

First records of the genera *Tillus* and *Elasmocyldrus* (Coleoptera: Cleridae) in Korea, with *Tillus elongatus* (Linnaeus, 1758) and *Elasmocyldrus takedaorum* Murakami and Gerstmeier, 2020

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Abstract

Two genera of the family Cleridae, *Tillus Olivier*, 1790 and *Elasmocyldrus Corporaal*, 1939 and two species, *Tillus elongatus* (Linnaeus, 1758) and *Elasmocyldrus takedaorum* Murakami and Gerstmeier, 2020 are reported for the first time in Korea. Illustrations of a habitus, diagnostic characteristics of the genus and species are presented with key to the Korean genera of subfamily Tillinae.

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Introduction

Cleridae is a family of predatory beetles with a cosmopolitan distribution (Corporaal, 1950; Gerstmeier and Weiss, 2009; Gerstmeier and Eberle, 2011; Opitz, 2010; Burke and Zolnerowich, 2017), but primarily in tropical and sub-tropical areas (Zappi and Pantaleoni, 2010). The checkered beetles (Cleridae and Thanerocleridae) contain approximately 3600 described species which involve 303 genera (Corporaal, 1950; Gerstmeier, 2000; Zappi and Pantaleoni, 2010; Gerstmeier and Eberle, 2011) and about 350 species in the Palearctic Region (Löbl *et al.*, 2007).

The genus *Tillus* Olivier, 1790 of the subfamily Tillinae is the common group comprising of about 42 species worldwide (Corporaal, 1950) and 12 species in the - Palearctic Regions

(Löbl *et al.*, 2007). *Tillus* is defined by the following characteristics: head broader than apex of pronotum; pronotum cylindrical, constricted apically and basally, sinuate in middle; eyes finely faceted; antennae distinctly serrate, pectinate or fan-like; elytra elongate, bulbously broader toward apex (Gerstmeier, 1998).

The genus *Elasmocyldrus* Corporaal, 1939 is very small group comprising of only two species, *Elasmocyldrus tricolor* (Corporaal, 1926) known from India and Myanmar (Corporaal, 1926; Faisal *et al.*, 2014), and *Elasmocyldrus takedaorum* Murakami and Gerstmeier, 2020 (Murakami and Gerstmeier, 2020) from Japan. *Elasmocyldrus* is defined by the following characteristics: antennomere 11 elongate, antennomeres 5-10 acutely serrate; apical 1/3 of pronotum transversely covered with fine yellowish pubescence (Murakami and Gerstmeier, 2020).

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Figs. 1-2. Adults of Korean Cleridae. 1. *Tillus elongatus* (a, dorsal; b, ventral); 2. *Elasmocylidrus takedaorum* (a, dorsal; b, ventral; c, head and margin of clypeus; d, antenna).

25 species in 14 genera belonging to the family Cleridae were previously recorded in Korea (Kim *et al.*, 1994; Hong and Lee, 2014; Jung, 2014; Lim *et al.*, 2015). In this paper, two genera, *Tillus* and *Elasmocylidrus* and two species, *Tillus elongatus* (Linnaeus, 1758) and *Elasmocylidrus takedaorum* Murakami and Gerstmeier, 2020 are reported for the first time in Korea.

Materials and Methods

Materials for this study were collected from April to October between 2007 and 2020. Samples for this study were collected

from logged area in the forest and by flight intercept traps, installed in the mixed forest and near valley.

The detailed morphological characters were carefully examined under stereomicroscopy (M50, DM2500, Leica, Germany). Photographs for adults were captured by using digital camera (Canon EOS 60D, Japan). Several taken layers of pictures were stacked by the software (Zerene Stacker 1.04, Zerene Systems, USA).

Taxonomy

Family Cleridae Latreille, 1802 개미불이과
Subfamily Tillinae Leach, 1815 날개개미불이아과

Key to the Korean genera of subfamily Tillinae

(modified from Gerstmeier, 1998)

1. Head large and noticeably long; a ridge-like bulge stretching posteriorly behind eyes; labrum not visible, hidden by clypeus
 *Elasmocylidrus*
 - Head normal size, not noticeably long; without ridge-like bulge stretching behind eyes; labrum visible 2
2. Elytra elongate, bulbously broader posteriorly; pronotum cylindrical and long, constricted apically and basally, sinuate in middle 3
 - Elytra compact, more or less parallel-sided; more or less strongly constricted posteriorly *Tilloidea*
3. Eyes coarsely faceted; elytral base not near to base of pronotum *Falsotillus*
 - Eyes finely faceted; elytral base closely near to base of pronotum *Tillus*

Genus *Tillus* A. G. Olivier, 1790 길쭉개미붙이속(신칭)

Tillus A. G. Olivier, 1790: no 22: 3.

Type species: *Chrysomela elongata* Linnaeus, 1758.

Diagnosis

Head broader than apex of pronotum. Eyes finely faceted. Apical maxillary palpomere cylindrical, broadly rounded apically. Apical labial palpomere large and securiform. Antennae of average length, protruding distinctly beyond the base of pronotum; distinctly serrated, pectinate or fan-like, from 4th antennomere to apex. Pronotum a little longer than broad, cylindrical, constricted apically and basally. Elytra compact to elongate, bulbously broader towards apex, striae-punctate (Gerstmeier, 1998).

Tillus elongatus (Linnaeus, 1758) 검은길쭉개미붙이(신칭)(Fig. 1)

Chrysomela elongatus Linnaeus, 1758: 377.

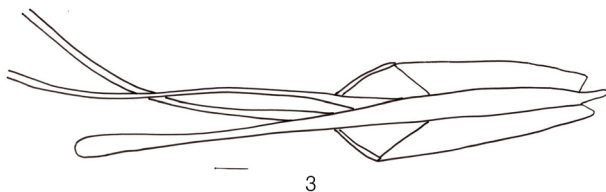


Fig. 3. Genitalia (male; scale bar = 0.1mm). 3. *Elasmocylidrus takedaorum* (tegmen and phallus).

Diagnosis. Male.

Body length 9 mm. Body narrow, elongate and almost cylindrical; convex dorsally; body color bluish black; dorsum covered with relatively erect, long, dense and grayish black hairs. Head wider than apex of pronotum; nearly smooth, only with diffuse and very tiny punctures; eyes large, finely faceted, strongly protruding outward; weakly emarginate at antennal insertions; ocular distance about 1.7 times wider than eye diameter; antennae relatively long, reaching to basal 1/6 of elytra; antennomeres 4-11 strongly serrated, without club; apical antennomere fusiform, strongly tapered apically; apical maxillary palpomere cylindrical, broadly rounded apically; apical labial palpomere large and securiform. Pronotum glossy, almost smooth or sometimes with shallow, straight transverse wrinkles in median part; a little longer than wide, most widest at middle; cylindrical, constricted apically and basally, more or less sinuate at middle. Elytra uniformly colour, bluish black, but rarely with light transverse spot in middle; oblong, subparallel-sided, weakly bulbous toward apex and sutural angles rounded; striae-punctate, with ten conspicuously engraved rows of punctures, extending nearly to apex; striae punctures distinctive, regular, large and gradually weak near apex; intervals weakly convex, with tiny and sparse punctures. All femora of legs thick and stout; all tarsomeres visible dorsally, tarsomeres 1-4 with lobes ventrally, especially third and fourth lobes wider than others; claws deeply divided into two parts, basal part with blunt tooth.

Sexual characteristics: Male: Pronotum black. Female: Pronotum sometimes light red (Gerstmeier, 1998).

Specimens examined: 1♂, Dutasan (Mountain), Shingiri, Jinbu-myeon, Pyeongchang-gun, Gangwon-do, 18.vii.2018, J.B. Seung and B.H. Jung (from logged area in the forest).

Distribution: Korea (New Record), Russia (Far East), Caucasus, Kazakhstan, Iran (East Azarbaijan), Europe.

Genus *Elasmocylidrus* Corporaal, 1939 큰머리개미붙이속(신칭)

Elasmocylidrus Corporaal, 1939: 18.

Type species: *Cylidrus tricolor* Corporaal, 1926.

Diagnosis.

Body elongate. Head large and long, covered with elongate punctures on vertex; eyes finely faceted, not protruding; a ridge-like, coarsely wrinkled bulge stretching posteriorly behind

eyes. Mandibles with long apical dens. Labrum bilobed, almost hidden beneath clypeus. Pronotum covered with fine and diffuse punctures before transverse depression, with dense and yellowish pubescence except for the central portion. Prosternum smooth. Prosternal process long, dilated distally, connected with hypomere. Procoxal cavities closed (Murakami and Gerstmeier, 2020).

Elasmocylidrus takedaorum Murakami and Gerstmeier, 2020
큰머리개미붙이(신칭) (Figs. 2, 3)

Diagnosis

Body length 8.0–9.0 mm. Body narrow, almost cylindrical and elongate, strongly convex dorsally, shiny and glabrous; body color mostly black; basal 1/2 of elytra, legs reddish; middle marking bands of elytra yellowish white; tibiae and tarsi reddish brown; dorsum mostly covered with relatively suberect black hairs; clypeus, middle of pronotum, basal half of pronotal sides, basal margin and middle of elytra and legs covered with whitish yellow decumbent hairs. Head long, weakly wider than basal part of pronotum, with elongate and coarse punctures; eyes finely faceted, not protruding; a ridge-like, coarsely wrinkled bulge stretching posteriorly behind eyes; ocular distance about 2.5 times wider than eye diameter; emarginate at antennal insertions; antennae not reaching to base of pronotum; antennomeres 6-11 strongly serrate inwardly, without club, apical antennomere fusiform; mandibles large, with long apical dens; apical maxillary palpomere slightly curved cylindrical; apical labial palpomere long and conical. Pronotum longer than wide, most widest before apex; constricted at basal 1/3, gradually narrowed basally; covered mostly with fine setigerous punctures, but with dense and sparse punctures at apical 1/10 part. Elytra oblong, subparallel-sided, most widest before apex; not striate-punctate; covered with fine and sparse punctures. All femora of legs thick and stout, profemora stouter than meso- and metafemora; metatibiae weakly curved inwardly; all tarsomeres visible dorsally, tarsomeres 1-4 with lobes ventrally, especially third and fourth lobes wider than others; claws bidentate, with an additional stout basal denticle.

Sexual characteristics: Female: Abdominal ventrites 3-5 without fine setigerous punctures at middle; ventrite 5 almost straight at apical margin; pygidium rounded at apical margin; pygidial struts short (Murakami and Gerstmeier, 2020).

Specimens examined: 1♂, Near chungju lifelong education institute, Bokdai-dong, Heungduk-gu, Chungju-si, Chungcheongbuk-do, 24.vi.2007, B.H. Jung; 1♂, Near Sanasa (Temple), Okcheon-myeon, Yangpyeong-gun, Gyeonggi-do, 20.vi.-13.vii.2020, J.B. Seung and B.H. Jung (F.I.T.).

Distribution: Korea (New Record), Japan.

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References

- Burke A, Zolnerowich G (2017) A taxonomic revision of the subfamily Tillinae Leach sensu lato (Coleoptera, Cleridae) in the New World. *ZooKeys* 179, 75–157. Corporaal JB (1926) New species of Cleridae from British India and Burma. *Indian For Rec* 12, 209–216.
- Corporaal JB (1939) Some Cleridae from India, Burma and Ceylon. *Indian For Rec* 2(6), 17–39.
- Corporaal JB (1950) Cleridae; in *Coleopterorum Catalogus, Supplementa edita a, pars 23: (Editio secunda.)*, Hincks WD (eds.), pp. 373, W. Junk, 's-Gravenhage.
- Faisal M, Singh S, Yousuf M (2014) Cleridae (Insecta: Coleoptera) type collection at National Forest Insect Collection (NFIC), Forest Research Institute, Dehradun (India). *Zootaxa* 3846(1), 105–18.
- Gerstmeier R (1998) Checkered Beetles. Illustrated Key to the Cleridae and Thanerocleridae of the Western Palaearctic. pp. 241. Margraf Verlag, Weikersheim, Germany.
- Gerstmeier R (2000) Aktueller Stand der Buntkäfer-Forschung (Coleoptera, Cleridae, Thanerocleridae). *Entomol Basiliensia* 22, 169–178.
- Gerstmeier R, Weiss I (2009) Revision of the genera *Diplocladus* Fairmaire, 1885 and *Strotocera* Schenckling, 1902 (Coleoptera: Cleridae: Tillinae). *Zootaxa* 2242, 1–54. <https://doi.org/10.3897/zookeys.92.1157>.
- Gerstmeier R, Eberle J (2011) Definition and Revision of the *Orthrius*-group of genera (Coleoptera, Cleridae, Clerinae). *ZooKeys* 92, 35–60.
- Hong KJ and Lee SH (2014) National List of Species of Korean Insects.

- (Coleoptera II). pp. 657, National Institute of Biological Resources, Incheon.
- Jung BH (2014) Insect Fauna of Korea 12, 19. Cleridae (Coleoptera: Cleroidea). Flora and Fauna of Korea, pp. 59, National Institute of Biological Resources Press, Korea.
- Kim JI, Kwon YJ, Paik JC, Lee SM, Ahn SL, Park HC, *et al.* (1994) Order 23. Coleoptera; in Check List of Insects from Korea. The Entomological Society of Korea and Korean Society of Applied Entomology (eds.), pp. 117–214, Kon-Kuk University Press, Seoul.
- Latreille PA (1802) Histoire Naturelle, générale et particulière des Crustacés et des Insectes. xii +pp. 13–467 + (1). Tome troisième. F. Dufart, Paris.
- Leach WE (1815) Entomology; in Edinburgh Encyclopaedia 9. Brewster D (ed.), pp. 57–172.
- Lim J, Nomura S, Lee S, Han Y, Lee B (2015) Record of *Coptoclerus* Chapin from Korea, with new species and a note on the distribution of the genus (Coleoptera: Cleridae). *Orient Insects* 49(3-4), 223–232.
- Linnaeus C (1758) *Systema Naturae per Regna Tria Naturae, secundum Classed, Ordines, Genera, Species, cum Characteribus, Differentiis, synonymis, Locis*. Editio Decima, Reformata. Tomus I. Laurentii Salvii, pp. 823, Stockholm.
- Löbl I, Rolčik J, KolibáčR, Gerstmeier R (2007) Family Cleridae Latreille, 1802. pp. 367–384; in *Catalogue of Palaearctic Coleoptera*. Volume 4. Elateroidea, Derodontoidea, Bostrichoidea, Lymexyloidea, Cleroidea, Cucujoidea. Löbl I and Smetana A (eds.). pp. 935 Apollo Books, Stenstrup, Denmark.
- Murakami H, Gerstmeier R (2020) A New Species of the Genus *Elasmocylidrus* Corporaal, 1939 (Cleridae: Tillinae) from Japan, with New Records of *Elasmocylidrus tricolor*. *Jpn J Syst Entomol* 26(2), 281–285.
- Olivier AG (1790) *Entomologie, ou histoire naturelle des insectes, avec caractères généraux et spécifiques, leur description, leur synonymie, et leur figure enluminae*. Coléoptères 2, Ips. pp. 18. Paris.
- Opitz W (2010) Classification, natural history, phylogeny, and subfamily composition of the Cleridae and generic content of the subfamilies. *Entomol Basiliensia Collect Frey* 32, 31–128.
- Zappi I, Pantaleoni RA (2010) *Opilo orocastaneus* n. sp.: a new checkered beetle from Sardinia (Coleoptera Cleridae). *Bull Insectology* 63(2), 225–231.