C)** Frontal view. **D)** Declivity. Photos by T.H. Atkinson.

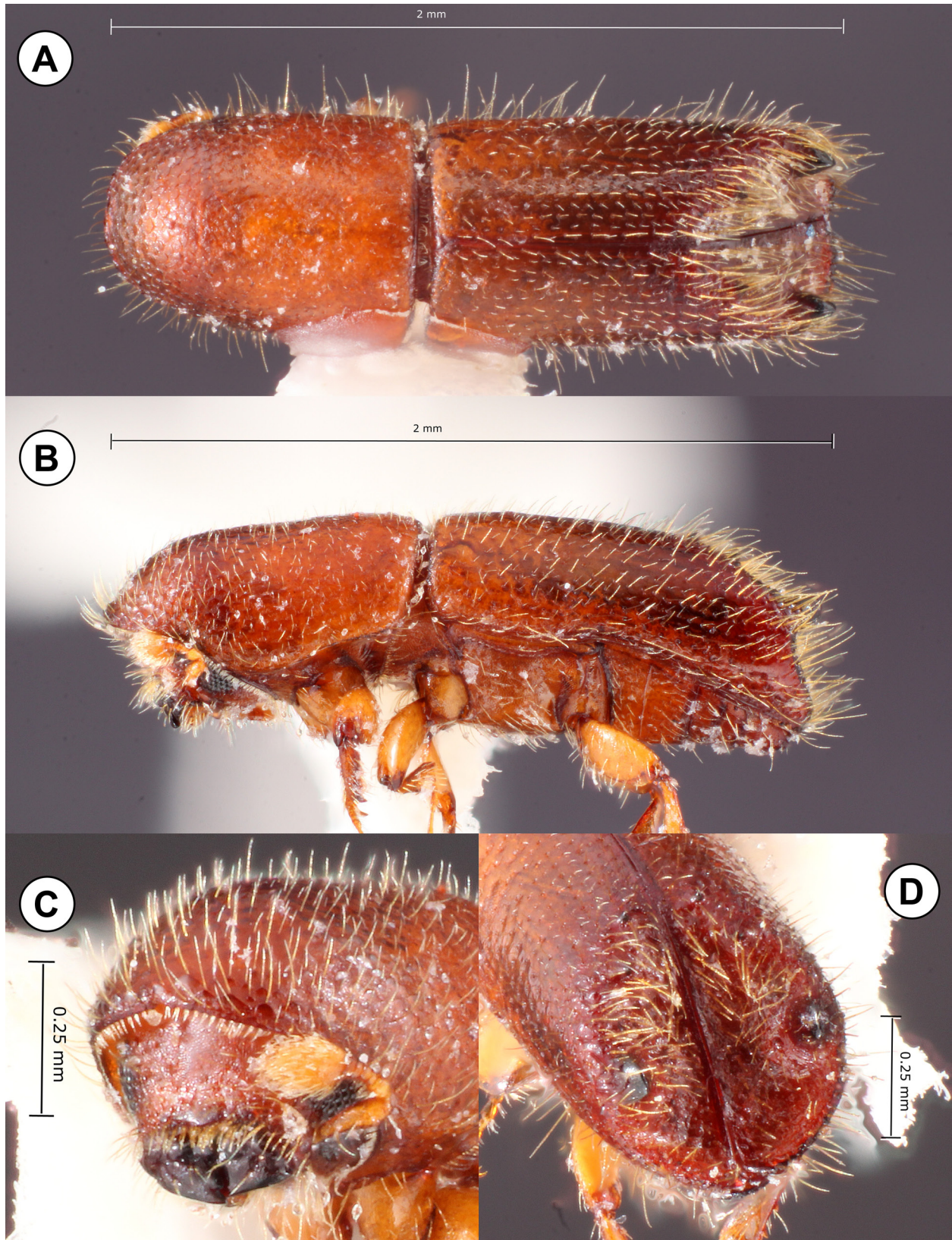


Figure 3. *Premnobius flechtmanni* (Wood), female. **A)** Dorsal view. **B)** Lateral view. **C)** Frontal view. **D)** Declivity. Photos by T.H. Atkinson.

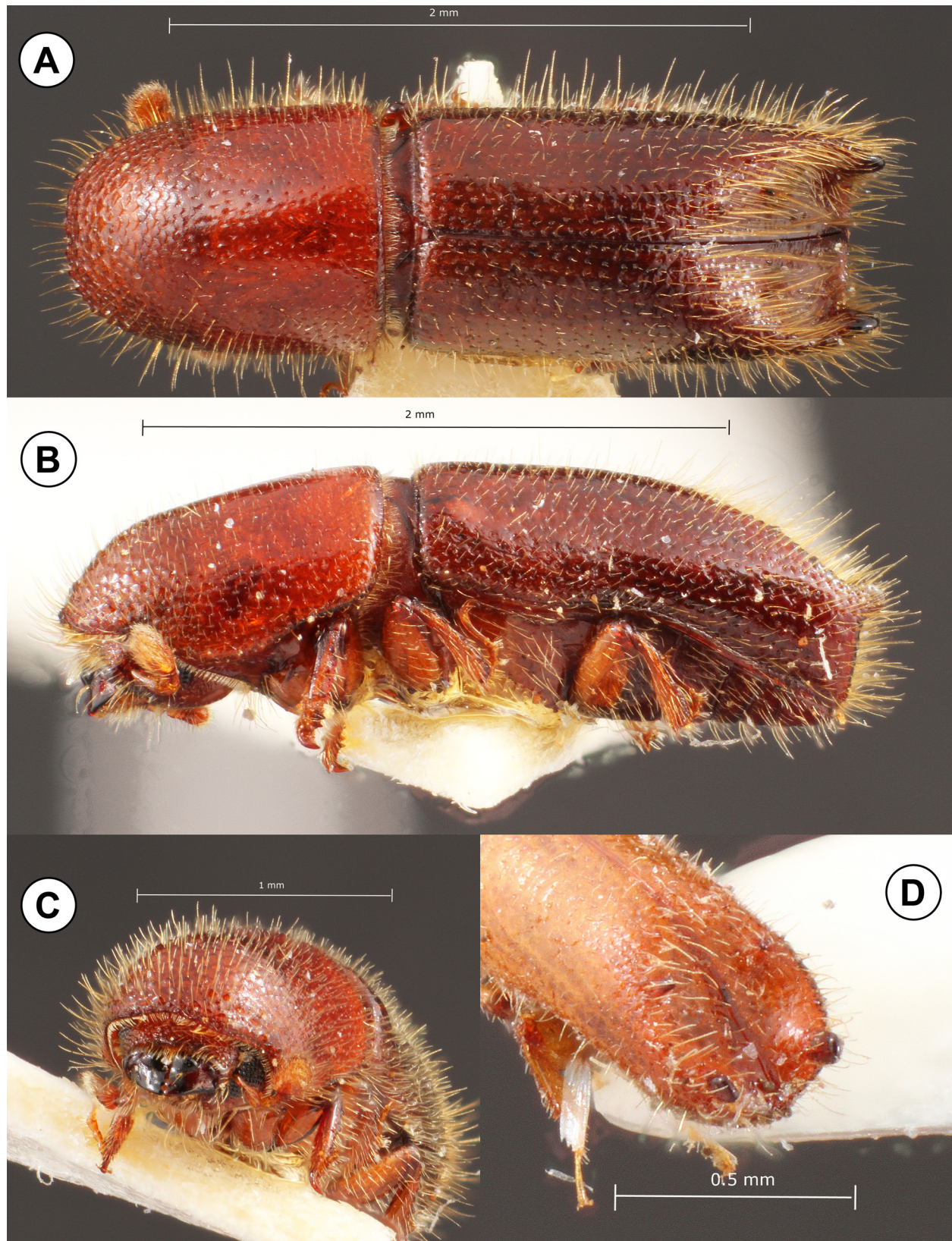


Figure 4. *Premnobius neoadjunctus* (Schedl), female holotype. **A)** Dorsal view. **B)** Lateral view. **C)** Frontal view. **D)** Declivity. Photos by T.H. Atkinson.

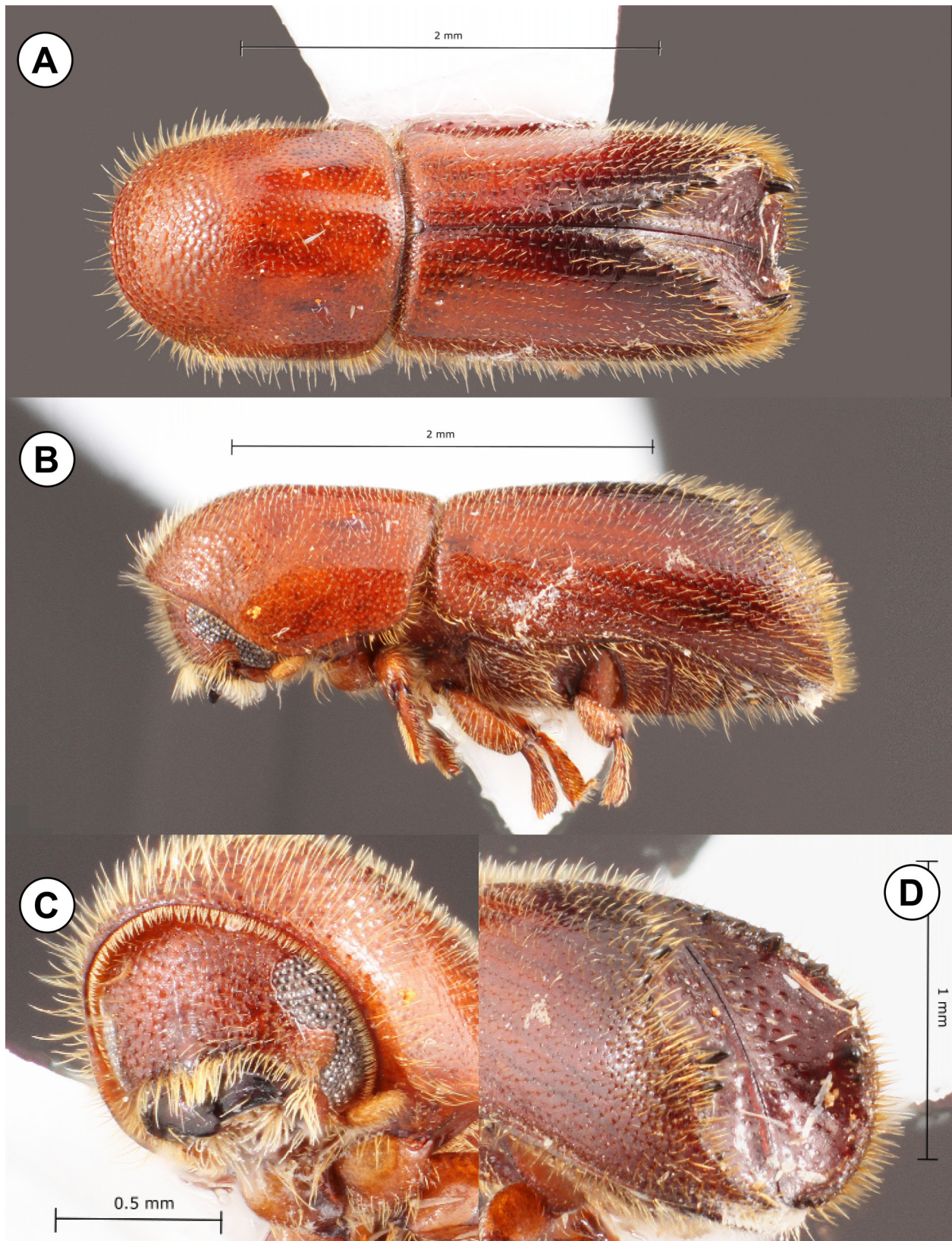


Figure 5. *Premnobius ambitiosus* (Schaufuss), female. **A)** Dorsal view. **B)** Lateral view. **C)** Frontal view. **D)** Declivity. Photos by T.H. Atkinson.

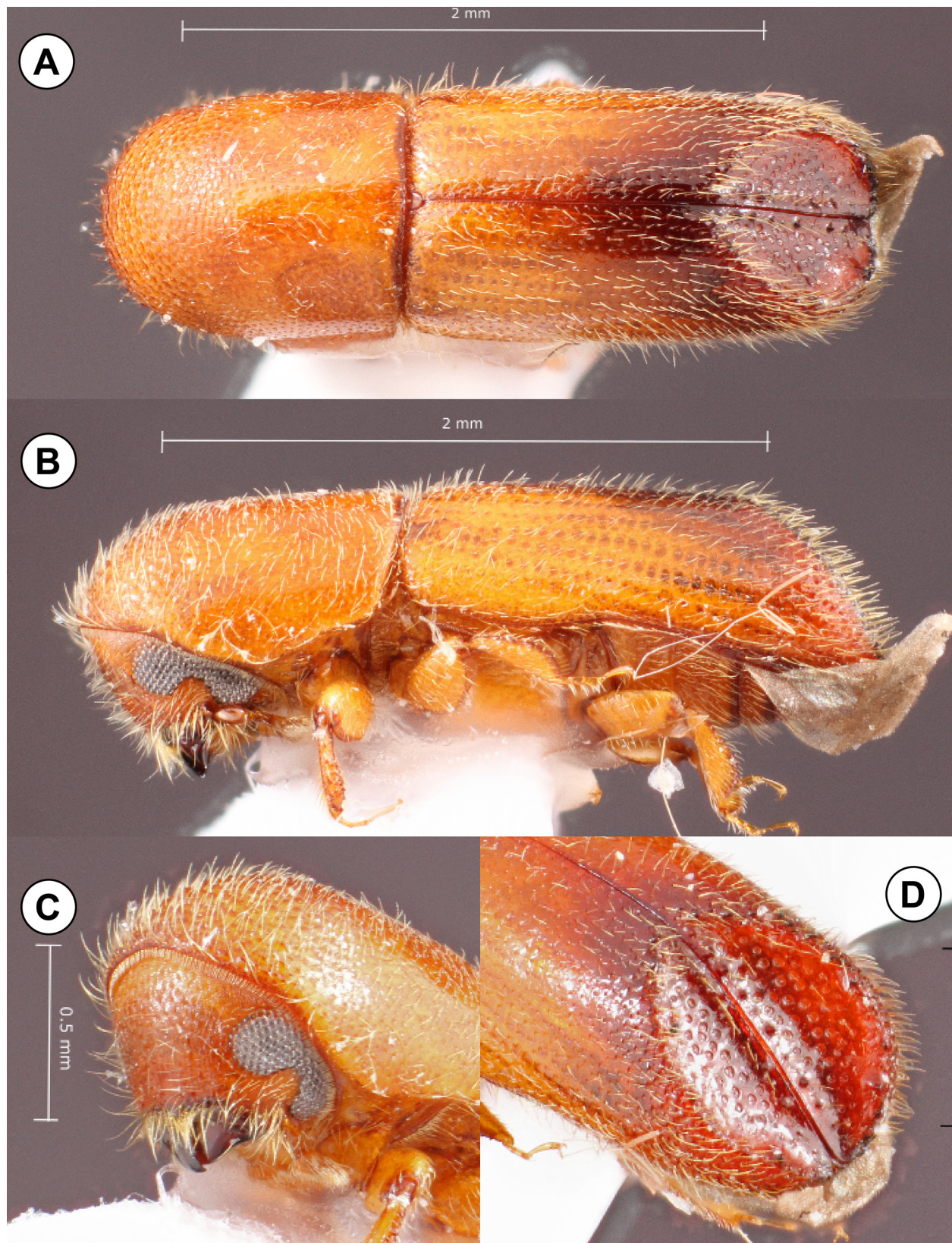


Figure 6. *Premnobius cavipennis* Eichhoff, female. **A)** Dorsal view. **B)** Lateral view. **C)** Frontal view. **D)** Declivity. Photos by T.H. Atkinson.

