

Rediscovery of *Pseudapocyrtus schadenbergi* Heller, 1912 (Coleoptera: Curculionidae: Entiminae: Pachyrhynchini) from the Apayao Lowland Forest, Northern Luzon, the Philippines

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***Pseudapocyrtus schadenbergi* Heller, 1912 is reported for the first time since its description in Barangay Tanglagan in the lowland forests of the Apayao Lowland Forest Key Biodiversity Area. Characters for recognition are mentioned, high-definition photographs of its habitus, median lobe, and endophallus are provided, and a brief discussion of its ecology is presented.**

Keywords: biosphere reserve, Calanasan, KBA-4, lost species, Pachyrhynchini, weevil

INTRODUCTION

Pseudapocyrtus Heller, 1912 was established by Heller in the tribe Pachyrhynchini with *Pseudapocyrtus imitator* Heller, 1912 as the type species (Heller 1912; Schultze 1924; Alonzo-Zarazaga and Lyal 1999). This genus is easily recognized from all other Philippine pachyrhynchine genera by the following characteristics: “Head small; dorsal boundary of antennal scrobe carinate. Rostrum separated from frons only by vestigial transverse

furrow, not swollen apically and without impression in basal half, moderately convex in both longitudinal and transverse direction, slightly tapered towards apex in lateral aspect. Eyes weakly convex. Pronotum almost circular in dorsal view, relatively small in comparison with elytra” (Heller 1912; Link and Zettel 2012). Currently, there are 10 known species of the genus (Schultze 1924; Heller 1929; Link and Zettel 2012), with all members biogeographically restricted to the Greater Luzon Pleistocene Aggregated Island Complex (PAIC) in the Philippines (Schultze 1924; Heller 1929; Link and Zettel

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2012). Greater Luzon PAIC is a biogeographic region in the northern part of the Philippines composed of mainland Luzon, Catanduanes Island, Polillo Island Complex, and Marinduque Island with a 120-m isobath between them. These areas were connected during the last glacial maxima when the sea level was 120 m lower (Vallejo 2011).

Like the other genera in the tribe Pachyrhynchini, *Pseudapocyrtus* is flightless. Its range is restricted to Luzon Island. Members of the Pachyrhynchini are also associated with intact forest habitats, except for some members of the genus *Metapocyrtus* Heller and *Pachyrhynchus* Germar that have become pests in agroforestry settings (Yap and Gapud 2007; Cabras 2020). Thus, the unabated loss of forests poses a great threat to the survival of these groups, especially for a narrow-range taxon like *Pseudapocyrtus*.

Pseudapocyrtus schadenbergi was described in 1912 by Heller from the private collection of Dr. Alexander Schadenberg, a German botanist and zoologist who conducted various explorations in the Philippines. These led to the discovery of several species new to science, which were described by Heller and Schultze (Heller 1912; Scheerer 1923). The type specimen was collected

at Mt. Palimlim, Ilocos Province, Luzon, the Philippines, and is currently deposited at the Senckenberg Natural History Collections (SMTD), Dresden, Germany. Since its publication, *P. schadenbergi* has not been collected or observed in situ up until this publication. In this paper, we report the rediscovery of *P. schadenbergi* from the lowland forest of Apayao, northern Luzon – approximately 111 years after its description – and provide a redescription of the species. The first high-definition photos of the male and female habitus, as well as the median lobe and endophallus are provided, and short ecologic notes are presented. This highlights the value of conducting field-based research in one of the least explored mountain ecosystems in the Philippines – revealing rare, lost, species of high research and conservation importance.

Rediscovery of *Pseudapocyrtus schadenbergi*

On 13 Jun 2023, at around noon, specimens of *P. schadenbergi* were collected in Barangay Tanglagan, Calanasan, Apayao (18.375687°, 120.964778°) (Figure 1), during a beetle expedition organized by the Philippine Eagle Foundation, Davao Oriental State University (DORSU), California Academy of Sciences, Department

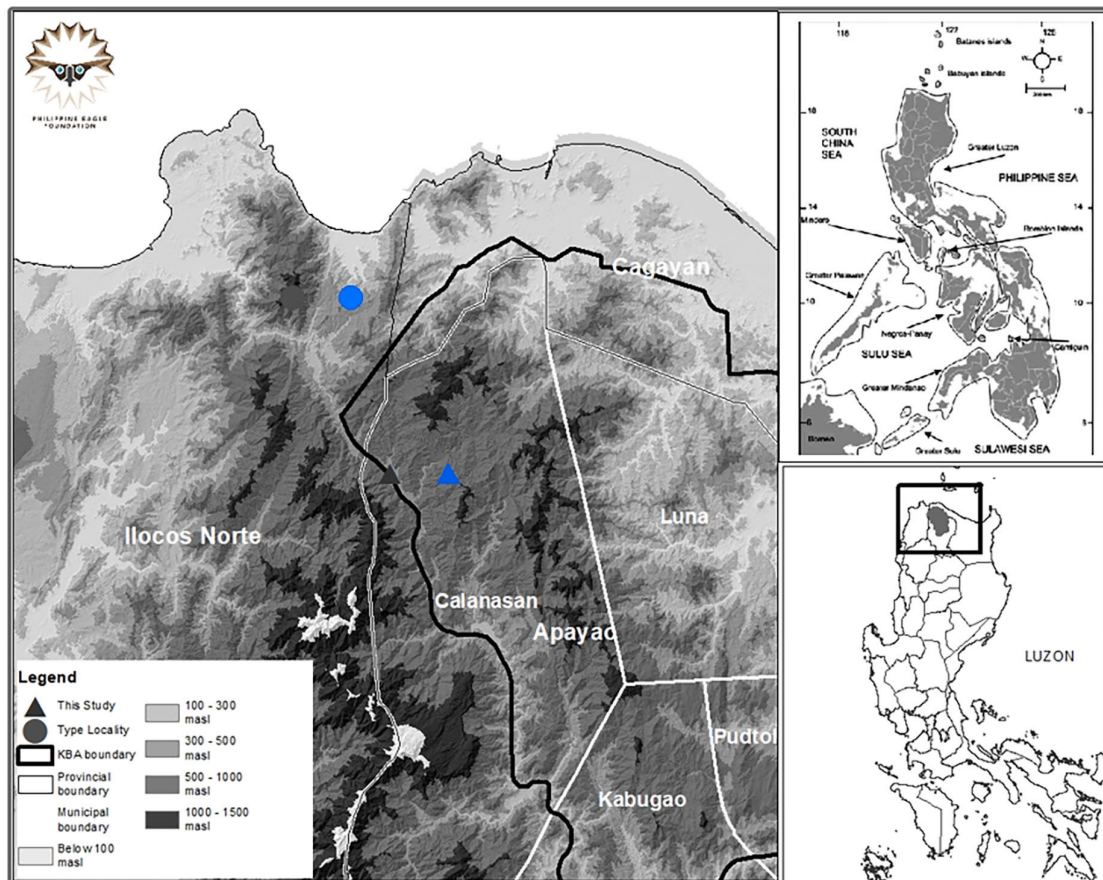


Figure 1. Distribution of *Pseudapocyrtus schadenbergi* in northern Luzon, the Philippines.

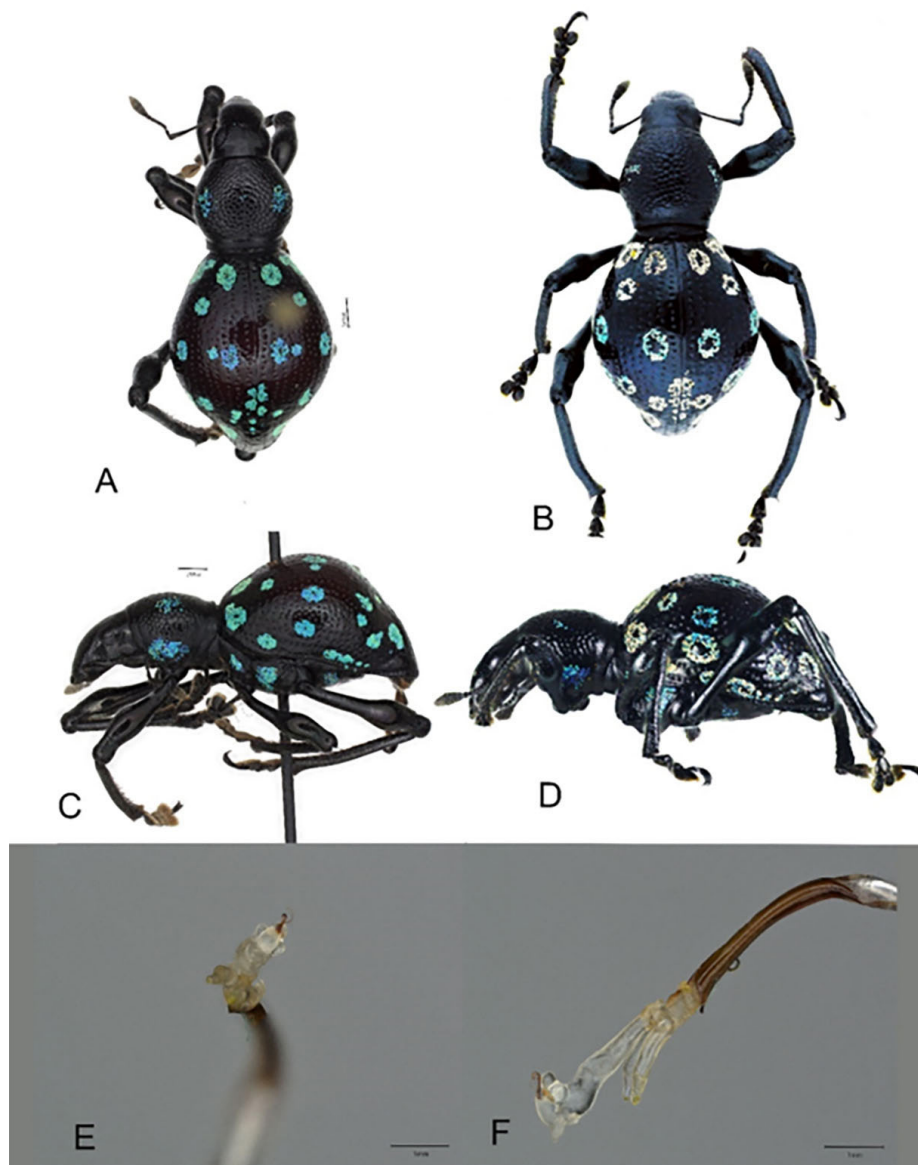


Figure 2. *Pseudapocyrtus schadenbergi* from Calanasan, Apayao, the Philippines: [A–B] male habitus, dorsal view; [C–D] male habitus, lateral view; [E] endophallus, distal anterior view; [F] median lobe and endophallus, lateral view.

of Environment and Natural Resources–Cordillera Administrative Region (DENR-CAR) and its field offices, and the Provincial and Municipal Local Government Units (LGU) of Apayao and Calanasan. This expedition aimed to gather additional empirical species data to provide us with the much-needed evidence to justify the immediate protection of the unprotected forests of the Apayao Lowland Forest Key Biodiversity Area (KBA-4) and strengthen the bid to declare it as a biosphere reserve.

Two specimens of *P. schadenbergi* were collected and are currently deposited at the National Museum of Natural History under the National Museum of the Philippines (PNM), as well

as the California Academy of Sciences Entomology Collection (CASENT). These are the first specimens collected and documented in its natural habitat. This report is also the first to provide precise locality data for the species. At present, there are only five *P. schadenbergi* specimens globally deposited in three natural history museums – PNM (Manila, Philippines), SMTD (Dresden, Germany), and CASENT (California, USA) – thus highlighting its rarity.

Redescription of *Pseudapocyrtus schadenbergi*

The type locality of *Pseudapocyrtus schadenbergi* is Mt. Palimlim, Ilocos Province, Luzon, which is 17.04 km

from Barangay Tanglagan, Calanasan, Apayao. Heller originally described *P. schadenbergi* in German; however, Schultze – when writing the monograph of the genus – redescribed the species in English (Schultze 1924). Here we provide a redescription of *P. schadenbergi*.

Description

Coloration: integument black; head, rostrum, pronotum, body surface, underside, legs lustrous. Head: dorsal surface between eyes punctate; lateroventral side below eyes with sparse bluish appressed piliform scales; forehead between eyes flat with distinct median furrow; eyes medium-sized, moderately convex, protruding on outline of head. Rostrum: basally with indistinct transverse groove not extending to lateral margins, confluent with median furrow of head, finely punctate with each puncture with fine pubescence, slightly longer than wide; dorsal contour arcuately convex; lateral contour narrowed apically. Prothorax: subglobular, slightly wider than long, widest at middle, dorsal contour weakly convex with highest point at middle, lateral contour strongly convex but slightly truncate at base, dorsal surface with large, flattened subquadrate tubercles that are elongate dorsolaterally, lateral sides near margin smooth. Prothorax with scaly markings composed of metallic blue, and turquoise contiguous appressed round and elliptical scales: [a] two subcircular patches at each side of dorsum and [b] large irregular patch along lateral sides before coxa. Elytra: strongly ovate, longer than wide, twice longer and moderately wider than prothorax, striate-punctate, each puncture with minute pubescence, dorsal contour strongly convex, highest at middle; lateral contour strongly convex, with sinuate apicad leading to rounded apical process, widest at middle. Each elytron with scaly markings of metallic blue and turquoise appressed round scales: [a] two round spots basally, one dorsally between striae II–IV, and one laterally near margin; [b] two smaller round spots on basal fourth, one dorsally in between the basal round spots, and another near lateral margin; [c] four medial spots, one on stria II and III, another on stria IV and V, and one dorsolateral and another on lateral side; [d] small and irregular postmedial spots near suture along apical declivity; [e] four irregular spots on apical fourth; and [f] irregular postmedial elongate patch near lateral margin. Legs: with moderately clavate femora, covered with appressed pubescence; tibiae covered with minute appressed pubescence on outer surface, long brown suberect pubescence on inner surface.

Female: they differ from males by the more prominent transverse groove between head and rostrum, and elytra with circular rings instead of spots. In van Dam *et al.* (2022) and Cabras *et al.* (2022) filled and non-filled elytral patterns can be part of a species polymorphism in *Pachyrhynchus*, which the authors assume should also be the case for *P. schadenbergi*.

HABITAT AND ECOLOGY

So far, *Pseudapocyrtus schadenbergi* has only been observed to inhabit the lowland evergreen forest of the Apayao Lowland Forest KBA (ALF KBA) at ~ 480–510 m above sea level.

Apayao Lowland Forest KBA covers portions of one municipality in Ilocos Norte (Adams), portions of four municipalities in Cagayan (Sta. Praxedes, Claveria, Sanchez-Mira, and Pamplona), and the four municipalities in Apayao (Luna, Pudtol, Kabugao, and Calanasan) – with an elevation ranging from 100–1391 masl and a total land area of 177,370 ha (Daipan 2021). The study site, located in Calanasan, is dominated by primary forest growth protected through implementing the Apayao customary law – the lapat system. The ALF-KBA comprises lowland, montane, and karst forest, as well as freshwater habitats that face threats of deforestation and resource depletion through timber poaching and conversion of forested lands to agricultural lands.

The newly collected specimens of *P. schadenbergi* were collected on the leaves of *Ficus* sp. (Moraceae) (Figure 3), along a semi-open forest trail and were entangled in a spider's web. The collection site (Figure 4) is dominated by various trees under the genera of *Lithocarpus* Blume., *Macaranga* Thouars, *Garcinia* L., *Palaquium* Blanco,



Figure 3. *Ficus* sp., the plant from which *Pseudapocyrtus schadenbergi* from Calanasan, Apayao, the Philippines was collected.



Figure 4. Collection site of *Pseudapocyrtus schadenbergi* from the lowland evergreen forest of Calanasan, Apayao, the Philippines.

Canarium L., *Greeniopsis* Merr., *Pometia* J.R.Forst. & G.Forst, *Homalanthus* Juss., *Turpinia* Vent., *Ficus* L., *Saurauia* Willd., *Elaeocarpus* L., and the species of *Dillenia megalantha* Merr., *Pterocarpus indicus* Willd, *Parashorea malaanonan* (Blanco), Merr., *Shorea contorta* S.Vidal., *S. almon* Foxw., *Bischofia javanica* Blume, Bijdr., and *Vitex parviflora* A.Juss. Additional field explorations in other habitat types in the area (e.g. karst forest and montane forest) could greatly improve our understanding of the extent of occurrence of this species. *Pseudapocyrtus schadenbergi* occurs with other weevil species – including species of *Metapocyrtus*, *Pachyrhynchus*, *Macrocyrtus*, *Nothapocyrtus*, *Alcidodes*, and Dryophthorinae. Compared to the other weevil species in the area, *P. schadenbergi* was not abundant, and only two specimens were collected by the authors.

ACKNOWLEDGMENTS

We extend our sincerest appreciation to the remarkable individuals whose unwavering support and exceptional contributions were instrumental during our fieldwork in Calanasan, Apayao. From the dedicated team at DENR-CAR and its field offices, we express our gratitude to Argil Khol Ta-a, Joan Adiram, Lemuel Calasag, Riela

Carlos, Ariel Balatoc, Beberly Calugan, Edralyn Soledad, Glenn Sungag, Grachelle Buyag, and John Jay Ta-a. Likewise, we acknowledge the indispensable assistance from the Provincial Government Office–Environment and Natural Resources Division – represented by Arjay Urbi and Breiden dela Cruz. The valuable collaboration extended by the Calanasan Green Guards – including Villamor Damaso, Guardina Cagcayan, and Jorge Viernes – was truly commendable. Our fieldwork and specimen collection were conducted under the Wildlife Gratuitous Permit (DENR-CAR 08-2023), thus ensuring adherence to ethical and regulatory guidelines. This endeavor was made possible through the generous funding provided by the San Roque Power Corporation and the support from the Provincial and Municipal LGUs of Apayao and Calanasan, respectively. We would also like to thank Mr. Tobias Mainda for translating Heller’s work, as well as the anonymous reviewers for helping improve the manuscript.

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