Original article KOREAN JOURNAL OF APPLIED ENTOMOLOGY

한국응용곤충학회지
Korean J. Appl. Entomol. 55(4): 529-537 (2016)
DOI: http://dx.doi.org/10.5656/KSAE.2016.11.0.068

pISSN 1225-0171, eISSN 2287-545X

New Records of Six Click Beetles (Coleoptera, Elateridae) in Korea

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한국 미기록 방아벌레 6종(딱정벌레목, 방아벌레과)의 보고

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ABSTRACT: Six unrecorded click beetles of Elateridae are reported in Korea for the first time as follows: 1) *Lacon altaicus* (Candéze, 1882) in Agrypnidae; 2) *Diacanthous undulatus* DeGeer, 1774, 3) *Liotrichus ligneus* (Candèze, 1879), 4) *Aplotarsus imperceptus* Gurjeva, 1987, 5) *Prosternon aurichalceum* Stepanov, 1930, and 6) *Anostirus* (*Anostirus*) *castaneus castaneus* (Linnaeus, 1758) in Denticollinae. Among them, three genera, *Diacanthous*, *Liotrichus*, and *Aplotarsus*, are also recorded for the first time. The previously recorded sepcies, *Prosternon tessellatum* Linnaeus, 1758 is suggested to be excluded from the Korean fauna by a misidentification of *P. aurichalceum*.

Key words: Taxonomy, Coleoptera, Elateridae, Unrecorded species, Korea

초 록: 방아벌레과에 속하는 한국 미기록 6종을 다음과 같이 보고한다: 땅방아벌레아과(Agrypninae)의 *Lacon altaicus* (Candéze, 1882) [앞가슴혹방아벌레(신칭)]; 주홍방아벌레아과(Denticollinae)의 *Diacanthous undulatus* DeGeer, 1774 [물결날개방아벌레(신칭)], *Liotrichus ligneus* (Candèze, 1879) [넓적가슴방아벌레(신칭)], *Aplotarsus imperceptus* Gurjeva, 1987 [민가슴방아벌레(신칭)], *Prosternon aurichalceum* Stepanov, 1930 [모진방아벌레], *Anostirus* (*Anostirus*) *castaneus castaneus* (Linnaeus, 1758) [끝검은먹무늬방아벌레(신칭)]. 이들 중 3속(*Diacanthous*, *Liotrichus* 및 *Aplotarsus*)는 국내 미기록 속으로 보고한다. 이전 기록종인 *Prosternon tessellatum* Linnaeus, 1758은 *P. aurichalceum*의 오동정으로 국내 곤충상에서 삭제할 것을 제안한다.

검색어: 분류, 딱정벌레목, 방아벌레과, 미기록 종, 한국

Click beetles of the family Elateridae were recently listed as 151 species distributed in Korea (Hong and Lee, 2014). However, many elaterid species including undescribed and unrecorded taxa still remain in the Korean fauna. In this study, six click beetles belonging to the subfamily Agrypninae and Denticollinae are reported in the Korean fauna for the first time.

The methods of specimen examination were followed Han et al. (2009). For morphological study, the general structures of specimens were observed under a stereoscopic microscope (MZ16A and MZ6; Leica, Solms, Germany). The examined specimens were preserved at the insect collection of the Applied Entomology Division, Department of Agricultural Biology, National Institute of Agricultural Science (NIAS), Jeonju, Korea. The Provincial abbreviations of the collecting sites within Korea are as follows: HB- Hamgyeongbuk-do, GW- Gangwon-do, GB- Gyeongsangbuk-do, GG: Gyeonggi-do including Seoul, CB- Chungcheongbuk-do. CN- Chungcheong nam-do, JN- Jeollanam-do.

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Received October 19 2016; **Revised** November 16 2016
Accepted November 17 2016

Taxonomic accounts

Family Elateridae Leach, 1815

Subfamily Agrypninae Candèze, 1857

Tribe Agrypnini Candèze, 1857

Genus *Lacon* Laporte, 1838

Lacon Laporte, 1838: 11. Type-species: *Elater atomarius* Fabricius, 1798: 139 (= *Elater punctatus* Herbst, 1779: 316).

***Lacon altaicus* (Candèze, 1882) 앞가슴흑방아벌레(신칭)** (Fig. 1)

Adelocera altaica Candéze, 1882: 2. Type locality: Altai, Far East Russia.

Diagnosis. Body clothed very dense, more or less light scale-like pubescence (Fig. 1A-C). Antennae short, reaching only near middle of lateral margin of pronotum. Pronotum with two pairs of tubercules, first one at anterior part and second one behind middle, and large median impression. Hind wings present. Elytra without striae.

Specimen examined. 1 male, Seockpo-ri, Seockpo-myeon, Bonghwa, GB. 3. VII. 2012. Taeman Han (No. 3420).

Distribution. Korea (new record), China, Russia (Siberia and Far East), Kazakhstan, Mongolia

Remarks. Biology of this species is unknown.

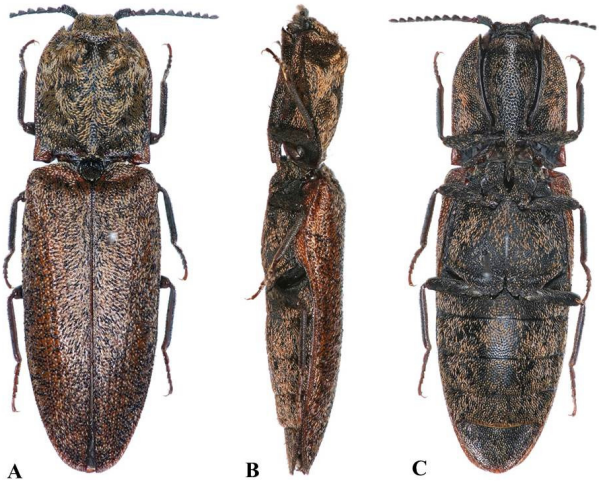

Fig. 1. Male of *Lacon altaicus* (Candéze, 1882) in Korea. A: dorsal view, B: lateral view, C: ventral view.

Subfamily Denticollinae Stein and Weise, 1877

주홍방아벌레아과

Tribe Hemicrepidiini Champion, 1894 다색방아벌레족(신칭)

Genus *Diacanthous* Reitter, 1905 물결날개방아벌레속(신칭)

Harminius (*Diacanthous*) Reitter, 1905: 25. Type species: *Athous undulatus* DeGeer, 1774: 155 (Europe).

Diagnosis. Medium to large. Head flattened, frontal margin well carinate, sometimes obscure at middle, often protruding above clypeus, mouth parts prognathous; antennae moderate, broad, serrated from 3rd to 10th; hind angles of pronotum without carina; basal incisures near base of hind angles small, distinct; basal notch of posterior margin of pronotum indistinct; posterior margin of hypomeron simple near procoxal cavities medially, then distinctly emarginated; tarsomeres with ventro-apical lobes from 1st to 4th, but 1st small, indistinct; claws simple (Platia, 1994).

Distribution. Northern Hemisphere: Seven species in Palearctic and one species in Nearactic (Platia, 1994; Cate, 2007).

Remarks. This genus is new to Korea. Species of this genus spends a pupal state between bark and wood or inter bark and the life cycle is known as four years (Laibner 2000: 94).

***Diacanthous undulatus* (DeGeer, 1774) 물결날개방아벌레(신칭)** (Fig. 2)

Elater undulatus DeGeer, 1774: 155 (Europe).

Synonyms. See Cate (2007: 169).

Diagnosis. Body rather large, 15.7-16.0 mm long, 4.2-4.5 mm wide, elongate, convex, parallel-sided (Fig. 2A); color bicolor, sub-opaque, reddish brown, with mouth part, antennae, scutellum, legs, ventral surface blackish (Fig. 2B), out-margins and median longitudinal portion of pronotum blackish, elytra basically reddish brown, but separated two tone color, of which dark bands bearing slender, blackish hairs, three yellowish brown bands formed by golden hairs (Fig. 2A). Punctures large, umbilicate, very dense on head and pronotum, intervals reticulate.

Morphological polymorphisms. Color variations are found in the pronotum, which is reddish brown to yellowish brown, median longitudinal region of pronotum is thickly or finely blackish brown. The circular foveae on the pronotum are distinct at posterior slop, also at middle, or absent. The median longitudinal impression is generally distinct just behind of middle, but sometimes perfectly absent.

Fig. 2. Female of *Diacanthous undulatus* (DeGeer, 1774) in Korea. A: dorsal view, B: ventral view.

Specimens examined. 3 females, Temple Sangwon-sa at Mt. Odae, Jinbu, Pyeongchang, GW, 10. VI-12. VII. 2012. S. W. Park (DNA no. 3305) [NIAS]; 2 females, ditto, 18. VI. 2010, T. M. Han (DNA nos. 2655-2656) [NIAS].

Distribution. Korea (new record), Europe, Russia, China, Mongolia, North America.

Remarks. The color variations of this species were introduced in detail by Leseigner (1972) and Laibner (2000) for the European population.

Tribe Ctenicerini Fleutiaux, 1936 뿔방아벌레족

Genus *Liotrichus* Kiesenwetter, 1858 넓적가슴방아벌레속 (신칭)

Corymbites (*Liotrichus*) Kiesenwetter, 1858: 288. Type species: *Elater affinis* Paykull, 1800: 12 (Europe).

Diagnosis. Body medium to large, subcylindrical; frontal margin carinate above antennal socket only; Antenna serrate from 3rd segment; pronotum narrowly marginate at lateral sides, with distinct basal incisures and notch at posterior margin; prosternum with longitudinal depression between procoxal cavities; prosternal process clearly bent behind procoxal cavities; pronotosternal sutures doble like at base only, then single anteriorly; posterior margin of hypomeron deeply emarginated near hind angle; legs slender, tarsus longer than tibiae, claws simple; parameres of aedeagus swellen at apex, lacking antero-lateral expansions (Kishii, 1987; Platia, 1994; Laibner, 2000).

Distribution. Northern Palearctic region: new to Korea.

Remarks. Five species are known from the Palearctic region (Cate, 2007).

***Liotrichus ligneus* (Candèze, 1879) 넓적가슴방아벌레(신칭)** (Fig. 3)

Corymbites (*Actenicerus*) *ligneus* Candèze, 1879: 281 (Amur).

Liotricus (*Liotricus*) *ligneus* (Candèze, 1879): Gurjeva, 1989: 41.

Diagnosis. Male (No. 2307) 14.0-17.0 mm long, 4.0-4.8 mm wide. Body subcylindrical, rather flat; color black, luster, with outer-margins of pronotum, elytra dark reddish brown, legs blackish brown (Fig. 3A), ventral part black (Fig. 3B). Head longitudinally depressed between eyes; frontal carina incomplete across front, obsolete at middle; punctures small, umbilicate, very dense; intervals recticulate. Antennae elongate, 10th antennomere exceeding beyond hind angles of pronotum in males, serrated from 3rd to 10th; 3rd triangular, 1.5 times as long as wide, 2.0 times as long as 2nd, semi-equal in length with 4th. Pronotum quadrate, longer than wide, 1.2 times as long as wide, widest at apex of hind angles, with shallow median longitudinal furrow narrowly; punctures umbilicate, circular, small, very dense wholly, intervals reticulate wholly; lateral margins entirely, distinctly carinate; hind angles elongate, diverged latero-posteriorly, slightly bent downwardly in lateral view, apices sharply pointed, with distinctly ridged carina. Prosternum with punctures umbilicate; hypomeron with umbilicate, smaller, denser than those on pronotum, posterior margin emarginate near procoxae, then nearly straight medially, then clearly emarginate near hind angles, apex of hind angles truncate. Scutellum tongue shaped, elongate, 1.4 times as long as wide, widest at anterior margin. Legs slender; hind tarsomeres simple. **Elytra** cylindrical, 1.6 times as long as combined length of head and pronotum, widest at anterior third. **Aedeagus** (No. 2307, Fig. 3D) slender, elongate, 2.7 times as long as wide; median lobe sub-cylindrical, gradually convergent to apex, then abruptly narrow at apex, apex roundly pointed, a little longer than parameres; parameres slender, swellen at apex, lacking antero-lateral expansions.

Female (Fig. 3C)**.** Body size 15.01-18.1 mm long, 4.3-5.1 mm wide, generally larger, stouter than male; antennae clearly shorter, barely reaching before base of hind angles, more

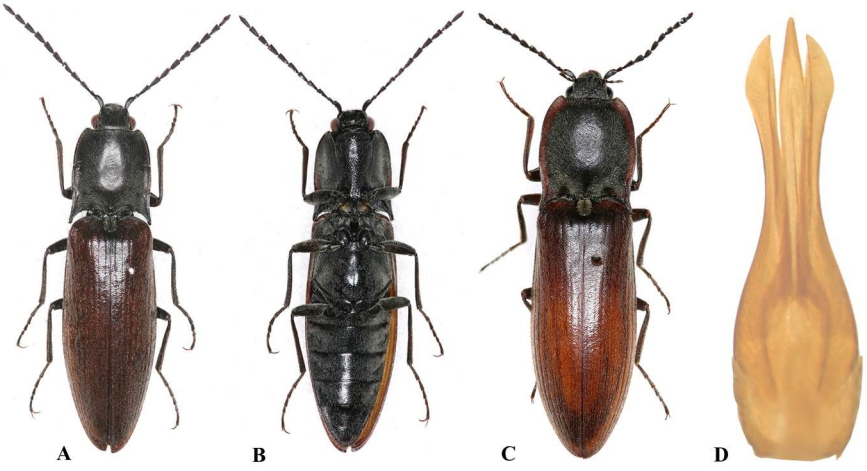

Fig. 3. *Liotrichus ligneus* (Candèze, 1879) in Korea. A: male in dorsal view, B: male in ventral view, C: female in dorsal view, D: aedeagus in dorsal view.

weakly serrate, 11th antennomere, shorter, oval shaped, not cylindrical, a little longer than 3rd; lateral margins of pronotum more arched and stout than male.

Specimens examined. 1 male, Mt. Odae, Jinbu-myeon, Pyeong chang-gun, GW. 6. VI. 2009. T. M. Han (DNA 2307); 1 male, Temple Bukdae-sa in Mt. Odae, Dongsan-ri, Jinbu-myeon, Pyeongchang, GW. 28. V. 2008. S. W. Park (DNA 2812); 1 male, Temple Baekdam-sa in Mt. Seolak, Yongdae-ri, Buk-myeon, Injae-gun, GW. 4. VI. 1979. S. G. Lee; 1 female, Mt. Gyebang, Changchon, Hongcheon, GW. VI. 1996. H. C. Park; 1 female, Mt. Gyebang, from Unduryeong to 1577 m peak, Nae-myeon, Hongcheon-gun, GW. 20. VI. 1999. D. S. Choi and S. K. Kim; 1 female, Mt. Baekdeok, from Ungyo-ri to 1350 m peak. 2. VI. 2001. D. S. Choi, D. S. Kang, and O. Y. Lim; 1 male, Yeonsei Univ. campus, Naeji-ri, Heungeup-myeon, Wonju-si, GW. 4. V. 2004. J. H. Yoon; 1 male, Mt. Sobaek, Punggi, Yeongju, GB. 6. VI. 1981. O. J. Kwak; 1 male, Silchon-myeon, Gwangju, GG. 7. VI. 1999. M. K. Ham; 1 male, Nogodan in Mt. Jiri, Sandong-myeon, Gurae-gun, JN. 23. V. 1999. T. M. Han.

Distribution. Korea (new record) and Far East Russia.

Remarks. *Liotrichus ligneus* is a mountainous species. In Korea, this species seems to be rare. Gurjeva (1989: 41) illustrated the diagnostic characters of this species. However, the Korean specimens are slightly different to population of the Far East Russia in the shape of the prosternal process and aedeagus. Unfortunately, the Russian specimen regarded as topolotype was not examined. More detail examination between the two geographical populations will be required.

Genus *Aplotarsus* Stephens, 1830 민가슴방아벌레속(신칭)

Aplotarsus Stephens, 1830: 271. Type species: *Elater rufipes* Stephens, 1830: 272 (= *Elater incanus* Gyllenhal, 1827: 358).

Diagnosis. Head flat, frontal margin incomplete, distinct above antennal sulci only; mouthpart prognatous; antennae serrate from 3rd antennomere, intermediate antennal segments slightly longer than wide; pronotum convex without median longitudinal furrow, hind angles divergent laterally, with carina or sometimes absent; prosternal process thin, narrowed at middle, then expanded apically in lateral view; pronotosternal sutures double, closed.

Distribution. Nine species in Palearctic region (Cate, 2007): new to Korea.

***Aplotarsus imperceptus* Gurjeva, 1987 민가슴방아벌레(신칭)** (Fig. 4)

Aplotarsus imperceptus Gurjeva, 1987: 46 (Primorsky in Far East Russia).

Diagnosis. Male (No. 2241) 8.2 mm long (7.9-8.6 mm), 2.6 mm wide (2.5-2.8 mm). Body (Fig. 4A) color entirely black, shining; pubescence short, recumbent, pale yellow to white hairs covered wholly. Head downwardly declined from eyes to anterior; frontal margin visible above antennal sockets, frontal carina obsolete medially, depressed at middle; punctures simple, small, deep, very dense; intervals distinctly narrower

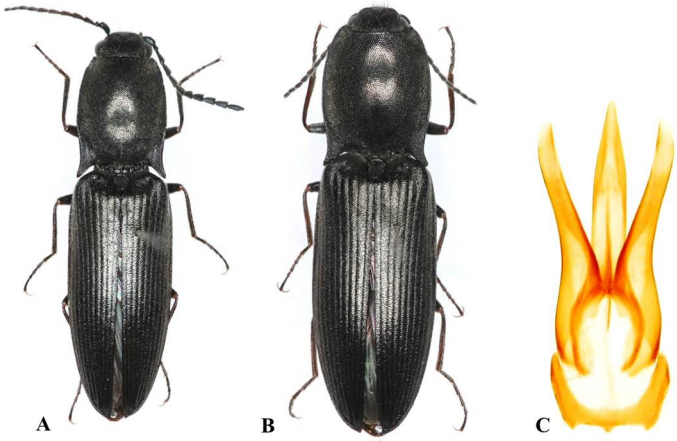

Fig. 4. *Aplotarsus imperceptus* Gurjeva, 1987 in Korea. A: male in dorsal view, B: female in dorsal view, C: aedeatus.

than diameter of punctures; surface smooth. Antennae elongate, from 11th antennomere exceeding beyond hind angles of pronotum, serrated from 4th to 10th; 3rd triangular, elongate, 2.0 times as long as wide, 2.3 times as long as 2nd, as long as 4th; from 4th to 10th each antennomere becoming gradually longer, not narrower to apical. Pronotum quadrate, as long as wide, widest at apex of hind angles, lacking shallow median longitudinal furrow; punctures simple, circular, small, very dense wholly; surface smooth; lateral margins entirely, distinctly carinate, wholly visible in dorsal view, distinctly arched, sinuate at base of hind angles; hind angles elongate, rather stout, diverged latero-posteriorly, apices sharply pointed, without carina. Prosternum convex, narrowest at base, with punctures simple, small, a little smaller than those on pronotum; pronotosternal sutures straight, double, anterior portion simple, closed; hypomeron with punctures umbilicate, denser than those on pronotum; posterior margin emarginate near procoxae, mostly expended medially, then nearly straight to apex of hind angles. Scutellum tongue shaped, elongate, 1.5 times as long as wide, widest at anterior margin, narrowest at middle. Legs rather stout; hind tarsomeres simple, gradually decreased to 4th; 1st to 5th moderately pilose ventrally; claws simple. Elytra cylindrical, 2.32 times as long as combined length of head and pronotum, 2.54 times as long as wide, weakly convex, clearly wider than pronotum. Aedeagus (Fig. 4C) slender, elongate; median lobe sub-cylindrical, semi-equal with parameres in length; parameres slender.

Female (Fig. 4B)**.** Body 8.5-10.2 mm long, 2.6-2.8 mm wide, clearly larger, stouter than male; antennae clearly shorter, barely reaching before base of hind angles, more weakly serrate; pronotum strongly convex, more distinctly arched at lateral margins.

Specimens examined. 1 female, Hongyeonam Dongmyeon, Hongcheon, GW. 30. V. 2009. T. M. Han (DNA 869); 1 female, Temple Dongbong-sa, Dongmyeon, Hongcheon, GW. 30. V. 2009. T. M. Han (DNA 871); 1 male, 1 female, Sangwangbong near Temple Bukdae-sa in Mt. Odae, Jinbu, Pyeongchang, GW. 23. V. 2007. S. U. Seong; 3 males, Temple Bukdae-sa in Mt. Odae, Jinbu, Pyeongchang, GW. 28. V. 2008. S. W. Park (DNA 2241-2244); 1 male, 1 female, ditto, 28. V. 2008. S. W. Park (DNA 2815-2816). 2 males, Mt. Hwaya, Gapyeong, GG. 4. VI. 2009. T. M. Han (DNA 2698-2699).

Distribution. Korea (new record) and Far East Russia.

Remarks. The detailed illustrations of the female reproductive organs were provided by Gurjeva (1989).

Genus *Prosternon* Latreille, 1834 모진방아벌레속(신칭)

Prosternon Latreille, 1834: 151. Type species: *Elater holosericeus* Olivier, 1790: 27 [= *Elater tessellatumm* Linnaeus, 1758: 406]

Synonyms. See Cate (2007: 180).

Diagnosis. Body small to medium; pubescence silky luster; antennae serrate, 3rd antennomere longer than 2nd segment; hind angles of pronotum with carina; pronotosternal sutures double; posterior margin of hypomeron nearly straight, not emarginate; elytral striae distinct.

Distribution. Holoarctic region, eight species in Palearctic,

six species in Nearctic (Gurjeva, 1984; Laibner, 2000; Cate, 2007).

***Prosternon aurichalceum* Stepanov, 1930 모진방아벌레** (Fig. 5)

Prosternon aurichalceum Stepanov, 1930: 90 (Khabarovsk in Far East Russia).

Korean records

Prosternon tessellatum Linnaeus: Miwa, 1933: 158 (Shuotsu = Jueul, HB in North Korea), misidentification.

Prosternon tessellatum Linnaeus, 1758: Miwa, 1934: 168 (Listed).

Prosternon tesselatum Linnaeus: Cho, 1934: 81 (Jueul, HB, North Korea), misidentification.

Prosternon tessellatum Linne: Mochizuki and Tsumekawa, 1937: 82 (Fauna: Mt. Soyo, GG).

Presternen [!] *tessellatum* Linne: Cho, 1957: 223 (Catalogue).

Prosternon tessellatum Linne: Kim, 1978: 112 (Distribution map: "모진방아벌레" named in Korean), misidentification.

Prosternon tessellatum (Linne): Shin and Yoon, 1994: 159 (Checklist).

Prosternon tessellatum (Linne): Kim, 1995: 166 (Fauna: Mt. Sobaek, GB).

Prosternon tesselatum [!] (Linne, 1758): Hua Li-zhong, 2002: 87 (Checklist).

Prosternon tessellatum (Linnaeus, 1758): Cate, 2007: 180 (Catalogue).

Diagnosis. Male (Fig. 5A) 13.1 mm long, 3.7 mm wide. Body cylindrical; color black with posterior margin of pronotum, elytra, antennae, legs, 6th and 7th sternite reddish brown; pubescence long, very dense, sub-recumbent, golden yellow hairs wholly covered. Antennae short, not exceeding beyond hind angles of pronotum, serrated from 4th to 10th. Pronotum subglobular, as long as wide, widest at middle, lacking shallow median longitudinal furrow; lateral sides well marginate, narrowly carinate, wholly visible in dorsal view, strongly arched, nearly parallel at base of hind angles; hind angles short, diverged posteriorly, apex truncate, with clearly ridged carina. Prosternum convex, with punctures umbilicate, barely exceeding to apex of hypomera; pronotosternal sutures straight, single, anterior portion simple, closed (Fig. 5B). Scutellum tongue shaped, elongate, narrow 1.4 times as long as wide, widest at anterior margin. Legs slender; hind tarsomeres simple, gradually decreased to 4th; 1st to 5th tarsomeres moderately pilose ventrally; claws simple. Elytra cylindrical, widest at two thirds; anterior edge convex. Aedeagus (Fig. 5D) slender, elongate, 2.6 times as long as wide; median lobe sub-cylindrical, gradually convergent to apex, then abruptly narrow at apex, apex roundly pointed, a little longer than parameres; parameres with antero-lateral expansions longitudinally elongate at apex and strongly sinuate at outer margin.

Female (Fig. 5C)**.** Body size 12.3-15.2 mm long, 3.2-4.1 mm wide, generally larger, stouter than male; antennae clearly shorter, reaching apex of hind angles, more weakly serrate, 11th antennomere, shorter, oval shaped, not cylindrical; lateral

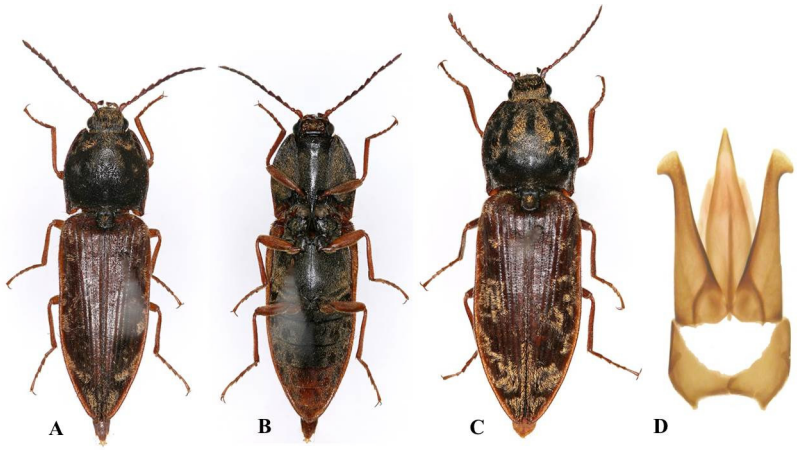

Fig. 5. *Prosternon aurichalceum* Stepanov, 1930 in Korea. A: male in dorsal view, B: male in ventral view, C: female in dorsal view. D: aedeagus.

margins of pronotum more distinctly arched and stout than male.

Specimens examined. 2 females, 1 male, Jueul, Gyeongseong-gun, HB. 14. VII. 1932. P. S. Cho, misidentification; 1 female, Mt. Chiak, Wonju-si, GW. 6. VI. 1983. H. K. Yun; 1 female, Mt. Gwanggyo, Suwon, GG. 11. V. 2003. J. C. Jeong; 1 male, 1 female, Songchu valley in Mt. Bukhan, Jangheung, Uiseongbu, GG. 9. VI. 2001. A. Y. Kim; 1 female, Mt. Bukhan, Dobong-gu, Seoul. 31. V. 1992. H. M. Choi; 1 female, ditto, 24. V. 1987. S. Y. Yoon; 1 female, ditto, 9. V. 1998. Y. S. Kim; 1 female, ditto, S. Y. Shin; 1 female, Mt. Surak, Nowon-gu, Seoul. 9. V. 1998. S. Y. Kim; 1 female, Mt. Dobong, Dobong-gu, Seoul. 23. V. 1990. H. J. Park; 1 female, Mt. Cheonggye, Seocho-gu, Seoul. 21. V. 2002. J. I. Kim; 1 female, ditto, 19. V. 1989. Y. J. Choi; 1 male, ditto, 1. VI. 1985. G. M. Kang; 1 female, ditto, 21. VI. 2002. M. R. Kim; 1 female, ditto, 15. V. 2002. S. S. Kim; 1 male, ditto, 21. V. 2002. S. H. Choi; 1 female, Mt. Cheonma, Pocheon, GG. 18. IV. 1983. G. S. Yun; 1 female, Goyang, GG. 19. VIII. 1992. J. H. Kang; 1 female, Mt. Chungryeong, Sudong-meyon, Namyangju, GG. 24. IV. 1993. J. Y. Im; 1 female, Namhansanseong, Seongnam, GG. 12. V. 1990. N. Y. Kim; 1 male, Changwoo-dong, Hanam-si, GG. 22. V. 2001. J. A. Baek; 1 female, Mt. Sobaek, Yeongju, GB. 13. VIII-15. X. 1999. D. S. Gu; 1 female, ditto, 28. V. 1999. J. H. Park; 1 female, ditto, H. J. Yoon; 1 female, ditto, 22. VII. 1974. J. I. Kim; 1 female, ditto, 7. VI. 1974. Bong Jin Lee; 1 female, Mungyeongsejae, GB. 26. V. 1996. E. Y. Kim; 1 female, Mt. Wolak, Jecheon, CB. 27. V. 1996. J. I. Kim; 1 male, Songyeon-ri, CheongCheon-myeon, Guisan-gun, CB. 23. VI. 1989. J. I. Kim; 1 female, Mt. Mansu, Boryeong-gun, CN. 12. VI. 1999. Tae Woo Kim; 1 male, Mt. Samdobong, Micheon-ri, Seolcheon-myeon, Muju, JB 13. V. 2005. H. C. Park; 1 female, Mt. Duckyou, Muju, JB. 3. VIII. 1993. S. R. Kim; 1 male, Simwon valley in Mt. Jiri, Gurae, JN. 23. V. 1999. T. M. Han; 1 female, Piagol valley in Mt. Jiri, Gurae, JN. 23. VI 1987. Y. A. Jang; 1 male, Mt. Baekun, Gwangyang. 5. VI. 1992. D. J. Kang.

Distribution. Korea (new record), E. China (Jilin), and Far East Russia.

Remarks. In Korea, *P. aurichalceum* has been incorrectly known as *P. tessellatum* since Miwa's record (1933: 158). He recorded *P. tessellatum* based on some materials, which were collected at Jueul, HB in North Korea by Cho at 14th July in 1932. The materials were examined in this study and reconfirmed as a misidentification of *P. aurichalceum*. Therefore, *P. aurichalceum* is new to Korea and *P. tesselatum* is suggested to be excluded from the Korean fauna.

Genus *Anostirus* Thomson, 1859 먹무늬방아벌레속(신칭)

Anostirus Thomson, 1859: 103. Type species: *Elater castaneus* Linnaeus, 1758: 405 (Europe).

Synonyms. See Kishii (1987) and Cate (2007).

Diagnosis. Body medium; frontal margin visible only above antennal sulci; antennae pectinate from 3rd to 10th in male, strongly serrated in female, 2nd antennomere small; pronotal pubescence conspicuously dense with a pair of whirlpool-like taglock (subgenus *Anostirus* s. str.), or sparse, long, erect hairs (subgenus *Ipostirus*); hind angle short, truncate at apex, without carina; pronotopleural sutures double at base, then becoming single anteriorly (Kishii, 1987; Platia, 1994).

***Anostirus* (*Anostirus*) *castaneus castaneus* (Linnaeus, 1758) 검은먹무늬방아벌레(신칭)** (Fig. 6)

Elater castaneus Linnaeus, 1758: 405. Type locality: Europe.

Elater flavopectinicornis DeGeer, 1774: 153.

Diagnosis. Male (No 2540; Fig. 6) 7.6 mm long, 2.9 mm wide. Body cylindrical; color black with elytra pale yellow except posterior apex; pubescence long, dense, recumbent, golden yellow hairs wholly covered. Antennae short, not exceeding beyond hind angles of pronotum, pectinate from 3rd to 10th; 2nd smallest, globular; 3rd triangular, 2.5 times as long as 2nd, as long as 4th. Pronotum subquadrate, longer than wide, widest at apex of hind angle; punctures simple, circular, large, dense wholly; surface smooth; lateral margins entirely, distinctly carinate, strongly arched, nearly parallel at base of hind angles; hind angles short, diverged posteriorly, apex truncate, with clearly ridged carina. Prosternum convex; surface smooth, with punctures umbilicate, barely exceeding to apex of hypomera; pronotosternal sutures straight, single, anterior portion simple, closed. Scutellum tongue shaped, elongate, widest at anterior margin; surface flat, coarse, puncture small, simple, very dense, with dense long hairs. Legs slender; hind tarsomeres simple, gradually decreased to 4th; 1st to 5th moderately pilose ventrally; claws simple. Elytra

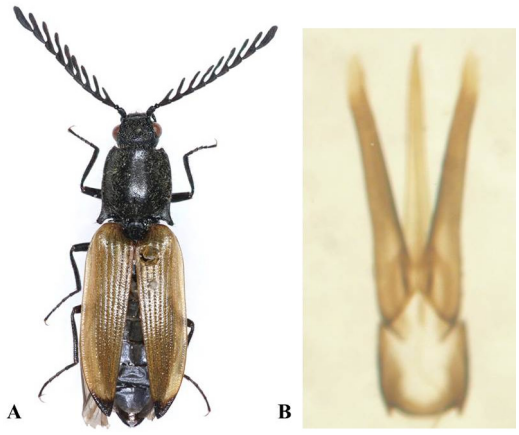

Fig. 6. *Anostirus* (*Anostrius*) *castaneus castaneus* (Linnaeus, 1758) in Korea. A: male in dorsal, B: aedeagus.

cylindrical, slightly wider than width of between apices of hind angle of pronotum, widest at two thirds; sutural elevated; striae distinctly punctuate as circular, finely furrowed; strial intervals uniform shape. Aedeagus (Fig. 6B) slender, elongate, 3.1 times as long as wide; median lobe cylindrical, gradually convergent to apex, then abruptly narrow at apex, apex roundly pointed, a little longer than parameres; parameres slender, cylindrical, simple at apex, lacking antero-lateral expansions, lateral outer-margins parallel, inner-margins slightly arched.

Female. Unavailable in this study.

Specimen examined. 1 male, Gangyeong-ri, Jinbu, Pyeong chang-gun, GW. 3. VI. 2005. H. K. Choi (No. 2540).

Distribution. Europe to Far East Russia: new to Korea.

Remarks. *Anostirus castaneus* is separated by two subspecies, *A*. *castaneus castaneus* and and *A. castaneus japonicus* Kishii and Ôhira, 1956. The nominotypical subspecies has very wide distribution from Euro-siberian region to Korea. *A*. *castaneus japonicu*s is endemic to Japan.

Acknowledgements

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 (NIBR201401203, 201501203).

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