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Ground-beetles of the Genus *Parena* Motschulsky from Korea (Coleoptera: Harpalidae)*

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한국산 *Parena*속의 먼지벌레 (딱정벌레목 : 먼지벌레과)

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ABSTRACT

Seven species of the genus *Parena* Motschulsky are known from Korea, with *Parena perforata* (Bates), reported herein for the first time. Collection data and characteristics are provided. A key to the species is given.

Key words : Systematics, Coleoptera, Harpalidae, *Parena*, Korea

INTRODUCTION

Ground-beetles of the genus *Parena* Motschulsky, belonging to the subfamily Lebiinae of the Harpalidae, are poorly known, with mere six known species in Korea (Kwon and Lee 1986, ESK and KSAE, 1994).

This genus was established by Motschulsky (1859) based on the type species, *bicolor* Motschulsky (Type locality: Java). Ventral side of head without or with one pair of distinct setae before level of hind margin of eyes and segments 2 and 3 of mid tarsi of male with ventral adhesive hairs were the taxonomic characteristics of this genus (Motschulsky 1859, Jedlicka 1963, Habu 1982). The members of the genus are widely distributed from India, Srilanka, Philippines and Indochina in the south to the Amur river, Sakhalin, Japan in the north (Bates 1873, Jedlicka 1963, Habu 1967, 1982, Lafer, 1989).

Habu (1982) divided the genus *Parena* into 4 groups with presence and position of seta on ventral side of head: *nigrolineata*-group, *monostigma*-group, *perforata*-group and *cavipennis* group. The species of truncatipennes group were partially studied in Korea by Kwon and Lee

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(1986), Paik (1988, 1993), and Paik and Kwon (1993).

P. koreana has been described by Kirschenhoper (1994) from North Korea and according to descriptions and figures, it resembles *P. monostigma* and requires comparative study of types.

The *Parena* ground-beetles prey usually upon eggs and small larvae of moth with their sharp mandibles and denticulated claws powerfully grasping the worms or other preys.

Collection of the *Parena* species is difficult because constituent species are usually live on the trees and have well developed hind wings which allow easy escape. And also, they are not openly attracted to black light trap at night. Sweeping with net and collection directly by eyesight are laborious but effective.

Specimens examined for this study were mostly collected by the authors in Korea and deposited in Dept. of Sericulture and Entomology Resources of Sangju National University and Dept. of Agricultural Biology of Kyungpook National University.

Abbreviations are as follows. GW: Gangwon-do; GG: Gyunggi-do; JB: Jeollabuk-do; JN: Jeollanam-do; CB: Chungcheonbuk-do; CN: Chungcheongnam-do; GB: Gyoungsangbuk-do; GN: Gyoungsangnam-do; and JJ: Jeju-do; WH: width of head; WF: width of frons.

Systematic Accounts

Key to the species of the genus *Parena* in Korea

1. Ventral side of head without one seta at the level of hind margin of eye. Elytra with black or greenish fascia along the lateral margin -- 2
   - Ventral side of head with one seta at about level of hind margin of eye. Elytra almost concolorous or with one patch on the suture at hind half ---------- 3
2. Elytral interval 8 light at outer angle. Head glabrous from dorsal view. WH/WF 1.74 - 1.82 ---------- *P. nigrolineata nipponensis* Habu
   - Elytral interval 8 blackish at outer angle. Head not glabrous at least in frontal furrows. WH/WF 1.67 - 1.72 -- *P. latecincta* (Bates)
3. Elytra with four discal pores at interval 3. Elytral striae almost effaced. Mentum with two setae ---------- *P. perforata* (Bates)
   - Elytra with three discal pores at interval 3 and with distinct striae. Mentum without setae ---------- 4
4. Pronotum strongly transverse widely and marginal sides flatted. Elytra yellowish concolorous, middle discal pore situated at about the middle of elytra, with weak impression - 5
   - Pronotum only moderately transverse, elytra dark-brown or yellowish with blackish patch on the suture, weak impression in the middle of elytra absent ---------- 6
5. Elytral striae not impressed and replaced by rows of fine punctures. Lamella of penis elongated in dorsal view ---------- *P. laesipennis* (Bates)
   - Elytral striae weakly impressed and finely punctuate. Lamella of penis shorter than its width in dorsal view ---------- *P. cavipennis* (Bates)
6. Body dark brown to almost black ---------- *P. tripunctata* (Bates)
   - Body yellowish light brown with blackish patch on suture, mainly situated in hind half but sometimes more or less invaded into anterior part ------- *P. monostigma* (Bates)

Genus *Parena* Motschulsky, 1859

Parena Motschulsky, 1859, Etud. Ent. 8: 31.

Type species: *Parena bicolor* Motschulsky (Type locality: Java).

• *Parena perforata* (Bates, 1873)
넉점선두리먼지벌레(신칭)
(Fig. 1)

Bothynoptera perforata Bates, 1873, Trans. Ent. Soc. Lond.: 313-314; Jedlicka, 1951: 59; Ohkura and Ueno, 1955: 108, pl. 40, fig. 143; Ohkura and Ueno, 1955: 43, pl. 12, fig. 217; Nakane, 1963: 52, pl. 26, fig. 18; Jedlicka, 1963: 445-446. Type locality: Japan. Types are deposited in the Museum of London, U.K.

Crossoglossa laesipennis : Mukaigawa, 1911: 230 - 231.

Bothynoptera Perforata : Uchida, 1957: 10 - 11.

Bothynoptera persorata(!) Inouye, 1958: 54.

Parena (*Parena*) *perforata* : Habu, 1967: 152, 161 - 164, figs. 227, 282, 296, pl. 17,

fig. 2; Nakane, 1975: 210, pl. 45; Lafer, 1989: 212, 213.

Diagnosis. 9 - 12mm. Yellowish brown, elytra with four pores on interval 3.

Materials examined. GW: 1♀, Mt. Kariwangsan, 7, VIII, 1991 (Y. K. Lee).

Distribution. Korea (Central), Japan.

• Remarks. This species is for the first time recorded from Korea herein.

Parena nigrolineata nipponensis Habu, 1964
흑선두리먼지벌레
(Fig. 2)

Parena nigrolineata nipponensis Habu, 1964, Akitu, 11: 33 - 34. fig. 2; Habu, 1967: 152, 153 - 155, figs. 44, 143, 269, 272, 281, pl. 17 - fig. 1; Nakane, 1975: 257, pl. 45; Kwon and Lee, 1986: 52; ESK and KSAE, 1994: 131. Type locality: Japan.

Diagnoisis. 8 - 9.5mm. Ventral side of head without seta. Elytral fascia black, black part on interval 8 ends near outer apical angle. Head and pronotum may be faintly punctate.

Materials examined. GG: 1♀, 12, X, 1982; JJ: 1♀ and 2♂, Chungmun, 23, VII, 1981; 1♂, same locality, 12, VIII, 1984; 1♂, Sŏngsanp'o, 11, V, 1982.

Distribution. Korea (Chejudo, South), Japan.

Remarks. This species very resembles *P. latecincta* but is generally more punctate on head and pronotum than the latter, and can be distinguished by the position of elytral fascia.

Parena latecincta (Bates, 1873)
줄납작밑빠진먼지벌레
(Fig. 3)

Crossoglossa latecincta Bates, 1873, Trans. Ent. Soc. Lond.: 315 - 316; Bates, 1889: 283; Yokoyama, 1931: 142, pl. 18, fig. 16; Matsumura, 1931: 15, 23, pl. 4, fig. 5; Yokoyama, 1932: 821, fig. 1615; Kamiya and Adachi, 1933: pl. 6, fig. 2. Type locality: Japan. Types are deposited in the Museum of London, U.K.

Phloeodromius nigrolineatus: Andrewes, 1921: 179.

Crossoglossa laticincta(!): Kano, 1922: 229; Kano, 1930: 30 - 31.

Crossoglossa viridilineata Jedlicka, 1939: 7.

Calleida splendidula: Minamikawa, 1943: 94 - 95, pl. 4, fig. 6.

Parena viridilineata: Jedlicka, 1946: 9; Jedlicka, 1963: 439, 441.

Parena nigrolineata: Habu, 1950: 945. fig. 2685.

Parena (*Crossoglossa*) *latecincta* : Nakane, 1963: 52, pl. 26, fig. 17.

Parena latecincta : Nakane *et al.*, 1966: 46, pl. 21, fig. 28; Habu, 1967: 152, 155 - 156, figs. 271, 274, 289, pl. 5. fig. 1; Nakane, 1975: 167, pl. 45; Kwon and Lee, 1986: 51; Lafer, 1989: 111; ESK and KSAE, 1994: 131.

Diagnosis. 9-10mm. Elytral fascia greenish or light black, greenish black part on interval 8 almost reaching apical margin, head and pronotum with finely, but rather distinctly punctate.

Materials examined. GG: 1♀, Mt. Myŏngjisan, 26, VI, 1983; GB: 1♀, Taegu, 10, V, 1981; GN: 1♂, Mt. Wŏnhyosan, 6, VI, 1981; 1♀, Mt. Kajisan, 10, V, 1981.

Distribution. Korea (Central, South), Japan, Taiwan, China, Indochina.

Remarks. The species usually lives on trees (Ueno *et al.* 1985) and prays the eggs and small insects.

Parena cavipennis (Bates, 1873)
납작선두리먼지벌레
(Fig. 4)

Crossoglossa cavipennis Bates, 1873. Trans. Ent. Soc. Lond.: 316-317. Type locality: Japan. Types are deposited in the Museum of London, U.K.

Parena cavipennis: Jedlicka, 1946: 8; Jedlicka, 1951: 210; Ohkura and Ueno, 1955: 106, pl. 39, fig. 133; Ohkura and Ueno, 1955: 41, pl. 11, fig. 13; Jedlicka, 1963: 439, 440; Habu, 1967: 152, 165-166, figs. 125, 280, 283, 293, pl. 17, fig. 4; Nakane, 1975: 364, pl. 45; Kwon and Lee, 1986: 51; ESK and KSAE, 1994: 131.

Diagnosis. 9.5-10mm. Yellowish brown. Elytral striae weakly impressed and finely puntate. Lamella of penis shorter than its width in dorsal view.

Materials examined. S: 1♂, 17, VII, 1971; GN: 1♂, Mt. Wŏnhyosan, 31, V, 1980; 1♂, Mt. Chrisan, 28, V, 1982; GB: 1♂ and 2♀, Todong, Is. Ullungdo, 10, VII, 1978; 1♀, Chŏdong, Is. Ullungdo, 21, VI, 1982; 1♀, Kach'angmyŏn, 6, VI, 1990; 3♀, Mt. Chuwangsan, 13, VII, 1978; 2♀, Mt. Chuhŭlsan, 5, VI, 1983; 2♀ and 1♂, Mt. P'algongsan, 2, VII, 1982; 1♀, same locality, 29, VI, 1982; 1♀, Mt. P'algongsan, 6, IX, 1985; GG: 1♂, Wabu-myŏn, 22, V, 1983; 1♀, Aengmubong, 15, VI, 1976; 1♀, Kwangnŭng, 25, VII, 1976; JB: 1♂, Mt. Naejangsan, 14, VIII, 1981; JN: 1♀, Is. Hongdo, 9, VIII, 1981; 1♀, same locality, 10, VIII, 1983; CB: 1♀, Mt. Songnisan, 10, VII, 1977.

Distribution. Korea (Central, South, Is. Ullungdo), Japan, China, Taiwan.

Remarks. The species resembles *P. laesipennis*, but is small.

Parena laesipennis (Bates, 1873)
큰선두리먼지벌레

Crossoglossa laesipennis Bates, 1873, Trans. Ent. Soc. Lond.: 317. Type locality: Japan. Types are deposited in the Museum of London, U.K.

Parena cavipennis: Habu, 1942: 78

Parena laesipennis: Jedlicka, 1946: 8; Nakane, 1963: 52, pl. 26, fig. 14; Jedlicka, 1963: 439, 440; Habu, 1967: 152, 168-169, figs. 279, 292, pl. 17, fig. 3; Nakane, 1975: 364; Kwon and Lee, 1986: 51; Lafer, 1989: 212, 213; ESK and KSAE, 1994: 131.

Parena (*Crossoglossa*) *laesipennis* : Ueno, 1964: 263.

Diagnosis. 11-12.5mm. Elytral striae not impressed and replaced by rows of fine punctures. Lamella of penis elongate in dorsal view.

Materials examined. Unavailable currently

Distribution. Korea (Central, South), Japan

Remarks. This species and *P. cavipennis* overwinter in the soil at adult stage (Ueno *et al.* 1985).

Parena monostigma (Bates, 1873)
한점선두리먼지벌레
(Fig. 5)

Crossoglossa monostigma Bates, 1873, Trans. Ent. Soc. Lond.: 316

Type locality: Japan. Types are deposited in the Museum of London, U.K.

Crossoglossa monocincta [sic]: Jakobson, 1908: 403; Winkler, 1924: Co. 204 (p. 1650).

Lebia japonica: Kato, 1933: pl. 46, fig. 7.

Parena japonica Jedlicka, 1946, Des. Carab. Nouv, Asie Orient : 10, fig. 5; Jedlicka, 1963: 440, 443, fig. 158.

Parena monostigma: Jedlicka, 1946: 10; Nakane, 1949: 13; Ohkura, and Ueno, 1955: 108, pl. 40, fig. 142; Ohkura and Ueno, 1955: 43, pl. 12, gig. 216; Nakane, 1963, 52, pl. 26, fig. 15; Jedlicka, 1963: 439, 443; Habu, 1967: 152, 158-159, figs. 275, 286, 294, pl. 16, fig. 3; Nakane, 1975: 351, pl. 45; Kwon and Lee, 1986: 51; Lafer, 1989: 212, 213; ESK and KSAE, 1994: 131.

Diagnosis. 6.5-7.5mm. Elytra yellow brown, with a large black triangular shape posteriorly.

Materials examined. GG: Is. Kangwhado, 10, V, 1981; GN: 1♂. Mt. Wŏnhyosan, 6, VII, 1981: 2♀, Mt. Kajisan, 10, V, 1981; GW: 1♀, Mt. Obongsan, 17, V, 1981; CB: 1♂, Mt. Chuhŭlsan, 5, VI, 1983.

Distribution. Korea (South, Central), Japan.

Remarks. The species was described from Japan and reported from Korea for the first time by Kwon and Lee (1986).

Parena tripunctata (Bates, 1873)
석점선두리먼지벌레
(Fig. 6)

Bothynoptera tripunctata Bates, 1873, Trans. Ent. Soc. Lond. : 314; Nakane, 1948: 12, pl. 1. fig. 26; Jedlicka, 1951: 59; Nakane, 1963: 52, pl. 26, fig. 19; Jedlicka, 1963: 445, 446; Habu, 1967: 152, 160-161, figs. 276, 285, 290, 291, pl. 16, fig; Kwon and Lee, 1986: 52; Lafer, 1989: 213; ESK and KSAE, 1994: 131. Type Locality: Japan. Types are deposited in the Museum of London, U.K.

Parena piceola Kryvolutskaja, 1973: 57, 59, 69, 172, 189.

Diagnosis. 6-7.7mm. Elytra black, with 3 pores on interval 3.

Materials examined. S: 1♀, Mt. Pukhansan, 11, VII, 1981; GN: 1♀, T'ongdosa Tmp. 9, X, 1979; 1♀, Mt. Wŏnghyosan, 6, VI, 1981; 1♀, Mt. Sinbulsan, 28, V, 1980; GW: 1♀, Mt. Sŏraksan, 28, VII, 1982; 1♀, same locality, 22, VII, 1982; 1♀, same locality, 9, VIII, 1976; 1♀, same locality, 25, VIII, 1982; 1♀, Mt. Ch'iaksan, 21, V, 1979; 6♀, Mt. Odaesan, 4, VIII, 1983; 1♀, same locality, 2, VIII, 1976; 1♀, Sokŭmkang, same localit, 21, VIII, 1981; 1♀, Mt. T'aebaecksan, 16, VI, 1974; GB: 1♀, Mt. P'algongsan, 22, V, 1981; 1♀, Taegu, 31, V, 1983; 1♀, Mt. Chuwangsan, 26, VII, 1984; 1♀, same locality, 28, VII, 1984; 3♀, Mt. Sobaeksan, 5, VI, 1981; 1♀, same locality, 22, IX, 1985; JN: 1♀, Is. Hongdo, 12, VIII, 1981.

Distribution. Korea(central, South), Japan.

Remarks. The species was described from Japan, and the first record in Korea was by Kwon and Lee (1986).

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적 요

한국에 분포하는 7종의 *Parena* 속 먼지벌레를 정리하며, 이중에서 넉점선두리먼지벌레(신칭)를 미기록종으로 보고한다. 검색표 채집지를 명시하였다.

검색어 : 분류, 딱정벌레목, 먼지벌레과, *Parena*속, 한국

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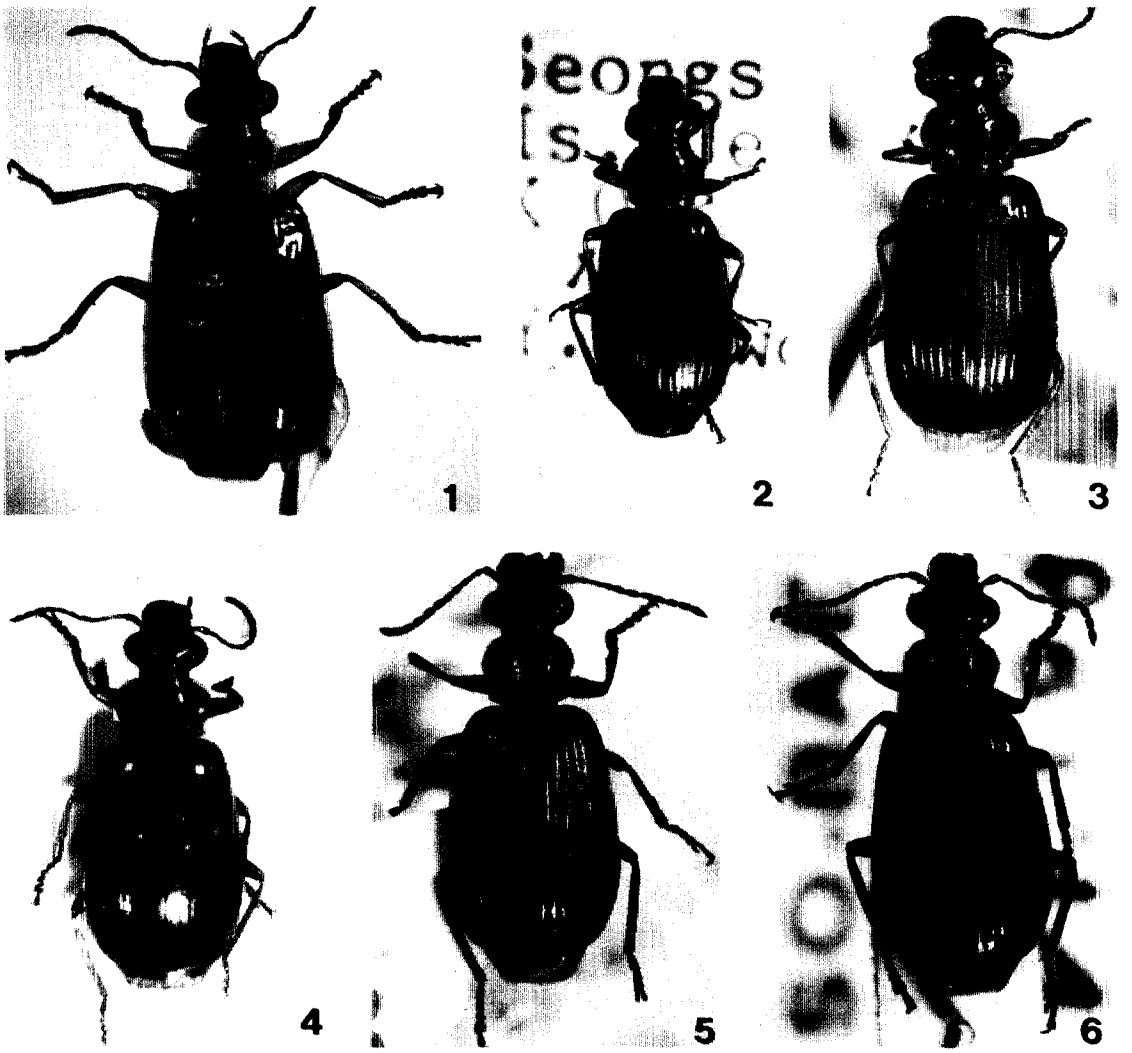

Figs. 1–6. 1. *Parena perforata* (Bates, 1873), 2. *Parena nigrolineata nipponensis* Habu, 1964, 3. *Parena latecincta* (Bates, 1873), 4. *Parena cavipennis* (Bates, 1873), 5. *Parena monostigma* (Bates, 1873), 6. *Parena tripunctata* (Bates, 1873).