

Notes on the *P. laterotarsoidea* group of the genus *Prosopocoilus* Hope in Westwood (Coleoptera: Lucanidae)

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초록

톱사슴벌레속(*Prosopocoilus*)의 *P. laterotarsoidea* 종군의 형질들을 논의하고, 해당 종군의 종들에 대한 검색표를 제시하였다. 여러 연구에서 유효한 속으로 취급되어 왔던 *Aphanognathus*속은 Tsuchiya (2021b)의 견해를 따라 톱사슴벌레속의 동물이명으로 간주하였다.

Abstract

The characters of the *P. laterotarsoidea* species group is discussed and the key to the species of the group is included. The genus *Aphanognathus* Heller, 1927 which was considered as a valid genus in several works, is here considered as a junior synonym of *Prosopocoilus*, following Tsuchiya (2021b).

Keywords: *Aphanognathus*, *Prosopocoilus*, key, taxonomy

Introduction

The genus *Aphanognathus* was described by Heller (1927), with a new species *A. minutigranosus*. de Lisle (1970) described another species, *Aphanognathus hiekei*. Mizunuma & Nagai (1994) treated *A. hiekei* as *Prosopocoilus*, and described subspecies of *hiekei*, ssp. *sakanashii*. They also synonymized *A. minutigranosus* with *P. laterotarsoidea*, and noted that *Aphanognathus* only contains one species, *A. laterotarsoidea*. Bomans & Benoit (2005) considered sp. *hiekei* as *Aphanognathus* and treated ssp. *sakanashii* as a junior synonym of ssp. *hiekei*. Fujita (2010) made *P. sakanashii* a separated species from *P. hiekei*, and described related species, *P. nozui*. He also considered *Aphanognathus* as a valid genus. Tsuchiya (2021b) pointed out the morphological similarity between *A. laterotarsoidea* and *P. hiekei*, and treated *A.*

laterotarsoidea as a *Prosopocoilus*. He introduced ‘the *P. laterotarsoidea* species group (コツノノコギリクワガタ グループ)’ and assessed this group as a primitive group within the genus. Here, *Aphanognathus* is treated as junior synonym of *Prosopocoilus*, and the *P. laterotarsoidea* species group is used based on classification proposed by Tsuchiya (2021b).

Materials & Methods

Photographs of the specimens were taken using a digital camera (Canon EOS R6 Mark III) with a macro lens [Tamron Auto Focus 60mm f/2.0 SP DI II LD IF 1:1 Macro Lens]. Image stacking was processed using Zerene stacker and editing was processed using Adobe Photoshop (Adobe Inc. San Jose, CA, USA.). The following literatures were also consulted for the key to the species: Mizunuma & Nagai (1994), Fujita (2010), Tsuchiya (2021a).

Taxonomy

Family Lucanidae Latreille, 1804

Subfamily Lucaninae Latreille, 1804

Tribe Dorcini Parry, 1864

Genus *Prosopocoilus* Hope in Westwood, 1845

The *P. laterotarsoidea* species group

This group is characterized by a combination of following characters: Body color usually dark brown or red. Head narrower than the pronotum. Male mandible usually shorter, or as long as the head (except *P. francisi*), with an axe-shaped or square-shaped tooth above the middle, without continuous serration in small males. Pronotum hexagonal, with posterolateral corners of pronotum emarginate. Legs relatively long, longer in males.

Composition. 5 species: *Prosopocoilus laterotarsoidea* Houlbert, 1915; *Prosopocoilus hiekei* (de Lisle, 1970); *Prosopocoilus sakanashii* Mizunuma, 1994; *Prosopocoilus nozui* Fujita, 2010; *Prosopocoilus francisi* Arnaud, 1986.

Remark. All species of this group are distributed in Philippines.

Discussion

Tsuchiya (2021a) illustrated the male genitalia of *P. laterotarsoidea*, the species that Mizunuma & Nagai (1994) and Fujita (2010) considered as the only species of the genus *Aphanognathus*. The permanently everted internal sac of *P. laterotarsoidea* is trifurcate at apex as in other *Prosopocoilus* (Tsuchiya, 2021a). External characters of *P. laterotarsoidea* show a general similarity to those of *P. hiekei*, *P. sakanashii*, *P. nozui*, and *P. francisi*. This species group is unique within the genus as its members possess relatively long legs and male mandibles lacking continuous serratio. If *Aphanognathus* were to be considered as a valid genus, the species belonging to the *P. laterotarsoidea* group would likely be members of the genus. Considering

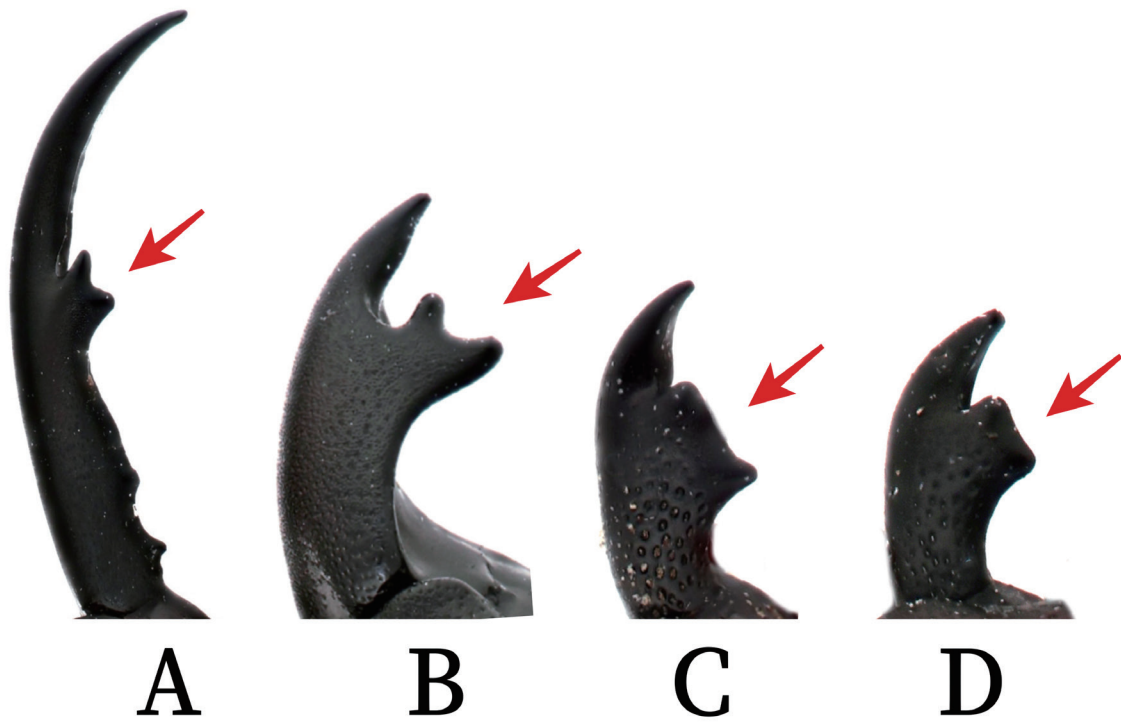


Figure 1. Male mandibles. **A.** *Prosopocoilus francisi*; **B.** *Prosopocoilus nozui*; **C.** *Prosopocoilus skanashii*; **D.** *Prosopocoilus hieki*. Red arrows indicating the axe-shaped tooth.

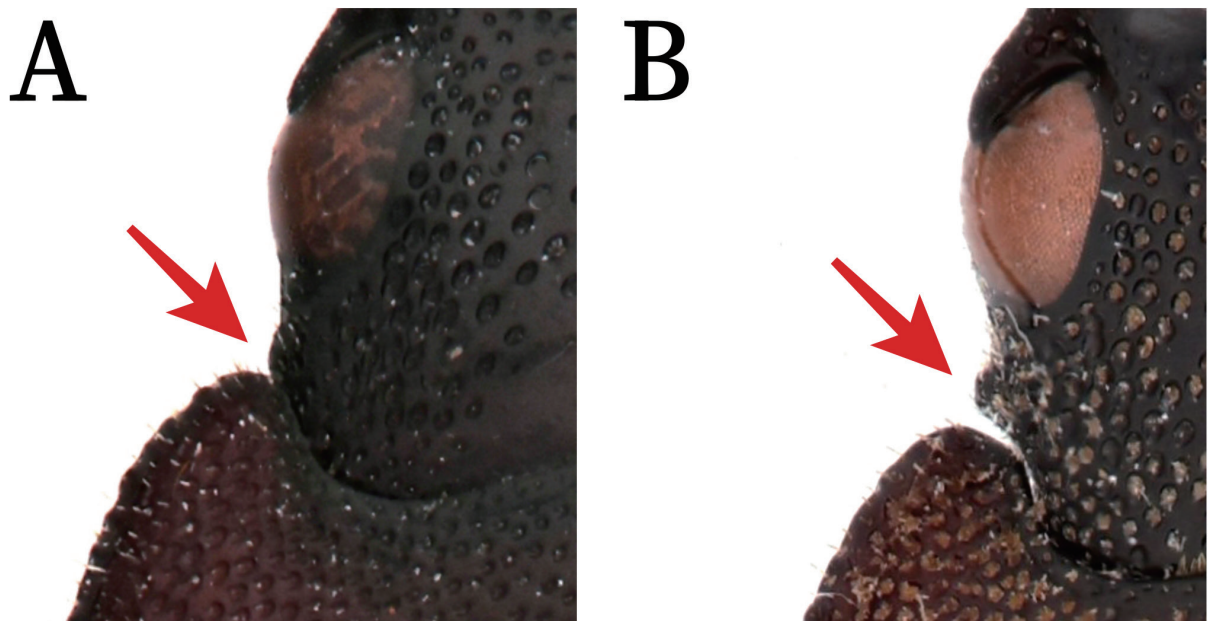


Figure 2. Male head. **A.** *Prosopocoilus hieki*; **B.** *Prosopocoilus skanashii*. Red arrows indicating the temporal process.

the distinct external morphology of the group, *Aphanognathus* might be a good subgenus of the genus *Prosopocoilus*, but further phylogenetic researches are needed for the confirmation.

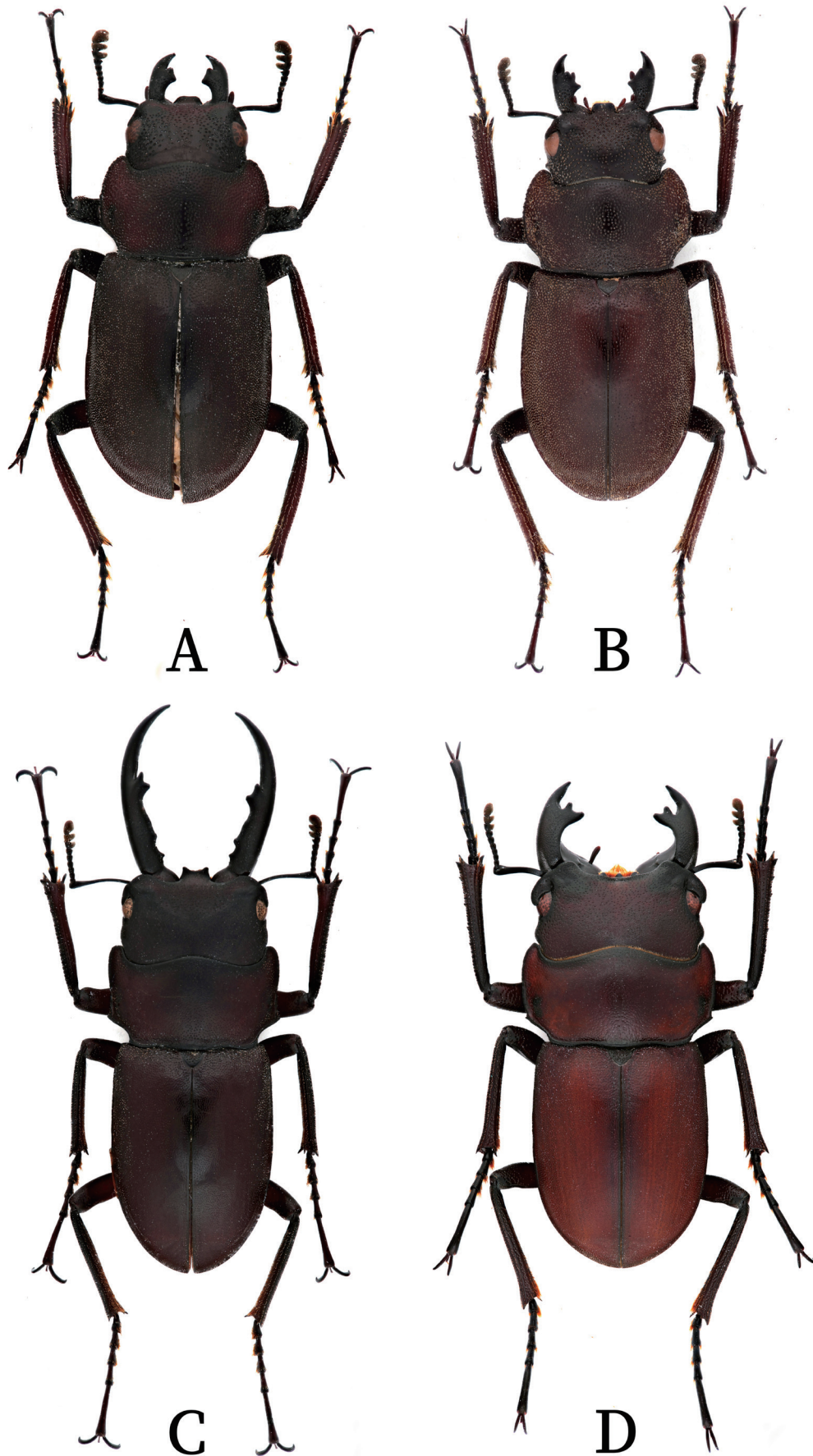


Figure 3. Dorsal habitus. A. *Prosopocoilus hiekei*; B. *Prosopocoilus skanashii*; C. *Prosopocoilus francisi*; D. *Prosopocoilus nozui*.

Key to the species of the *P. laterotarsoidea* species group (male)

1. Mandible longer than head in large male. Lateral margin of pronotum slightly concave..... *P. francisi*
 – Mandible shorter or as long as head in large male. Lateral margin of pronotum slightly convex..... 2
2. Mandible markedly shorter than the head, about half its length, with a basal tooth *P. laterotarsoidea*
 – Mandible slightly shorter, or as long as head without a basal tooth.....3
3. Body rather large. Canthus thick. Internal tooth of mandible slender and long, strongly bifurcate. Clypeus trilobed.....*P. nozui*
 – Body rather small. Canthus narrow. Internal tooth of mandible thick and short. Clypeus shaped as a transverse plate.....4
4. Dorsal surface more densely punctate. Temporal process strong (figure 2B). Median angle of pronotum dull..... *P. sakanashii*
 – Dorsal surface less punctate. Temporal process very weak (Figure 2A). Median angle of pronotum acute..... *P. hiekei*

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