

## Three New Species of the Genera *Ampedus* and *Limoniscus* (Coleoptera, Elateridae) from Kyushu, Japan

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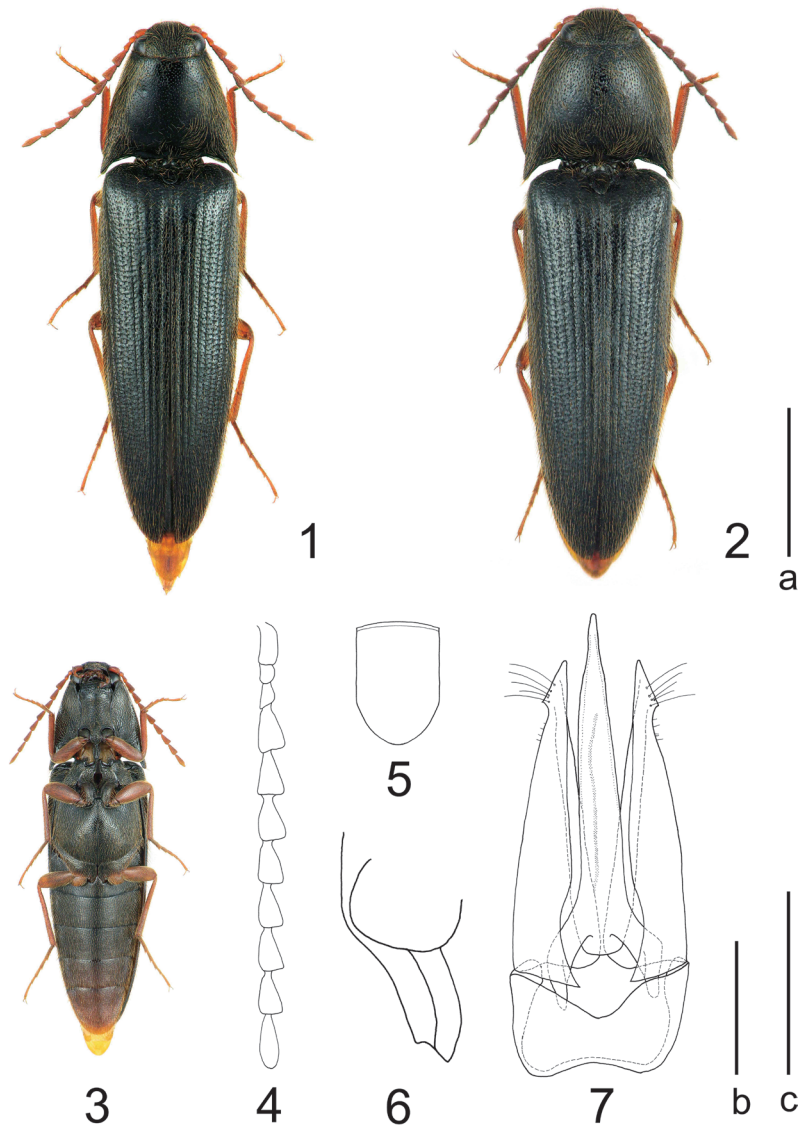
**Abstract** *Ampedus (Ampedus) shiratoriensis* sp. nov., *Ampedus (Ampedus) tsutsumiuchii* sp. nov. and *Limoniscus yujii* are described based on some specimens collected from Kyushu of Japan.

### Introduction

In mainland Kyushu of Japan, 221 species of elaterid beetles are known (IRIE, 1978; IMASAKA & ABIRU, 2012; KIDO, 1997, 2002; KISHII, 1999, 2001 a, b, 2004 a, b, 2006 a; NAKANE, 1959; ÔHIRA, 1964, 1988, 1997, 2003, 2004, 2006; ÔHIRA & TSUTSUMIUCHI, 1999; ÔTSUKA, 1999; TAKAKURA, 1989; TSUTSUMIUCHI, 2000, 2008, 2010, 2012). However, several species are still unrecorded from Kyushu, or undescribed. My examination revealed that three species were undescribed. Among them, two belong to the genus *Ampedus* DEJEAN, 1833 and one belongs to the genus *Limoniscus* REITTER, 1905. *Ampedus* is a large genus belonging to the subfamily Elaterinae and contains over 150 known species and subspecies in Japan (ARIMOTO, 2004, 2012; KISHII, 1999, 2002 a, 2004 b, c, d, 2006 b, 2010; ÔHIRA, 2005, 2007). In mainland Kyushu, only 20 known species of *Ampedus* have been recorded (KIDO, 1997; KISHII, 1999; NAKANE, 1959). The two new species are readily distinguished from those species. The genus *Limoniscus* belongs to the subfamily Dendrometrinae and 21 species are known in Japan (KISHII, 2002 b, 2004 a). In Kyushu, eight species are recorded (KISHII, 1999; TSUTSUMIUCHI, 2000, 2008). The undescribed species is distinguished from other *Limoniscus* species by the diagnostic characters states. In this paper, I describe those new elaterid species.

### Materials and Methods

The following abbreviations are used in this study: BL – length of body from anterior margin of frons to elytral apices; BW – maximum width of body; PL – maximum length of pronotum including posterior angles; PML – length of the midline of pronotum; PW – maximum width of pronotum including posterior angles; EL – length of elytra; EW – maximum width of elytra. Measurements were made with a stereo microscope (Nikon SMZ-U) and are all in millimeters. Photos of specimens were taken with a Canon PowerShot G7 with a macro lens Reynox CM–3500, and then combined by an image processing software (CombineZM). The type specimens are deposited in the Entomological Laboratory, Kyushu University, Fukuoka (ELKU) and the personal collection of K. ARIMOTO, Fukuoka, Japan (cAK) and collection of Y. TSUTSUMIUCHI, Usuki, Ôita, Japan (cTY).



Figs. 1–7. *Ampedus (Ampedus) shiratoriensis* K. ARIMOTO, sp. nov., holotype, ♂ (1, 3–7) and paratype, ♀ (2). — 1, Habitus; 2, ditto; 3, ventral view; 4, right antenna; 5, scutellum; 6, prosternal process in lateral view; 7, aedeagus in ventral view. Scales: a, 3.0 mm for 1 & 2; b, 3.0 mm for 3, 1.0 mm for 4; c, 0.5 mm for 5–7.

*Ampedus (Ampedus) shiratoriensis* K. ARIMOTO, sp. nov.

[Japanese name: Haraaka-hoso-kuro-kometsuki]

(Figs. 1–7, 14–16)

*Description.* Male. Body (Fig. 1) elongate, BL: 9.62–11.13, BW: 2.48–2.88; moderately convex above, shining. Colour black; antennae dark orange, but basal three segments paler; mouth-parts dark orange, with mandibles black; legs dark orange with tarsi paler; 6th and 7th abdominal ster-

nites dark orange to reddish orange (Fig. 3); inferior margin of hind coxal plate more or less dark orange usually.

Dorsal surface densely clothed with yellowish brown, long and recumbent setae; ventral surface densely clothed with yellowish brown, moderate long and recumbent setae. Antennae with a mixture of black and yellowish brown, fine, recumbent and dense setae and some moderate long and yellowish brown setae. Femora with yellowish brown, moderate long and recumbent setae; tibiae and tarsi with short setae.

Head shorter than basal width, slightly convex above between eyes; clypeal margin rounded, well ridged near each antennal socket, widely flattened at the middle; surface smooth; punctures dense and small, but made denser toward posteriad.

Antennae (Fig. 4) moderately long, extended beyond the apices of posterior angles of pronotum by apical segments; basal segments robust, cylindrical, distinctly longer than width; segment II short, longer than width; segment III obconical, longer than width, about 1.3 times as long as segment II; segment IV longer than width, about 1.8 times as long as segment III, as long as the preceding two segments combined; segments IV–X serrate; apical segments oblong-ovate, distinctly longer than width, about 1.3 times as long as segment X.

Pronotum trapezoidal, PL: 2.42–2.69, PML: 1.93–2.28, PW: 2.48–2.88, shorter than width, widest at the base, moderate convex above; sides widening gradually in apical halves, then widening abruptly towards posterior angles; surface smooth; punctures small and sparse, but made denser and larger toward the outside, smaller than punctures of head; posterior angles moderate long, extended posterior laterad, with distinct median carina above.

Scutellum (Fig. 5) linguulate, moderate convex above, inclined anterior downwards; anterior margin well ridged; surface punctured small and moderately densely.

Elytra elongate, EL: 6.90–8.05, EW: 2.47–2.77, 2.79–2.91 times as long as width; moderate convex above; sides almost parallel in basal halves then rounded and gradually convergent towards apices; striae defined, punctuated deeply and regularly; intervals slightly convex above, micro-winkled, punctuated small and sparse, smaller than pronotum.

Prosternal process (Fig. 6) moderate long, distinctly incurved just behind procoxal cavity in lateral aspect, rounded at apex.

Legs slender; tarsi and claws simple.

Aedeagus (Fig. 7) median lobe elongate, longer than lateral lobes, narrowed gradually from base to apex, abruptly narrowed near apex pointed acutely; lateral lobes robust near base; apical portion of lateral lobes elongate-triangular, with some long setae.

**F e m a l e.** Similar to male (Fig. 2), but wider body, antennae shorter and not reaching the apices of posterior angles of pronotum; pronotum strongly convex above, sides of pronotum more rounded. BL: 9.30–11.2, BW: 2.38–3.03, PL: 2.32–2.89, PML: 1.88–2.40, PW: 2.47–3.08, EL: 6.53–7.90, EW: 2.38–3.03.

**Holotype.** BL: 10.38, BW: 2.77, PL: 2.46, PML: 1.96, PW: 2.73, EL: 7.58, EW: 2.77.

**Type series.** Holotype: ♂, Mt. Shiratori-yama [白鳥山], 1,220 m alt., Yatsushiro-shi, Kumamoto Pref., Kyushu, Japan, 32°28'52.0"N/131°00'08.9"E, 8–X–2011, K. ARIMOTO leg. (ELKU). Paratypes (13 ♂♂, 5 ♀♀): 2 ♂♂, 2 ♀♀, same data as the holotype (cAK); 1 ♂, 1 ♀, same locality as the holotype, 8–IV–2012, K. ARIMOTO leg. (cAK); 1 ♂, same locality as the holotype, 23–IV–2011, K. ARIMOTO leg. (cAK, immersion specimen in 99.5% ethanol); 1 ♂, Mt. Shiraiwa-yama [白岩山], 1,300 m alt., Nishiusuki-gun, Miyazaki Pref., Kyushu, Japan, 9–IV–2011, K. ARIMOTO leg. (cAK, immersion specimen in 99.5% ethanol); 1 ♂, Mt. Katamuki-yama [傾山], Ogata-chô, Ôita Pref., Kyushu, Japan, 10–VII–1999, Y. TSUTSUMIUCHI leg. (cTY); 1 ♀, same place as the former, 23–VII–1999,

Y. TSUTSUMIUCHI leg. (cTY); 1 ♂, Shôjiiwa [障子岩], Ogata-chô, Toyogoôno-shi, Ôita Pref., Kyushu, Japan, 25–VI–2005, Y. TSUTSUMIUCHI leg. (cTY); 1 ♂, Mt. Kuro-dake [黒岳], 900 m alt., Yufu-shi, Shônai-chô, Ôita Pref., Kyushu, Japan, 28–III–2009, M. MORI leg. (cAK); 1 ♂, Mt. Kuro-dake [黒岳], Yufu-shi, Shônai-chô, Ôita Pref., Kyushu, Japan, 10–XI–2012, K. ARIMOTO leg. (cAK); 1 ♂, Ôura [大浦], Uchinoura-chô, Kagoshima Pref., Kyushu, Japan, 3–V–2001, Y. TSUTSUMIUCHI leg. (cTY); 1 ♂, Sugiyamadani [杉山谷], Minamiôsumi-chô, Kagoshima Pref., Kyushu, Japan, 12–V–2005, Y. TSUTSUMIUCHI leg. (cAK); 1 ♂, 1 ♀, Mt. Kosho-san [古処山], Kama-shi, Fukuoka Pref., Kyushu, Japan, 10–IV–2010, S. KOBAYASHI leg. (cAK); 1 ♂, Mt. Hiko-san [英彦山], 800 m alt., Soeda-machi, Fukuoka Pref., Kyushu, Japan, 10–VII–2010, M. MORI leg. (cAK).

*Diagnosis.* The new species is similar to *Ampedus (Ampedus) ogatai* KISHII, 1983 and *A. (A.) sawadai* KISHII, 1985 recorded only from Yakushima Island of Kyushu. It is distinguished from *A. (A.) ogatai* by its pronotum gradually widening from anterior to posterior and having the widest base, and robust aedeagus (Fig. 7). It is distinguished from *A. (A.) sawadai* by its moderate smaller body, orangish antennae and legs, more or less reddish 6th and 7th abdominal sternites (Fig. 3), clearly different shaped aedeagus (Fig. 7).

*Etymology.* Patronym, associated with Mt. Shiratori-yama, the type locality.

*Distribution.* Japan: Kyushu (Fukuoka Pref., Kumamoto Pref., Ôita Pref., Miyazaki Pref., Kagoshima Pref.).

*Bionomics.* The type specimens from Mt. Shiratori-yama and Mt. Shiraiwa-yama were collected in blighted trees and fallen trees of *Cercidiphyllum japonicum* (Cercidiphyllaceae) (Fig. 15) in winter. At the same time, adults of *Ampedus (Ampedus) hypogastricus hypogastricus* (CANDÈZE, 1873), *A. (A.) japonicas japonicas* SILFVERBERG, 1977, *A. (A.) gyoja* KISHII, 2004 and many larvae and adults of stag beetle, *Ceruchus lignarius nodai* FUJITA, 1987, were collected. The specimens from Mt. Kuro-dake and Mt. Kosho-san were collected in fallen trees, whose name is unknown. Mr. Y. TSUTSUMIUCHI collected all the specimens by light traps. This is a rare case for *Ampedus* species, which are generally active in the daytime. Because the type specimens were collected from lowland laurel forests (Fig. 16) to highland deciduous broad-leaved forests (Fig. 14), the new species is probably distributed widely in various localities in Kyushu.

***Ampedus (Ampedus) tsutsumiuchii* K. ARIMOTO, sp. nov.**

[Japanese name: Kuroge-kuro-kometsuki]

(Figs. 8–13, 17)

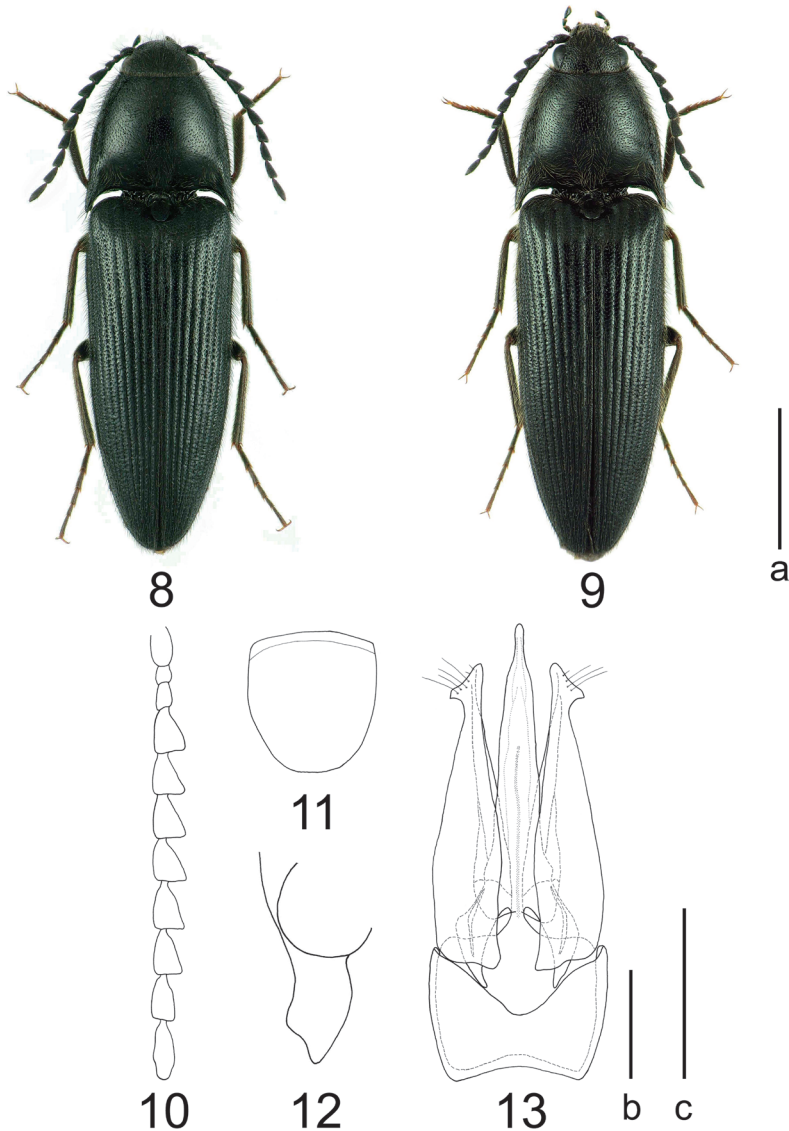
*Description.* Male. Body (Fig. 8) moderate elongate, BL: 10.89, BW: 3.15; moderately convex above, shining. Colour black; legs brownish black with femora black, becoming paler apically in every segment.

Dorsal surface clothed with faintly brownish black, long and erect setae; ventral surface clothed with yellowish brown, moderate long and moderate erect setae, except for abdominal sternites with short and recumbent setae. Antennae clothed densely with black, fine and recumbent setae and with some brown and moderate long setae; basal three segments clothed more densely with moderate long setae. Legs clothed densely with brown, short and recumbent setae; femora with moderate long setae.

Head shorter than basal width, moderate convex above; clypeal margin rounded and ridged; surface smooth, punctuated densely and small.

Antennae (Fig. 10) moderate long, extended beyond the apices of posterior angles of pronotum by apical segments; basal segments robust, cylindrical, distinctly longer than width; segment II short, almost as long as width; segment III obconical, short, longer than width, about 1.4 times as long as

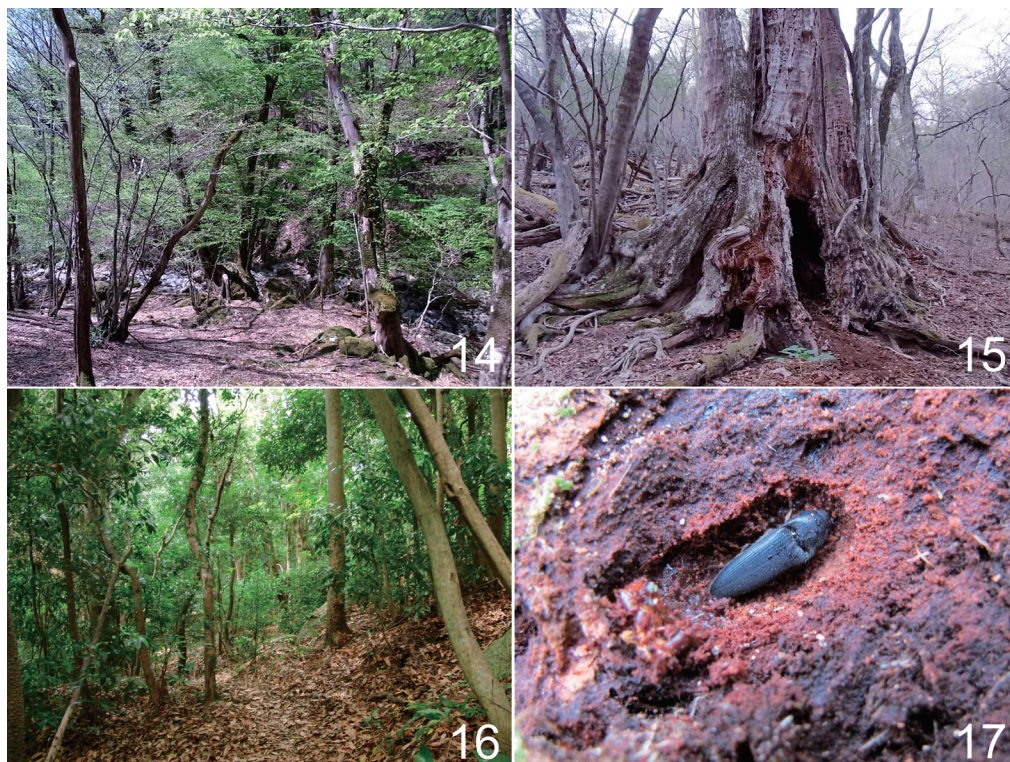




Figs. 8–13. *Ampedus (Ampedus) tsutsumiuchii* K. ARIMOTO, sp. nov., holotype ♂, (8, 10–13) and paratype, ♀ (9). — 8, Habitus; 9, ditto; 10, right antenna; 11, scutellum; 12, prosternal process in lateral view; 13, aedeagus in ventral view. Scales: a, 3.0 mm for 8 & 9; b, 1.0 mm for 10; c, 0.5 mm for 11–13.

segment II; segment IV longer than width, about 1.5 times as long as segment III, almost as long as the preceding two segments combined; segments IV–X serrate; apical segments oblong-ovate, distinctly longer than width, about 1.3 times as long as segment X.

Pronotum sub-trapezoidal, PL: 2.95, PML: 2.40, PW: 3.10, slightly shorter than width, widest at the base, moderate convex above; sides rounded and gradually widening in apical halves, then gently widening in basal halves; surface smooth; punctures small, dense; posterior angles moderate long, extended posterior laterad, with distinct median carina above.



Figs. 14–17. Collecting site of *Ampedus* (*Ampedus*) *shiratoriensis* K. ARIMOTO, sp. nov. (14, 15: by the author; 16: by Mr. R. NODA) and *A. (A.) tsutsumiuchii* K. ARIMOTO, sp. nov. (17: by Mr. Y. TSUTSUMIUCHI) — 14, Landscape of deciduous broad-leaved forests, holotype collecting site (Mt. Shiratori-yama, 1,220 m, Yatsushiro-shi, Kumamoto-Pref., Kyushu, Japan) in May; 15, blighted trees of *Cercidiphyllum japonicum* from which some specimens were collected; 16, landscape of laurel forests, paratype collecting site (Sugiyamadani, Minamiôsumi-chô, Kagoshima-Pref., Kyushu, Japan) in July; 17, passing the winter in the fallen tree of *Pterocarya rhoifolia*.

Scutellum (Fig. 11) lingulate, convex above, inclined anterior downwards; anterior margin well ridged; surface smooth, punctured small and densely.

Elytra elongate, EL: 7.50, EW: 3.15, 2.38 times as long as width, moderate convex above; sides almost parallel in basal halves, then rounded and gradually convergent towards apices; striae defined, punctuated deeply and regularly; intervals slightly convex above, micro-winkled, punctuated small and densely, more densely than pronotum.

Prosternal process (Fig. 12) short, distinctly incurved just behind procoxal cavity in lateral aspect, pointed gently at apex.

Legs slender; tarsi and claws simple.

Aedeagus (Fig. 13); median lobe elongate, longer than lateral lobes, narrowed gradually from the base to the apex pointed acutely; lateral lobes robust around base; apical portion of lateral lobes triangular, with some long and thin setae.

**F e m a l e.** General structures very similar to male (Fig. 9), but ventral setae more brownish black, antennae shorter and not reaching the apices of posterior angles of pronotum. BL: 11.14; BW:

3.35; PL: 3.10; PML: 2.50; PW: 3.35; EL: 8.05; EW: 3.28.

*Type series.* Holotype: ♂, Mt. Katamuki-yama [傾山], Ogata-machi, Bungoôno-shi, Ôita Pref., Kyushu, Japan, 12–III–2011, Y. TSUTSUMIUCHI leg. (ELKU). Paratype: 1 ♀, same data as the holotype. (cAK).

*Diagnosis.* The species is similar to *Ampedus* (*Ampedus*) *nubatama* KISHII, 1988 and *A.* (*A.*) *yamato* KISHII, 1988 from Honshu of Japan, but it is distinguished from them by its wider body, long and erect setae and different shaped aedeagus (Fig. 13).

*Etymology.* Dedicated to Mr. Yûji TSUTSUMIUCHI, the collector of the holotype.

*Distribution.* Japan: Kyushu (Ôita Pref.).

*Bionomics.* Type specimens were found in overwintering under moss growing on a fallen tree of *Pterocarya rhoifolia* (Juglandaceae) in deciduous broad-leaved forests (Fig. 17). Other details of the life history are unknown.

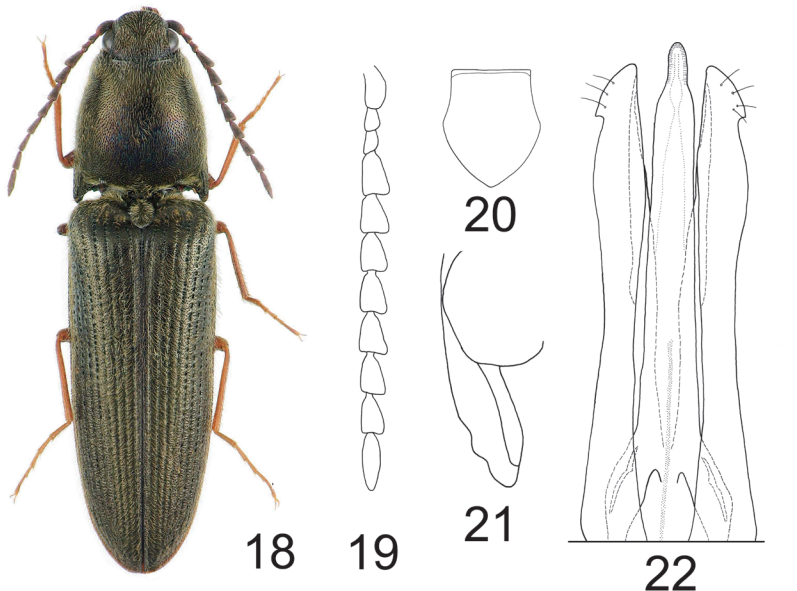
***Limoniscus yujii* K. ARIMOTO, sp. nov.**

[Japanese name: Kinsuji-kane-kometsuki]

(Figs. 18–22)

*Description.* Male. Body (Fig. 18) elongate, BL: 9.60–10.63, BW: 2.40–2.80; subparallel-sided, moderately convex above. Whole surface with brownish and dimly metallic luster, apical margin of elytra brown, antennae and mouth parts reddish-black; legs dark orange.

Dorsal surface moderately densely clothed with long, recumbent and yellowish brown setae; elytra with sparse setae from 4th to 8th striae; base of elytra and scutellum with denser setae; ventral surface densely clothed with moderate long, recumbent and yellowish brown setae. Antennae clothed with dense, fine, recumbent and yellowish brown setae and some moderate long setae. Legs densely



Figs. 18–22. *Limoniscus yujii* K. ARIMOTO, sp. nov., holotype, ♂ — 18, Habitus; 19, right antenna; 20, scutellum; 21, prosternal process in lateral view; 22, aedeagus in ventral view (basal piece broken). Scale: 3.0 mm for 18, 1.0 mm for 19, 0.5 mm for 21, 0.3 mm for 20, 22.



clothed with short, recumbent and yellowish brown setae.

Head broad, moderately convex between eyes, flattened triangularly between antennae; clypeal margin rounded, ridged; surface smooth; punctures small and dense, but made larger and denser from frons to base.

Antennae (Fig. 19) moderate long, extended beyond the apices of posterior angles of pronotum by apical segments; basal segments robust, cylindrical, distinctly longer than width; segment II short, longer than width; segment III obconical, short, longer than width, almost as long as segment II; segments IV longer than width, about 1.5 times as long as segment III, shorter than the preceding two segments combined; segments IV–X serrate; apical segments oblong-ovate, distinctly longer than width, about 1.5 times as long as segment X.

Pronotum sub-trapezoidal, PL: 2.55–2.80, PML: 2.25–2.50, PW: 2.16–2.50, longer than wide, widest at base, convex above, with distinct lateral margin vanished just before anterior angles; sides widening roundly from anterior angles to apical 2/7, widening gradually and lineally from apical 2/7 to apical 4/7, then widening slightly towards base; surface smooth; punctures small and dense, smaller than punctures of head; posterior angles short, plane, robust, extended posteriad, with distinct median carina above.

Scutellum (Fig. 20) lingulate, plane, inclined anterior downwards; anterior margin ridged narrowly; surface smooth, punctuated small and densely.

Elytra elongate, EL: 6.45–7.05, EW: 2.40–2.75, 2.56–2.69 times as long as width; moderately convex above; sides almost parallel in basal halves, then rounded and gradually convergent towards apices; striae defined, punctuated deeply, largely and regularly; intervals slightly convex above, punctuated smaller and sparser than pronotum.

Prosternal process (Fig. 21) moderate long, incurved loosely and roundly just behind procoxal cavity in lateral aspect, broad and narrowed gently from base to apex in ventral aspect, rounded at apex.

Legs slender; tarsi and claws simple.

Aedeagus (Fig. 22) elongate; median lobe longer than lateral lobes, convergent linearly from base to apex; lateral lobes broad, slightly narrowed from base to basal halves, then slightly widening just before apical lobes; apical portion of lateral lobes fan-shaped, with some short setae.

F e m a l e. Unknown.

Holotype. BL: 10.63, BW: 2.80, PL: 2.80, PML: 2.50, PW: 2.50, EL: 7.05, EW: 2.75.

*Type series.* Holotype: ♂, Mt. Takatoya-san [鷹鳥屋山], Ume, Saiki-shi, Ôita Pref., Kyushu, Japan, 9–VI–2002, Y. TSUTSUMIUCHI leg. (ELKU). Paratypes (2 ♂♂): 1 ♂, Mt. Shiratori-yama [白鳥山], 1,220 m alt., Yatsushiro-shi, Kumamoto Pref., Kyushu, Japan, 32°28′52.0″N/131°00′08.9″E, 14–V–2011, K. ARIMOTO leg. (cAK, immersion specimen in 99.5% ethanol); 1 ♂, Momigi [縦木], 980 m alt., Izumi-machi, Yatsushiro-shi, Kumamoto Pref., Kyushu, Japan, 32.529°N/130.999°E, 29–IV–2012, K. ARIMOTO leg. (cAK).

*Diagnosis.* This species is similar to *Limoniscus montivagus* (LEWIS, 1894), *L. hiramatsui* (ÔHIRA, 1976) and *L. naomii* KISHII, 1997, but is distinguished by its uniformly brownish and relatively larger body, yellowish brown setae, distinctly rounded clypeal margin of head, sparser pronotal punctures and different shape of prosternal process (Fig. 21) and aedeagus (Fig. 22).

*Etymology.* Dedicated with Mr. Yûji TSUTSUMIUCHI, the collector of the holotype.

*Distribution.* Japan: Kyushu (Ôita Pref., Kumamoto Pref.).

*Bionomics.* The holotype was collected in a laurel forest around the top of Mt. Takatoya-san (639 m). The two paratypes were collected by sweeping flowers of the tree, *Acer carpinifolium* (Aceraceae) in deciduous broad-leaved forests.

### Acknowledgements

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### 要 約

有本晃一：九州産コメツキムシ属，カネコメツキ属（コウチュウ目コメツキムシ科）の3新種。——筆者は九州の各地で得られたコメツキムシを調べ、未記載種を認めたので、そのうちの3種を *Ampedus* (*Ampedus*) *shiratoriensis* sp. nov. ハラアカホソクロコメツキ, *Ampedus* (*Ampedus*) *tsutsumiuchii* sp. nov. クロゲクロコメツキ, *Limoniciscus yujii* sp. nov. キンスジカネコメツキと命名して記載した。 *A. (A.) shiratoriensis* は *A. (A.) ogatai* KISHII, 1983 ヤククロコメツキと *A. (A.) sawadai* KISHII, 1985 アカヒゲクロコメツキに類似する。 *A. (A.) ogatai* とは前胸背板側縁が前角から後角に向かって広がり、基部で最も幅広いこと、雄交尾器がより太いことから識別できる。また、 *A. (A.) sawadai* とは体サイズが比較的小さいこと、触角と脚がより鮮やかな橙色であること、腹板第6, 7節が多少なりとも赤橙色であること、雄交尾器の形状の違いから識別できる。 *A. (A.) tsutsumiuchii* は *A. (A.) nubatama* KISHII, 1988 スバタマクロコメツキ, *A. (A.) yamato* KISHII, 1988 ヤマトクロコメツキと類似するが、長く直立した毛、より幅広い体、雄交尾器側片の形状の違いで識別できる。 *L. yujii* は *L. montivagus* (LEWIS, 1894) ミヤマカネコメツキ, *L. hiramatsui* (ÔHIRA, 1976) ヒラマツカネコメツキ, *L. naomii* KISHII, 1997 アワカネコメツキと似ているが、体色が一樣に茶色であること、体サイズが幾分か大きいこと、毛が黄褐色であること、頭部前縁が明確に丸いこと、前胸背板点刻の密度がより低いこと、前胸腹板突起と雄交尾器の形状の違いによって識別できる。

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