

Classification of the genus *Pterostichus* Bonelli from Korea (Coleoptera: Harpalidae)

II. Three new species of the subgenus *Feroperis* Lafer

韓國産 길쭉먼지벌레屬의 분류 (딱정벌레목: 먼지벌레과)

2. *Feroperis* 亞屬의 3 新種에 대하여

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ABSTRACT The pterostichid ground beetles of the subgenus *Feroperis* Lafer from Korea are revised here. Among them, three new species are described: *Pterostichus rasilis* sp. nov., *P. seungmoi* sp. nov. and *P. probus* sp. nov. Thus, totally four species of the subgenus are known to Korean fauna. The identification key and distribution data for each species are provided.

Keywords Systematics, Coleoptera, Harpalidae, *Pterostichus*, *Feroperis*, Korea

초 록 한국산 길쭉먼지벌레속을 정리하던중 *Feroperis* 아속의 *Pterostichus rasilis* sp. nov., *P. seungmoi* sp. nov. 와 *P. probus* sp. nov. 등 3 신종을 발견하였으므로 이에 기재 보고한다. 따라서 한국산은 모두 4종이 된다. 그리고 각 종에 대한 검색표 및 분포기록 등을 작성하였다.

검색어 분류, 딱정벌레목, 먼지벌레과, 길쭉먼지벌레속, 한국

The first record for ground beetles of Korean Pterostichini was reported by Morawitz (1862) who described *Pterostichus rotundangulus* from Korea as a new species. After that, most species of the genus *Pterostichus* from Korea were reported by foreigners, such as Bates (1873, 1883), Tschitschérine (1894, 1895, 1897, 1898) and Jedlicka (1932, 1934, 1953, 1962) etc., although Cho (1934), as the first native Korean author, reported a few species of *Pterostichus* from Korea. But the taxonomy of this group has rarely been studied in Korea, even if a primary classification system had been provided by Kwon and Lee (1986). As we know, there are 18 subgenera belonging to the genus *Pterostichus* from Korea as given by Kim *et al.* (1994). So, the classification of each subgenus is extremely difficult because of their superficial resemblance in external features with the allied subgenus. Therefore, all kind of internal and external characters, ventral seta of

tarsi, shapes of pronotum, protuberance of last abdominal sternite, interval pores of elytra and shapes of aedeagus etc., are usually considered for classifying in this group. Recently, Nemoto (1988) used types of endophallus in aedeagus as a character being new technique for identification of allied species. In the subgenus *Feroperis* Lafer, 1979, the shape of pronotum and apical lamella of aedeagus are good characters, because the former is flat and rounded in lateral marginal side and the latter is often twisted or protuberanced, unlike the species of other subgenus.

All the new type materials treated herein will be deposited in the Systematic Entomology Laboratory, Department of Agricultural Biology, Kyungpook National University.

The following abbreviations are used here: L: length of body (from median clypeus to elytral apex); HL: length of head; HW: width of head; PA: apical width

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of pronotum; PW: largest width of pronotum; PB: basal width of pronotum; PLt: distance between apical angle and basal angle; PL: median length of pronotum; EL: length of elytra; EW: width of elytra.

HNHM: Zoological Department, Hungarian Natural History Museum, Budapest, Hungary

Genus *Pterostichus* Bonelli, 1810

Subgenus *Feroperis* Lafer, 1979

Feroperis Lafer, 1979, Zhu. Dal. Vos. Vosto. Sib.: 3. Tschichérine

Type-species: *Pterostichus (Feroperis) jugans* Tschichérine, 1897 (Russia).

KEY TO SPECIES OF KOREAN *FEROPERIS*

- 1. Pronotum round from apical apex to basal angle - 2
- Pronotum strongly narrowed posterad - *rasisilis* sp. nov.
- 2. Apical lamella of aedeagus with protuberance at latero-dorsal view - - - - - 3
- Apical lamella of aedeagus without protuberance at latero-dorsal view - - - - - *seungmoi* sp. nov.
- 3. Aedeagus strongly curved (>90°), apical lamella short - - - - - *probus* sp. nov.
- Aedeagus moderately curved (90°>), apical lamella long - - - - - *pertinax*

1. *Pterostichus (Feroperis) pertinax* Tschitschérine, 1895 긴길쪽먼지벌레

Feronia (Pterostichus) pertinax Tschitschérine, 1895, Hor. Soc. Ent. Ross. 29: 175 (Korea).

Pterostichus pertinax: Cho, 1957, Hum. Sci. Kor. Univ. 2: 193 (Korea).

Pterostichus pertinax: Jedlicka, 1962. Ent. Abh. Ber. Mus. Tierk. Dresden 26(21): 250 (Korea).

Pterostichus pertinax: Kwon et Lee, 1986, Ins. Kor. 6: 30 (Korea).

Pterostichus pertinax: Shin *et al.*, 1994, Check List Ins. Kor.: 124 (Korea).

Material examined: HB: 1♀, Paektusan, 31, X, 1986; PB: 1♂, Myohyangsan, 26, V, 1991, 1♂, same locality, 28, V, 1991.

Distribution: Korea (North).

2. *Pterostichus (Feroperis) probus* sp. nov. 멧길쪽먼지벌레(신칭)

Generally black or sometimes dark brown in color; abdomen, antenna, legs and plapi reddish brown or light reddish brown; pronotum and elytra usually glabrous with luster.

Head moderately smooth on dorsal side; frontal im-

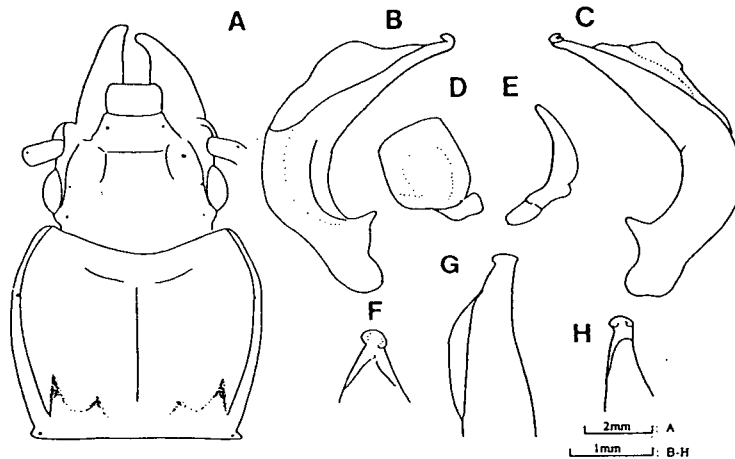


Fig. 1. *Pterostichus (Feroperis) probus* sp. nov. A: head and pronotum in dorsal view; B,C: median lobe of male genitalia in lateral view; D: ditto, left paramere; E: ditto, right paramere; F: ditto, apex in apical view; G: ditto, apex in ventral view; H: ditto, apex in dorsal view.

pressions swallow, deep, and reaching level of anterior supraorbital seta, hind supraorbital seta situated at level of posterior margin of eyes. Eyes convex. Tempora less convex; gena smooth. Clypeus transverse, trapezium-shaped; frontal margin almost straight, slightly depressed in middle and with one seta on each side. Labrum transverse; lateral apex weakly emarginate and bearing with six seta along it. Antenna cylindrical and elongate; segment 2 with 1 short additional seta. Apical segment of maxillary palpi fusiform and rounded at tip. Mentum tooth bifid.

Pronotum slightly rectangular or less cordate, weakly transverse, widest at about a little behind of 1/3 from anterior angles (PW/HW 1.44, PW/PLt 1.17, PW/PL 1.36). Hind angles acute and with weak denticles. Lateral furrows strongly more wide before basal angles than anterior one (PW/PB 1.23, PW/PA 1.41). Width of pronotal hind margin more longer than anterior margin (PB/PA 1.14). Basal linear fovea of pronotum with 2 rows in each side, widely depressed; inner and outer fovea linear almost paralleled, as a same length with punctures. Pronotal process of pronotum weakly bordered at tip.

Elytra oblong, rather stout and long (EL/EW 1.45, EL/PL 2.38, EW/PW 1.21), widest at about in middle. Shoulders with denticles. Elytral intervals convex; interval 3 with 3 discal setiferous pores in both side of elytra; anterior seta situate at about 1/3 of adjoining stria 2; mid and hind seta with adjoining stria 2 at about 2/3, 3/4 from base of elytra; interval 9 with 21 setiferous pores at adjoining stria 8. Stria regular, full, deep; stria 1 jointed to basal pores. Striole of scutellum long; not reaching to stria 1.

Ventral side of body smooth; lateral view of body with punctures densely. Abdominal last sternite with bordered transverse line in the middle on holotype.

Legs rather long and slender; segment 5 of tarsi with seta in ventral view.

Aedeagus rather simply, tubercular, without additional lobes; apical lamella with tooth, slightly curved, more or less slender, apically almost rectangular. Left paramere wide; apex truncate and rounded at dorsal margin. Right paramere long and slender.

The size of holotype as follows (in mm): L 16.42, HL 2.16, HW 3.42, PA 3.50, PW 4.92, PB 4.00, PLt 4.20, PL 3.62, EL 8.60, EW 5.95.

Material examined : Holotype ♂, Myōngjisan, GG, Korea, 6, VI, 1976, S.M, Lee; paratypes: 2♂♂, North Korea, 16, IX, 1986, Sustek (HNHM); 1♀, same locality, 1-4, VIII, 1991, same collector.

Distribution : Korea (North, Central).

Remarks : This new species is similar to *P. (F.) pertinax* in external features, but it can be easily distinguished from allied species by the protuberance of apical lamella in aedeagus.

3. *Pterostichus (Feroperis) rasilis* sp. nov.

맵시길쭉먼지벌레(신칭)

Generally black in color; tarsi and plapi reddish brown; pronotum and elytra usually glabrous with luster.

Head more or less large; dorsal side with microsculpture; frontal impressions bented, reached a little before of anterior supraorbital seta; hind supraorbital seta situated almost at level of posterior margin of eyes. Eyes convex. Clypeus transverse, trapezium-shaped; frontal margin straight, slightly depressed in middle, and with one seta on each side. Labrum transverse; frontal margin straight and with six seta along it. Antenna cylindrical; segment 2 with 1 short additional seta. Apical segment of maxillary palpi weakly fusiform and blunt at tip. Mentum tooth bifid.

Pronotum cordate, convex and transverse, widest at about 1/3 from anterior angles of pronotum (PW/HW 1.44, PW/PLt 1.22, PW/PL 1.31). Lateral margins gently rounded; lateral furrows before basal angle apparently wider than anterior one (PW/PB 1.31, PW/PA 1.38). Hind angles acute, with weak denticles. Disk of pronotum convex, glabrous. Median line of pronotum fine and deep, reached at posterior margin. Basal linear fovea of pronotum with 2 rows in each side, widely depressed; inner and outer fovea linear almost paralleled light obliquely, with punctures and winkles. Pronotal process of pronotum not bordered at tip.

Elytra oblong, rather convex and long (EL/EW 1.51, EL/PL 2.38, EW/PW 1.20), widest at about a little

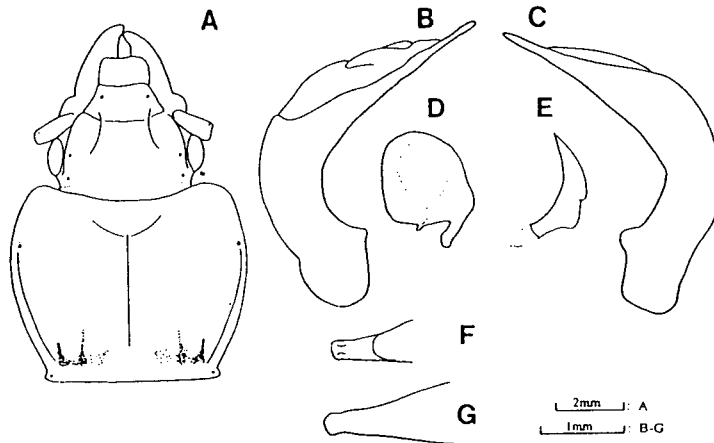


Fig. 2. *Pterostichus (Feroperis) rasilis* sp. nov. A: head and pronotum in dorsal view; B,C: median lobe of male genitalia in lateral view; D: ditto, left paramere; E: ditto, right paramere; F: ditto, apex in dorsal view; G: ditto, apex in ventral view.

behind of middle. Elytral shoulders with unrecognized or very weak denticles. Stria regular. Intervals more or less flat or feebly convex; interval 3 with 3 discal setiferous pores at adjoining stria 2. Striole of scutellum long, not reaching to stria 1.

Ventral side of body smooth; lateral part of body with dense punctures.

Legs rather long and slender; segment 5 of tarsi with seta in ventral view.

Aedeagus simple, tubercular and slender; apical lamella more or less long, rectangular. Left paramere wide and rounded at apical-dorsal margin. Right paramere narrowed from apical part to base.

The size of holotype as follows (in mm): L 14.80, HL 1.98, HW 3.14, PA 3.28, PW 4.53, PB 3.46, PLt 3.71, PL 3.45, EL 8.30, EW 5.42.

Material examined : Holotype ♂, Paektusan, HB, Korea, 2, VII, 1993, Y. J. Kwon paratype: 11♂♂ & 2♀♀, same data as holotype.

Distribution : Korea (North).

Remarks : This new species is very similar to *P. pertinax* and *P. probus*, but it is well separated from them by the apical lamella of aedeagus which is not twisted and more longer.

4. *Pterostichus (Feroperis) seungmoi* sp. nov.
승모길쭉먼지벌레 (신칭)

Generally black or sometimes dark brown in color; antenna, legs and palpi dark reddish brown or light reddish brown. Body generally stout, almost glabrous with luster. A medium-sized species in this group, with moderately large head and convex eyes. Head more or less large, with weak punctures near to hind supraorbital seta. Frontal impressions straight lines, reaching obliquely a little before levels of anterior supraorbital setae. Eyes convex. Clypeus transverse, trapezium-shaped; frontal margin almost straight. Labrum transverse; lateral apex weakly emarginate and with six seta along it. Antenna cylindrical; segment 2 with 1 short additional seta.

Pronotum cordate, convex, widest at about 1/3 from anterior angles (PW/HW 1.44, PW/PLt 1.22, PW/PL 1.31), Lateral margins gently rounded (PW/PB 1.30, PW/PA 1.45); lateral furrows situated before basal angles apparently wider than anterior one. Hind margin of pronotum far longer than anterior one (PB/PA 1.12). Hind angles acute, with weak denticles. Anterior angles slightly emarginate, rounded at tip. Disk of pronotum convex, more or less transverse wrinkles. Median line fine and deep, reached at posterior margin. Base of pronotum with 2 longitudinal rows in each side, widely depressed, with weak punctures. Between inner and outer linear fovea bordered as bulked longitudinal rows in each side. Pronotal process of pronotum unbordered

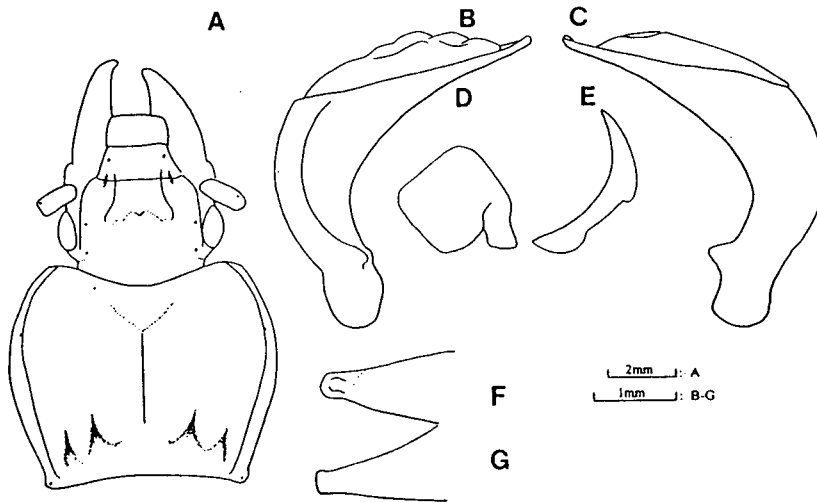


Fig. 3. *Pterostichus (Feroperis) seungmoi* sp. nov. A: head and pronotum in dorsal view; B,C: median lobe of male genitalia in lateral view; D: ditto, left paramere; E: ditto, right paramere; F: ditto, apex in dorsal view; G: ditto, apex in ventral view.

at tip.

Elytra oblong or less oval, rather convex and long (EL/EW 1.52, EL/PL 2.7, EW/PW 1.20); lateral margins more or less rounded and widest at about a little behind of middle elytra. Elytral shoulders with denticles. Stria regular, full, deep. Intervals convex; interval 3 with 3 discal setiferous pores in both side of elytron at adjoining stria 2; interval 9 with 14~15 setiferous pores in both side adjoining stria 8. Striole of scutellum long, not reaching to stria 1.

Ventral side of body smooth; lateral parts of body with punctures.

Legs rather long and slender; segment 5 of tarsi with seta in ventral view.

Aedeagus rather simple, slender; apical lamella short, glabrous at tip, slightly twisted to latero-dorsal part; apical lamella rectangular in latero-dorsal view.

The size of holotype as follows (in mm): L 17.10, HL 2.18, HW 3.39, PA 3.60, PW 5.22, PB 4.02, PLt 4.12, PL 3.54, EL 9.55, EW 6.27.

Material examined: Holotype ♂, Taebaeksan, GW, Korea, 28, VII, 1976, S. M. Lee; paratypes: 2♀♀, Kyebangsang, GW, Korea, 31, V, 1991, Y. J. Kwon; 2♂♂, same data as holotype.

Distribution : Korea (Central).

Remarks : This new species can be distinguished from allied species by the rectangular shape of the apical lamella, and also by a slight twist in the aedeagus.

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