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A remarkable new species of Prioninae (Coleoptera: Cerambycidae) from Guadalcanal, Solomon Islands

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Cerambycidae; new species;
Prioninae; description;
Psalidocoptus; morphology;
satori; Guadalcanal;
taxonomy; Solomon Islands.

Abstract. – New Prioninae material from Guadalcanal, Solomon Islands has led to the re-evaluation of two undetermined female specimens from 1965 in the collection of the Natural History Museum, London. The male and additional females have since been found, and the distinctive new species *Psalidocoptus satori* sp. nov. is described in this paper, the first addition to the genus *Psalidocoptus* in over 160 years. A detailed description of this new species is provided based on the morphological characters of 3 male and 13 female specimens, along with detailed photographs of both sexes.

Zhang Y. & Barclay M. V. L., 2021. – A remarkable new species of Prioninae (Coleoptera: Cerambycidae) from Guadalcanal, Solomon Islands. *Faunitaxys*, 9(22): 1 – 5.

ZooBank: <http://zoobank.org/33023E4F-802C-4F0C-9469-8B7B5367DADC>

Introduction

The genus *Psalidocoptus* was erected by Adam White (1856), to accommodate the single species *Psalidocoptus scaber*. The type series was collected by John MacGillivray, a naturalist aboard the HMS Herald, from ‘Tana, New Hebrides’ corresponding to modern day Tanna Island, Vanuatu. Over 160 years later, virtually nothing is known about the biology of this species, which has seldom been collected since the time of MacGillivray. An unknown (albeit very small) number of *Psalidocoptus scaber* specimens reside within private collections, whilst Natural History Museum, London (which holds the syntypes) and Institut Royal des Sciences Naturelles de Belgique are among the few public institutions that hold any material of this species.

Ziro Komiya (2001) described a new monotypic genus *Psalidosphryon*, with *Psalidosphryon spiniscapus* (Schwarzer, 1924) as the type species. Komiya noted the new genus’ affinities to *Psalidocoptus*, and expressed the view that *Psalidocoptus* likely originated from the Oriental realm rather than the Neotropical realm. More recently, a second species was described, *Psalidosphryon andreevi* Delahaye *et al.*, 2021, based on two female specimens from West Papua. Both *Psalidosphryon* species have flightless females with reduced hind wings; the male of *P.spiniscapus* is fully winged and capable of flight (Komiya, pers. comm.) and the male of *P. andreevi* remains unknown. This is in contrast to *Psalidocoptus scaber*; in which both sexes are incapable of flight.

In March 2021, two specimens of an unusual Prioninae from Guadalcanal were brought to the attention of the authors. This new taxon exhibited characters similar to both *Psalidocoptus* and *Psalidosphryon*, and its geographical distribution is intermediate between that of the two genera. Two additional specimens from 1965 were also found in the Natural History Museum, London. In the subsequent months prior to publication, a total of 16 specimens were examined, consisting of 3 male and 13 female specimens. These comprise the type series of *Psalidocoptus satori* sp. nov. described in this paper.

Material and methods

The sex of the beetles was determined by the presence of ovipositors, the tips of which were extracted using forceps unless already visible externally. The photographs were taken by the first author unless otherwise noted, using a Sony Alpha 7 III mirrorless camera, and subsequently edited in Adobe Photoshop. The body length was measured from the tip of the mandibles to the apices of the elytra, and width was measured at the widest part of both elytra; measurements were made using stainless steel callipers and are indicated in millimetres (mm). Details of the specimens were examined under a Zeiss Stemi binocular microscope using 10x and 30x magnification. The distribution maps of *Psalidosphryon* and *Psalidocoptus* were produced using ArcGIS map viewer.

Acronyms

The abbreviations used in this paper denote the following institutions:

– **BMNH**: Natural History Museum (formerly British Museum, Natural History), London, United Kingdom.

– **NDCF**: Norbert Delahaye Private Collection, Plaisir, France.

Psalidocoptus satori sp. nov.

(Fig. 1-4)

ZooBank : <http://zoobank.org/BDF0154D-B2B4-4F52-9126-BD39A445296A>

Holotype, ♂, Veranggono, 9°34'50"S 160°17'23"E, Guadalcanal, Solomon Islands, 14. V. 2021, local collector leg. (BMNH).

Paratypes (15 ex.)

– 1 ♀, SOLOMON IS., Guadalcanal, Mt. Popamanaseu, 5500'[feet], 25.10.1965, 20232B, P. Greenslade/ ex pupa in log, with larvae, 20232A (BMNH);

– 1 ♀, SOLOMON IS., Guadalcanal, Popamanaseu, 5000'[feet]/ Pres. by, Com. Inst. Ent., B.M. 1966-2/ 25.10.1965 20278, P. Greenslade (BMNH);

– 1 ♀, Guadalcanal, Solomon Islands, I. 2021, local collector leg. (NDCF);

– 1 ♀, Veranggono, 9°34'50"S 160°17'23"E, Guadalcanal, Solomon Islands, 20. I. 2021, local collector leg. (BMNH);

- 1 ♀, Veranggono, 9°34'50"S 160°17'23"E, Guadalcanal, Solomon Islands, 5. II. 2021, local collector leg. (NDCF);
 – 1 ♀, Veranggono, 9°34'50"S 160°17'23"E, Guadalcanal, Solomon Islands, 2. IV. 2021, local collector leg. (BMNH);
 – 7 ♀, Veranggono, 9°34'50"S 160°17'23"E, Guadalcanal, Solomon Islands, 12-14. V. 2021, local collector leg.;
 – 1 ♂, Veranggono, 9°34'50"S 160°17'23"E, Guadalcanal, Solomon Islands, 2. IV. 2021, local collector leg. (NDCF);
 – 1 ♂, Veranggono, 9°34'50"S 160°17'23"E, Guadalcanal, Solomon Islands, 10. VI. 2021, local collector leg.

Description. – Length 29–49 mm. Medium-sized Prioninae, with integument colouration ranging from reddish-brown to black. The apparently flightless female is on average larger, darker and more matt-textured than the male, which is capable of flight.

Male (Fig. 1a, 2)

Length. – 34–36 mm

Head. – Frons about twice as wide as long; maximum width across the base of mandibles. Narrow longitudinal median impression begins at its deepest between antennal tubercles and gradually fades to merge with the vertex between the eyes. Antennal tubercles prominent, surface rough and densely punctured. Eyes large, extending to cover approximately 3/5 the head's circumference. Dense covering of brown setae on antennal tubercles, frons and outer edges of mandibles.

Antennae. – 11-segmented, 1.1x length of body. Scape thinner and rounder, 0.75x length of pronotum; second antennomere reduced. 3rd–11th segments with relative length ratios of 2.07: 1.33: 1.20: 1.10: 1.10: 1: 1: 1: 1.4, with gradually streaked 3rd and streaked grooves covering 4th–11th antennomeres. Thin covering of fine setae present in first three segments.

Pronotum. – Slightly wider at base than at apex; laterally tridentate, twice as broad as long including spines. Lower lateral spines arise from a common origin at the middle of the pronotum and then bifurcate. Apical spine much more robust.

Scutellum. – Scutellar shield broadly triangular, with evenly rounded apex; finely punctuated.

Elytra. – Gently arched in lateral view; from above almost straight-sided, but broadening steadily from base to approximately halfway along elytra before tapering again towards the apex, width at humeri approximately same as width at apex; length 2.9 times humeral width, and 5.7 times length of pronotum; humeral angles almost 90°, longitudinal ridges much less pronounced than in female; derm reddish brown and uniformly punctured with a semi-glossy texture; apex of each elytron emarginate, and each with two spines; spine at sutural margin longer than that on external margin.

Legs. – Very long and thin; femur approximately 1/3 of body length, widest at base and tapering towards apex; tibia approximately same length as femur; first metatarsomere approximately 3x as long as second; twice as long in mesotarsi and approximately the same length in protarsal segments; terminal protarsomere including claws very long, almost as long as first 4 protarsomeres.

Female (Fig. 1b, 3, 4)

Length. – 29–49 mm

Head. – Frons about twice as wide as long; maximum width across the base of mandibles. Narrow longitudinal median impression begins at its deepest between antennal tubercles and gradually fades to merge with the vertex between the eyes. Antennal tubercles prominent, surface rough and densely punctured. Eyes emarginate, medium-sized, much smaller than those of male, with upper eye lobes widest just above antennal insertion. Brown setae covering antennal tubercles, frons and outer edges of mandibles much sparser than in male. Mandibles robust, with one small tooth and several minor teeth along inside edge.

Antennae. – 11-segmented, 0.6x length of body. Scape robust, subcylindrical, 0.5x length of pronotum; second antennomere reduced. 3rd–11th segments with relative length ratios of 3.55: 1.75: 1.55: 1.30: 1.25: 1: 1: 0.90: 1.10, with gradually streaked 7th and streaked grooves covering 8th–11th antennomeres. Setae mostly absent.

Pronotum. – Slightly wider at base than at apex; tridentate, twice as broad as long. Lower lateral spines arise from a common origin at the midlength of the lateral margin of the pronotum and then bifurcate. In some large females the apical of the two lateral spines also has a slight bifurcation. The apical pronotal spine is separate from the lateral pair, and inclined forwards, in most

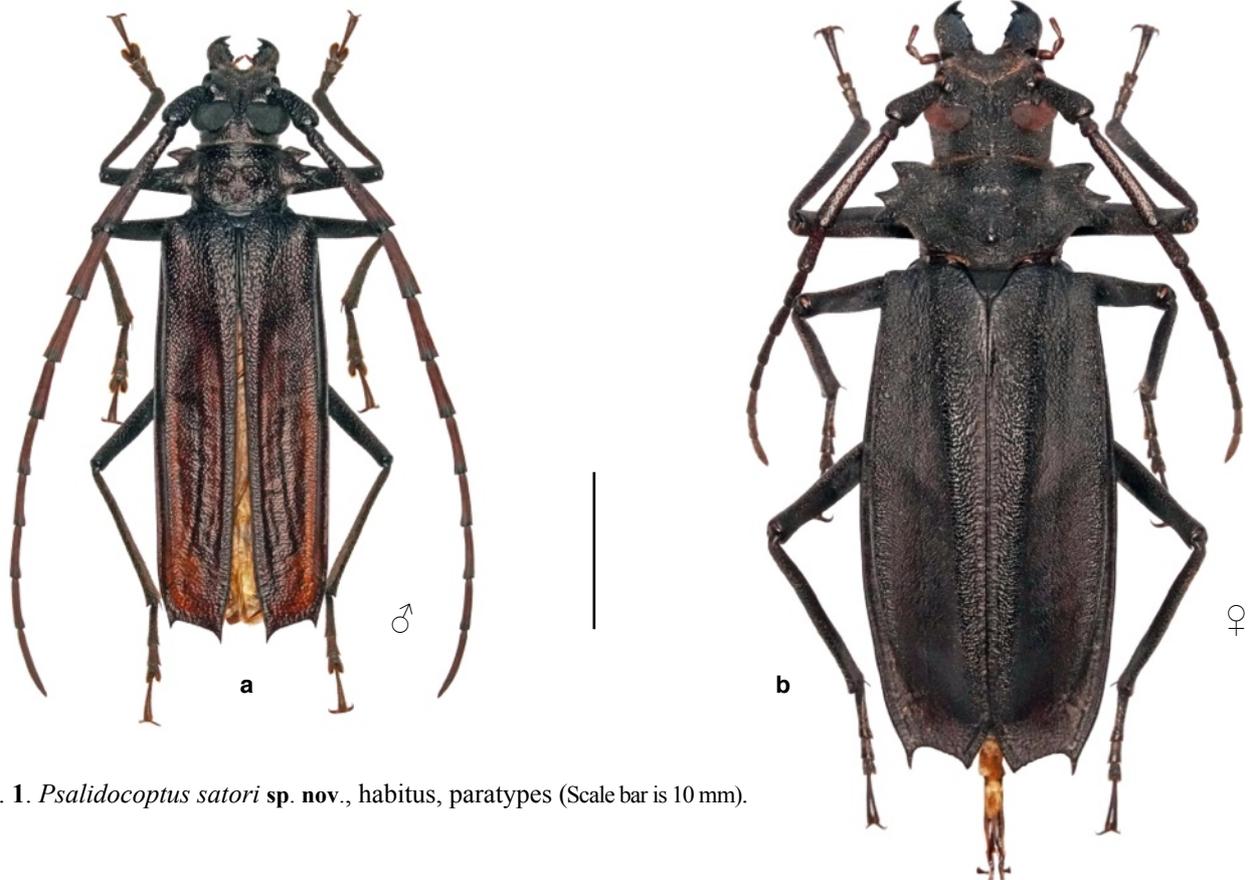


Fig. 1. *Psalidocoptus satori* sp. nov., habitus, paratypes (Scale bar is 10 mm).

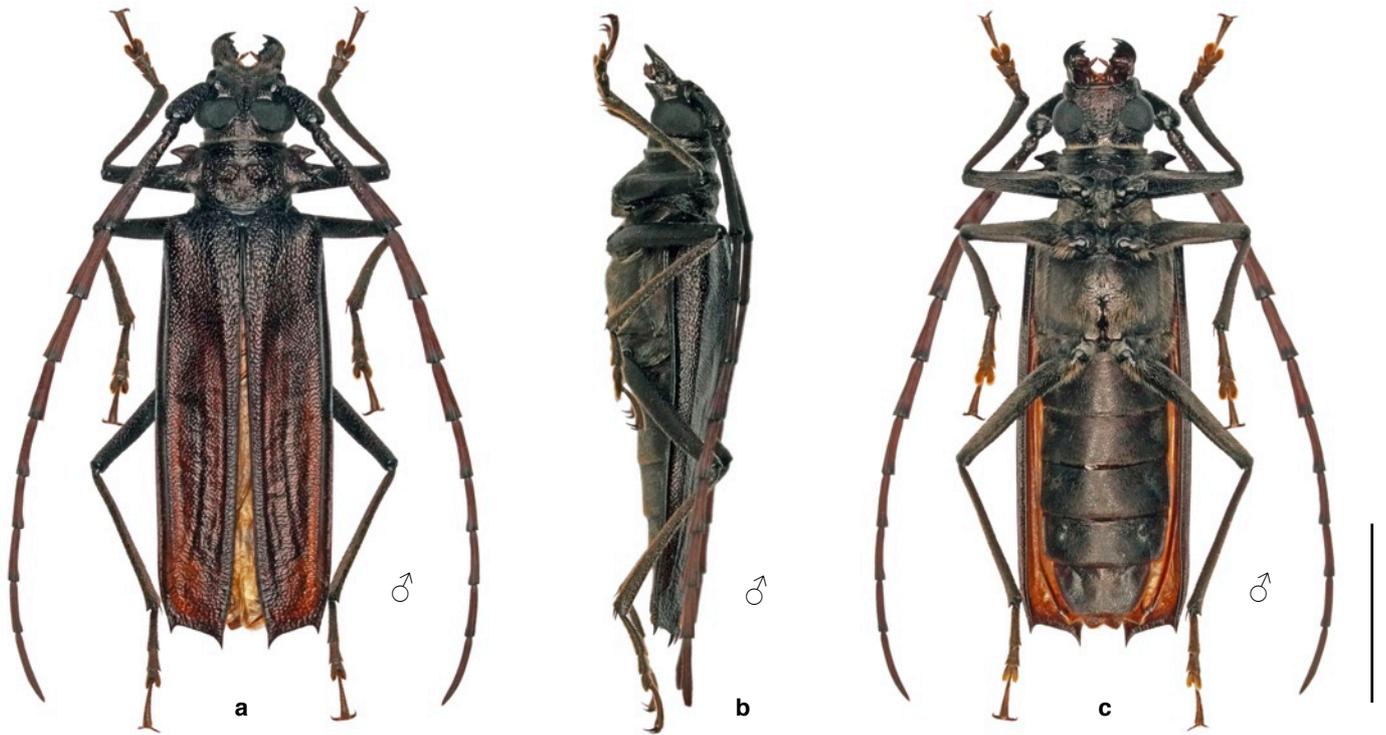


Fig. 2. *Psalidocoptus satori* sp. nov., ♂, paratype, habitus (Scale bar is 10 mm).

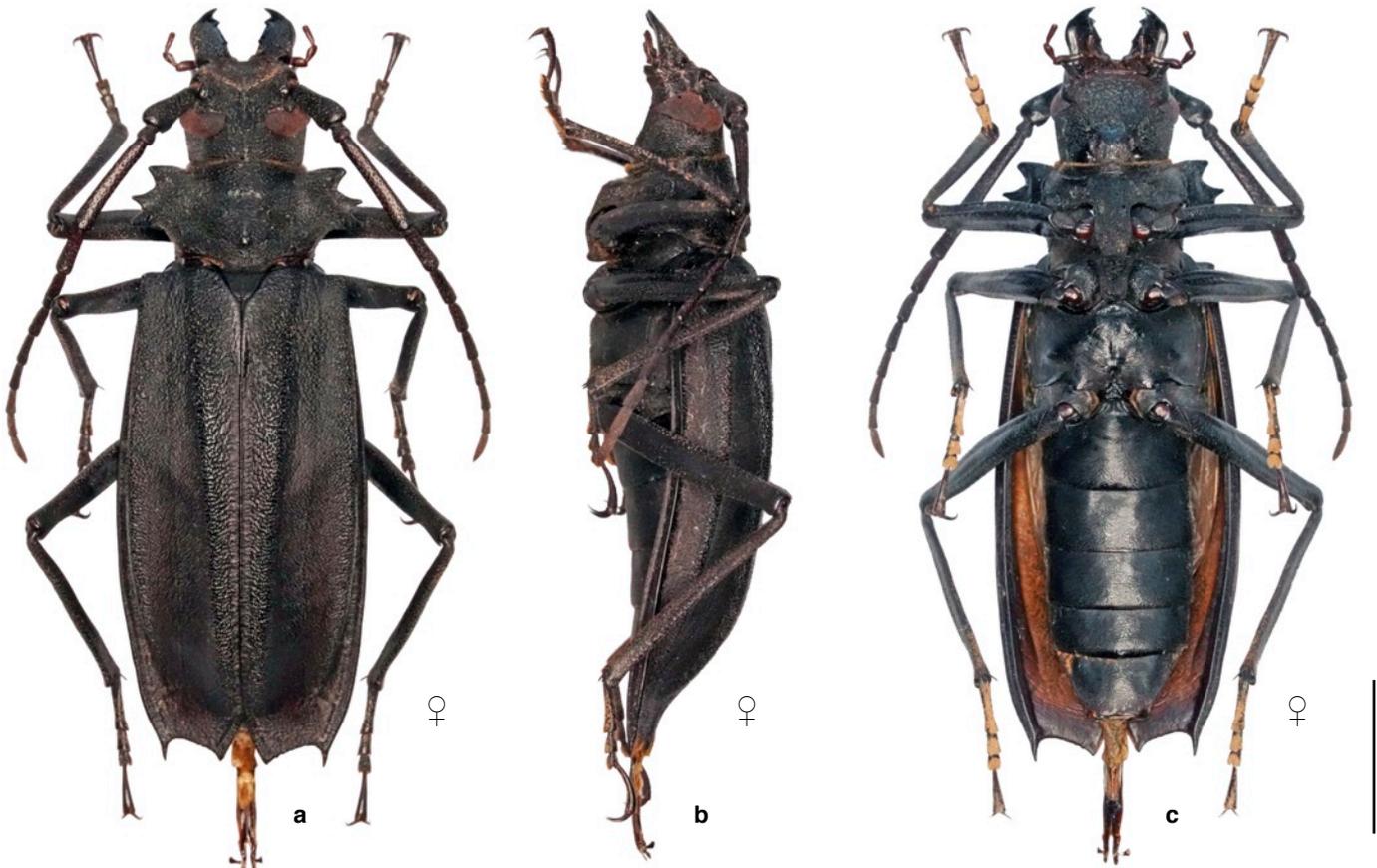


Fig. 3. *Psalidocoptus satori* sp. nov., ♀, paratype, habitus (Scale bar is 10 mm).

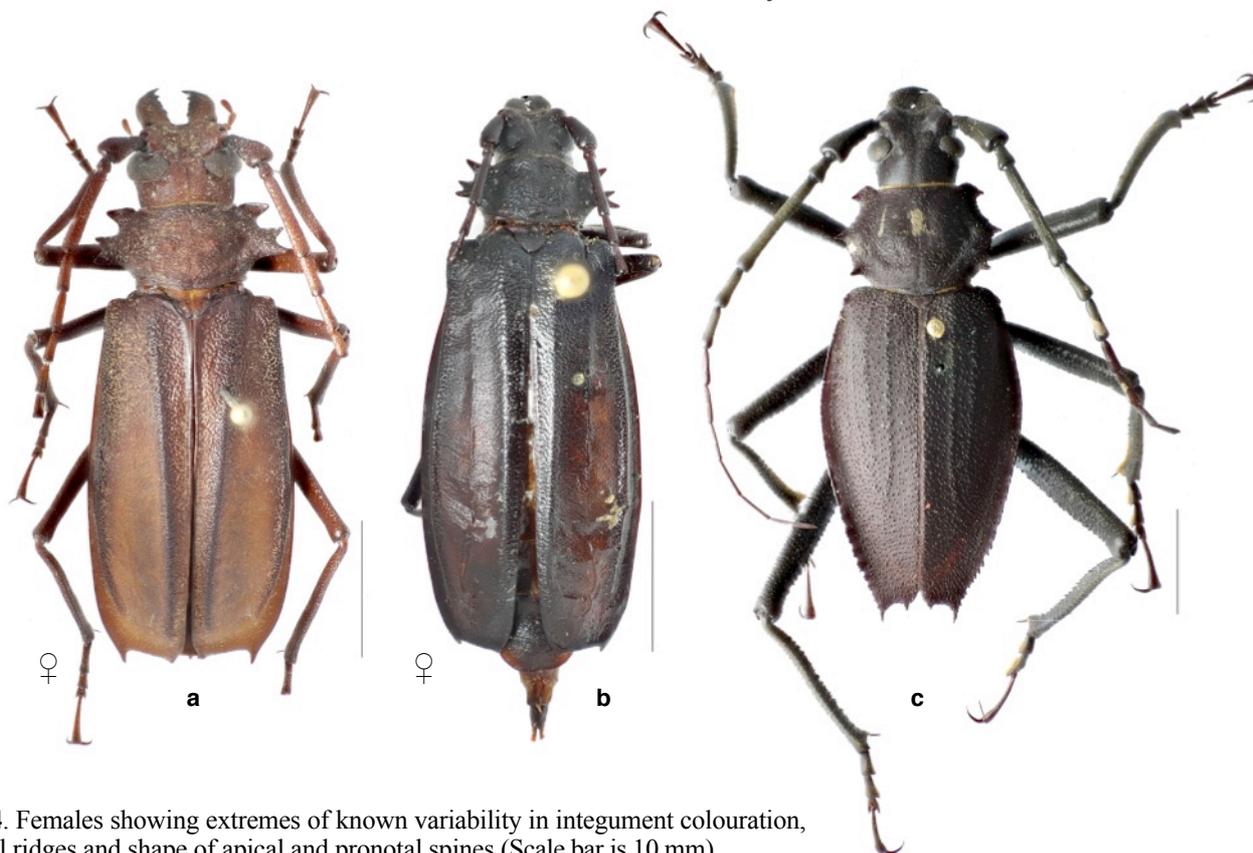


Fig. 4. Females showing extremes of known variability in integument colouration, elytral ridges and shape of apical and pronotal spines (Scale bar is 10 mm).

a) Reddish female paratype from Veranggono. **b)** Female paratype from Mount Popamanaseu. **c)** *Psalidocoptus scaber* syntype from Tanna, Vanuatu. (All BMNH, images Keita Matsumoto).

cases shorter and more robust than the lateral spines. Pronotal spines, especially of females, show pronounced variation (e.g. see Figures 3a, 4a, 4b).

Scutellum. – Scutellar shield broadly triangular, with evenly rounded apex; finely punctuated.

Elytra. – Convex in lateral view, much more strongly arched than in male; broadening steadily from base to approximately halfway along elytra before tapering again towards the apex, width at humeri 1.2 times width at apex; length 2.5 times humeral width, and 4.7 times length of pronotum; humeral angles almost 90°, giving rise to a longitudinal ridge that extends almost to the apex, is mirrored by a similar ridge near the medial suture; derm ranges from reddish brown to black, uniformly punctured and dull except on the ridges where the texture appears semi-glossy; apex of each elytron emarginate, much more so than in male, with long aciculate spine on external margin, and smaller subtriangular spine at sutural margin.

Legs. – Similar to those of male.

Natural history. – Larvae develop within dead wood like most Prioninae, as shown by the label on the 1965 female ‘ex pupa in log with larvae’. Local collectors report that individuals are collected mostly at night, and claim that they can locate infested wood by its particular aroma. This may be associated with a pheromone produced by the flightless females.

Etymology. – The genus name is derived from the ancient Greek words ψαλίς ‘scissors’ and κόπτω ‘to cut’, as if the shape of the elytral apex was cut out using a pair of scissors. The specific name was inspired by the antagonist Andrei Sator from the film Tenet, from the Latin ‘founder’ or ‘progenitor’.

Diagnosis. – The new species can be distinguished from *Psalidocoptus scaber* White, 1856 (Figure 4c) by its much smaller size, less oval form of elytra and fully-winged male; it differs from species of the genus *Psalidosphryon* by the presence of two long spines at the apex of each elytron in both sexes, and a laterally tridentate pronotum.

Based on its morphology and distribution, this new taxon could be interpreted as transitional between the genera *Psalidocoptus* White, 1856 and *Psalidosphryon* Komiya, 2001. It can easily be distinguished

from *Psalidocoptus scaber* by its much smaller size, fully-winged male, the shape of the elytra and the arrangement of the pronotal spines. It also differs from *Psalidosphryon* in possessing strongly ridged elytra with two ridges running almost the entire length of each one (ridges do not exceed half the length of elytra in known *Psalidosphryon*) and two long spines at the apex of each elytron (none in *Psalidosphryon*). It differs from *Psalidosphryon spiniscapus* in the absence of a distinct spine on the 1st antennomere of the female, but this character is also absent in *Psalidosphryon andreevi* Delahaye *et al.* We have placed the new species in the genus *Psalidocoptus*, but it is likely that as further species are recognised, the genera of Prioninae of the region will need to be reviewed, and the description of additional genera or the synonymy of some existing ones will be required.

Variation. – Females of the new species show marked variation, in particular of the pronotal and elytra spines (e.g. see Figures 3a, 4a, 4b), which seems to be correlated or partly correlated to body size. The two females from Popamanaseu most closely resemble each other in the shape of the pronotal spines and the general shape of the elytra, but this is to be expected given their flightlessness, and the fact they represent a separate population. Their characters fall within the range of variation shown by the longer and more diverse series from Veranggono, so it was concluded that they are conspecific.

Distribution. – The Island of Guadalcanal, Solomon Islands. Known from Veranggono (9°34'50"S 160°17'23"E) and Mount Popamanaseu (9°40'01.3"S 160°04'31.2"E) (Fig. 5).

Discussion. – Since the Solomon island chain is partly volcanic in origin and formed no earlier than the Miocene (Coleman, 1970), the ancestors of wood-feeding beetles now occurring there may have reached Guadalcanal as larvae/pupae inside driftwood. The females of *Psalidocoptus* are also heavily sclerotized and are potentially capable of dispersing via ocean flotsam as adults, especially during the cyclone season. So far, *Psalidocoptus satori* sp. nov. is the only Prioninae with a flightless female known from the Solomon Islands,

and the geographical location of Guadalcanal at the south-eastern edge of the island chain seems to suggest that similar populations could exist on more westerly islands as well (Vitali & Casadio, 2007).

The new species has been collected at two localities, Veranggono and Mount Popamanaseu, separated by around 30km in a straight line. The older specimens collected at Popamanaseu by P. John Greenslade in the 1960s, were extracted from dead wood at altitudes between 1500 and 1700 metres, while the Veranggono locality is apparently only a few hundred metres above sea level. The collection of the Natural History Museum includes extensive material collected in the Solomon Islands in the 20th Century, but this included only two female specimens of the new species.

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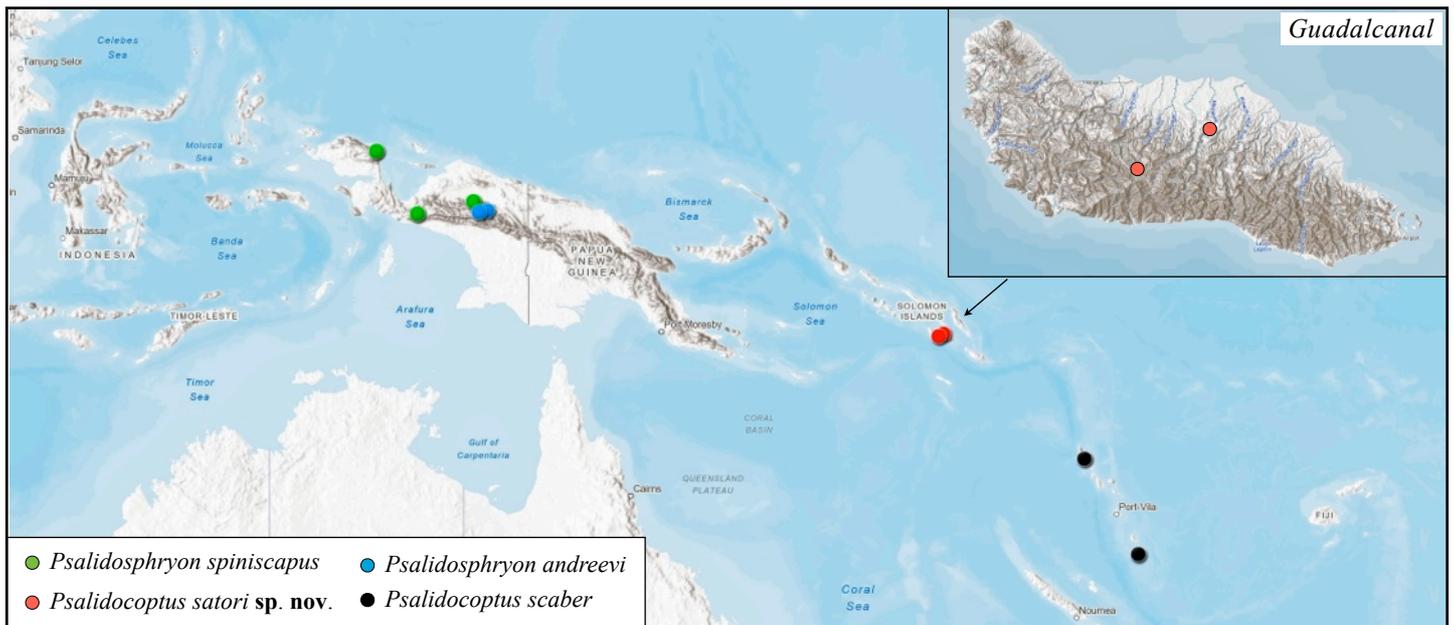


Fig. 5. Known distribution of *Psalidosphryon* and *Psalidocoptus*.

Résumé

Zhang Y. & Barclay M. V. L., 2021. – Un nouveau Prioninae remarquable de Guadalcanal, Îles Salomon (Coleoptera: Cerambycidae). *Faunitaxys*, 9(22): 1 – 5.

L'étude d'un nouveau matériel de Prioninae en provenance de Guadalcanal, aux Îles Salomon, a conduit à s'intéresser à deux spécimens femelles indéterminés depuis 1965, avec la conclusion qu'ils représentent une nouvelle espèce. Le mâle et d'autres femelles ont depuis été retrouvés. *Psalidocoptus satori* sp. nov. est décrit dans cet article, comme le premier ajout au genre *Psalidocoptus* depuis plus de 160 ans. Une description détaillée de cette nouvelle espèce est fournie sur la base des caractères morphologiques de 3 spécimens mâles et de 13 femelles, ainsi que des photographies détaillées des deux sexes.

Mots clés. – Cerambycidae, Prioninae, *Psalidocoptus*, *satori*, taxonomie, nouvelle espèce, description, morphologie, Guadalcanal, Îles Salomon.

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Volume 9, Numéro 22, Juillet 2021

SOMMAIRE

Un nouveau Prioninae remarquable de Guadalcanal, Îles Salomon (Coleoptera: Cerambycidae).
Yikai Zhang & Maxwell V. L. Barclay 1 – 5

CONTENTS

A remarkable new species of Prioninae (Coleoptera: Cerambycidae) from Guadalcanal, Solomon Islands.
Yikai Zhang & Maxwell V. L. Barclay 1 – 5

Illustration de la couverture : Montane rainforest in Arfak Mountains, West Papua (image courtesy of Dmitry Telnov, BMNH, 2015).

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