

## First Records of the Genus *Parthenocodrus* (Hymenoptera: Proctotrupidae) from Japan and South Korea

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### ABSTRACT

Two species of the genus *Parthenocodrus* Pschorn-Walcher, 1958 (Hymenoptera: Proctotrupidae) are reported: *P. elongatus* from Japan and South Korea and *P. puncticauda* from South Korea. *Parthenocodrus elongatus* is easily distinguished by having posterior surface of propodeum without transverse carinae and ovipositor sheath with distinct longitudinal striations. *Parthenocodrus puncticauda* is easily distinguished by having posterior surface of propodeum with transverse carinae and ovipositor sheath without distinct longitudinal striations. This genus is also newly recorded in each country. Redescriptions and photographs of the diagnostic characters are provided. All specimens for this study are deposited in the Yeungnam University (YNU), Gyeongsan-si, South Korea.

**Keywords:** Japan, new records, *Parthenocodrus elongatus*, *P. puncticauda*, South Korea, taxonomy

### INTRODUCTION

The genus *Parthenocodrus* belonging to the tribe Proctotrupini of the family Proctotrupidae comprises eight described species (Kolyada, 1999; He and Xu, 2004, 2011). All of the species are distributed in the Oriental and Palearctic Regions, and three of them are from the Eastern Palearctic. *Parthenocodrus* can be easily distinguished from other genera in the tribe Proctotrupini by the following combination of characters: mandible bidentate apically, upper tooth shorter than lower tooth; propodeum partly or entirely reticulate, dorsal surface with a shallow median longitudinal groove; tarsal claws simple; abdomen with a distinct stalk.

Here, we report *P. elongatus* from Japan and South Korea and *P. puncticauda* from South Korea, with redescriptions and photographs of the diagnostic characters, and record the genus new to the fauna of these countries.

The terminology used in the present study follows that of Townes and Townes (1981). The images were captured with an AxioCam HRC camera through a Discovery V20 stereomicroscopy (Carl Zeiss, Oberkochen, Germany), then produced with the AxioVision 40AC software (Carl Zeiss). Final photographs were produced in Adobe Photoshop CS6 (Adobe Systems Incorp., San Jose, CA, USA). Abbreviations

are as follows: OL, distance between the inner edges of a lateral ocellus and median ocellus; OOL, distance from the outer edge of a lateral ocellus to the compound eye; POL, distance between the inner edges of the two lateral ocelli; MT, malaise trap.

### SYSTEMATIC ACCOUNTS

Order Hymenoptera Linnaeus, 1758

Family Proctotrupidae Latreille, 1802

Genus *Parthenocodrus* Pschorn-Walcher, 1958

(Korean name: Ga-neun-jul-meok-jom-beol-sok)

*Parthenocodrus* Pschorn-Walcher, 1958: 63 (type species: *Proctotrupes elongatus* Haliday).

*Cryptoserphus* Pschorn-Walcher, 1958: 69 (type species: *Proctotrupes buccatus* Thomson).

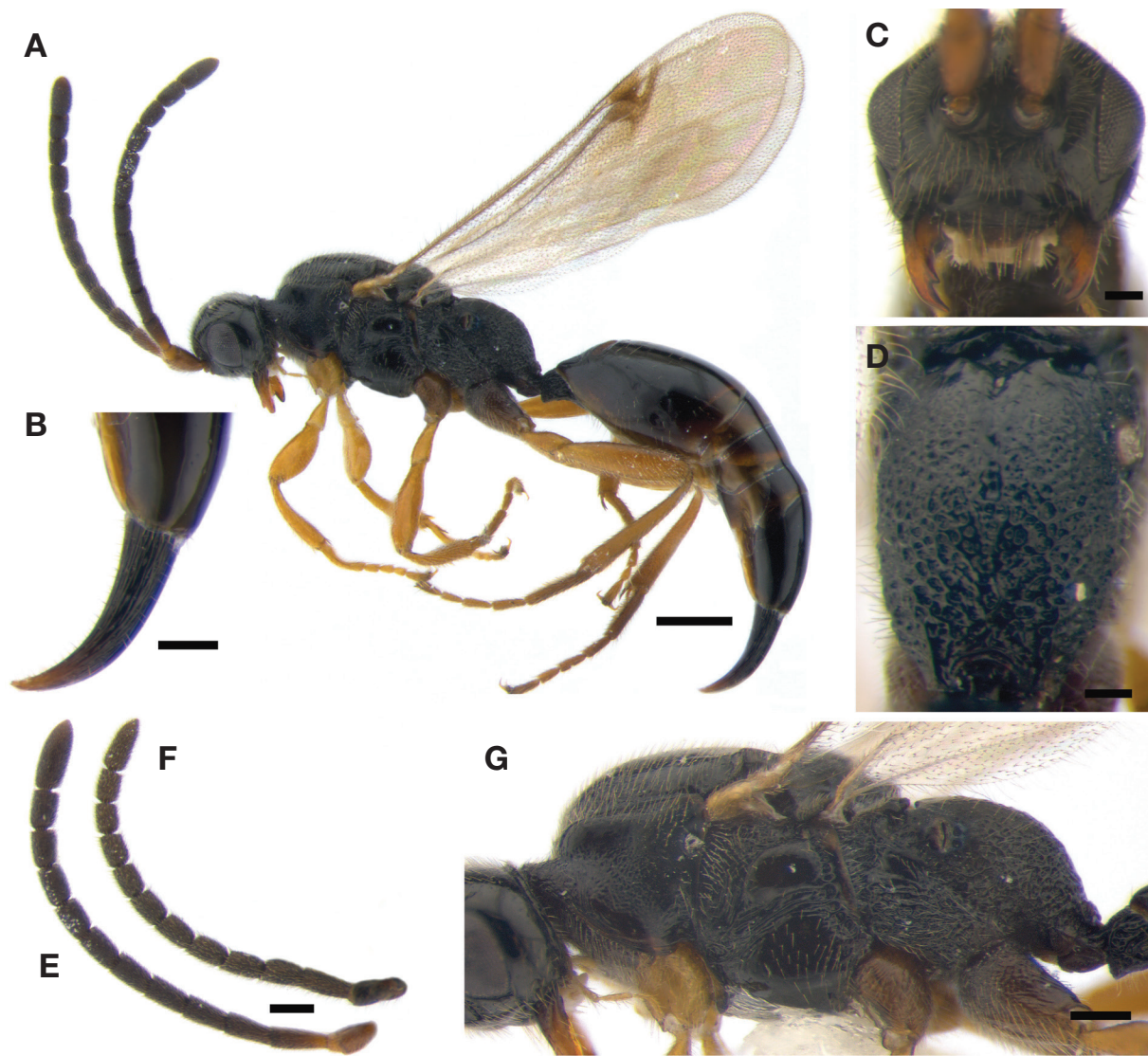
***Parthenocodrus elongatus* (Haliday, 1839) (Fig. 1)**

(Korean name: Ga-neun-jul-meok-jom-beol)

*Proctotrupes elongatus* Haliday, 1839: 11.

*Proctotrupes buccatus* Thomson, 1858: 421.

*Serphus* (*Phaenoserphus*) *Buccatus*: Kieffer, 1908: 302.



**Fig. 1.** *Parthenocodrus elongatus* (Haliday, 1939). A, Habitus in lateral view (female); B, Ovipositor sheath (female); C, Head in frontal view (female); D, Propodeum in dorsal view (female); E, Antenna (female); F, Antenna (male); G, Mesosoma in lateral view. Scale bars: A=0.5 mm, B, E-G=0.2 mm, C, D=0.1 mm.

*Serphus* (*Phaenoserphus*) *Elongatus*: Kieffer, 1908: 302.

*Phaenoserphus buccatus*: Kieffer, 1909: 5.

*Phaenoserphus elongatus*: Kieffer, 1909: 5.

*Brachyserphus buccatus*: Hellén, 1941: 42.

*Cryptoserphus buccatus*: Pschorn-Walcher, 1958: 59.

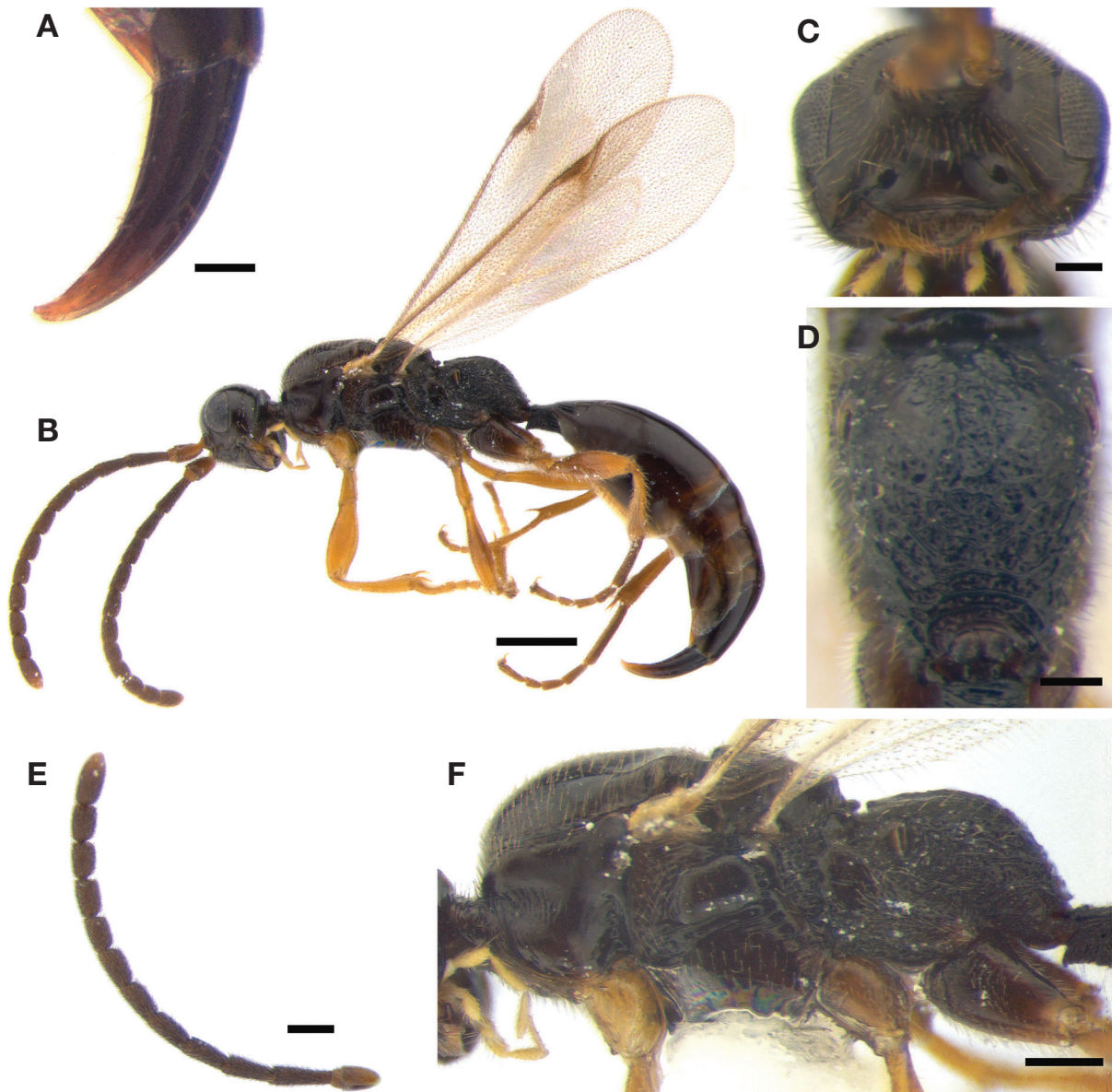
*Parthenocodrus elongatus* Pschorn-Walcher, 1958: 63.

**Material examined.** Japan: 1♂, Okusawa-suigenchi, Otaru-shi, Hokkaido, Alt. 197 m, 43°08'57.4"N, 140°57'27.1"E, 24 Jul 2013, Kim CJ; 1♂, *ditto*, Oh SH; South Korea: 1♀, Busan-si, Gijang-gun, Jeonggwan-myeon, Dalsan-ri, Gijang City Management Corporation, 35°18'38"N, 129°11'59"E,

18 Jun–27 Jun 2008 (MT), Lee JW; 2♀♀, Gyeonggi-do, Gwangju-si, Docheog-myeon, Mt. Taehwasan, Alt. 243 m, 37°18'32.7"N, 127°18'7.2"E, 26 Jun–4 Jul 2007 (MT), Lim JO; 2♀♀ 1♂, Jeollanam-do, Wando-gun, Soan-myeon, Mira-ri, Soando, 34°08'53.08"N, 126°39'7.52"E, 17 Jun–15 Jul 2013 (MT), Lee JW.

**Redescription of female.** Body length 5.05–5.54 mm. Forewing length 3.37–3.75 mm.

**Head.** Head smooth, covered with setae, in dorsal view wider than long (52:41), almost equal to width of mesosoma; eye with sparse setae, length of setae on eye 2.00 × the width of the last segment of maxillary palpus; POL: 14;



**Fig. 2.** *Parthenocodrus puncticauda* Kolyada, 1999, female. A, Ovipositor sheath; B, Habitus in lateral view; C, Head in frontal view; D, Propodeum in dorsal view; E, Antenna; F, Mesosoma in lateral view. Scale bars: A, C, D=0.1 mm, B=0.5 mm, E, F=0.2 mm.

OL: 9; OOL: 12; height of head in lateral view equal to its length; mandible bidentate, upper tooth shorter than lower tooth (5 : 6) (Fig. 1C); tentorial pit distinctly visible; antenna shorter than body length (10 : 19); antennal segments in the following proportions (length : width): 17 : 12; 7 : 8; 23 : 9; 20 : 9; 18 : 9; 17 : 9; 16 : 10; 16 : 10; 15 : 10; 15 : 10; 15 : 10; 17 : 10; 31 : 11 (Fig. 1E).

**Mesosoma.** Mesosoma distinctly longer than its maximum width (75 : 29); lateral side of pronotum smooth and almost without setae, scrobe of pronotum rugose; epomia absent; mesoscutum smooth and covered with setae, notauli absent;

mesopleuron with completely horizontal groove, deep foveolate along hind margin; metapleuron rugose, almost without bare area (Fig. 1G); dorsal surface of propodeum dorsally rugose with a shallow longitudinal groove, anterior one-fourth smooth; posterior surface of propodeum rugose without transverse carinae (Fig. 1D).

**Wings.** Forewing with costal, subcostal, marginal, post-marginal, radial veins and stigma tubular; radial vein joining costal vein at 38° and descending vertically from the lower corner of the stigma, then curved toward the costal vein; radial cell  $0.77 \times$  the depth of the stigma.



**Metasoma.** Metasoma shiny and bare, except syntergite and second sternite with sparse setae; metasoma with short metasomal stalk, its length  $0.58 \times$  the median depth; dorsal surface of stalk rugose; syntergite basally with median longitudinal groove,  $1.25 \times$  longer than the length of first thyridium and with four strong additional lateral grooves on each side; ovipositor sheath with distinct longitudinal striations and  $0.75 \times$  length of hind tibia (Fig. 1B).

**Color.** Head black, except labrum and mandible brown, palpi yellow; antenna dark brown, except scape, pedicel and basal one-third of first flagellomere yellowish brown; mesosoma and metasoma dark brown to black, except tegula yellowish brown; wings hyaline, covered with brown setae; legs yellowish brown except middle and hind coxae dark brown.

**Male.** Body length 4.15 mm. Forewing length 3.06–3.29 mm. Similar to female, but antennal segments in following proportions (length : width): 17 : 10; 6 : 8; 21 : 8; 19 : 10; 16 : 10; 16 : 10; 16 : 10; 15 : 10; 16 : 10; 15 : 10; 15 : 10; 24 : 12 (Fig. 1F); sculpture of propodeum reticulate rugose; color of scape, pedicel and fore coxa dark brown.

**Host.** Elateridae: *Athous niger* (Linnaeus, 1758), *A. haemorrhoidalis* (Fabricius, 1801), *Agriotes obscurus* (Linnaeus, 1758) (Townes and Townes, 1981).

**Distribution.** Japan (new record), South Korea (new record), Transpalearctic from Europe to Russian Far East.

***Parthenocodrus puncticauda* Kolyada, 1999 (Fig. 2)**

(Korean name: Ga-neun-jul-jeom-meok-jom-beol)

*Parthenocodrus puncticauda* Kolyada, 1999: 1068.

**Material examined.** South Korea: 1 ♀, Chungcheongbuk-do, Danyang-gun, Danyang-eup, Cheondong-ri, 36°57'25.1"N, 128°36'47.6"E, 12 Jun–22 Jul 2008 (MT), Lee JW; 1 ♀, *ditto*, 11 Jun–5 Jul 2009 (MT), Oh SH; 1 ♀, *ditto*, 5 Jul–26 Jul 2009 (MT), Oh SH; 1 ♀, Gyeongsangbuk-do, Mungyeong-si, Gaeun-eup, Wanjang-ri, Mt. Songnisan National Park, 6 Jun–11 Aug 2011 (MT), Lee JW.

**Redescription of female.** Body length 4.47–5.56 mm. Forewing length 2.89–3.68 mm.

**Head.** Head smooth, covered with setae, in dorsal view wider than long (13 : 9), slightly wider than width of mesosoma (13 : 12); eye with sparse setae, length of setae on eye  $1.00 \times$  the width of the last segment of maxillary palpus; POL: 13; OL: 7; OOL: 14; height of head in lateral view equal to its length; mandible bidentate, upper tooth shorter than the length of the lower tooth (3 : 5) (Fig. 2C); tentorial pit distinctly visible; antenna shorter than body length (26 : 47); antennal segments in following proportions (length : width): 16 : 12; 7 : 8; 28 : 9; 21 : 9; 19 : 9; 18 : 10; 19 : 10; 19 : 10; 18 : 10; 18 : 10; 18 : 10; 17 : 10; 27 : 10 (Fig. 2E).

**Mesosoma.** Mesosoma distinctly longer than its maximum

width (77 : 27); lateral side of pronotum smooth and almost without setae, scrobe of pronotum finely wrinkled; epomia absent; mesoscutum smooth and covered with setae, notauli absent; mesopleuron with completely horizontal groove, deep foveolate along hind margin; metapleuron rugose, with small bare area in upper part (Fig. 2F); dorsal surface of propodeum dorsally rugose with a shallow longitudinal groove, anterior one-fourth smooth; posterior surface of propodeum rugose with several transverse carinae (Fig. 2D).

**Wings.** Forewing with costal, subcostal, marginal, postmarginal, radial veins and stigma tubular; radial vein joining costal vein at 42° and descending vertically from the lower corner of the stigma, then curved toward the costal vein; radial cell  $0.71 \times$  the depth of the stigma.

**Metasoma.** Metasoma shiny and bare, except syntergite and second sternite with sparse setae; metasoma with short metasomal stalk, its length  $0.79 \times$  the median depth; dorsal surface of stalk rugose; syntergite basally with median longitudinal groove,  $1.57 \times$  longer than length of first thyridium and with four strong additional lateral grooves on each side; ovipositor sheath without distinct longitudinal striations and  $0.55 \times$  the length of the hind tibia (Fig. 2A).

**Color.** Head black except labrum and mandible brown, palpi yellow; antenna dark brown, except scape, pedicel brown; mesosoma and metasoma dark brown to black, except tegula brown; wings hyaline, covered with brown setae; legs brown except basal half of hind coxa dark brown.

**Host.** Unknown.

**Distribution.** South Korea (new record), Russian Far East.

## ACKNOWLEDGMENTS

We would like to thank the two anonymous reviewers for their valuable comments and suggestions to improve the quality of the paper. 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 (NIBR201601203).

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Received October 17, 2015

Revised December 9, 2015

Accepted December 10, 2015