

Tetratoma (Abstrulia) pictipennis* New to South Korea (Coleoptera: Tetratomidae), with a Key to Species of the Subgenus *Abstrulia

Seung-Gyu Lee¹, Sang-Woo Jung², Yoon-Ho Kim^{2,*}

¹Animal Resources Division, National Institute of Biological Resources, Incheon 22689, Korea

²DASARI Research Institute of BioResources, Daejeon 34116, Korea

ABSTRACT

The subgenus *Abstrulia* Casey belonging to the genus *Tetratoma* Fabricius of the family Tetratomidae is distributed ten species over the Holarctic region, including eight Palaearctic species. In East Asia, four species from Russian Far East and two species from Japan have been recorded, respectively. In the Korean Peninsula, two species, *T. (A.) ainu* (Nakane) and *T. (A.) pictipennis* Reitter, were reported up to date, and latter species is newly recorded in South Korea in this paper. A redescription, habitus photograph, and illustrations of diagnostic characters of the species are provided, with a key to species of the subgenus *Abstrulia*.

Keywords: Coleoptera, Tetratomidae, *Tetratoma (Abstrulia) pictipennis*, Korea

INTRODUCTION

Casey (1900) first proposed the subgenus *Abstrulia* belonging to the genus *Tetratoma* Fabricius, 1790 of the family Tetratomidae Billberg, 1820 based on *Tetratoma tessellate* Melsheimer, 1844. The subgenus *Abstrulia* is distributed ten species over the Holarctic region, including eight Palaearctic species (Nikitsky, 2004, 2008). In East Asia, four species from Russian Far East and two species from Japan have been recorded, respectively, but any species have not been reported from China (Nikitsky, 2008). In the Korean Peninsula, two species, *T. (A.) ainu* (Nakane) and *T. (A.) pictipennis* Reitter, were reported up to date, and latter species is only distributed in North Korea.

Most members of Tetratomidae are associated with fresh or soft fruiting bodies of various wood-rotting fungi, and their hosts include a variety of Basidiomycetes mainly in the family Polyporaceae (Lawrence and Leschen, 2010). The subgenus *Abstrulia* of genus *Tetratoma* is hardly known for biological data, but some *Tetratoma* species including type species, *T. (Tetratoma) fungorum* Fabricius feeds mainly on fresh fruiting bodies of *Piptoporus betulinus* of Polyporaceae (Lawrence and Leschen, 2010).

While studying diversity of Korean beetle, *Tetratoma (Abst-*

rulia) pictipennis Reitter is discovered in South Korea for the first time. In this paper, we provide a redescription, habitus photograph and illustrations of diagnostic characters, and also provide a key to species of the subgenus in order to facilitate identification of *Abstrulia* species.

MATERIALS AND METHODS

All Korean specimens examined were collected by using window trap in Mt. Gamaksan (Gangwon Province) in 2016 and two of which is deposited in the National Institute of Biological Resources (NIBR), Incheon, Korea.

Habitus photographs were taken using an image processing systems (Leica M205A, Leica DFC495; Leica Microsystems, Wetzlar, Germany) and were merged using an image stacking software, Combine ZP.

SYSTEMATIC ACCOUNTS

Order Coleoptera Linnaeus, 1758
Family Tetratomidae Billberg, 1820
Genus *Tetratoma* Fabricius, 1790

© This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

***To whom correspondence should be addressed**
Tel: 82-70-7353-2547, Fax: 82-31-540-8800
E-mail: dosirak09@naver.com

Subgenus *Abstrulia* Casey, 1900

Abstrulia Casey, 1900: 167 (type species: *Tetratoma tessellate* Melsheimer, 1844).

Diagnosis. Body setae well-visible on the upperside in dorsal aspect; antennomeres 8–11 shorter than or about as long as all preceding ones combined; lateral margins of pronotum reflexed and flattened, with minute serration; elytra bicolor, entirely black to brown, with red or yellow spotty pattern; visible abdominal sternite I often distinctly longer than II; visible abdominal V with impression; aedeagus distinctly shorter than tegmen, parameres very narrowly divided or contiguous all along inner edge, narrow and pointed at apex (Nikitsky, 1998).

Key to species of the subgenus *Abstrulia* Casey (Nikitsky, 2004)

1. Scutellum reddish color; elytra with short and sparse setae not overlapping each other 2
 - Scutellum blackish color; elytra with long and dense setae overlapping each other 3
2. Lateral margin of pronotum narrowly and less-developed, without angle *Tetratoma (Abstrulia) ancora*
 - Lateral margin of pronotum widely and well-developed, with minutely angle near middle *T. (A.) virgo*
3. Elytra with prominent seta distinctly distant from surface 4
 - Elytra with adjoining seta slightly distant from surface 7
4. Antennomere 3 distinctly long, 1.6–1.8 times as long as 4; visible male abdominal ventrite V with relatively weak groove; aedeagus constrict and abruptly narrow apically *T. (A.) crenicollis*
 - Antennomere 3 relatively short, less than 1.6 times as long as 4; visible male abdominal ventrite V with distinct and large groove; aedeagus gradually narrow apically 5
5. Elytra without apical patterns near elytral suture; elytral surface with distinctly prominent and long seta, apical part of seta not bent *T. (A.) canadensis*
 - Elytra with small subapical patterns near elytral suture in most, connected to preceding patterns in some; elytral surface with slightly prominent and relatively short seta, apical part of seta slightly bent 6
6. Pronotum uneven and slightly serrated in lateral margin; visible ventrite I of abdomen about 2.0 times as long as IV *T. (A.) tessellata*
 - Pronotum distinctly serrated in lateral margin; visible ventrite I of abdomen about 2.0 times less than IV *T. (A.) variegata*
7. Antennomeres 8–11 more than 1.25 times shorter than

- preceding all antennomeres combined; elytra more elongate, more than 1.55 times as long as wide 8
- Antennomeres 8–11 less than 1.25 times shorter than preceding all antennomeres combined; elytra less elongate, less than 1.55 times as long as wide 10
- 8. Elytra with apical patterns near elytral suture *T. (A.) ainu*
 - Elytra without apical patterns near elytral suture 9
- 9. Body length 2.8–3.5 mm; antennomere 11 about 1.5–1.7 times as long as 10; pronotum about 1.6–1.7 times as wide as long; posterior patterns not reach to suture and lateral margin of elytra *T. (A.) baudueri*
 - Body length about 3.5 mm; Antennomere 11 about 1.8 times as long as 10; pronotum about 1.5 times as wide as long; posterior patterns reach to suture or lateral margin of elytra *T. (A.) tedaldi*
- 10. Anterior patterns of elytra slightly sinuate in posterior part; antennomere 3 about 1.7–2.0 times as long as wide; antennomere 6 slightly elongate or about as long as wide *T. (A.) japonica*
 - Anterior patterns of elytra distinctly sinuate in posterior part; antennomere 3 about 1.4–1.6 times as long as wide; antennomere 6 distinctly transverse *T. (A.) pictipennis*

¹**Tetratoma (Abstrulia) pictipennis* Reitter, 1896 (Figs. 1, 2)

Tetratoma pictipennis Reitter, 1896: 237.
Tetratoma (Abstrulia) pictipennis: Nikitsky, 2004: 30.

Material examined. 3 exs., Korea: Gyeonggi-do, Yangju-si, Nam-myeon, Hwangbang-ri, Mt. Gamaksan, 37°56'00.68"N, 126°58'47.27"E, 13 Aug 2013, Lee SG.

Description. Body (Fig. 1) length about 2.7 mm, entirely elongate-oval, convex dorso-ventrally; surface glossy, with dense punctures and light yellow pubescence. Coloration. Body entirely reddish-black to black; mouthparts, antennomeres 1–5, pronotal margins and legs reddish yellow; antennomeres 6–11 dark brown; elytra black with reddish yellow patterns, anterior patterns distinctly sinuate in posterior part and connected in median region, medial patterns located in lateral margins at middle and contiguous to anterior patterns, posterior patterns separated and distinctly reflexed (reinforce); apical patterns contiguous to posterior patterns and connected near apex of elytral suture. Head (Fig. 2B). Slightly transverse, 1.05–1.15 times as wide as long, widest across eyes and increasingly narrow posteriorly behind eyes; approximately 0.55–0.60 times narrower than pronotum; eyes approximately 0.65–0.70 times as long as wide, distinctly prominent laterally and widely separated, distance between eyes approx-

Korean name: ¹*날개무늬애버섯벌레붙이

imately 1.80 times width of eye. Antenna (Fig. 2A) longer than head width; antennomeres 1–3 elongate, antennomere 1 swollen, 3 narrower and shorter than 2, approximately 1.45 times as long as wide, antennomeres 4–5 subquadrate, 6–7 transverse to distinctly transverse, 8–11 clubbed, slightly shorter than all preceding combined, antennomere 7 distinctly transverse and approximately 1.85–1.90 times as wide as long, 8 slightly transverse and approximately 1.25–1.30 times

as wide as long, antennomeres 9–10 approximately 1.40–1.50 times as wide as long, antennomere 11 approximately 1.20–1.25 times as long as wide and approximately 1.65–1.70 times longer than 10. Thorax. Pronotum distinctly transverse, approximately 1.55–1.70 times as wide as long, widest in basal third; surface with densely granular punctures, relatively long and light yellow pubescence; anterior angles slightly round and posterior angles obtuse; lateral margin uneven and indistinctly serrated. Scutellum transversely shield shape, approximately 1.35–1.50 times as wide as long; surface with dense punctures, subequal in size of elytral punctures. Elytra slightly wider than pronotum, approximately 1.55–1.70 times as long as wide, widest near middle; surface with granular punctures, subequal in size and density of pronotal punctures. Mesocoxae (Fig. 2C) moderately separated; mesoventrite with dense punctures, composed of slight network; mesoventral process emarginate at apex, approximately distinctly longer than metaventral process; metaventrite with densely granular punctures, smaller and sparser to apex; metaventral process cuspidate at apex. Legs. Slender and relatively long, with dense pubescence; tibiae with two spurs at apex; tarsal formula 5-5-4, mesotarsomeres 1 longer than 2, not longer than succeeding 2 and 3 combined; metarsomere 1 about as long as succeeding 2 and 3 combined. Abdomen. Visible abdominal ventrite I often distinctly longer than II, about as long as succeeding II and III combined; visible abdominal ventrite V with slight impression in postero-median region; all ventrites with dense punctures bearing pubescence, punctures smaller than those of meso- and metaventrites. Aedeagus (Fig. 2D). Length about 0.6 mm; typical shape of subgenus *Abstrulia*,



Fig. 1. Habitus of *Tetratoma (Abstrulia) pictipennis*, 2.7 mm.

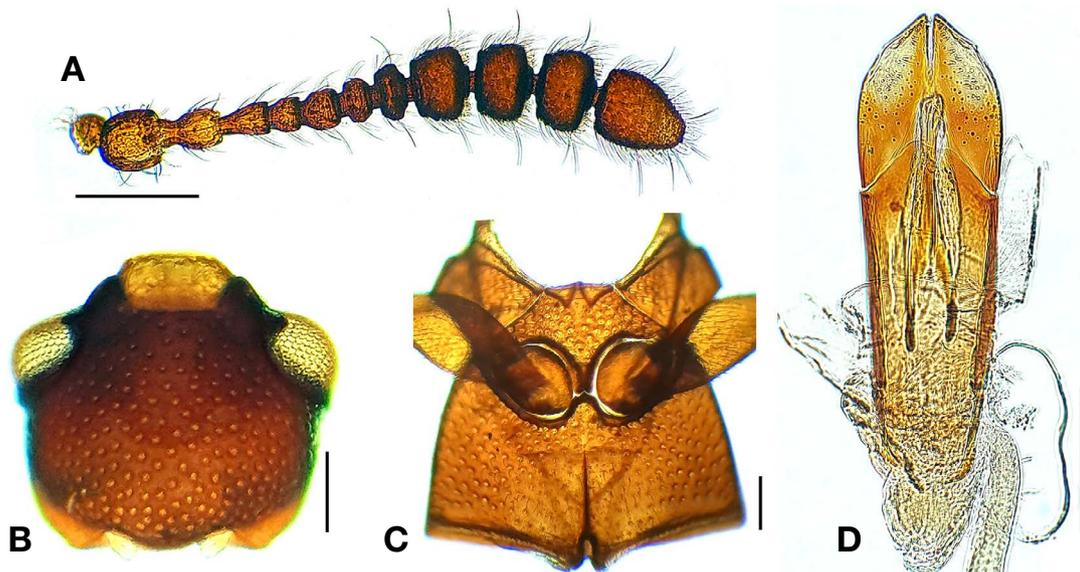


Fig. 2. *Tetratoma (Abstrulia) pictipennis*. A, Antenna; B, Head (dorsal aspect); C, Meso- and metaventrites (ventral aspect); D, Median lobe of aedeagus (ventral aspect). Scale bars: A–D=0.2 mm.

with very narrowly divided parameres; aedeagus subparallel-sided, slightly narrow basally and round at base; widest at apical sixth, narrow and pointed at apex.

Distribution. Korea (North, South) and Russia (East Siberia, Far East).

Remarks. This species is very similar to *Tetratoma (Abstrulia) japonica* Miyatake with variable elytral patterns, but can be distinguished by the following characters: anterior patterns of elytra distinctly sinuate in posterior part, antennomere 3 about 1.4–1.6 times as long as wide, antennomere 6 distinctly transverse.

ORCID

Seung-Gyu Lee: <https://orcid.org/0000-0002-9512-6073>

Sang Woo Jung: <https://orcid.org/0000-0001-9545-1207>

Yoon-Ho Kim: <https://orcid.org/0000-0003-0902-8280>

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

ACKNOWLEDGMENTS

We are grateful to Prof. Hiroyuki Yoshitomi (Ehime University, Japan) for providing holotype image and label data. This work was supported by a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (NIBR201801203).

REFERENCES

- Casey TL, 1900. Review of the American Corylophidae, Cryptophagidae, Tritomidae and Dermestidae, with other studies. *Journal of the New York Entomological Society*, 8:51-172.
- Fabricius JC, 1790. *Nova insectorum genera*. *Skrivter af Naturhistorie Selskabet*, 1:213-228.
- Lawrence JF, Leschen RAB, 2010. Tetratomidae Billberg, 1920. In: *Handbuch der Zoologie/Handbook of zoology*. Band/Volume IV Arthropoda: Insecta. Teilband/Part 38. Coleoptera, beetles. Vol. 2. Morphology and systematics (Polyphaga partim) (Eds., Leschen RAB, Beutel RG, Lawrence JF). *Water de Gruyter, Berlin*, pp. 514-520.
- Melsheimer FE, 1844. Descriptions of new species of Coleoptera of the United States. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 2:98-118.
- Nikitsky NB, 1998. Generic classification of the beetle family Tetratomidae (Coleoptera, Tenebrionoidea) of the world, with description of new taxa. *Pensoft (Series Faunistica No. 9)*, Sofia, Moscow, pp. 1-80.
- Nikitsky NB, 2004. The beetles of the subfamily Tetratominae Billberg, 1820 (Coleoptera, Tetratomidae) of the world fauna. *Bulleten Moskovskogo Obshchestva Ispytatelei Prirody Otdel Biologicheskij*, 109:25-36 (in Russian).
- Nikitsky NB, 2008. Family Tetratomidae Billberg, 1820. Tenebrionoidea. In: *Catalogue of Palaearctic Coleoptera*. Vol. 5 (Eds., Löbl I, Smetana A). *Apollo Books, Stenstrup*, pp. 62-64.
- Reitter E, 1896. *Abbildungen mit Beschreibungen zehn neuer Coleopteren aus der palaearctischen Fauna*. *Wiener Entomologische Zeitung*, 15:233-240.

Received December 21, 2021

Revised April 25, 2022

Accepted April 25, 2022