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Muganryus susumui gen. et sp. nov. (Coleoptera, Leiodidae, Catopocerinae) from Hokkaido, a Beetle Subfamily New for the Japanese Fauna

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Abstract *Muganryus susumui* gen. et sp. nov. is described from the vicinity of Jôzankei, central Hokkaido, Japan. This peculiar new anophtalmic and apterous genus and species is assigned to the leiodid subfamily Catopocerinae. Relevant morphological characters of the new species are illustrated with color photos and line drawings. Brief notes are made on its habitat, feeding habit and phenology.

Introduction

A small anophtalmic leiodid was initially collected from an upper hypogean zone near the head of a forested narrow stream in the vicinity of Jôzankei, central Hokkaido by Susumu Takahashi. Subsequent visits to the same locality in the summer of 2017 resulted in additional specimens collected in baited soil traps (see Nishikawa *et al*., 2012). Specimens were dissected and agree with the current concept of the leiodid subfamily Catopocerinae and concluded to be a new genus and species belonging to the tribe Catopocerini.

The monophyly of the Catopocerinae consisting of two tribes (Glacicavicolini and Catopocerini) has not been clearly defined and no unique synapomorphies have been identified (Newton, 1998), and it may be a polyphyletic group based on pretarsal characters (Gnaspini *et al*., 2017 b). Perreau and Růžička (2007) identified four potential synapomorphies as evidence to transfer the Far Eastern genus *Perkovskius* Lafer, 1989 from Leiodinae (Pseudoliodini) to Catopocerini: prosternum is long in front of the procoxae, the widely separated metacoxae, the invagination of the abdominal segment VIII and the presence of an expansion on the anterior edge of the male sternite 8.

The subfamily contains four genera. The genus *Glacicavicola* Westcott, 1968 (Glacicavicolini) is monotypic, and contains a single cave-inhabiting species in North America (Westcott, 1968; Newton, 1998; Peck & Cook, 2011). The genus *Catopocerus* Motschulsky, 1870 (Catopocerini) was currently split into *Catopocerus* and *Pinodytes* Horn, 1880, with 47 species in total and correspond to members occurring east and west of the Mississippi River, North America (Peck, 1975; Peck & Cook, 2011; Peck & Newton, 2017). The East Palaearctic Region includes *Catopocerus kovalevi* Perkovsky, 1989 that was described from Primorsky Krai, the Russian Far East, and was subsequently transferred to *Perkovskius* (Perkovsky, 2011) and now includes three congeners (Perreau, 2015). The *Catopocerus* species recorded from Kanagawa Prefecture, central Japan (Hirano, 2004), was misidentified and has been subsequently described as *Typhlocolenis fusca* Hoshina, 2008 (Leiodinae, Pseudoliodini). An undescribed genus is present in Chile and, if the group is assumed to be monophyletic, the world distribution suggests that the subfamily arose through ancient vicariance (Newton, 1985, 1998; Fig. 1). In this paper the first bona fide representative of Catopocerinae from Japan is described. A diagnosis for the subfamily is included.

Material and methods

The specimens examined in this study are deposited in the following museums and collections:

HMS: Hokkaido Museum, Sapporo, Japan (Shigehisa HORI);

HUM: Hokkaido University Museum, Sapporo, Japan (Masahiro ÔHARA);

MNIC: private collection of Masaaki NISHIKAWA, Ebina, Japan;

NSMT: National Museum of Nature and Science, Tsukuba, Japan (Shûhei Nomura);

NZAC: Landcare Research, New Zealand Arthropod Collection, Auckland, New Zealand (R. A. B. LESCHEN);

STC: private collection of Susumu TAKAHASHI, Sapporo, Japan.

Exact label data are cited into double quotation marks (“ ”) only for type specimens examined; separate label lines are indicated by a slash (/) and separate labels by a double slash (//). Author’ remarks and additions are placed in square brackets. Coordinates of localities were specified using GSI Maps (Geospatial Information Authority of Japan, 2013; http://maps.gsi.go.jp).

Technical method for examining morphological details of specimens, and photographing method generally followed those described in NISHIKAWA (2017). For observing gut contents of adults, the gut of a specimen is soaked in dehydrated ethanol, and mounted it on a micro slide with Euparal, covered with another micro slide, and then pressed by tweezers to liberate the contents.

Comparative material:

Catopocerus nikei BROWN, 1 ♀, USA: Virginia, Shenandoah Nat’ Park, Lewis Mt., 2000’ elev., 10.VI.1967, S. PECK leg. (litter, Berlese #53) (MNIC).

Perkovskius zerchei PERREAU et RŮŽIČKA, 1 ♀, Russia: Far East, Primorsky territory, Lazovsky Reserve, Urochishche Amerika, 24.V.2000, Yu. SUNDUKOV leg. (MNIC).

Pinodytes cappizzi (HATCH), 1 ♂, USA: Oregon, Coos County, Sunset Beach area, 1.VI.1983, ex A. ALLEN (MNIC); 1 ♂, USA: Oregon, Mary’ Peak, Benton County, Oregon Coast Range, 3.VI.1983, A. ALLEN leg. (MNIC).

Pinodytes pusio (HORN), 1 ♀, USA: Kneeland, Humboldt Co., Car., 20.I.1975, T. R. HAIG leg. (MNIC).

The following abbreviations are used for the measurements in millimeters: AL — length of the median lobe of male genitalia measured from the anterior edge of dorsal side to the apex; HL — length of head measured from the apical edge of clypeus to occipital end; HW — greatest width of head; PL — maximum length of pronotum; PW — greatest width of pronotum; EL — length of elytron measured from the shoulder to the apex; EW — greatest width of elytra; M — arithmetic mean. Body length of the specimen is the total of HL+PL+EL.

Taxonomy

Subfamily **Catopocerinae** HATCH, 1927

[Japanese name: Muganchibishidemushi-aka]

Catopocerini HATCH, 1927: 4. [see NEWTON & THAYER (1992) or PECK & COOK (2011).]
Type genus: *Catopocerus* MOTSCHULSKY, 1870.
Pindodytini HORN, 1880: 248. [see NEWTON & THAYER (1992) or PECK & COOK (2011).]
Type genus: *Pinodytes* HORN, 1880.

Diagnosis. The adult characters of Catopocerinae diagnosed by NEWTON (1998), PERREAU and RŮŽIČKA (2007), and PECK and COOK (2011) can be summarized as follows (does not include the un-

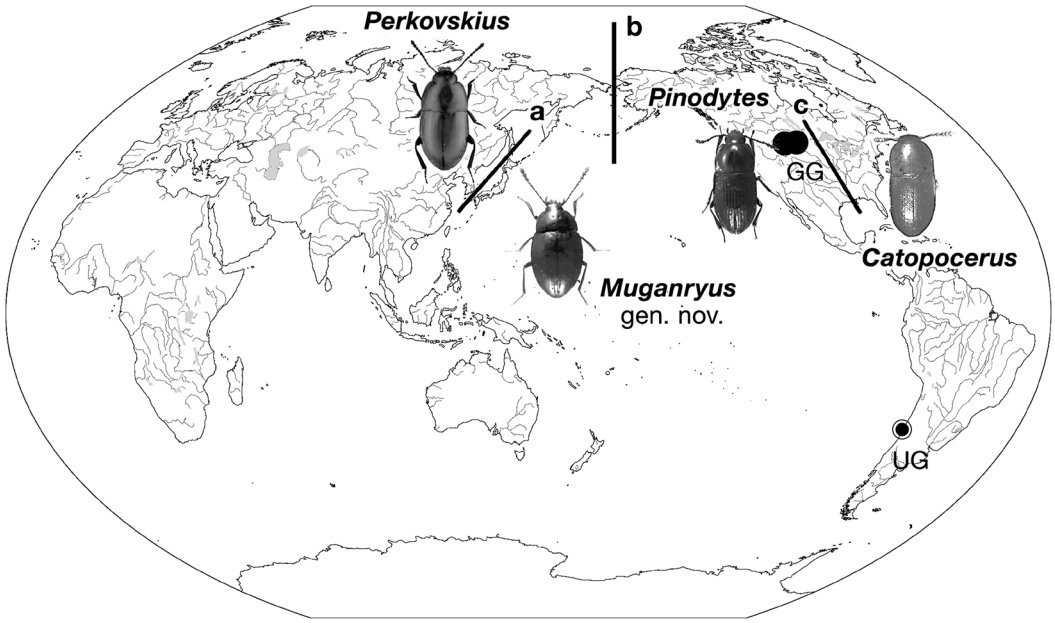

Fig. 1. Schematic representation of the distribution of the genera belonging to Catopocerinae in the world. —— a–c, Possible present barriers in the Catopocerini genera: a, the Sea of Japan; b, the Baring Strait (Peck & Cook, 2011); c, the Mississippi River (Peck & Cook, 2011). GG: *Glacicavicola*, UG; undescribed genus.

described genus from Chile): anophtalmic and apterous leiodids; dorsum generally glabrous (Fig. 2); head without an occipital carina or crest, relatively flattened and broad; antennal insertions concealed in dorsal view (except *Glacicavicola*) (Fig. 3); antennae 11-segmented, antennomere VIII smaller than antennomeres IX–X and without a periarticular gutter or internal vesicles (except for the *Pinodytes pusio* species-group having internal vesicles in antennomeres IX–X) (Fig. 3); cervical sclerites present (Fig. 3); procoxal cavities open behind; prosternum elongate, longer than the procoxal cavities; postcoxal process of pronotum triangular (Fig. 18); mesocoxal cavities separated by meso- and metaventral processes; metacoxae widely separated (Fig. 4); tarsal formula 5-5-5 (except for *Perkovskius* to be 5-5-3 in the male and 4-4-3 in the female); abdomen with five visible ventrites in both sexes; abdominal intersegmental membranes short and without minute sclerites; abdominal segment VIII invaginated into VII; and abdominal ventrite 8 with an apophysis on the anterior margin in both sexes (Figs. 8–9). In addition, protarsomeres have tenent setae in the male: conical and/or spatulate type in Catopocerini (Fig. 5) and discoidal type in Glacicavicolini (Gnaspini *et al*., 2017 b); the pretarsus has a wide and symmetric empodium bearing a pair of projections over the articulation with the empodial setae in *Catopocerus* and *Glacicavicola* (Gnaspini *et al*., 2017 a).

Distribution. Nearctic, East Palearctic, Chile (undescribed).

Comment on distribution. The generic distributions do not overlap (Fig. 1) and there are no fossil records of the subfamily. However, a late Jurassic fossil *Mesagyrtoides fulvus* Perkovsky assigned to Leiodinae from Mongolia may be sister taxon to Catopocerinae (Perkovsky, 1999): if so, the origin of this subfamily is expected to be ancient (Peck & Cook, 2011). It is possible that the discontinuity in geographic distributions of the genera were the result of large-scale tectonic movements and worldwide climatic fluctuations, and may have affected the Japanese fauna (see Tojo *et al*., 2017). A phylogenetic study of this group is needed to address this biogeographical hypothesis.

Tribe **Catopocerini** HATCH, 1927

Muganryus NISHIKAWA, gen. nov.

[Japanese name: Muganchibishidemushi-zoku]

(Figs. 2–15 & 17–21)

Type species: *Muganryus susumui* gen. et sp. nov.

Diagnosis. The new genus is assigned to the tribe Catopocerini based on the following characteristics: Body form ovoid (Fig. 2); epistomal suture with a median stem (Fig. 3); labrum entire (Fig. 3); gular sutures widely separated; pronotum transverse, laterally margined, subequal to basal width of elytra (Fig. 2); legs relatively short; and abdominal ventrites free (NEWTON, 1998, in part; PECK & COOK, 2011, in part).

The new genus can be diagnosed by the following characteristics: Antennomeres without serrations (Fig. 3); elytra fused; mesoventrite carinate (Fig. 4); metaventrite without median carina (Fig. 4); protibiae with fine spines on outer margins only in the female (Fig. 21); tarsal formula 5-5-5 in both sexes; male protarsomeres slightly expanded apicad, ventrally with spatulate tenent setae (Fig. 5); mesotarsomeres without tenent setae; paired claws large, asymmetrically falciform in both sexes (Figs. 5–7); first visible abdominal ventrite (= sternite 8) smooth (Fig. 4); male abdominal ventrite 8 with a long apophysis, anchor-shaped as a whole (Figs. 8); genital segment with spiculum gastrale (Fig. 9); parameres of male genitalia continuous with basal piece, each with paired preapical setae (Figs. 10–12); and spermatheca tubular (Fig. 14).

Etymology. The new genus name is derived from the "Mugan-ryu", which was a school of martial arts for the samurai and had been mastered by the technical and mental training based on the sense of blindness. The gender is masculine.

Distribution. Japan: Hokkaido.

Remarks. Despite the geographic proximity of Hokkaido and Primorsky Krai, *Muganryus* is more closely related to the North American *Pinodytes* rather than *Perkovskius* based on the sharing of the following characters: antennomeres are simple; the abdominal ventrite 3 is smooth; spiculum gastrale is present; parameres are continuous with basal piece, with paired preapical setae; and anterior apophysis is present on the male abdominal sternite 8. But, *Muganryus* can be differentiated from *Pinodytes* as well as *Catopocerus* by the metasternum without carina, though this character state is shared with *Perkovskius* (see PERREAU & RŮŽIČKA, 2007).

The shape of the tarsal claws is variable in Leiodidae, but most of the members have slender and arcuate or uncinate claws according to SEM micrographs shown by ANTUNES-CARVALHO and GNASPINI (2016), and GNASPINI *et al*. (2017 a). The falciform tarsal claws of *Muganryus* are unique within Catopocerini.

Figs. 2–16. Morphological details and gut contents of *Muganryus susumui* gen. et sp. nov. from Motoyama, near Jôzankei, Hokkaido —— 2, Habitus, female; 3, head and its appendages, dorsal view, male; 4, meso- and metaventrites and the basal part of abdomen, leftward view, male; 5, right protarsus, ventral view, male; 6, paired claws and the apical part of left terminal protarsomere, male; 7, left protarsomeres, ventral view, female; 8, abdominal ventrite 8, male; 9, genital segment and abdominal segment VIII, male; 10, aedeagus, dorsal view, holotype; 11, same, close up of the apices of median lobe and parameres; 12, same, lateral view; 13, abdominal ventrite 8, female; 14, spermatheca, (tone inverted); 15, female genitalia, ventral view; 16, gut contents. —— sg: Spiculum gastrale; sv: spiculum ventral. Scales: 0.025 mm for 6; 0.1 mm for 5, 7–15; 0.5 mm for 2–4.


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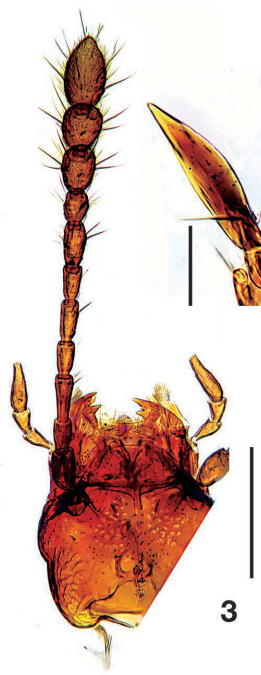
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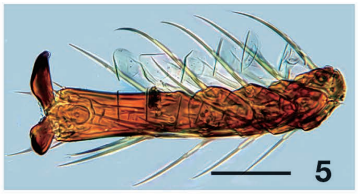
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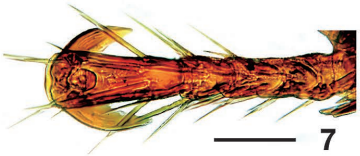
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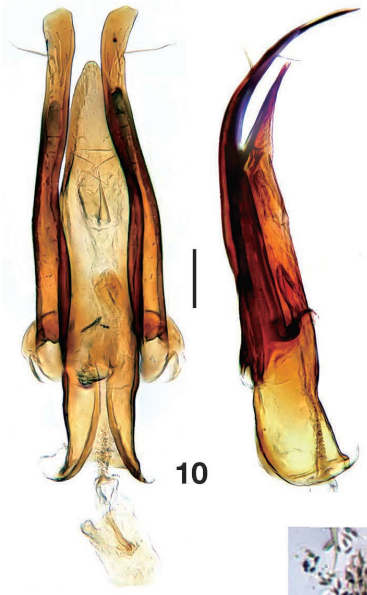
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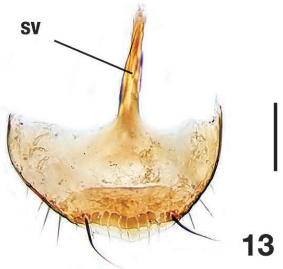
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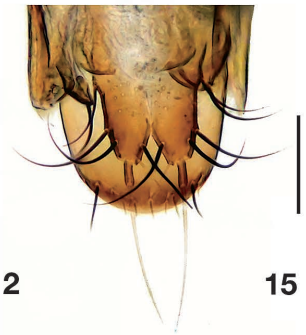
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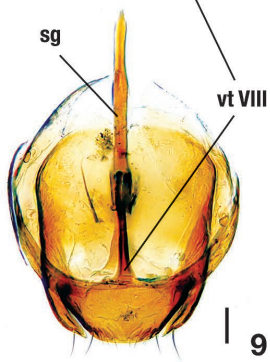
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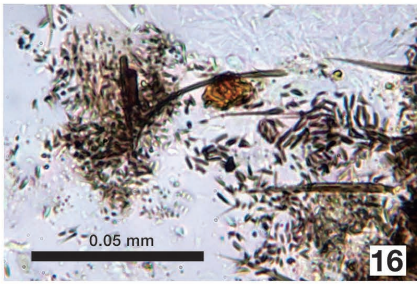
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At first glance, this new genus is similar to the anophtalmic genus *Typhlocolenis* HOSHINA, 2008 (Leiodinae, Pseudoliodini) known from caves and litter layers of Honshu, Japan, but can be clearly distinguished from the latter by the tarsal formula to be 5-5-5 in both sexes (that of the latter is 5-4-4), other than by having open procoxal cavities (generally closed for Pseudoliodini: NEWTON, 1998) and five visible abdominal ventrites (six for Pseudoliodini: PERREAU & RŮŽIČKA, 2007).

Muganryus susumui NISHIKAWA, gen. et sp. nov.

[Japanese name: Kohaku-muganchibishidemushi]

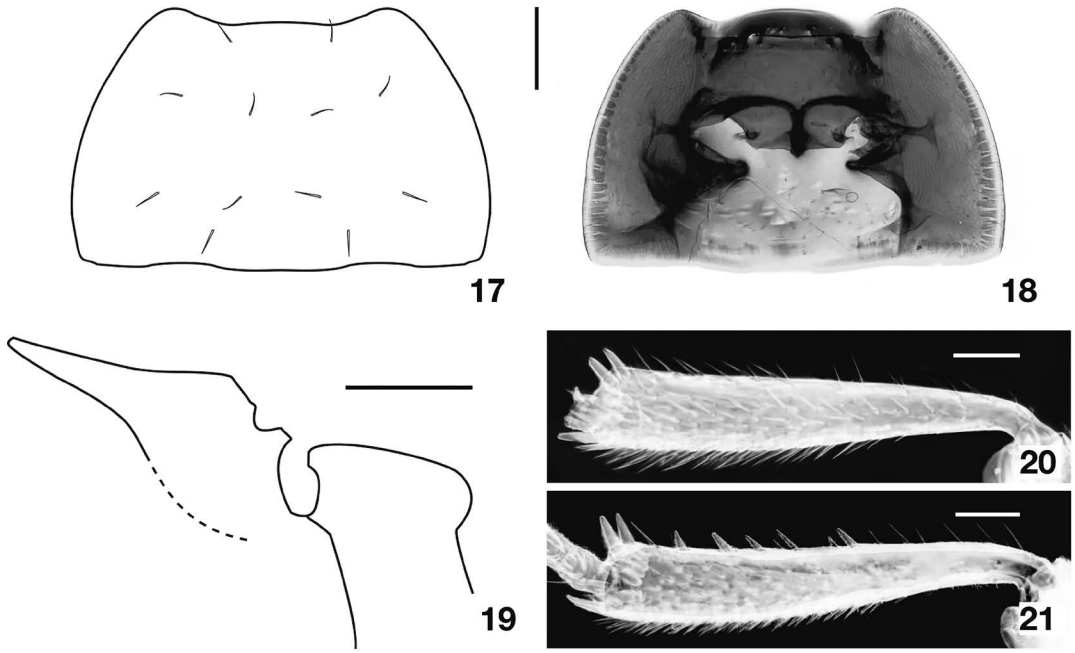
(Figs. 2–15 & 17–21)

Type series. Holotype: ♂, "Motoyama, / [ca. 42.97˚N 141.03˚E] / near Jôzankei, Minami-ku, / Sapporo-shi, // central Hokkaido, / North Japan, / 28.V.– 4.VI.2017 (soil trap), Susumu TAKAHASHI leg. // HOLOTYPE / *Muganryus susumui* gen. et sp. nov. / Det. M. NISHIKAWA, 2017 / MNIC126566Ctpo4L♂" [head and pronotum, meso- and metathoraces and elytra, and abdomen are removed; genital apparatus on micro slide] (HUM). Paratypes: 1 ♀, "2008.5.28 / 札幌市南区豊羽鉱山下 [Below Toyoha Mine, Minami-ku, Sapporo-shi = the same place as for the holotype] / 豊平川水系白井川支流 [Tributary of the Shiraigawa River in the Toyohiragawa River system] / Leg. S[usumu]. TAKAHASHI" (MNIC); 6 ♂♂, 19 ♀♀, same data as for the holotype except: 28.V.–4.VI.2017, 4.–11.VI.2017, 11.–19.VI.2017, 19.–25.VI.2017, 25.VI.–9.VII.2017, 16.–23. VII. 2017, 23.–31.VII.2017, or 31.VII.–21.VIII.2017 (HMS, HUM, MNIC, NSMT, NZAC & STC) [dried specimens except for a male paratype mounted on slides with Euparal after dissection and a female one is in alcohol]; body parts for ca. 3 exs., same data as for the holotype except: 4.VI.–21.VIII.2017 (decayed onion trap), M. NISHIKAWA leg. [all on a small card bord] (MNIC).

Description. M a l e. Length 2.43–2.51 (M 2.47) mm (2.43 mm in the holotype), width 1.18–1.25 (M 1.20) mm. Body dimensions: HL 0.33–0.35, HW 0.45–0.48, PL 0.58–0.63, PW 1.0–1.05, EL 1.5–1.55 and EW 1.18–1.25. Habitus ovoid, convex above. Color brown to blackish brown, shining; mouth-parts, antennae and legs paler; a pair of dark tentorial maculations arranged near pronotal base.

Head (Fig. 3) relatively flat, with anterior margin straight, shallowly punctate irregularly on dorsal surface except for occiput almost smooth, the punctures sporadically with short setae, microsculpture transversely striate only near occipital end; widest between orbital regions, HW/HL 1.29–1.37. Labrum trapezoidal. Mandibles with asymmetric inner margins, each apical tooth pointed, right mandible with a blunt preapical tooth and a pointed large tooth, left one with pointed small two preapical teeth and a pointed large tooth. Maxillary palpus with the ultimate palpomere subconical, apically bent downward, ca. 2.2 times as long as the penultimate one. Antennae with long setae throughout length, especially dense in last three antennomeres, IV–VI and IX–X antennomeres similar in shape, respectively, VIII shorter than VII and IX, and XI elongate oval; internal vesicles absent (Fig. 3). Dimensions (length : width) of antennomeres of the holotype: I, 0.1 : 0.08; II, 0.09 : 0.05; III, 0.13 : 0.04; IV, 0.09 : 0.04; V, 0.1 : 0.05; VI, 0.08 : 0.05; VII, 0.11 : 0.06; VIII, 0.09 : 0.08; IX, 0.11 : 0.09; X, 0.11 : 0.1; XI, 0.18 : 0.1.

Pronotum (Figs. 17–18) transverse, trapezoidal, gently convex, widest at basal 1/4, PW/PL 1.63–1.75; anterior margin widely emarginate; anterior angles obtuse; sides arcuate, distinctly marginate; posterior angles obtuse; base weakly bisinuate; surface slightly elevated in middle part inside anterior margin, with a pair of six setiferous gentle pits as shown in Fig. 17, the setae long, punctures large, shallow, irregularly arranged, intermingled with smaller ones, sporadically with yellowish short setae, interspaces of the punctures smooth, microsculpture absent. Scutellum fused to elytra, transversely pentagonal, wider than long, with projecting and tapering apex, microsculpture transversely rugose.



Figs. 17–21. Morphological details of *Muganryus susumui* gen. et sp. nov. from Motoyama, near Jôzankei, Hokkaido —— 17, Pronotum, showing the positions of setiferous pits, male; 18, prothorax, ventral view, (tone inverted); 19, mesoventrite, ventrolateral view; 20, right protibia, dorsal view, male, (tone inverted); 21, same, female. Scales: 0.1 mm for 19–21; 0.2 mm for 17–18.

Elytra fused together, ovoidal, moderately convex, widest at basal 1/3: EW/PW 1.14–1.19, EL/PL 2.38–2.59, EL/EW 1.22– 1.29; sides arcuate, strongly narrowed apicad in posterior halves, well marginate; surface vaguely with a pair of more or less eight striae, with strial punctures distinct and almost regular in intervals, bearing with yellowish short setae, transversely rugose near base, joined by fine transverse microscopic striations. Epipleuron wide, with width ca. 1/3 of each elytron, tapering from posterior 1/6, surface flat. Mesoventrite (Fig. 4) carinate along midline in anterior part, the carina slightly projected posteriorly, strongly hollowed inward behind the carina in lateral view, also carinate longitudinally in middle of posterior part, the carina strongly expanded downward, with a tooth-like projection at beginning (Fig. 19). Metaventrite (Fig. 4) smooth, with setiferous punctures sparsely in middle part, microsculpture reticulate. Legs slender, moderate in size. Protarsomeres slightly expanded, ventrally with spatulate tenent setae (Fig. 5); paired claws large, flat, falciform, ventrally concave, each with at least three longitudinal grooves, asymmetrical, the inner claw longer than the outer one (Figs. 5–6); empodium with a pair of setae. Meso- and metatarsomeres simple, without tenent setae, with claws similar to those of protarsi in shape, but outer claws longer than inner ones. Protibiae weekly expanded apicad, with outer margin without spines (Fig. 20). Meso- and metatibiae normal in shape. Femorae with spines along outer margins.

Abdomen with microreticulate surface, ventrite 3 without any impressions (Fig. 4), ventrite 8 with anterior apophysis, anchor-shaped (Fig. 8). Genital segment longer than wide; spiculum gastrale rather long and robust as shown in Fig. 9.

Aedeagus (Figs. 10–12) elongate, slender, AL/EL 0.53 in the holotype. Median lobe lanceolate, symmetrical, with narrowly round apex, many longitudinal fine grooves on apical part, a transparent

lamella medially at apical 1/4, posteriorly notched, vertically folded in inner part, anteriorly indistinct; in lateral view, median lobe thick in basal 3/4, gradually thinner toward apex, dorsally arcuate in apical part, bent ventrad at apical 1/4 of ventral margin. Inverted internal sac with a subcordate sclerite at middle of median lobe, a curved transverse sclerite at basal 1/6, an anteriorly sclerotized and apically spinose, club-shaped structure extending beyond base of median lobe, and a longitudinal series of short spines among these sclerites and structure. Parameres wide, posteriorly extending beyond apex of median lobe, slightly twisted to median lobe in position, sinuate in dorsal view, well arcuate in lateral view, with apices widely rounded, weekly elevated at middle, longitudinal fine grooves on preapical parts, each of which has two long setae (Figs. 11–12).

F e m a l e. Length 2.61–2.76 (M 2.67) mm, width 1.28–1.38 (M 1.32) mm. Body dimensions: HL 0.35–0.43, HW 0.48–0.5, PL 0.63–0.65, PW 1.08–1.13, EL 1.6–1.73 and EW 1.28–1.38. Similar to male in general appearance, except for protarsi without tenent setae (Fig. 7), protibiae with fine spins along outer margins (Fig. 21). Spiculum ventral as shown in Fig. 13. Female genitalia as shown in Fig. 15. Spermatheca (Fig. 14) elongate, tubular, closely annulate, proximally bent and connected with spermathecal duct.

Etymology. The specific epithet of this new species is patronymic for Susumu TAKAHASHI, the discoverer of the new species and who clarified the biology of the species through continuous observations at the type locality.

Distribution. Japan: Hokkaido.

Remarks. Females are slightly larger than the males; e.g., the body width (= EW) of the females is significantly wider than that of the males: $t = -5.43$, $df = 8$, $p < 0.01$.

Habitat. The initial specimen was found from the upper hypogean zone close to a narrow stream. Soil traps were baited with minced dry silkworms (NISHIKAWA *et al*., 2012) and sliced prawns or with crushed onions. The traps were set at a depth of about 10 cm under the mossy riparian scree located in the shade that was quite wet due to water runoff from a gutter on an adjacent paved road. It is possible that *Muganryus* is a specialist if this wet zone and that the uniqueness of tarsal claws (Fig. 6) is an adaptation to riparian habitats of headwaters with wet stones with large open gaps in cool and moist scree.

Feeding habit. Fungal associations of Coleoptera were reviewed by FOGEL and PECK (1975) and NEWTON (1984): Five *Catopocerus* species have been collected from sporocarps of hypogeous fungi belonging to six families in four orders. The feeding habit of *Catopocerus* species was confirmed to be partly mycophagous according to field observations and rearing data (PECK, 1975) and examinations of gut contents of larvae and adults (NEWTON, 1984). Fungal spores have been observed in the alimentary canal of *Perkovskius zerchei* PERREAU et RŮŽIČKA (PERREAU & RŮŽIČKA, 2007, fig. 17).

To confirm the feeding habit of the new species, gut contents of a female paratype (an individual dug from underground) were photographed and identified by an expert of Japanese hypogeous fungi. The gut contents included spores of ascomycete or Boletaceae (Basidiomycota) species (Fig. 16), but none were from hypogeous species, at least in this specimen (Takamichi ORIHARA, pers. comm.), indicating that the new species may not be host specific as adults or opportunistic in their feeding strategy. In addition to mycophagy, it is likely that *Muganryus* is saprophagous, as indicated by specimens attracted to traps baited with animal and plant organic matter.

Phenology. Number of trapped individuals is summarized by month in Table 1. The new species was active during June to November but was not trapped in the early September and early October. In addition, teneral and mature adults were obtained together in the remaining periods of the September and October. These conditions suggest that *Muganryus* is univoltine with newly eclosed adults appearing in autumn and are active until summer.

Table 1. Seasonal activity of *Muganryus susumui* gen. et sp. nov. in 2017.

month	1	2	3	4	5	6	7	8	9	10	11	12
number of trapped	–	–	–	–	–	9	25	6	5*	12*	1	–

Remarks. –: could not setting traps because snow cover; *: including tenerals.

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要　　約

西川正明：コハクムガンチビシデムシ・北海道産の日本新記録亜科，新属新種のタマキノコムシ科甲虫（鞘翅目）．————北海道の定山渓近郊の源流域地下浅層から高橋　進氏（札幌市）によって採集されていたタマキノコムシ科甲虫の追加標本を得て，分類学的位置を検討したところ，従来日本から記録のないムガンチビシデムシ亜科（新称）Catopocerinae に所属することが判明した（ただし，同亜科の定義は見直しの最中にあることから，今後所属が変更される可能性がある）．さらに，極東ロシアと北アメリカ産の同亜科種と比較検討を行った結果，未知の属に所属する新種であることが結論づけられたので，新属ムガンチビシデムシ属（新称）*Muganryus* gen. nov. を設立して，新属新種コハクムガンチビシデムシ（新称）*Muganryus susumui* gen. et sp. nov. を命名して記載した．同時に，生息場所，食性，季節的消長に関する知見についても報告した．

References

ANTUNES-CARVALHO, C., & P. GNASPINI, 2016. Pretarsus and distal margin of the terminal tarsomere as an unexplored character system for higher-level classification in Cholevinae (Coleoptera, Leiodidae). *Systematic Entomology*, **41**: 392–415.

FOGEL, R., & S. B. PECK, 1975. Ecological studies of hypogeous fungi. I. Coleoptera associated with sporocarps. *Mycologia*, **67**: 741–747.

GNASPINI, P., C. ANTUNES-CARVALHO, & R. A. B. LESCHEN, 2017 a. Pretarsal structures in Leiodidae and Agyrtidae (Coleoptera, Staphylinoidea). *Journal of Morphology*, **278**: 1354–1379.

GNASPINI, P., C. ANTUNES-CARVALHO, A. F. NEWTON, & R. A. B. LESCHEN, 2017 b. Show me your tenent setae and I tell you who you are – Telling the story of a neglected character complex with phylogenetic signals using Leiodidae (Coleoptera) as a case study. *Arthropod Structure & Development*, **46**: 662–685.

HATCH, M. H., 1927. Studies on the carrion beetles of Minnesota, including new species. *Agricultural Experiment Station Technical Bulletin*, **48**: 3–19.

HIRANO, Y., 2004. Coleoptera. Pp. 335–835. *In* Kanagawa Entomologists' Association (ed.), *Insect Fauna of Kanagawa 2004*,

[II] (Megaloptera, Raphidiodea, Neuroptera, Coleoptera, Strepsiptera). Kanagawa Entomologists' Association, Odawara. (in Japanese with English book title.)

HORN, G. H., 1880. Synopsis of the Silphidae of the United States with reference to the genera of other countries. *Transactions of the American Entomological Society*, **8**: 219–322.

HOSHINA, H., 2008. A new blind genus of the tribe Pseudoliodini (Coleoptera, Leiodidae) from Japan, with description of three new species. *Journal of the Speleological Society of Japan*, **33**: 11–27.

LAFER, G. Sh., 1989. Fam. Catopidae – small carrion beetles. Pp. 310–318. *In* LER, P. A. (ed.), *A Key to the Insects of Far Eastern USSR in Six Volumes*. **3**. *Coleoptera or Beetles*. Part 1. 572 pp. Nauka, Leningrad. (in Russian.)

MOTSCHULSKY, V., 1869 [1870]. Enumeration des nouvelles espèces de Coléopteres rapportés de ses voyages, VIII. *Bulletin de la Société Impériale des Naturalistes de Moscou*, **42**: 348–410.

NEWTON, A. F., 1998. Phylogenetic problems, current classification and generic catalog of world Leiodidae (including Cholevidae). Pp. 41–178. *In* GIACHINO, P. M., & S. B. PECK (eds.), *Phylogeny and Evolution of Subterranean and Endogean Cholevidae* (=*Leiodidae Cholevinae*). *Proceedings of a Symposium* (*30 August*, *1996*, *Florence*, *Italy*), *XX International Congress of Entomology*. 295 pp. Museo Regionale di Scienze Naturali, Torino, Torino.

NEWTON, A. F., 2005. Leiodidae Fleming, 1821. Pp. 269–280. *In* BEUTEL, R. G., & R. A. B. LESCHEN (eds.), *Handbook of Zoology*, *Coleoptera* **1**, *Evolution and systematics*, *Archostemata*, *Adephaga*, *Myxophaga*, *Staphyliniformia*, *Scarabaeiformia*, *Elateriformia*. xi + 567 pp. De Gruyter, Berlin.

NEWTON, A. F., Jr., 1984. Mycophagy in Staphylinoidea (Coleoptera). Pp. 302–353. *In* WHEELER, Q., & M. BLACKWELL (eds.), *Fungus-Insect Relationships*. *Perspectives in Ecology and Evolution*. xiii + 514 pp. Columbia Univ. Press, New York.

NEWTON, A. F., Jr., 1985. South temperate Staphylinoidea (Coleoptera): their potential for biogeographic analysis of austral disjunctions. Pp. 180–220. *In* BALL, G. E. (ed.), *Taxonomy*, *Phylogeny and Zoogeography of Beetles and Ants*: *A Volume Dedicated to the Memory of Philip Jackson DARLINGTON*, *JR.*, *1904–1983*. xiv + 514 pp. Dr W. Junk Publ., Dordrecht.

NEWTON, A. F., Jr., & M. K. THAYER, 1992. Current classification and family group names in Staphyliniformia (Coleoptera). *Fieldiana Zoology*, new series, (67): 1–92.

NISHIKAWA, M., 2017. Two new *Ptomaphaginus* (Coleoptera, Leiodidae, Cholevinae) from Honshu and Shikoku, Japan, with a supplemental description of *Ptomaphaginus takaosanus*. *Elytra*, *Tokyo*, (n. ser.), **7**: 25–38.

NISHIKAWA, M., Y. Hayashi, M. YOSHIDA & Y. Fujitani, 2012. The underground fauna of Agyrtidae and the subfamily Cholevinae of Leiodidae (Coleoptera) in eastern Shikoku, Southwest Japan, with a summary of the habitat diversity of some Japanese cholevines. *Elytra*, *Tokyo*, (n. ser.), **2**: 267–278.

PECK, S. B., 1975. The eyeless *Catopocerus* beetles (Leiodidae) of eastern North America. *Psyche*, *Cambridge*, **81** [for 1974]: 377–397.

PECK, S. B., & J. COOK, 2011. Systematics, distributions and bionomics of the Catopocerini (eyeless soil fungivore beetles) of North America (Coleoptera: Leiodidae: Catopocerinae). *Zootaxa*, (3077): 1–118.

PECK, S. B., & A. F. NEWTON, 2017. An annotated catalog of the Leiodidae (Coleoptera) of the Nearctic Region (Continental North America north of Mexico). *Coleopterists Bulletin*, **71**: 211–258.

PERKOVSKY, E. E., 1989. *Catopocerus kovalevi* sp. n.: First palearctic representative of the tribe Catopocerini (Coleoptera, Leiodidae). *Vestnik zoologii*, **1989**(2): 85–86. (in Russian with English title and abstract.)

PERKOVSKY, E. E., 1999. New genus and species of late Jurassic Leiodinae (Coleoptera, Leiodidae) from Mongolia. *Vestnik zoologii*, **33**(4–5): 77–79. (in Russian with English summary.)

PERKOVSKY, E. E., 2011. About transfer *Catopocerus kovalevi* to the genus *Perkovskius* LAFER (Leiodidae, Catopocerinae). *Vestnik zoologii*, **45**(5): 438. (in Russian with English title.)

PERREAU, M., 2015. Family Leiodidae FLEMING, 1821. Pp. 180–290. *In* LÖBL, I., & D. LÖBL (eds), *Catalogue of Palaearctic Coleoptera*, **2**/1. *Hydrophiloidea – Staphylinoidea*. Revised and updated edition. xxvi + 1,702 pp. Brill, Leiden.

PERREAU, M., & J. RŮŽIČKA, 2007. Systematic position of *Perkovskius* LAFER 1989 (Coleoptera: Leiodidae: Catopocerinae), with description of a second species from the Far East of Russia. *Annales de la Société Entomologique de France*, (n. ser.), **43**: 257–264.

TOJO, K., K. SEKINE, M. TAKENAKA, Y. ISAKA, S. KOMAKI, T. SUZUKI & S. D. SCHOVILLE, 2017. Species diversity of insects in Japan: their origins and diversification processes. *Entomological Science*, **20**: 357–381.

WESTCOTT, R., 1968. A new subfamily of blind beetle from Idaho ice caves with notes on its bionomics and evolution (Coleoptera: Leiodidae). *Los Angeles County Museum Contributions to Science*, **141**: 1–14.

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