

ORIGINAL ARTICLE

Revision of the genus *Kolibacia* Leschen and Lackner (Coleoptera: Trogossitidae: Trogossitinae)

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The genus *Kolibacia* Leschen and Lackner, 2013 is revised. Five species are recognized, one of which, *K. okinawana* sp. nov., is new to science. Two new combinations, *K. tsushimana* (Nakane) and *K. regularis* (Grouvelle), are proposed and *K. regularis* is newly recorded from Vietnam.

Key words: east Palearctic, Indochina, new combination, new species, taxonomy.

INTRODUCTION

Trogossitidae is one of the lesser-studied families of the superfamily Cleroidea (Kolibáč 2010), and is represented by about 30 genera and 600 species from all zoogeographical regions. Kolibáč (2005, 2006) previously described all genera of the family, and it is expected that more taxonomic works will be published based on these revisions.

The genus *Kolibacia* (Trogossitidae: Trogossitinae: Gymnochilini) was erected for two east Palearctic taxa. The genus had been recognized as a member of the genera *Leperina* or *Lepidopteryx* (Leschen & Lackner 2013). All the taxa are distributed in East Asia (mainly Japan), but its taxonomic status has not been revised (Kolibáč 2009; Leschen & Lackner 2013). In addition, the Taiwanese species of this genus have been neglected (Kolibáč 2009; Leschen & Lackner 2013).

In the present paper, we review the species of the genus *Kolibacia*.

MATERIALS AND METHODS**Materials**

The present study is based on the specimens deposited in the following institutes and private collections: the Natural History Museum, London (BMNH); the Senckenberg Deutsches Entomologisches Institut (DEI); Ehime University Museum, Matsuyama (EUMJ);

Kurashiki Museum of Natural History, Kurashiki (KURA); Korea University, Tokyo (KUT); the National Science Museum, Tsukuba (NSMT); the Taiwan Agricultural Research Institute, Taichung (TARI); Kenji Otsuka private collection (KOC); Hiroshi Otake private collection (HOC); and Katsumi Akita private collection (KAC). The type specimens designated in this paper are deposited in the EUMJ, NSMT, KOC, HOC or KAC.

Methods

General observation and dissection were made under a stereoscopic microscope. Dissected parts were mounted on hollow slides with pure glycerin and observed under a microscope. After observation, the dissected parts were mounted on the same card as the specimens.

Terminology

The terminology refers generally to Kolibáč (2005, 2006), Kolibáč and Leschen (2010) and Leschen and Lackner (2013).

Abbreviations for measurements

PL, length of pronotum in median line; PW, maximum width of pronotum; EL, length of elytra in suture from anterior margin of scutellum to elytral apex; EW, maximum width of elytra; TL, total length (PL + EL). The average is given in parentheses after the range.

TAXONOMY**Genus *Kolibacia* Leschen & Lackner, 2013**

urn:lsid:zoobank.org:act:7E017B4C-92F0-423D-9D41-2111B41EC0C1

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Kolibacia Leschen & Lackner, 2013, 288 (Type species: *Leperina tibialis* Reitter 1889, by the original designation).

Diagnosis. Body length (TL) 7–17 mm. Coloration of body black or reddish brown. Dorsal surface of head, pronotum, scutellum and elytra sparsely covered with scales forming rather irregular patterns. Front margin of labrum straight or shallowly concave. Antennae 11 segmented, with loose club. Elytra oblong, subparallel-sided near base to apical 1/4, with 6–8 elytral carinae; intercarinal space bipunctate.

Sexual dimorphism. Frons strongly depressed in male, weakly in female. Tuft of setae on submentum (ctenidium) present in male (Figs 13,15–20), absent in female (Fig. 14). Lateral margin of pronotum slightly curved in male, arcuate in female.

Remarks. Based on the result of phylogenetic analysis, Leschen and Lackner (2013) erected the new genus *Kolibacia* for the Asian taxa, which have been described under the Australasian genus *Leperina* Erichson, 1844 (type species: *Trogosita decorata* Erichson, 1844).

The tribe Gymnochilini (sensu Kolibáč 2006; Leschen & Lackner 2013) includes nine genera from South America (Chile), Asia, Australasia, and Europe to Africa (Leschen & Lackner 2013). Of these, four genera (“split-eyed group” in Leschen & Lackner 2013: *Anacypta* Illiger, *Narcisa* Pascoe, *Xenoglena* Reitter and *Gymnocheilus* Dejean) have a divided eye with a small ventral portion located below the head and connected to the larger main eye by a row of elongate ommatidia (Leschen & Lackner 2013), and are easily distinguished from the other genera including *Kolibacia* in having a non-divided eye. The genus *Kolibacia* is also distinguished from the remaining genera by the presence of scaly setae (*Melambia* Erichson (distributed in Africa) and *Seidlitzella* Jakobson (Europe) are not covered with scales on the dorsal surface), continuous elytral carinae (*Phanodesta* Reitter (Juan Fernandez Islands, Chile and Australasia) having beaded elytral carinae), and a bipunctate intercarinal space in the elytra (*Leperina* Erichson (Australasia) multipunctate).

Key to species of the genus *Kolibacia*

1. Body smaller, TL 7.1–13.1 mm; tegmen short, with short phallobasic apodeme and tegminal struts (Figs 38–40,43–45); parameres long, as long as phallobasic apodeme; phallus short and stout (Figs 41,42,46,47) 2
- Body larger, TL 7.3–16.8 mm; tegmen long, with long phallobasic apodeme and tegminal struts (Figs 48–50,57–59,62–64); parameres shorter than phallobasic apodeme; phallus long and slender (Figs 51,52,60,61,65,66) 3

2. Scales on mesal portion of elytra mostly oblong (Fig. 12, L/W = about 3.0); posterior margin of male sternite VIII straight (Fig. 33); apical portions of tegmen and phallus relatively short (Figs 38–42); distributed in Japan (Hokkaido, Honshu), North and South Korea, northeast China, Mongolia, Russian Far East, East Siberia *K. squamulata*
- Scales on mesal portion of elytra mostly oval (Fig. 12, L/W = about 1.5); posterior margin of male sternite VIII arcuate (Fig. 34); apical portions of tegmen and phallus relatively long (Figs 43–47); distributed in Tsushima, Japan *K. tsushimana*
3. Tibiae clearly covered with white scaly setae in apical parts (Fig. 54); abdominal ventrites dark reddish brown (Fig. 56); distributed in Hokkaido to Kyushu *K. tibialis*
- Tibiae lacking scaly setae (Fig. 53); abdominal ventrites black (Fig. 55) 4
4. Scale-like setae on dorsal surface of body wide and distinct (Fig. 12); phallobasic apodeme expanded laterally in caudal part, then tapered anteriorly (Fig. 62); distributed in Taiwan and Vietnam *K. regularis*
- Scale-like setae on dorsal surface of body thin and indistinct (Fig. 12); phallobasic apodeme evenly tapered anteriorly (Fig. 57); distributed in Amami-Ōshima and Okinawa-jima ... *K. okinawana* sp. nov.

Kolibacia squamulata (Gebler, 1830)

(Figs 1,7,12,15,21,27,33,38–42,53,55)

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[Japanese name: Gomadara-kokunusuto]

Peltis squamulata Gebler, 1830, 97.

Leperina squamulosa (misspelling): Miyatake, 1985, 148, pl. 24, no. 3; Chûjô & Lee, 1994, 187; Zaitsev, 2008 [photo of larva].

Leperina squamulata: Kolibáč, 2007, 364.

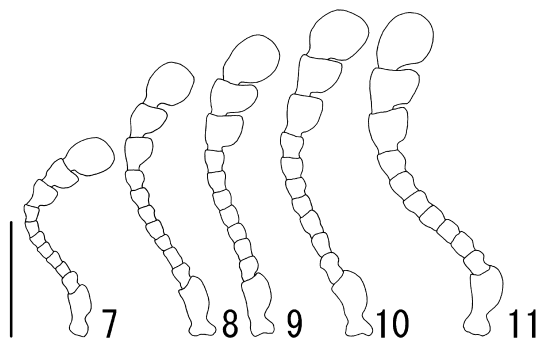
Kolibacia squamulata squamulata: Leschen & Lackner, 2013, 288.

Specimens examined. Hokkaido. 1 male (EUMJ), “Hokkaido Asahi-mura Jul. 26. 1952 T, Hasegawa”; 2 females (EUMJ); 1 female figured in Miyatake 1985, 148, pl. 24, no. 3), same data but “Jun. 28. 1952”; 1 female (EUMJ), same data but “Jun. 29. 1952”; 1 female (EUMJ), “Maruyama Sapporo VI. 24. 1941 Y. Nishio”.

Honshu. 2 females (EUMJ), “Mt. KANNABE HYÔGO 26. VII. 1981 K. ANDO”; 1 male and 2 females (EUMJ), “Kisofukushima Kiso-gun Nagano Pref. 6, VII, 1991 H. Yoshitomi leg.”; 1 male (EUMJ), same data but “20. VI. 1993”; 1 male (EUMJ), “Hirugano, Gifu VII-16. 1949 K. Ohbayashi”; 1 male,



Figures 1–6 Adults of *Kolibacia* spp. 1 *K. squamulata*; 2 *K. tsushimana*; 3 *K. tibialis*; 4 *K. okinawana* sp. nov., holotype; 5 *K. regularis* from Taiwan; 6 Ditto from Vietnam. Scale bars: 5.0 mm.



Figures 7–11 Left antennae of *Kolibacia* spp. in dorsal view. 7 *K. squamulata*; 8 *K. tsushimana*; 9 *K. tibialis*; 10 *K. okinawana* sp. nov., paratype; 11 *K. regularis*. Scale bars: 1.0 mm.

“Agematsu Nagano Pref. 10. VIII. 1983 K. Fukuzumi”; 1 male and 1 female, same locality, but “21. VIII. 1993 H. Yoshitomi leg.”; 1 female (EUMJ), “IDANI, GIFU 23, VI. 1957 N. Ohbayashi”.

Russia. 1 female, “Mt. Sestra Primorskii Russia 17-VIII-1992 M. Sato leg.”.

China. 2 females (EUMJ), “[Manchuria] Mutanchiang – Chientao orientalis 24. vi. 1994 Takeo Gotô”.

Korea. 1 female (KUT), “DPR. KOREA Pyong Yang-City Mt. Daesong-san 25. VI. 2009 Changdo Han leg.”, “TOKYO [JAPAN] Collection of Wildlife Research Center In Korea University”.

Redescription. Male. Coloration of body black, strongly shiny; maxillary and labial palpi, tibiae and tarsi brownish. Scales (Fig. 12) on head, pronotum, scutellum and elytra white, oblong ($L/W = 2.5-4.5$), sparsely and irregularly distributed.

Head (Fig. 21) coarsely and densely punctate, depressed dorsally in frons. Front margin of clypeus shallowly concave. Tuft of setae on submentum (Fig. 15) golden, short, bearing narrowly. Antennae relatively short, reaching about anterior 1/3 of pronotum. Pronotum (Fig. 27) widest at middle, coarsely and densely punctate in lateral portion, coarsely and sparsely

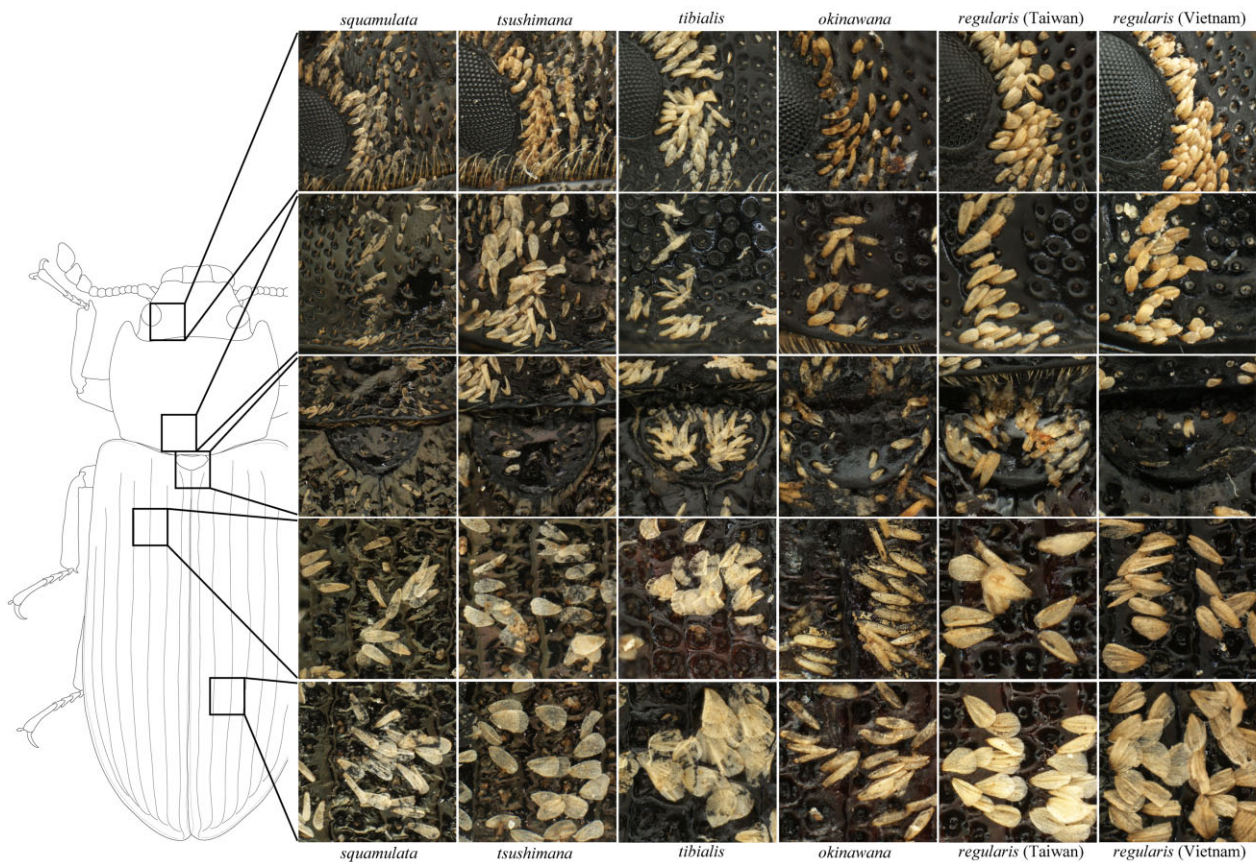


Figure 12 Scale-like setae on dorsal surface of *Kolibacia* spp. Scale = 1.0 mm.



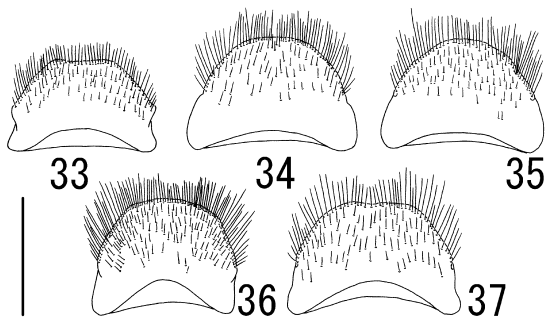
Figures 13–20 Head of *Kolibacia* spp. in ventral view (male: 13,15–20; female: 14). 13,14 *K. okinawana* sp. nov., paratypes; 15 *K. squamulata*; 16 *K. tsushimana*; 17–19 *K. tibialis*; 20 *K. regularis*. Scale bar: 1.0 mm.

punctate in mesal portion, with two pairs of shallow and small submesal concavities in apical 1/3 and 2/3 of disk; anterior corners rather pointed; PW/PL 1.53–1.71 (1.64). Scutellum subtriangular; W/L about 1.4. Elytra with indistinct six pairs of carinae, rather raised in basal portion of 2nd and 4th carinae; epipleuron relatively wide, gently tapering posteriorly; EL/EW 1.44–1.62

(1.56); EL/PL 3.34–3.67 (3.52); EW/PW 1.33–1.42 (1.38); TL/EW 1.88–2.08 (2.00). Prosternum sparsely covered with short setae, with narrow longitudinal glabrous area in mesal portion; hypomeron rugose, bearing short setae; posterior margin of prosternal process straight. Mesoventrite closely punctate, with longitudinal glabrous area.



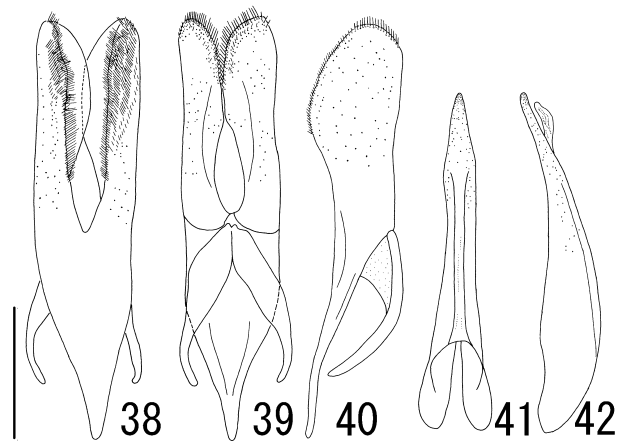
Figures 21–32 Head (21–26) and pronotum (27–32) of *Kolibacia* spp. in dorsal view. 21,27 *K. squamulata*; 22,28 *K. tsushimana*; 23,29 *K. tibialis*; 24,30 *K. okinawana* sp. nov., paratype; 25,31 *K. regularis* from Taiwan; 26,32 Ditto from Vietnam. Scale bars: 1.0 mm.



Figures 33–37 Male sternite VIII of *Kolibacia* spp. 33 *K. squamulata*; 34 *K. tsushimana*; 35 *K. tibialis*; 36 *K. okinawana* sp. nov., paratype; 37 *K. regularis*. Scale bar: 1.0 mm.

Sternite VIII trapezoidal, straight in caudal margin, bearing short setae in caudal margin.

Tegmen short and stout; phallobasic apodeme short, evenly tapered anteriorly; tegminal struts reaching about basal 1/8 of tegmen; parameres long and wide, about 0.50 times as long as length of tegmen, densely covered with long spines and fine punctures in dorsal aspect. Phallus short, about 0.8 times as long as tegmen, slightly curved dorsally in apical portion, thick in basal portion, punctate in apical portion.



Figures 38–42 Male genitalia of *Kolibacia squamulata*. 38 Tegmen, dorsal view; 39 Ditto, ventral view; 40 Ditto, lateral view; 41 Phallus, dorsal view; 42 Ditto, lateral view. Scale bar: 0.5 mm.

Female. PW/PL 1.56–1.73 (1.64); EL/EW 1.61–1.73 (1.67); EL/PL 3.58–3.79 (3.68); EW/PW 1.28–1.41 (1.35); TL/EW 2.05–2.21 (2.12).

Measurements. Male ($n = 6$): TL 7.87–10.35 (8.74) mm; PW 2.75–3.93 (3.17) mm; PL 1.70–2.30 (1.94)

mm; EL 6.15–8.05 (6.80) mm; EW 3.80–5.22 (4.37) mm. Female ($n = 13$): TL 7.10–12.00 (9.92) mm; PW 2.60–4.15 (3.47) mm; PL 1.50–2.60 (2.12) mm; EL 5.60–9.40 (7.80) mm; EW 3.47–5.70 (4.67) mm.

Distribution. Japan (Hokkaido, Honshu); North and South Korea, northeast China, Mongolia, Russian Far East, East Siberia.

Biological notes. In Japan, this species is mainly distributed in the northeastern area (Hokkaido to Shinshu District) except for Mt. Kannabe (469 m a.s.l.), which is in Hyōgo Pref., Kinki District (Fig. 67). The species is easily collected from a mountainous lumberyard, and mainly attack conifer woods.

***Kolibacia tsushimana* (Nakane, 1985),
comb. nov.** (Figs 2,8,12,16,22,28,34,43–47)

urn:lsid:zoobank.org:act:4E665676-4F76-4052-B37A-9C3C6BEA8368

[Japanese name: Tsushima-gomadara-kokunusuto]

Lepidopteryx squamulosa tsushimana Nakane, 1985, 162.

Leperina tsushimana: Miyatake, 1985, 148, pl. 24, no. 4.

Lepidopteryx squamulata tsushimana: Kolibáč, 2009, 128.

Specimens examined. 4 Males and 5 females (EUMJ), “Uchiyama Tsushima isl. 21. VI. 1991 N. Okimoto leg.”; 1 male and 1 female (EUMJ), “Nagasaki: Japan Mt. Mitake Kamiagata-chō 13. VI. 2002 T. Kurihara leg.”; 1 male (EUMJ), “Mt. ŌBOSHI TSUSHIMA Is. 8. VII. 1984 M. HIRANO”; 1 male (EUMJ), “(TSUSHIMA) Mt. Mitake 29. VI. 1980 leg. N. Ohbayashi”; 1 female (EUMJ, figured in Miyatake 1985, 148, pl. 24, no. 4), “(TSUSHIMA) Sago Kamiagata-cho May 16, 1978 S. Hisamatsu”, “8-04”; 1 male and 1 female

(EUMJ), “(TSUSHIMA I.) Meboro 7. V. 1978 A. Oda leg.”; 1 male (EUMJ), “Kechi TSUSHIMA Is. 19. VI. 1974 Y. KITSUKI”; 2 males and 4 females (EUMJ), “SASUNA TSUSHIMA Is. 14. vii. 1984 K. ANDO”.

Redescription. Male. Color of body black, strongly shiny; tibiae and tarsi rather brownish. Scales (Fig. 12) on head, pronotum and scutellum white, oblong ($L/W = 2.5–4.5$); scales on elytra cream to white, oblong to oval ($L/W = 1.2–4.0$).

Head (Fig. 22) coarsely and closely punctate, depressed dorsally in frons; front margin of clypeus shallowly concave. Tuft of setae on submentum (Fig. 16) brown, short, widely bearing. Antennae relatively short, reaching about anterior 1/3 of pronotum. Pronotum (Fig. 28) widest at middle, coarsely and closely punctate in lateral portion, coarsely and sparsely punctate in mesal portion, with two pairs of shallow submesal concavities in anterior 1/3 and 2/3 of disc; anterior corners rather pointed; $PW/PL 1.51–1.73 (1.63)$. Prosternum sparsely covered with short setae, with wide glabrous area in mesal portion; hypomeron rugose, bearing short setae; posterior margin of prosternal process straight. Mesoventrite closely punctate, with longitudinal glabrous area. Scutellum subtriangular; W/L about 1.7. Elytra with indistinct 6 elytral carinae, rather raised in 2nd and 4th carinae; epipleuron relatively wide, gently tapering posteriorly; $EL/EW 1.58–1.71 (1.63)$; $EL/PL 3.25–3.71 (3.45)$; $EW/PW 1.23–1.37 (1.30)$; $TL/EW 2.02–2.20 (2.10)$.

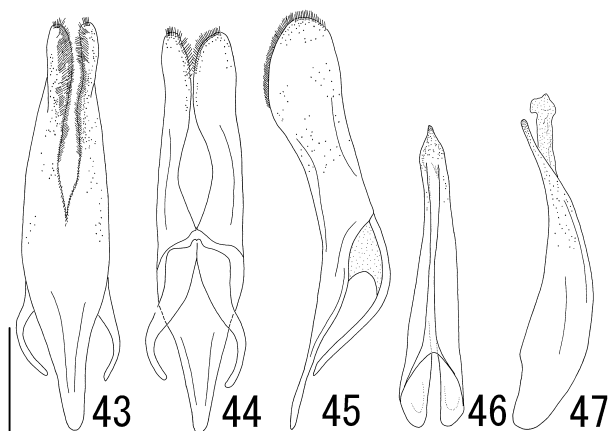
Sternite VIII semicircular, bearing short setae in caudal margin. Tegmen short and stout; phallobasic apodeme relatively short, gently tapered anteriorly; tegminal struts short, strongly curved interiorly, reaching about basal 1/8 of tegmen; parameres long and wide, about 0.53 times as long as length of tegmen, slightly curved dorsally, densely covered with long spines and fine punctures in dorsal aspect. Phallus short, about 0.8 times as long as tegmen, curved dorsally in apical portion, thick in basal portion, elongate and punctate in apical portion.

Female. $PW/PL 1.10–1.74 (1.60)$; $EL/EW 1.57–1.80 (1.65)$; $EL/PL 2.54–4.02 (3.57)$; $EW/PW 1.26–1.46 (1.36)$; $TL/EW 2.00–2.42 (2.11)$.

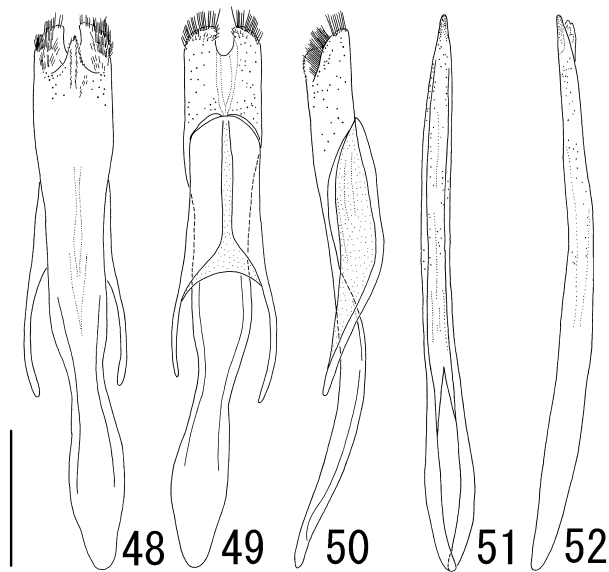
Measurements. Male ($n = 10$): TL 8.00–12.08 (10.35) mm; PW 2.90–4.50 (3.80) mm; PL 1.70–2.70 (2.33) mm; EL 6.30–9.38 (8.03) mm; EW 3.90–5.55 (4.93) mm. Female ($n = 11$): TL 8.35–13.05 (10.87) mm; PW 2.80–4.35 (3.78) mm; PL 1.80–3.35 (2.40) mm; EL 6.55–10.45 (8.47) mm; EW 4.10–5.95 (5.14) mm.

Distribution. Japan (Tsushima).

Biological notes. The species is common in Tsushima Island from lowland to mountainous areas, and attacks broadleaf woods in a lumberyard.



Figures 43–47 Male genitalia of *Kolibacia tsushimana*. 43 Tegmen, dorsal view; 44 Ditto, ventral view; 45 Ditto, lateral view; 46 Phallus, dorsal view; 47 Ditto, lateral view. Scale bar: 0.5 mm.



Figures 48–52 Male genitalia of *Kolibacia tibialis*. 48 Tegmen, dorsal view; 49 Ditto, ventral view; 50 Ditto, lateral view; 51 Phallus, dorsal view; 52 Ditto, lateral view. Scale bar: 0.5 mm.

***Kolibacia tibialis* (Reitter, 1889)**

(Figs 3,9,12,23,29,35,48–52,54,56)

urn:lsid:zoobank.org:act:FC9F36B9-A0CA-4F51-9317-B24DADF59970

[Japanese name: Oo-gomadara-kokunusuto]

Leperina tibialis Reitter, 1889, 217. Miyatake, 1985, 148, pl. 24, no. 5. Kolibáč, 2007, 364.

Kolibacia tibialis: Leschen & Lackner, 2013, 288.

Type specimen examined. 1 Syntype (BMNH), “Type H. T.”, “SYN-TYPE”, “Japan. G. Lewis. 1910-320.”, “*Leperina tibialis* m n. sp.”, “Sapporo. 5. VIII.-16. VIII. 80.”.

Further specimens examined. Hokkaido. 1 male (EUMJ), “HOKKAIDO Sahunkyo 18. VII. 1970 M. Sakai leg.”; 3 females (EUMJ), “HOKKAIDO maruyama, Sapporo 18 VII, 1956 Y. Nishijima”; 1 female (EUMJ), “Hokkaido Asahi-mura Jun. 28. 1952 T. Hasegawa”; 1 female (EUMJ), “(HOKKAIDO) Wakoto, lake Kucharo 5. VII. 1958 M. Miyatake”; 1 female (EUMJ), “Hokkaido, Shiraiikawa VII. 24. 1983 Tanabe leg.”.

Honshu. 1 male (EUMJ), “Hiwada Takane-mura Gifu Pref. 31. VIII. 1993 H. Yoshitomi leg.”; 1 male (EUMJ), same data, but “28. VI. 1994”; 1 female (EUMJ), same data, but “25. VII. 1995”; 1 female (EUMJ), same data, but “24–25. VI. 1995”; 1 male (EUMJ), same data, but “10. VII. 1995 M. Sato leg.”; 2 males (EUMJ), “Near Hachimantai (ca 1000–1300 m) Ashiro-chô, Iwate Pref. 10–13. VII. 1995 H. Yoshitomi leg.”; 2 males and 1 female, “Towada Aomori Pref. 26-VI-1960 K.



Figures 53–56 Fore tibiae (53,54) and abdominal ventrites (55,56) of *Kolibacia* spp. 53,55 *K. squamulata*; 54,56 *K. tibialis*. Scale bars: 1.0 mm.

Shimoyama”; 1 male (EUMJ), same data, but “5-VI-1960”; 1 male (EUMJ), “Hiraka-cho Aomori Pref. 22-V-1958 K. Shimoyama”; 1 male (EUMJ), same data, but “14-VIII-1958”; 1 male (EUMJ), “Hirakura Misugimura Mie Pref. 23-V. 1993 H. Yoshitomi leg.”; 1 male, same data, but “13. VI. 1993 K. Fukuzumi leg.”; 1 male (EUMJ), “Hirayu Gifu VII. 24. 1946 K. Ohbayashi”; 1 female (EUMJ), same data, but “VII. 23. 1946”; 1 male (EUMJ), “Azusayama Kawakami-mura Nagano Pref. 24. VII. 1993 H. Yoshitomi leg.”; 1 male (EUMJ), “(HONSHU) Simajima-dani Nagano Pref. 7. VII. 1969 S. Kinoshita”; 1 female (EUMJ), “Osawa, Katashina-mura, Gunma P., 1. VIII. 1989 H. Yoshitomi”; 1 female (EUMJ), “(Pref. Nagano) Karuizawa Jul, 23. 1951 S. Hisamatsu”; 1 female (EUMJ), “Mt. Hakkoda (Mt. Takadaohtake) Aomori Pref. 11. X. 1965 S. Hisamatsu N. Morishita”.

Shikoku. 1 male (EUMJ), figured in Miyatake 1985, 148, pl. 24, no. 5), “(SHIKOKU) Omogo-kei Ehime Pref. 26. V, 1969 M. Sakai leg.”, “8-05”; 1 male and 1 female (EUMJ), “[EHIME: JAPAN] Mt. Shiratsue

Matsuyama City 27. V. 2007 S-T. Hisamatsu leg.”; 1 male (EUMJ), “[EHIME: JAPAN] Komenono Matsuyama City 11. VI, 1993 K. Okada legit”; 1 female (EUMJ), same locality, but “28. VI. 1970 S. Kinoshita”; 1 female (EUMJ), “(SHIKOKU) Mt. Ishizuchi Ehime Pref. 21–24. VII, 1968 M. Iga leg.”; 1 female (EUMJ), “Ehime Mt. Omogo 27. VI. 1951 M. Miyatake”; 1 female (EUMJ), “26. VII. 1964 Oda 900 m high Ehime pref. Japan H Kan”; 1 female (EUMJ), “val. NARUKAWA Ehime-pref. Japan 25. VI. 1972 H. Kan leg.”; 1 male and 1 female (EUMJ), “Hoonomata-rindo Odamiyama, Ehime 30–31. VII. 1994 N. Ohbayashi leg.”; 1 female, “(Ehime JAPAN) Koyayama Odamiyama 5. VI. 1997 E. Yamamoto”.

Kyushu. 1 male (EUMJ), “Kurodake Ohita Pref. 8. VII. 1995 K. Sasagawa”.

Redescription. Male. Color of body black, strongly shiny; abdominal ventrites III–VII reddish brown (Fig. 56). Scales (Fig. 12) on head, pronotum and scutellum cream, oblong ($L/W = 3.0\text{--}4.0$); scales on elytra white to cream, oval ($L/W = 1.0\text{--}2.0$).

Head (Fig. 23) coarsely and closely punctate, slightly depressed dorsally in frons; front margin of clypeus shallowly concave. Tuft of setae on submentum (Figs 17–19) golden, long, bearing narrowly in smaller specimens and widely in larger specimens. Pronotum (Fig. 29) widest at middle, coarsely and closely punctate throughout, but punctures on mesal part rather small; longitudinal narrow glabrous line present on midline of anterior half; anterior corners obtuse; $PW/PL = 1.42\text{--}1.63$ (1.53). Prosteronum sparsely covered with short setae, with narrow or absent glabrous area in mesal portion; hypomeron rugose, bearing short setae; posterior margin of prosternal process straight. Mesoventrite closely and coarsely punctate, lack glabrous area. Scutellum semicircular; W/L about 2.0. Elytra with indistinct 8 elytral carinae; epipleuron relatively narrow, abruptly tapering posteriorly; $EL/EW = 1.63\text{--}1.85$ (1.72); $EL/PL = 3.44\text{--}3.74$ (3.55); $EW/PW = 1.27\text{--}1.42$ (1.35); $TL/EW = 2.09\text{--}2.35$ (2.20). Tuft of scaly setae on dorsal surface of tibiae (Fig. 54) white, situated on proximal 1/3 to near apex.

Sternite VIII semicircular, bearing long setae in caudal part. Tegmen long and slender; phallobasic apodeme long and stout, widened in basal portion; tegminal struts long, reaching about basal 1/3 of tegmen; parameres short, fused in basal portion, about 0.18 times as long as length of tegmen, densely covered with short spines in dorsal part. Phallus long and slender, a little longer than tegmen, weakly curved dorsally, punctate in apical part.

Female. $PW/PL = 1.39\text{--}1.60$ (1.49); $EL/EW = 1.63\text{--}1.84$ (1.74); $EL/PL = 3.39\text{--}4.04$ (3.74); $EW/PW = 1.36\text{--}1.57$ (1.45); $TL/EW = 2.04\text{--}2.30$ (2.20).

Measurements. Male ($n = 19$): $TL = 7.25\text{--}12.6$ (10.10) mm; $PW = 2.40\text{--}4.40$ (3.40) mm; $PL = 1.60\text{--}2.75$ (2.22) mm; $EL = 5.65\text{--}9.85$ (7.88) mm; $EW = 3.30\text{--}5.60$ (4.60) mm. Female ($n = 17$): $TL = 8.88\text{--}14.35$ (10.90) mm; $PW = 2.88\text{--}4.60$ (3.42) mm; $PL = 1.98\text{--}3.00$ (2.30) mm; $EL = 6.90\text{--}11.35$ (8.61) mm; $EW = 3.97\text{--}6.80$ (4.96) mm.

Distribution. Japan (Hokkaidô, Honshû, Shikoku, Kyûshû).

Biological notes. This species is endemic to Japan, and is distributed in northern to southern areas (Fig. 67). The species is readily collected from a mountainous lumberyard, and attacks broadleaf and conifer woods.

Remarks. Judging from the original description, this species had been described based on some specimens, but we could examine only one syntype deposited in BMNH.

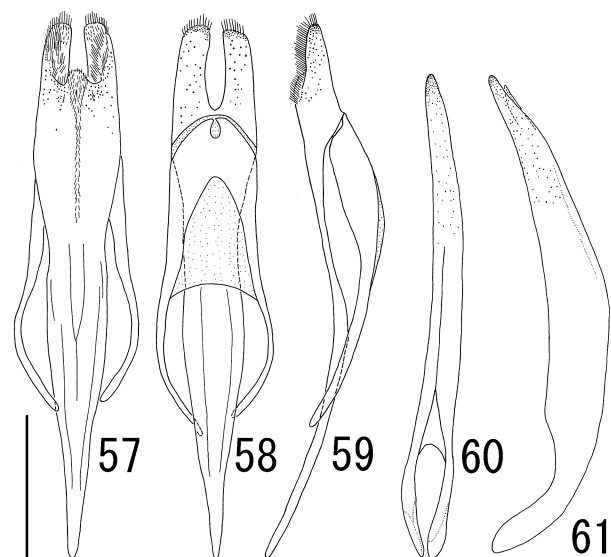
Kolibacia okinawana sp. nov.

(Figs 4,10,12–14,24,30,57–61)

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[Japanese name: Okinawa-gomadara-kokunusuto]

Type series. Holotype (EUMJ): 1 male, “Oku Okinawa Is. 16. V. 1978 H. Makihara”. Paratypes: 2 males and 3 females (EUMJ, NSMT), same data as for the holotype; 1 female (KAC), “JAPAN; Ryukyus Okinawa-jima Is. Oogimi-son, Nûha 27. V. 2009 Saneaki TSUHA leg.”, “K. AKITA collection KAC 41608”; 1 male and 1 female (HOC), “Hentona Kunigami-son (Okinawa-jima Is)



Figures 57–61 Male genitalia of *Kolibacia okinawana* sp. nov., paratype. 57 Tegmen, dorsal view; 58 Ditto, ventral view; 59 Ditto, lateral view; 60 Phallus, dorsal view; 61 Ditto, lateral view. Scale bar: 0.5 mm.

Okinawa P. JAPAN 19-VI. 2005 Hiroshi OTOBE leg.”; 1 female (EUMJ), “Nuha Ohgimi Vill. Okinawa-jima Is. Okinawa Pref. JAPAN 23-VI-2003 Jun OKAMURA leg.”; 1 female (HOC), “Kina, Ogimi-son (Okinawa-jima Is.), Okinawa-ken JAPAN 2-5-V. 2007 Hiroshi OTOBE leg.”; 2 females (HOC), “Hentona Kunigami-son (Okinawa-jima Is.) Okinawa P. JAPAN 3-4-V. 2006 Hiroshi OTOBE leg.”; 3 females, “Hiji, Kunigami-son, Okinawa-jima, Okinawa Pref., 29-IV-2012, K. Otsuka leg.” (written in Japanese); 1 female, “Hama, Kunigami-son, Okinawa-jima, Okinawa Pref., 15-VII-2007, K. Otsuka leg.” (written in Japanese); 2 males and 1 female (EUMJ, HOC), ditto, but 30-IV-2007; 1 female (EUMJ), “OKINAWA-JIMA Kunigami-son Yona 16. V. 1992 H. Nakano leg.”; 1 female (EUMJ), “Hiji-otaki, Kunigami-son, Okinawa-jima 1-V-1997, K. Tsuchida leg.”; 1 female (EUMJ), “Yona Okinawa-hontô 24. IV. 1982 T. Itô leg.”; 1 female (EUMJ), “Is. Okinawa Takazato, Oogimi-son 3. VI. 2000 N. Ohbayashi”.

Additional material. 1 Female (KAC), “JAPAN; Ryukyus Amami-ooshima Is. Yamato-son, Yamato-hama, 20. VI. 2008 Seiichirô Fukida leg.”, “K. AKITA collection KAC 32327”.

Description. Male. Color of body black, strongly shiny. Scales (Fig. 12) on head, pronotum, scutellum and elytra cream, oblong ($L/W = 2.0-4.5$).

Head (Fig. 24) coarsely and closely punctate, slightly depressed dorsally in frons; front margin of clypeus shallowly concave. Tuft of setae on submentum (Fig. 13) brown, short, widely bearing. Pronotum (Fig. 30) widest at middle, coarsely and closely punctate in lateral portion, coarsely and sparsely punctate in mesal portion, with two pairs of shallow submesal concavities in apical 1/3 and 2/3 of disc, but anterior ones indistinct; anterior corners rounded; $PW/PL = 1.52-1.59$ (1.56). Prosternum sparsely covered with minute setae, with narrow longitudinal glabrous area in mesal portion; hypomeron rugose, bearing short setae; posterior margin of prosternal process gently curved. Mesoventrite closely punctate, with longitudinal glabrous area. Scutellum semicircular; W/L about 1.7. Elytra with 6 elytral carinae; epipleuron relatively wide, gently tapering posteriorly; $EL/EW = 1.58-1.72$ (1.64); $EL/PL = 3.21-3.38$ (3.31); $EW/PW = 1.27-1.38$ (1.30); $TL/EW = 2.04-2.23$ (2.14).

Sternite VIII semicircular, closely bearing long setae in caudal part. Tegmen long and slender; phallobasic apodeme long, evenly tapered anteriorly; tegminal struts long, reaching about basal 2/9 of tegmen; parameres short, about 0.17 times as long as length of tegmen, densely covered with short spines in dorsal part. Phallus long, as long as tegmen, gently curved dorsally, distinctly tapered in basal part, sparsely punctate in apical part.

Female. $PW/PL = 1.51-1.64$ (1.56); $EL/EW = 1.61-1.78$ (1.70); $EL/PL = 3.23-3.64$ (3.49); $EW/PW = 1.24-1.37$ (1.32); $TL/EW = 2.08-2.29$ (2.19).

Measurements. Male ($n = 6$): $TL = 11.05-14.90$ (13.10) mm; $PW = 3.90-5.30$ (4.73) mm; $PL = 2.55-3.40$ (3.04) mm; $EL = 8.50-11.50$ (10.06) mm; $EW = 4.95-7.30$ (6.14) mm. Female ($n = 16$): $TL = 11.40-16.80$ (13.73) mm; $PW = 3.83-6.00$ (4.77) mm; $PL = 2.50-3.90$ (3.06) mm; $EL = 8.90-12.90$ (10.67) mm; $EW = 5.10-7.85$ (6.29) mm.

Distribution. Japan (Amami-Ôshima, Okinawa-jima).

Biological notes. The species is collected from broadleaf woods in lowland to mountainous areas.

***Kolibacia regularis* (Grouvelle, 1913), comb.**

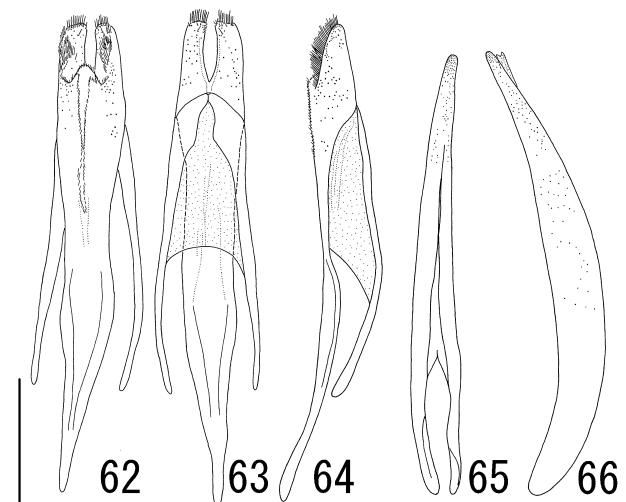
nov. (Figs 5,6,11,12,20,25,26,31,32,37,62-66)

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[Japanese name: Taiwan-gomadara-kokunusuto]

Leperina regularis Grouvelle, 1913, 46.

Type specimens examined. 1 Syntype (BMNH), “Cotype”, “COTYPUS”, “Formosa. H. Sauter. Brit. Mus. 1923-61.”, “Fuhosho Formosa Sauter -VIII- 07-09”, “*Leperina regularis* Grouv.”; 1 syntype (DEI), “*Leperina regularis* sp. nr. 520 m”, “Syntypus”, “Banshoryo Distr. Sokutsu (Formosa) H. Sauter VI. 1912”, “Grouvelle det.”. **Further specimens examined.** Taiwan. 1 male (DEI), “TAIWAN: Taipei Hushan [Chinese character] 14. VI. 2004, leg. H.-T. Cheng”; 1 male (TARI), “Taiwan: Hualien Kuanyuan [Chinese character] 18. VI. 2006, leg. H.-Y. Li”; 1 ex. (TARI), “Taito FORMOSA 14. VIII.



Figures 62-66 Male genitalia of *Kolibacia regularis*. 62 Tegmen, dorsal view; 63 Ditto, ventral view; 64 Ditto, lateral view; 65 Phallus, dorsal view; 66 Ditto, lateral view. Scale bar: 0.5 mm.

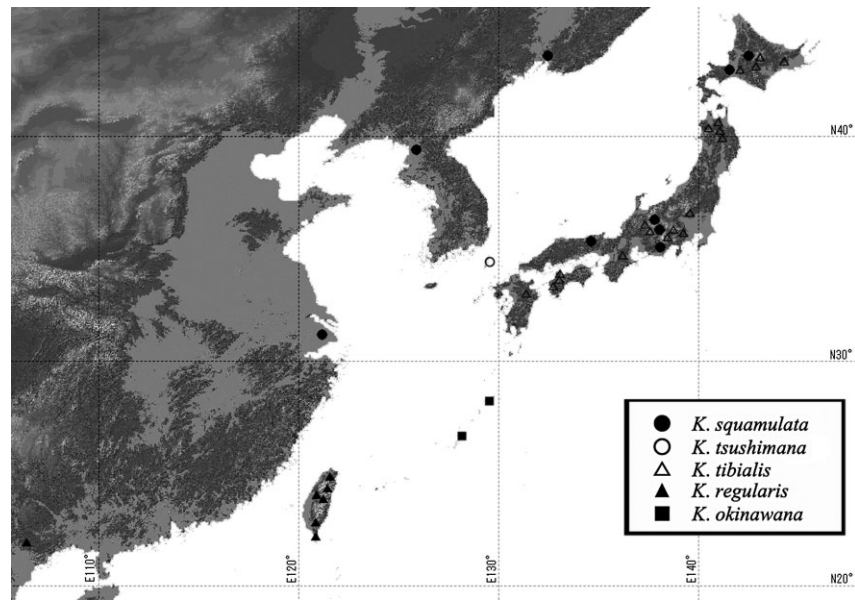


Figure 67 Map showing the distribution of *Kolibacia* spp.

1932”; 1 ex. (TARI), “59 Kuraru FORMOSA 13-VI-1932 COL. Y. MIWA”; 1 female, “Satono, FORMOSA 11-III. 1939 T. Mitono”; 1 female (TARI), “HORISHA Formosa 20-6-1930 S. Hirashima”, “4”; 1 male and 2 females (EUMJ), “[TAIWAN] Kenting Park Pingtung Hsien 16~18. III. 1977 Y. Notsu leg.”; 1 male and 1 female (EUMJ), “(Taiwan) 1974 M. Sato leg.”; 1 female (EUMJ), “Paling, Taoyuan Taiwan 28-VI-1990”; 1 female (EUMJ), “Sung kang Nantou, Taiwan 27-VI-1990”; 1 female (EUMJ), “(TAIWAN) Sankuan, alt. 800 m, near Palin, Taoyuan Co. 15. V. 1978 N. Yashiro leg.”; 1 male and 1 female (EUMJ), “(TAIWAN) Sulo, alt. 700 m, near Palin, Taoyuan Co. 28. IV. 1978 N. Yashiro leg.”; 3 males (EUMJ), “Tai Yuan Shan, near Liu Kui, S-Taiwan 1. VI. 1986 Col. K. Baba”; 1 female, “Tai Yuan Shan, near Liu Kui, S-Taiwan 10. VI. 1986 Col. K. Baba”; 1 male (EUMJ), “(FORMOSA) Sulo Taoyuan Hsien 7, V 1982 N. Ohbayashi leg.”; 1 female (EUMJ), “[FORMOSA] Taidainojyo nr. Jenai Nan Tow Country IV-17, 1976 K. Ushijima leg.”.

Vietnam. 1 Male (KURA), “Tam Dao Vinh Phu Prov. N. Vietnam Apr. -7 May 1996 Native leg.”, “Kurashiki Mus. N. H. Exot. Insect Coll. no. 28300”; 1 male and 1 female (HOC), “Tam Dao V N. Vietnam May, 1998 K. Aramaki”.

Redescription. Male. Color of body black, strongly shiny. Scales (Fig. 12) on head, pronotum and scutellum cream, oblong (L/W = 2.0–3.0); scales on elytra cream, oval (L/W = 1.0–2.0).

Head (Figs 25,26) coarsely and closely punctate, slightly depressed dorsally in frons; front margin of clypeus shallowly concave. Tuft of setae on submentum (Fig. 20) brown, short, narrowly bearing. Pronotum

(Figs 31,32) widest at middle, coarsely and closely punctate in lateral portion, coarsely and sparsely punctate in mesal portion; midline narrowly and indistinctly glabrous; two pairs of shallow and oblong submesal concavities present in near anterior margin and posterior 1/3 of disk; anterior corners rounded; PW/PL 1.43–1.54 (1.48). Prosternum sparsely covered with minute setae, with narrow longitudinal glabrous area in mesal portion; hypomeron rugose, bearing short setae; posterior margin of prosternal process straight. Mesoventrite closely punctate, with longitudinal glabrous area. Scutellum semicircular; W/L about 2.4. Elytra rather distinct in 6 elytral carinae; epipleuron relatively narrow, abruptly tapering posteriorly; EL/EW 1.50–1.74 (1.66); EL/PL 3.16–3.42 (3.31); EW/PW 1.29–1.37 (1.35); TL/EW 1.98–2.26 (2.16).

Sternite VIII semicircular, shallowly concave in caudal margin, bearing long setae in caudal part. Tegmen long and slender; phallobasic apodeme long, abruptly tapered anteriorly in basal 1/3; tegminal struts long, reaching about basal 1/4 of tegmen; parameres short, about 0.15 times as long as length of tegmen, densely covered with short spines in dorsal part. Phallus long, a little shorter than tegmen, gently curved dorsally, evenly tapered basally and apically, sparsely punctate in apical part.

Female. PW/PL 1.41–1.52 (1.45); EL/EW 1.56–1.81 (1.66); EL/PL 3.13–3.65 (3.32); EW/PW 1.33–1.44 (1.39); TL/EW 2.03–2.31 (2.15).

Measurements. Male ($n = 7$): TL 11.70–15.80 (14.01) mm; PW 3.93–5.85 (4.82) mm; PL 2.65–3.80 (3.26) mm; EL 9.05–12.00 (10.75) mm; EW 5.40–8.00 (6.49) mm. Female ($n = 10$): TL 11.30–16.15 (14.19) mm; PW 3.80–5.40 (4.75) mm; PL 2.70–3.70

(3.28) mm; EL 8.60–12.45 (10.91) mm; EW 5.30–7.40 (6.58) mm.

Distribution. Taiwan, Vietnam (new record).

Biological notes. This species is common in Taiwan from lowland to mountainous areas.

Remarks. Judging from the original description, this species had been described based on many specimens (“Nombres exemplaires” in Grouvelle 1913), but we could examine only two syntypes deposited in BMNH and DEL.

DISCUSSION

As a result of our revision, five species of the genus *Kolibacia* are recognized from the eastern part of Asia including a part of the Oriental Region. *Kolibacia squamulata* is widely distributed between Mongolia to the northeastern part of Japan, and its sibling species *K. tsushimana*, which has been treated as a subspecies of *K. squamulata* but is treated as an independent species in this paper, is limited to Tsushima Island. *Kolibacia tibialis* is distributed in Japan from Hokkaido to Kyushu, and is sympatric to *K. squamulata* in Hokkaido and the northern part of Honshu. However, the former species generally inhabits a lower altitude area than the latter. *Kolibacia okinawana* is distributed in Okinawajima and Amami-Oshima, and the related species *K. regularis* is distributed in Taiwan and Vietnam.

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