Elytra, *Tokyo*, New Series, **7** (2): 421–438
December 25, 2017

A Revision of the Genus *Ancylopus* (Coleoptera, Endomychidae) of Japan

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Abstract Resulting of a revision of the genus *Ancylopus* from Japan based on about 500 specimens, three species are recognized. *Ancylopus pictus asiaticus* Strohecker, 1972 is the most common species in Japan (Hokkaido to Okinawa). *Ancylopus phungi* Pic, 1926 is rare species recorded from Hokkaido and Honshu. *Ancylopus borealior* Strohecker, 1972 is firstly recorded from Japan, and has been only collected from Fukushima Pref. The three species are redescribed with figures and key using Japanese specimens, and the larva and pupa of *Ancylopus pictus asiaticus* Strohecker is described.

Introduction

The genus *Ancylopus* Costa, 1850 of the subfamily Lycoperdininae Redtenbacher, 1844 is represented by 17 species (+ 6 subspecies), and is distributed in Europe, Africa, Madagascar, India, Sri Lanka, Indochina, East Asia, Southeast Asia, to Papua New Guinea (Shockley *et al.*, 2009 a). The most of the species in the genus inhabits open land, i.e. grass land, wet land, and paddy field, and feeds upon decaying vegetable matter (Arrow, 1925). Arrow (1925) considered that the previously known species were treated as junior synonyms of *A. melanocephalus* (Olivier, 1808) widely distributed in Europe to East Asia, and this taxonomic treatment was followed by Strohecker (1953). However Strohecker (1972) reviewed the Asian and European species of this genus, and he recognized six species and six subspecies.

Up to the present, two species of the genus have been recorded from Japan (Strohecker, 1972; Sasaji, 1983), but were not reviewed until now. The most common species, *A. pictus asiaticus* Strohecker, 1972, is well known and there are many collecting record. On the other hand, another species, *A. phungi* Pic, 1926 was recorded from "Fuji Nat. Pk." by Strohecker (1972), and no additional record has been reported (Sasaji, 1980). In this paper, we review the Japanese species of the genus based on about 500 specimens.

Material and Methods

The materials examined in this paper are preserved in Ehime University Museum, Matsuyama, Japan (EUMJ); Systematic Entomology, Hokkaido University, Sapporo, Japan (SEHU); private collection of Y. Hirano (PYH); private collection of K. Akita (PKA).

General observations, dissections and microstructures of dissected parts were made under a Leica MZ95. After observation, the dissected parts were mounted on the same card with the specimen. Photographs were taken under a Leica MZ95.

Technical terms refer to Tomaszewska (2005).

Morphological abbreviations used in this study are as follows: EL: elytral length from anterior margin to elytral apex; EW: maximum elytral width; PML: pronotal length in median line; PSL: pronotal length from anterior angle to posterior margin; PW: maximum width of pronotum; TL: total length (PML + EL). The average is given in parenthesis after the range.

Genus *Ancylopus* COSTA, 1850

[Japanese name: Yotsuboshi-tentoudamashi Zoku]

Ancylopus COSTA, 1850: 13. GERSTAECKER, 1858: 188; ARROW, 1925: 333; STROHECKER, 1972: 704; TOMASZEWSKA, 2005: 19 [redescription].

Type species: *Endomychus melanocephalus* OLIVIER, 1808.

Diagnosis. Body (Fig. 1) oblong and glossy, yellowish brown to dark reddish brown; elytral maculations (Fig. 2A) consisting of basal maculation (b), sutural maculation (s), latero-median maculation (lm), and latero-apical maculation (la); lm oval, attached to lateral margin; la oblong, not attached lateral margin. Leg black or dark brown. Antennae (Fig. 3) shorter than 1/2 of TL; antennal club 3-segmented, loose; antennomere 9 of female slender. Pronotum (Fig. 4A–F) bearing long setae in anterior margin, with stridulatory membrane; basal sulcus distinct; anterior angles acute; posterior angles right angled; female pronotum grooved in mesal part, with long lateral sulci curved inwardly and forming M-shape. Mesoventrite (Fig. 4G–I) slightly setose, with short intercoxal process. Metaventrite (Fig. 4G–I) slightly setose, having a pair of knobs at basal 1/2 of metathoracic discrimen; anterior margin widely bordered, with three pairs of mycangia. Elytra elongate, densely and irregularly covered with fine punctures. Legs slender and setose; tibiae (Fig. 5) densely covered with long setae in apical part, with tooth in male; tarsi densely setose. Abdomen (Fig. 7A–F) bearing long setae in middle, with five freely articulated ventrites. Male sternite 8 (Fig. 6D–F) emarginate at middle; tergite 8 (Fig. 6G–I) large, blunt at apex. Male genital segment (Fig. 6A–C; = sternite and tergite 9) with paired apophyses fused at apical 1/3. Aedeagus (Fig. 8) moderately long, strongly sclerotized, stout; median lobe ventrally curved, having three processes in apical part; apical branch ("ab" in Fig. 8) longest among other process, projecting at apex; subapical branch ("sb" in Fig. 8) secondary longest, situated under ab; dorsal process ("dp" in Fig. 8) shortest, projecting from apico-dorsal part; tegmen placed at base of median lobe, ring-like shaped, fused with parameres.

Female genitalia (Fig. 7G–I) with transversal tergite 8; ovipositor sclerotized and stout; styli present.

Remarks. This genus resembles *Avencymon* STROHECKER, 1971 and *Malindus* VILLIERS, 1953 in the body size and shape, but differs from them by the following characteristics: female pronotum with lateral sulci connected medially; characterized elytral maculations; labrum subparallel-sided (TOMASZEWSKA, 2005).

THAXTER (1916) described *Rickia ancylopi* THAXTER, 1916 (Laboulbeniaceae, Laboulbeniales) on *Ancylopus bisignatus* GERSTAECKER, 1858 in Cameroon, and this ascomycota have been recorded from other *Ancylopus* species in India, Japan, Malaysia, Taiwan and Korea (SUGIYAMA, 1974; LEE & CHOI, 1992; LEE *et al.*, 1995; SHOCKLEY *et al.*, 2009 b).

Key to the Species of the Genus *Ancylopus* from Japan

1. Basal maculation (b) narrow at middle, widened in humeral parts; sutural maculation (s) narrow; latero-median (lm) and latero-apical (la) maculations small (Fig. 2H, I). In male, fore tibia (Fig. 5C) with slender tooth in inner margin; middle tibia (Fig. 5F) without tooth. Male pronotum with lateral sulci short and facing on apical outside; lateral sulci of female pronotum rather long, not fused with each other. Median lobe (Fig. 8C, F) without dorsal process (dp). TL 4.50–4.85 (4.67) mm. Distribution: Japan (Honshu), China ····· *A. borealior*

— Basal maculation (b) wide at middle, slightly narrow in humeral parts in most specimens; s long and wide; lm large; la large, connected with s in some specimens. In male, fore tibia with wide

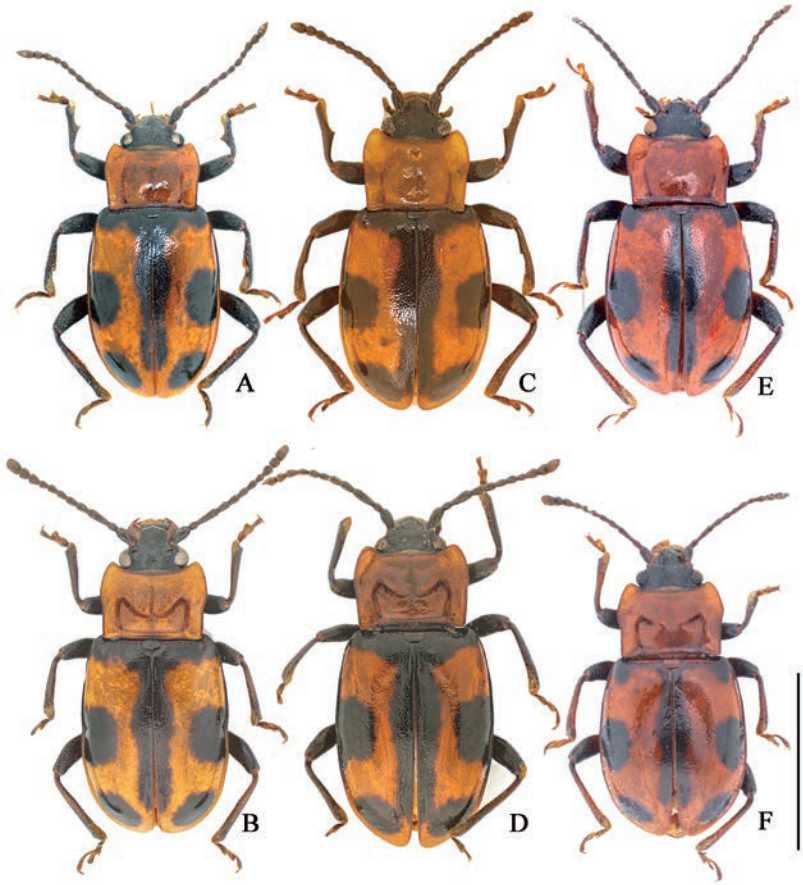

Fig. 1. Habitus of *Ancylopus* spp. from Japan. —— A & B, *Ancylopus pictus asiaticus* STROHECKER; C & D, *Ancylopus phungi* PIC; E & F, *Ancylopus borealior* STROHECKER. —— A, C & E, Male; B, D & F, female. Scale bar = 3.0 mm.

tooth in inner margin; middle tibia with tooth in inner margin. Male pronotum with lateral sulci long, subparallel; lateral sulci of female pronotum less long, curved inwardly and connected with each other, forming M-shape. Median lobe with dp ····· 2

2. Basal maculation (b) bisinuate in posterior margin; sutural maculation (s) long; latero-apical maculation (la) separated from s in most specimens (Fig. 2A–C). Male middle tibia (Fig. 5D) with tooth at basal 3/5 of inner margin; hind tibia (Fig. 5G, H) with serrate from base to apex. Median lobe (Fig. 8A, D) strongly excavate in apico-dorsal 1/5 and ventrally curved; ab long, slender and slightly curved, ventrally curved at apex; sb short and cultrate; dp acute and short. TL 3.91–5.10 (4.48) mm. Distribution: Japan (Hokkaido, Honshu, Shikoku, Kyushu, Tokara Isls., Ishigaki-jima), China, India, Taiwan, Vietnam ····· *A. pictus asiaticus*

— Basal maculation (b) straight in posterior margin; s very long; la connected with s in most specimens (Fig. 2D–G). Male middle tibia (Fig. 5E) with tooth at basal 2/5 of inner margin; hind tibia (Fig. 5I) with serrae from middle to apex. Median lobe (Fig. 8B, E) slightly excavate in apico-dorsal 1/9, ventrally curved; ab very long, wide and subangulately, dorsally recurved; sb long and slender; dp right angled and very short. TL 4.23–5.41 (4.87) mm. Distribution: Japan (Hokkaido, Honshu), China, Korea, Tibet, Vietnam ····· *A. phungi*

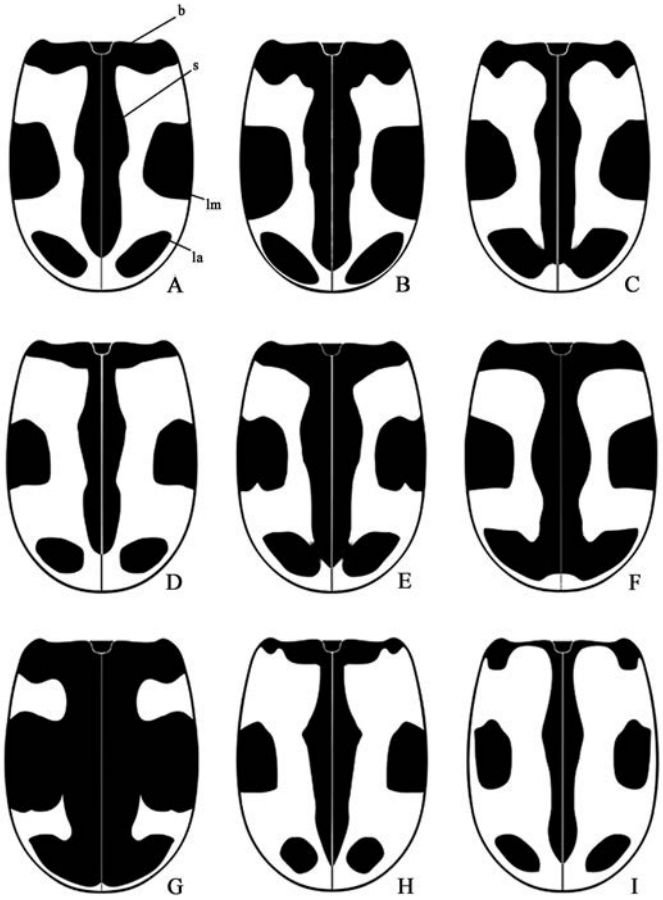

Fig. 2. Elytral pattern variation of *Ancylopus* spp. from Japan. —— A–C, *Ancylopus pictus asiaticus* Strohecker; D–G, *Ancylopus phungi* Pic (G: Chinese specimen); H & I, *Ancylopus borealior* Strohecker. —— Abbreviations: b, basal maculation; s, sutural maculation; lm, latero-median maculation; la, latero-apical maculation.

Ancylopus pictus asiaticus Strohecker, 1972

[Japanese name: Yotsuboshi-tentoudamashi]

(Figs. 1A, B, 2A–C, 3A, D, 4A, B, G, 5A, D, G, H, 6A, D, G, 7A, D, G, 8A, D & 9–11)

Ancylopus pictus asiaticus Strohecker, 1972: 706. Sasaji, 1980: 1; 1983: 6 [list]; 1985: 241 [note, photo]; Tomaszewska, 2007: 562 [catalogue]: Shockley *et al.*, 2009 a: 32 [list].

Ancylopus melanocephalus: Gorham, 1873: 205 [list]; Arrow, 1925: 333 [note]; Ohta, 1931: 222; Chûjô, 1939: 60–61 [note, fig]; Taniguchi, 1942: 157; Strohecker, 1953; 75 [list]; Hayashi & Nakamura, 1953: 29 [larva]; Hayashi *et al.*, 1959: 448 [larva]. [nec Olivier, 1808] .

Ancylopus melanocephalus (Olivier) var. *pictus* Wiedemann, 1823: Csiki, 1910: 32 [list].

Ancylopus villiersi Dajoz, 1973: 1046. Synonymized by Sasaji (1983).

Specimens examined. [Hokkaido] 1 ♂, 6 ♀♀ (EUMJ), Satsumae, Matsumae-chô, Matsumae-gun, 1.VII.2017, A. Kashizaki leg.; 5 exs. (SEHU), Okushiri, Uchida, Sawada leg. [Honshu] <Miyagi Pref.> 2 exs. (SEHU), Gamoh, 20.X.1985, H. Kusakari leg. <Fukushima Pref.> 1 ex. (SEHU), Tashiro-zan, Aizu, 20.VIII.1951, K. Nagayama leg.; 1 ex. (SEHU), Wakamatsu, 5.VIII.1946, K. Nagaya-

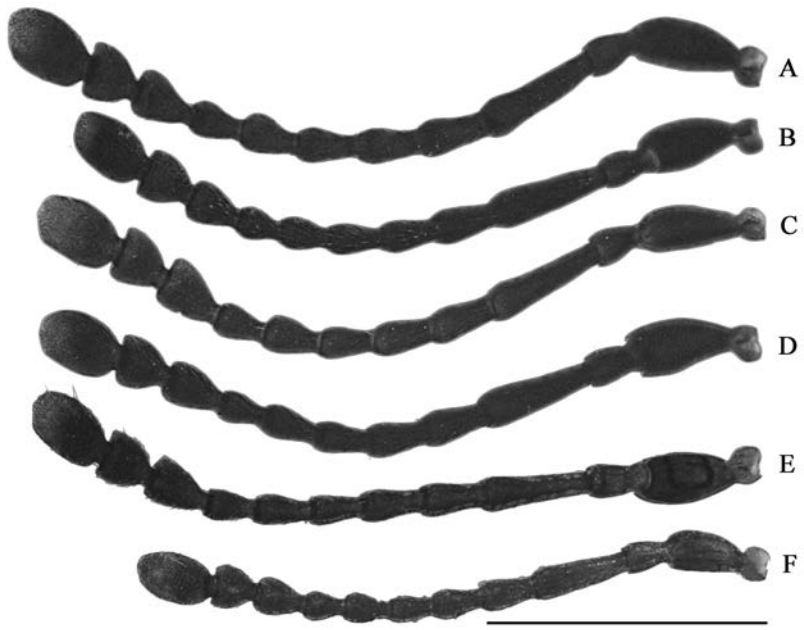

Fig. 3. Left antennae of *Ancylopus* spp. in male (A–C) and female (D–F). —— A & D, *Ancylopus pictus asiaticus* Strohecker; B & E, *Ancylopus phungi* Pic; C & F, *Ancylopus borealior* Strohecker. Scale bar = 1.00 mm.

ma leg. <Tochigi Pref.> 1 ex. (SEHU), Nishinasuno, 30.IX.1975, T. Kumata leg. <Ibaraki Pref.> 2 ♀♀ (PKA), Ami-machi, Kasumigaura, 13.III.1996, H. Onodera leg.; 5 ♂♂, 4 ♀♀ (EUMJ), Oarai-kaigan, 26.XI.1983, M. Nishikawa leg. <Gumma Pref.> 1 ex. (SEHU), Tokura, 6.VII.1951, T. Nakane leg. <Saitama Pref.> 4 ♂♂, 1♀ (EUMJ), Misawa, Minano-chô, Chichibu-gun, 23.VII.2017, T. Nonaka leg. <Tokyo Metr.> 2 ♂♂, 5 ♀♀ (EUMJ), Futago-tamagawa, 25.V.1949, S. Hisamatsu leg.; 1 ex. (SEHU), Urasawa, 31.VII.1979, M. Miura leg.; 2 exs. (SEHU), no data, 7.IV.1938; 1 ex. (SEHU), no data, Matsumura leg. <Kanagawa Pref.> 2 ♂♂, 1 ♀ (EUMJ), Hisano, Odawara-shi, 24.X.1965, Y. Hirano leg.; 1 ♀ (EUMJ), Nishi-Tanzawa, 23.VIII.1988, Y. Notsu leg.; 1 ♀ (EUMJ), ditto, 7.V.1972, Y. Hirano leg.; 1 ♀ (EUMJ), Okagami, Kawasaki, 31.V.1971, M. Nishikawa leg.; 1 ♂ (EUMJ), Sagami-gawa, Ebina-shi, 11.IX.2015, Nishikawa leg.; 1 ♀ (EUMJ), Terao, Ayase, 20.IX.1981, M. Nishikawa leg. <Shizuoka Pref.> 1 ♀ (EUMJ), Miho-kaigan, 23.X.2016, Nishikawa leg.; 1 ♂ (EUMJ), Shiomizaka-kaigan, Kosai-shi, 12.IX.1994, H. Yoshitomi leg. <Aichi Pref.> 2 exs. (SEHU), Nagoya, 22.VII.1943, T. Nakane leg. <Nara Pref.> 1 ex. (SEHU), Ikadaba, Ohdai, 22.VII.1953, TK. <Kyoto Pref.> 1 ex. (SEHU), Kibune, 19.IV.1953, T. Nakane leg.; 1 ex. (SEHU), no data, 18.IX.1952, F. Takahashi leg.; 1 ex. (SEHU), no data, 22.VI.1957, F. Takahashi leg. <Osaka Pref.> 1 ♂, 1 ♀ (EUMJ), Nose-chô, Toyono-gun, 30.V.1982, K. Ando leg.; 3 exs. (SEHU), Senriyama, 17.VI.1953, K. Sawada leg.; 4 exs. (SEHU), Uenoshiba, 15.V.1952, K. Sawada leg.; 3 exs. (SEHU), ditto, 9.III.1952, K. Sawada leg. <Hyôgo Pref.> 1 ex. (SEHU), Harima, 8.V.1919, T. Takamuku leg.; 1 ex. (SEHU), Hinagura-tôge, 19.VI.1952, S. Uéno leg.; 1 ♀ (EUMJ), Kariguchi, Akashi-shi, 5.V.1965, M. Tomokuni leg.; 1 ex. (SEHU), Motoyama-mura, Kôbe, 17.XI.1941, K. Sakaguchi leg. <Okayama Pref.> 1 ♀ (EUMJ), Kinko-san, Okayama-shi, 10.X.1978, S. Hisamatsu leg.; 1 ex. (SEHU), Nakao, Kasaoka, 5.X.1995, T. Aono leg. <Hiroshima Pref.> 1 ex. (SEHU), Miyoshi, 11.VI.1991, S. Shiyake leg. [Oki Isls.] 10 ♂♂, 7 ♀♀ (EUMJ), Saigo, Dôgo, 15.VII.2017, H. Yoshitomi leg. [Shikoku] <Kagawa Pref.> 2 ♀♀ (EUMJ), Ido, Miki-chô, Kida-gun, 23.VI.1961, M. Chûjô leg.; 1 ♂, 2 ♀♀ (EUMJ), dit-

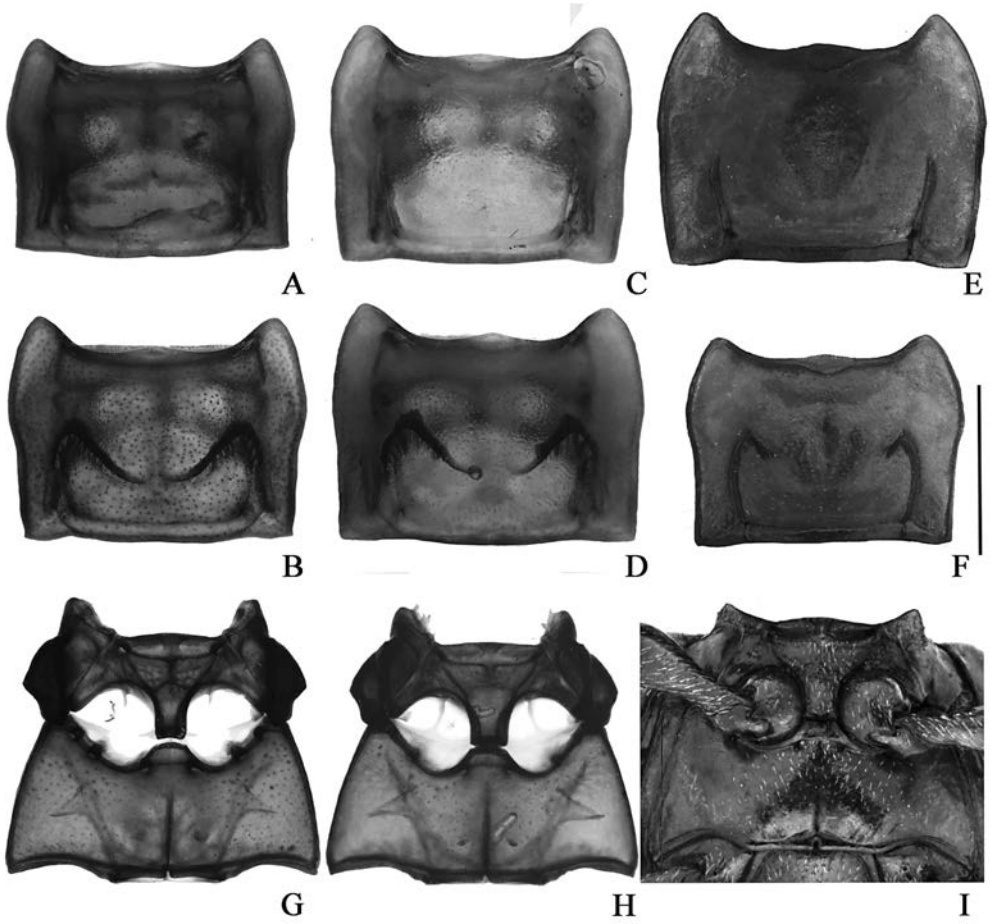

Fig. 4. Pronota (A–F) and meso- and metasterna (G–I) of *Ancylopus* spp. —— A, B & G, *Ancylopus pictus asiaticus* Strohecker; C, D & H, *Ancylopus phungi* Pic; E, F & I, *Ancylopus borealior* Strohecker. —— A, C & E, Male; B, D & F, female. Scale bar = 1.00 mm.

to, 8.XI.1960, M. Chûjô leg.; 1 ♀ (EUMJ), Kawamata, Hiketa-chô, 5.IX.1993, K. Aita leg.; 1 ♂ (EUMJ), Kawanishi-machi, Marugame-shi, 10.VI.2002, Y. Kamite leg.; 1 ♂ (EUMJ), Shin-ike, Kasadakasaoka, Toyonaka-chô, Mitoyo-shi, 4.VIII.2006, J. Ogawa leg.; 2 ♂♂, 1 ♀ (EUMJ), Takamatsu-shi, 19.II.1963, M. Chûjô leg.; 1 ♀ (EUMJ), Zozu-san, 16.VII.1978, M. Sakai leg. <Ehime Pref.> 1 ♀ (EUMJ), Matsuyama-shi, 9.V.2000, N. Hamada leg.; 1 ♂ (EUMJ), ditto, 19.IV.1974, G. Tokihiro leg.; 1 ♂, 1 ♀ (EUMJ), ditto, 26.VI.1950, M. Miyatake leg.; 1 ♀ (EUMJ), ditto, 5.V.1950, M. Miyatake leg.; 1 ♂, 1 ♀ (EUMJ), ditto, 9.VII.1974, G. Tokihiro leg.; 1 ♂ (EUMJ), Fukumigawa-chô, Matsuyama-shi, 13.V.1973, A. Oda leg.; 4 ♂♂, 5 ♀♀ (EUMJ), Gomyo, Matsuyama-shi, 8.XI.1978, I. Amano, Kotani & Y. Seiyama legs.; 1 ♂ (EUMJ), Haruchi-ike, Shimo-Idai, Matsuyama-shi, 28.XI.2006, Y. Satô leg.; 1 ♂ (EUMJ), Hatadera-machi, Matsuyama-shi, 16.X.1948, M. Miyatake leg.; 1 ♀ (EUMJ), ditto, 21.III.2016, Y. Hisasue leg.; 1 ♀ (EUMJ), Higashino, Matsuyama-shi, 15.V.1998, S. Yano leg.; 1 ♂ (EUMJ), ditto, 20.IX.1952, K. Sasaki leg.; 13 ♂♂, 11 ♀♀ (EUMJ), ditto, 22.IV.1995, S. Hisamatsu leg.; 1 ♂ (EUMJ), ditto, 22.IX.1958, Y. Takaishi leg.; 1 ♀ (EUMJ), ditto, 29.XI.1994, K. Aita leg.; 1 ♂ (EUMJ), ditto, 7.VII.1995, Y. Araki leg.; 1 ♂ (EUMJ), Kishi-machi,

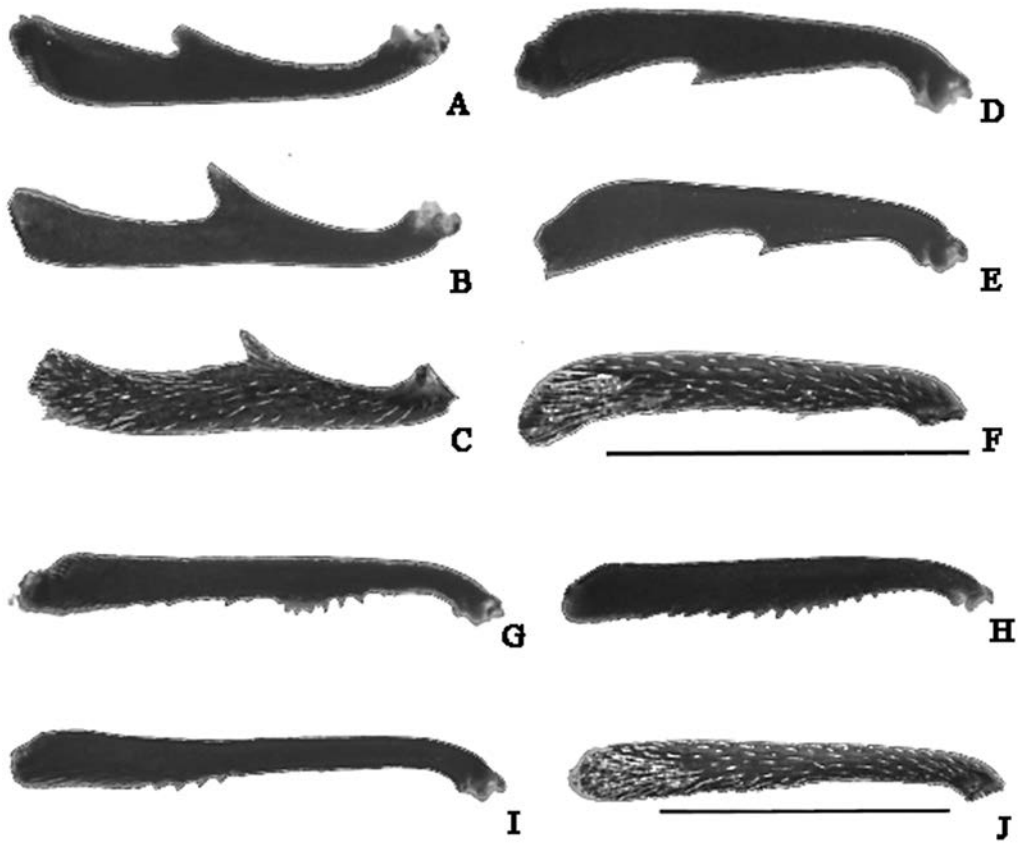

Fig. 5. Male fore tibiae (A–C), mid tibiae (D–F), hind tibiae (G–J) of *Ancylopus* spp. —— A, D, G & H, *Ancylopus pictus asiaticus* Strohecker; B, E & I, *Ancylopus phungi* Pic; C, F & J, *Ancylopus borealior* Strohecker. Scale bars = 1.00 mm.

Matsuyama-shi, 3.XII.2016, K. Yasuda leg.; 1 ♀ (EUMJ), Kita-Umemoto, Matsuyama-shi, 16.VIII.1980, K. Sasagawa leg.; 25 ♂♂, 6 ♀♀ (EUMJ), Komenono, Matsuyama-shi, 23.IX.1994, K. Aita leg.; 1 ♂ (EUMJ), ditto, 7.V.1978, I. Amano leg.; 1 ♂, 1 ♀ (EUMJ), ditto, 9.IV.1988, Y. Utsunomiya leg.; 1 ♂ (EUMJ), Takanawa-san, Matsuyama-shi, 28.IV.1996, H. Nakanishi leg.; 2 ♀♀ (EUMJ), ditto, 5.VII.2006, Y. Senda leg.; 1 ♂, 1 ♀ (EUMJ), Nogutsuna-jima, Matsuyama-shi, 15.X.1957, F. Takechi leg.; 1 ♀ (EUMJ), Ohino, Matsuyama-shi, 22.V.1976, T. Ishihara leg.; 2 ♂♂ (EUMJ), Shin-ike, Zenoh-ji, Matsuyama-shi, 7.VI.2006, Y. Satô leg.; 1 ♂, 1 ♀ (EUMJ), Sugesawa-chô, Matsuyama-shi, 24.VI.2000, M. Sakai leg.; 1 ♂, 1 ♀ (EUMJ), Sugitate, Matsuyama-shi, 12.VII.1957, A. Oda leg.; 1 ♂ (EUMJ), ditto, 8.VI.1969, K. Sasaki leg.; 1 ♂ (EUMJ), Tarumi, Matsuyama-shi, 26.VI.1950, M. Miyatake leg.; 1 ♀ (EUMJ), ditto, 29.VI.1950, M. Miyatake leg.; 1 ♂ (EUMJ), ditto, 3.VII.1950, Y. Satô leg.; 1 ♂ (EUMJ), ditto, 3.VII.1950, M. Miyatake leg.; 1 ♂ (EUMJ), Yama shrine, Higashino, Matsuyama-shi, 22.VIII.1997, S. Hayakawa leg.; 2 ♂♂, 2 ♀♀ (EUMJ), Nakayama-chô, 12.V.1974, A. Oda leg.; 1 ♀ (EUMJ), Estuary of Shigenobu-gawa, 25.VI.1999, H. Nakanishi leg.; 4 ♂♂ (EUMJ), ditto, 3.VIII.1993, M. Sakai leg.; 1 ♂, 1 ♀ (EUMJ), ditto, 20.VI.2001, M. Sakai leg.; 1 ♂ (EUMJ), Kitagawara, Shigenobu, 1–10.VII.2005, Y. Satô leg.; 1 ♀ (EUMJ), ditto, 1–10.VII.2006, J. Ogawa leg.; 1 ♂ (EUMJ), Minara, Shigenobu, 12.VIII.1992, M.

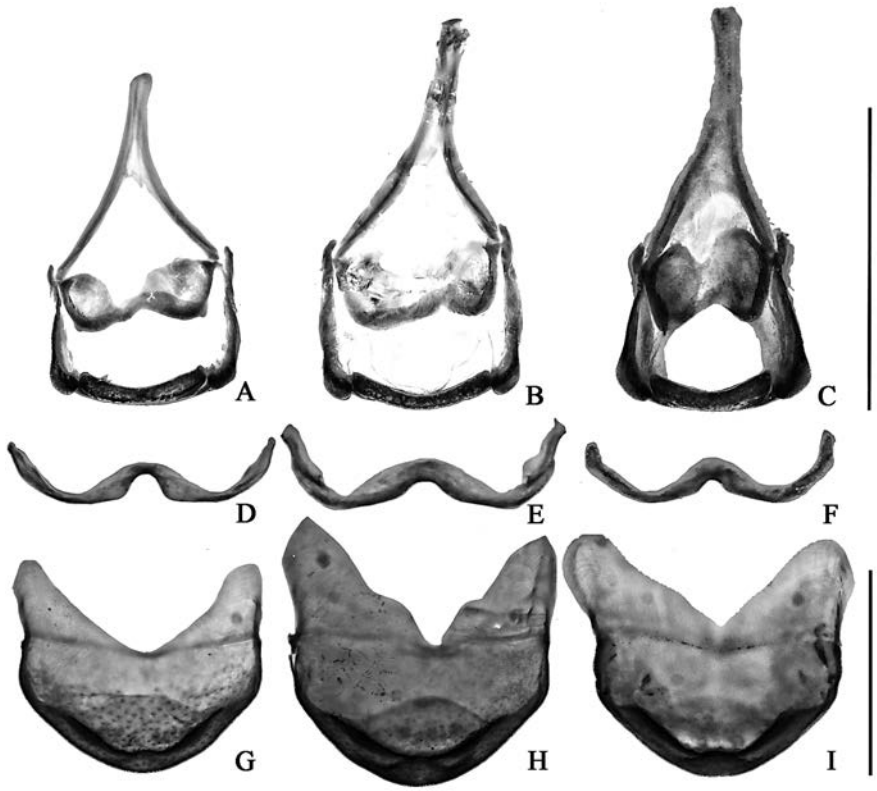

Fig. 6. Male genital segment (A–C), sternites 8 (D–F) and tergites 8 (G–I). —— A, D & G, *Ancylopus pictus asiaticus* Strohecker; B, E & H, *Ancylopus phungi* Pic; C, F & I, *Ancylopus borealior* Strohecker. Scale bars = 1.00 mm.

Sakai leg.; 1 ♂ (EUMJ), Nishioka, Shigenobu-chô, 2.VII.2002, M. Namba leg.; 1 ♂, 2 ♀♀ (EUMJ), Shigenobu-gawa, Kitagawara, 20.VI.2001, C. Takahashi leg.; 1 ♂ (EUMJ), Wakimizu, Kanbayashi, Toon-shi, 10.VII.2006, Y. Satô leg.; 1 ♂ (EUMJ), ditto, 20.VI.2007, Y. Satô leg.; 1 ♂ (EUMJ), ditto, 28.VII.2006, J. Ogawa leg.; 1 ♀ (EUMJ), ditto, 29.XI.2006, Y. Satô leg.; 1 ♀ (EUMJ), ditto, 30. VIII.2006, T. Ichiyanagi leg.; 1 ♀ (EUMJ), Yokogawara, Shigenobu-chô, 30.VI.2000, J. Ogawa leg.; 1 ♂ (EUMJ), ditto, 7.IX.1989, M. Sakai leg.; 2 ♀♀ (EUMJ), Higashitani-ike, Kikuma-chô, Imabari-shi, 22.VI.2013, S. Hisamatsu leg.; 1 ♂, 2 ♀♀ (EUMJ), Imabari-shi, 30.V.1971, F. Yoshimoto leg.; 1 ♂ (EUMJ), Narabara-san, Imabari-shi, 19–20.V.1973, K. Ito leg.; 1 ♀ (EUMJ), Oomi-shima, Imabari-shi, 19.VII.1959, M. Satô leg.; 1 ♀ (EUMJ), Suzugatani-ike, Imabari-shi, 30.X.2005, Y. Katayama leg.; 1 ♂ (EUMJ), Yamada-ike, Yosokuni, Miyakubo-chô, Imabari-shi, 11.X.2006, J. Ogawa leg.; 1 ♂ (EUMJ), Estuary of Hiji-kawa, 25.VI.1999, H. Nakanishi leg.; 2 ♂♂ (EUMJ), ditto, 3.VIII.2004, S. Hisamatsu leg.; 1 ♀ (EUMJ), Hiji-kawa, Nakamura, Ozu-shi, 1.VI.2001, C. Takahashi leg.; 1 ♀ (EUMJ), Hiji-kawa, Toge, Ozu-shi, 13.V.2001, M. Namba leg.; 2 ♂♂ (EUMJ), ditto, 13.V.2001, Y. Sugiura & Y. Takeuchi legs.; 1 ♀ (EUMJ), ditto, 3.VI.2001, M. & A. Sakai leg.; 1 ♀ (EUMJ), ditto, 30.VI.2001, Y. Sugiura leg.; 1 ♂ (EUMJ), ditto, 30.VII.2001, H. Ishikawa leg.; 1 ♂ (EUMJ), Hijikawa R, Masaki-chô, 20.VI.2001, C. Takahashi leg.; 1 ♂ (EUMJ), Hiji-kawa, Goro, Ozu-shi, 30.VI.2001, Sugiura & Ito legs.; 1 ♀ (EUMJ), ditto, 30.VII.2002, H. Ishikawa leg.; 3 ♂♂, 2 ♀♀ (EUMJ), Nagahara, Ozu-shi, 5.VII.2006, Y. Satô leg.; 3 ♀♀ (EUMJ), Nakamura, Ozu-shi, 20.V.2001,

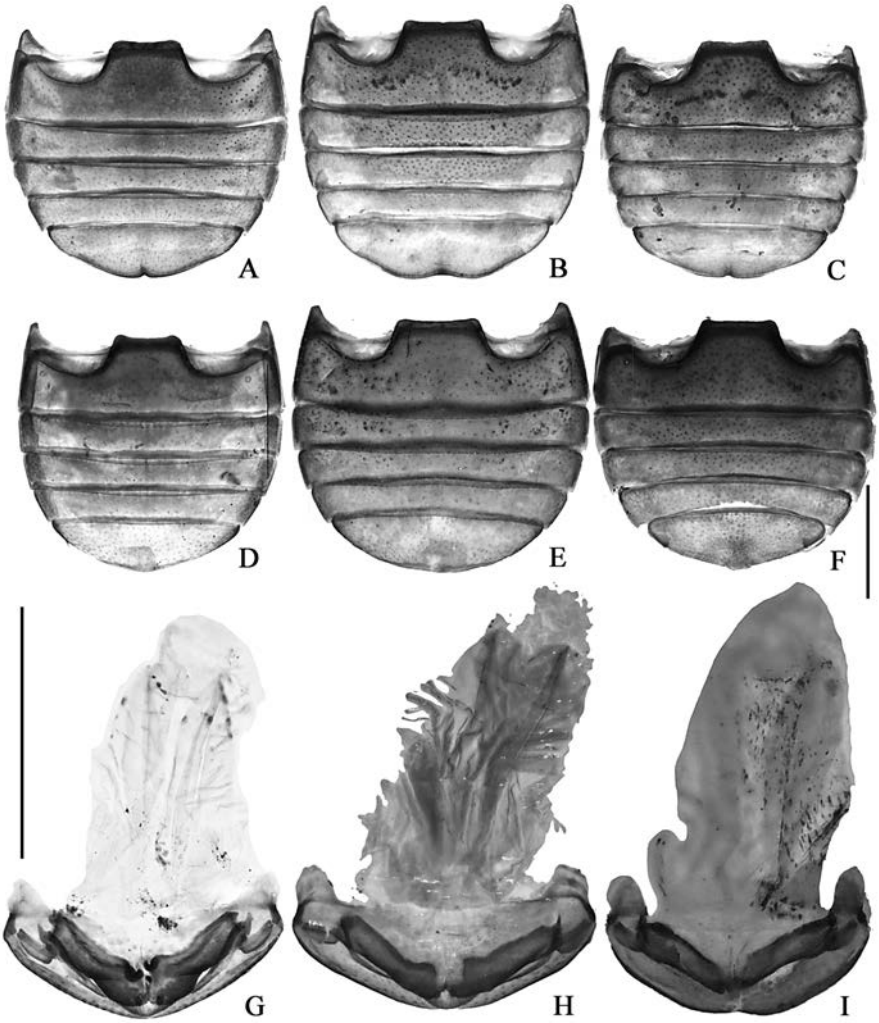

Fig. 7. Abdominal ventrites (A–F) and female genitalia (G–I) of *Ancylopus* spp. —— A, D & G, *Ancylopus pictus asiaticus* Strohecker; B, E & H, *Ancylopus phungi* Pic; C, F & I, *Ancylopus borealior* Strohecker. A–C, Male; D–F, female. Scale bars = 1.00 mm.

M. Sakai & C. Takahashi leg.; 1 ♂ (EUMJ), ditto, 6.X.2001, M. Sakai leg.; 2 ♀♀ (EUMJ), Ozu, Ozu-shi, 6.X.2001, M. Namba leg.; 1 ♀ (EUMJ), Sericulture Experiment Station, Tokunomori, Ozu-shi, 19.VII.1993, Sticky traps; 1 ♂, 1 ♀ (EUMJ), Shiba, Nagahama-chô, 30.VI.2001, C. Takahashi leg.; 1 ♂ (EUMJ), Komoso-ike, Toyooka, Masaki-chô, 10.VII.2006, J. Ogawa leg.; 1 ♂ (EUMJ), ditto, 20.X.2006, J. Ogawa leg.; 1 ♀ (EUMJ), Shimo-Karakawa, Iyo-shi, 16.IX.2005, T. Kurihara leg.; 1 ♀ (EUMJ), Tobe-chô, Iyo-gun, 9.IV.1980, K. Sasagawa leg.; 2 ♂♂ (EUMJ), Nakagumi, Kumakogen-chô, 29.X.2006, Y. Satô leg.; 1 ♀ (EUMJ), Yurano, Kumakogen-chô, 27.IX.2007, E. Yamamoto leg.; 1 ♂ (EUMJ), ditto, 28.IX.2007, E. Yamamoto leg.; 2 ♂♂, 1 ♀ (EUMJ), Komi, Yanadani-mura, 2.X.1999, L. Li & N. Ohbayashi legs.; 1 ♀ (EUMJ), Nomura Dam, Nomura-mura, 27.V.1994, M. Sakai leg.; 1 ♀ (EUMJ), ditto, 8–9.X.1994, K. Aita leg.; 1 ♂ (EUMJ), Oda-kawa, Ikazaki-chô, 10.VII.2003, E. Yamamoto leg.; 1 ♀ (EUMJ), Odamiyama. Uchiko-chô, 9.VII.1961, S. Hisamatsu

leg.; 2 ♀♀ (EUMJ), Yoshino-gawa, Oda-chô, 21.VII.1993, M. Kawanabe leg.; 1 ♀ (EUMJ), Shitanda-ike, Seiyo-shi, 16.IV.2005, T. Kurihara leg.; 1 ♂, 1 ♀ (EUMJ), Yamada, Uwa-chô, Seiyo-shi, 15.V.2004, T. Kurihara leg.; 1 ♂, 1 ♀ (EUMJ), ditto, 15.V.2005, M. Sakai leg.; 1 ♂ (EUMJ), ditto, 19. VI. 2004, M. Sakai leg.; 1 ♂ (EUMJ), Sone, Mima-chô, Uwajima-shi, 8.VII.2007, J. Ogawa leg.; 1 ♂ (EUMJ), Furuike, Tanbara-chô, Saijo-shi, 30.X.2005, Y. Katayama leg.; 1 ♂ (EUMJ), Kanota-ike, Saijo-shi, 27.X.2007, Y. Yamauchi leg.; 2 ♂♂ (EUMJ), Ryutakuji-ike, Uonashi, Shirokawa-chô, Saijo-shi, 20.X.2006, J. Ogawa & Y. Katayama legs.; 2 ♂♂ (EUMJ), Shuridani-ike, Myoko, Komatsu-chô, Saijo-shi, 25.X.2006, J. Ogawa leg.; 1 ♂ (EUMJ), Nakatani-ike, Hagyu, Niihama-shi, 9. X.2006, J. Ogawa leg.; 1 ♂ (EUMJ), Yanatani-kami-ike, Hagyu, Niihama-shi, 13.VI.2007, J. Ogawa leg.; 1 ♀ (EUMJ), Miyanotani-ike, Shikokuchûô-shi, 13.VI.2005, T. Kurihara leg.; 2 ♀♀ (EUMJ), ditto, 30.X.2005, T. Kurihara leg.; 2 ♂♂, 1 ♀ (EUMJ), Shirai-ike, Tenma, Doi-chô, Shikokuchûô-shi, 22.X.2010, M. Sakai leg.; 5 ♂♂, 4 ♀♀ (EUMJ), Iwagi, Kamijima-chô, Akahone-jima, 29–30.XI.2004, J. Ogawa leg.; 1 ♀ (EUMJ), Iwamatsu R, Tsushima-chô, 28.V.2000, N. Hamada leg.; 1 ♀ (EUMJ), Ohhama, Johen-chô, 4.VII.2000, J. Ogawa leg. <Kochi Pref.> 1 ♀ (EUMJ), Ashizuri-misaki, Tosashimizu-shi, 14–15.VII.1973, K. Ito leg.; 1 ♂ (EUMJ), Estuary of Niyodo-gawa, 21.IX.1980, S. Hisamatsu leg.; 1 ♀ (EUMJ), Monobe-gawa, Oda-jima, Tosayamada, 17.III.2003, Y. Nakata leg.; 1 ♀ (EUMJ), Nagano, Yusuhara-chô, Takaoka-gun, 1–2.X.1994, K. Shima leg.; 1 ♂ (EUMJ), ditto, 17.X.1993, K. Aita leg.; 1 ♀ (EUMJ), ditto, 1–2.X.1995, S. Hayakawa leg.; 1 ex. (SEHU), Okinoshima, 18–20.VII.1952, Sakaguchi leg.; 4 ♀♀ (EUMJ), Takano, Higashi-tsuno-mura, 25.V.1997, M. Sakai leg. <Tokushima Pref.> 1 ♂ (EUMJ), Akui-chô, Tokushima-shi, 2.VII.1965, M. Sakai leg.; 10 ♂♂, 11 ♀♀ (EUMJ), Akui-gawa, Naka-akui, 15.VIII.1988, M. Sakai leg.; 1 ♀ (EUMJ), Anabuki-chô, Mima-gun, 9.XII.1962, M. Sakai leg.; 1 ♀ (EUMJ), Ishii-chô, Myozai-gun, 24.III.1965, M. Sakai leg.; 2 ♂♂, 2 ♀♀ (EUMJ), Kotsu-san, Yoshinogawa-shi, 21.VII.1968, M. Sakai leg.; 1 ♀ (EUMJ), Bizan, 26.XII.1949, R. Ohgushi leg.; 1 ♂, 1 ♀ (EUMJ), Nada, 14.VII.1965, M. Sakai leg.; 2 ♀♀ (EUMJ), Oshima, Anabuki-chô, Mima-gun, 26.VIII.1992, M. Sakai leg.; 1 ♂, 1 ♀ (EUMJ), Takabatake, Ishii-chô, Myozai-gun, 26.VIII.1992, M. Sakai leg.; 7 ♂♂, 2 ♀♀ (EUMJ), Tsuda, Tokushima-shi, 18.IX.1965, M. Sakai leg.; 1 ♂, 1 ♀ (EUMJ), ditto, 2.IX.1965, M. Sakai leg.; 1 ♂, 3 ♀♀ (EUMJ), Tsurugi-san, 2.V.1965, M. Sakai leg.; 1 ♀ (EUMJ), Yoshino-gawa, Tokushima-shi, 14.VIII.1968, M. Sakai leg. [Kyushu] <Fukuoka Pref.> 2 ♂♂, 2 ♀♀ (EUMJ), Hiko-san, Soeda-machi, Tagawa-gun, 21.VI.1956, Y. Murakami leg.; 1 ♀ (EUMJ), ditto, 3.V.1962, M. Chûjô leg.; 1 ex. (SEHU), Miike, 29.VIII.1982, Sakai leg.; 1 ex. (SEHU), Omuta, 28.VII.1982, K. Sakai leg.; 2 exs. (SEHU), Yoshii, 21.VI.1956, N. Gyotoku leg. <Nagasaki Pref.> 2 ♂, 3 ♀♀ (EUMJ), Fugen-san, Isahaya, 20.VII.1973, S. Kinoshita leg.; 1 ♀ (EUMJ), Shikamachi-chô, 30.VII.1975, A. Oda leg. <Kumamoto Pref.> 1 ♀ (EUMJ), Koshi-machi, Kiuchi-gun, 9.V.1987, K. Fujita leg. <Ôita Pref.> 1 ex. (SEHU), Onotaira, Sobo, 15–19.VII.1979, M. Miura leg.; 3 ♂♂, 4 ♀♀ (EUMJ), Ueno, Ôita-shi, 20.IV.1946, M. Chûjô leg. <Miyazaki Pref.> 1 ex. (SEHU), Aya, 24.IV.1986, T. & T. Nakane leg. <Kagoshima Pref.> 1 ex. (SEHU), Toso, 11.1984, M. Ohara leg.; 2 exs. (SEHU), no data, 22.V.1953, T. Nakane leg.; 1 ex. (SEHU), no data, 8.VIII.1981, T. Kinoda leg.; 2 ♂♂, 1 ♀ (EUMJ), Takakuma, Kaigata, Tarumizu-shi, 10.VIII.2017, J. Oku leg. [Tsushima] 1 ♀ (EUMJ), Ayumodoshi park, Izuhara, Tsushima-shi, 3.VIII.1998, Y. Sugiura leg.; 1 ♀ (EUMJ), Iguchi-hama, Kamiagata-chô, Tsushima-shi, 19.VII.1995, K. Aita leg.; 1 ♂ (EUMJ), Meboro, Tsushima-shi, 7.V.1978, A. Oda leg.; 1 ♀ (EUMJ), Oboshi-yama, Mine-machi, Tsushima-shi, 6.VIII.1994, H. Yoshitomi leg.; 1 ♂, 1 ♀ (EUMJ), Sasuna, Tsushima-shi, 14.VII.1985, K. Ando leg.; 1 ♀ (EUMJ), Tatera-san, Tsushima-shi, 15.IX.1995, K. Ando leg. [Tokara Isls.] 2 exs. (SEHU), Nakanoshima, 3–13.VI.1953, H. Kono leg.

Compared specimens. Korea: 1 ex. (SEHU), Taecheon Dam, Gunbuk-myeon, Okcheon-gum, Chungbuk, 2.IX.2006, T. Yoshida leg. Taiwan: 1 ♀ (EUMJ), Minsheng road at Liukei, Kaohsiung Co,

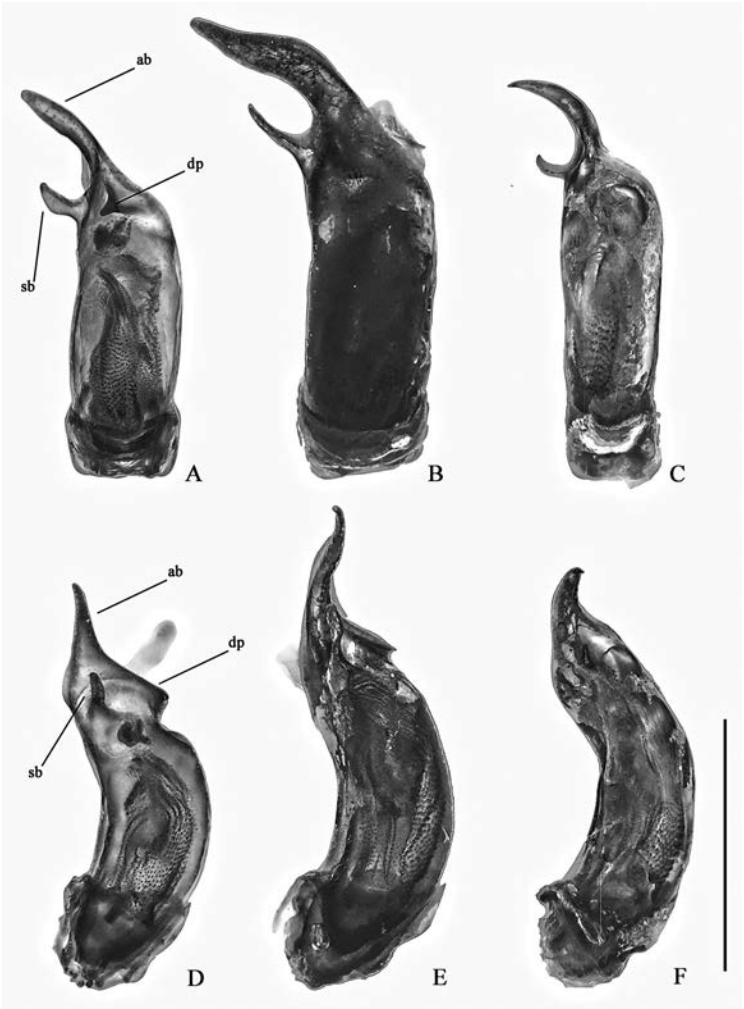

Fig. 8. Aedeagus of *Ancylopus* spp. in dorsal (A–C) and lateral (D–F) views. —— A & D, *Ancylopus pictus asiaticus* STROHECKER; B & E, *Ancylopus phungi* PIC; C & F, *Ancylopus borealior* STROHECKER. —— Abbreviations: ab, apical branch; sb, subapical branch; dp, dorsal process. Scale bar = 1.00 mm.

12.VI.1977, K. USHIJIMA leg.

Larval and pupal specimens. One mature larva and 1 pupa, Seiyo-shi, Ehime Pref. (Fig. 11D), 28.VII.2017, H. YOSHITOMI leg.

Description. Adults. M a l e (Fig. 1A). Body oblong, glossy, yellowish brown to dark reddish brown, with distinct large black marking on elytra (Fig. 2A–C); basal maculation (b) wide around scutellar shield, with posterior margin bisinuate in most specimen; sutural maculation (s) long, widened near latero-median (lm) and latero-apical (la) maculations; lm large, attached with lateral margins; la large, connected with s in some specimens; leg black or dark brown, but coxa, trochanter, basal 1/3 of femur, apical part of tibia and tarsus light brown to orange.

Head densely and irregularly covered with small punctures. Antennomere 9 round in inner angle; antennomere 7 strongly bulbous; approximate ratio of each antennomere (Fig. 3A; n = 1) as 1.80 : 1.00 : 1.20 : 1.13 : 1.13 : 1.20 : 1.27 : 1.33 : 2.47 : 1.00 : 2.80. Pronotum (Fig. 4A) transverse, glossy,

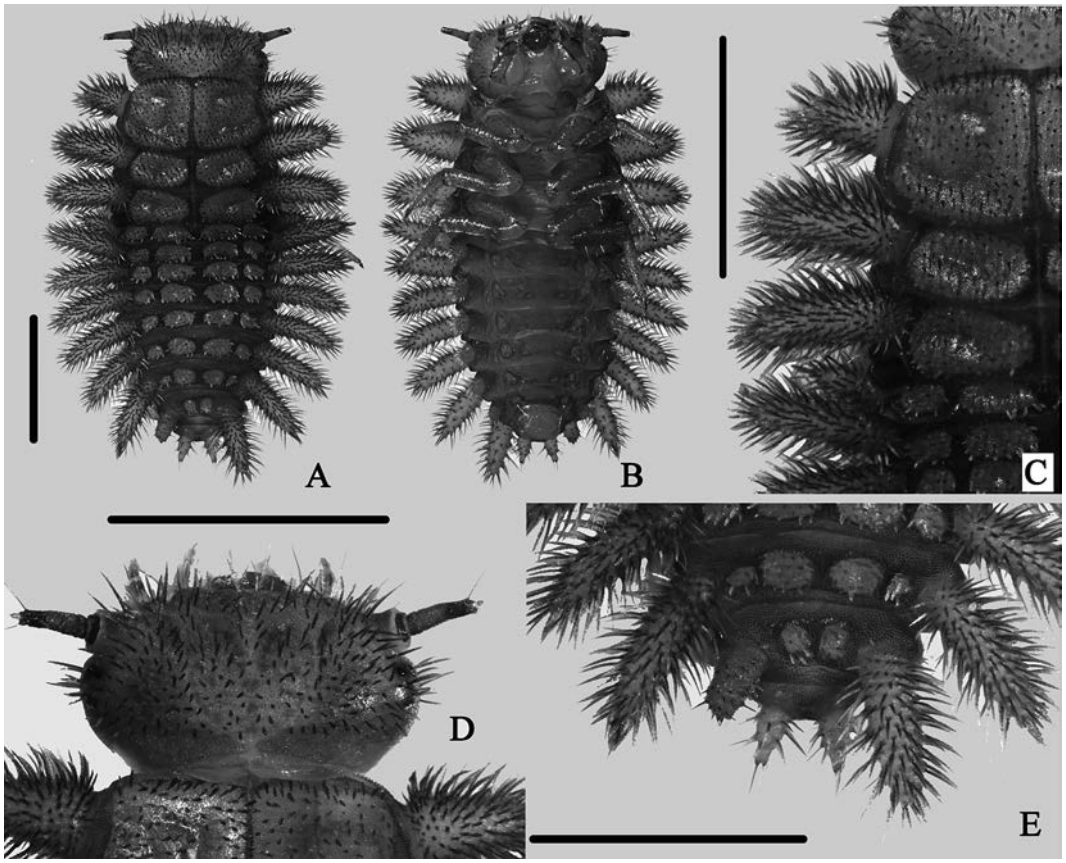

Fig. 9. Larvae of *Ancylopus pictus asiaticus* STROHECKER, 1972. —— A, Dorsal habits; B, ventral habits; C, lateral part of thorax in dorsal view; D, head in dorsal view; E, caudal part in dorsal view. Scale bars = 1.00 mm.

densely and irregularly covered with definite punctures; anterior angles acute; posterior angles right angled; lateral margins curved in apical 1/3; lateral sulci straight, deep, long and subparallel; PW/PL 1.42–1.57 (1.49); PW/PSL 1.28–1.46 (1.37); PML/PSL 0.86–0.96 (0.92). Elytra glossy, elongate, densely and irregularly covered with definite punctures; lateral margins slightly emarginate at middle; EL/EW 1.42–1.52 (1.48); EL/PL 2.95–3.38 (3.11); EW/PW 1.34–1.51 (1.42); TL/EW 1.89–2.01 (1.95). Intercoxal process of mesoventrite (Fig. 4G) long, narrow, subparallelly carinate. Metaventrite transverse, punctate and slightly pubescent, with a pair of knobs at middle of metathoracic discrimen; anterior margin widely bordered, with three pairs of mycangia; inner pair located in base of intercoxal process of metaventrite; median and outer pairs located in latero-anterior margin of metaventrite, close with each other. Fore tibia (Fig. 5A) with wide process in basal 3/5 of inner margin; middle tibia (Fig. 5D) with tooth at basal 3/5 of inner margin; hind tibia (Fig. 5G, H) with serrae from base to apex. Ventrite 5 (Fig. 7A) triangular, having crevice at apex. Sternite 8 (Fig. 5D) narrow, deeply emarginate at middle, basally curved in each side; tergite 8 (Fig. 5G) large, rounded at apex. Aedeagus (Fig. 8A & D) strongly sclerotized and stout; median lobe strongly excavate in apico-dorsal 1/5 and ventrally curved; apical branch (ab) long, slender and slightly curved; subapical branch (sb) short and cultrate; dorsal process (dp) acute and short.

F e m a l e (Fig. 1B). Sexual dimorphism distinct in the following characteristics: antennomere 9 slender; approximate ratio of each antennomere (Fig. 3D, n = 1) as 1.85 : 1.15 : 1.23 : 1.00 : 1.15 :

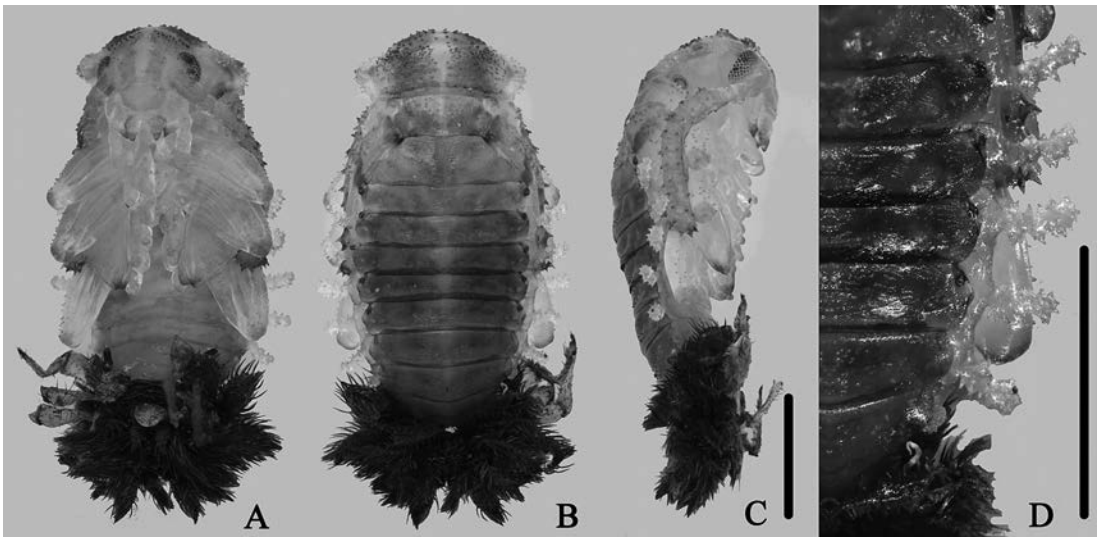

Fig. 10. Pupae of *Ancylopus pictus asiaticus* STROHECKER, 1972. —— A, Ventral view; B, dorsal view; C, lateral view; D, lateral part of abdomen. Scale bars = 1.00 mm.

1.31 : 1.23 : 1.46 : 2.69 : 1.00 : 2.80; pronotum (Fig. 4B) narrowly grooved at middle; lateral sulci of pronotum longer, curved inwardly and connected with each other in basal 1/3 of PML, forming M-shape; elytra with lateral margins emarginate at middle; legs slender, without projection in tibiae; ventrite 5 (Fig. 7D) slightly pointed at apex; tergite 8 slightly pointed at apex; ovipositor (Fig. 7G) stout and wide, with apico-inner margin hook-shaped and outer margin uneven; PW/PML 1.43–1.60 (1.54); PW/PSL 1.30–1.43 (1.37); PML/PSL 0.85–0.94 (0.89); EL/EW 1.40–1.57 (1.49); EL/PL 2.95–3.35 (3.11); EW/PW 1.30–1.46 (1.36); TL/EW 1.87–2.05 (1.97).

Measurements. Male (n = 20). TL 3.91–4.76 (4.39) mm; PW 1.43–1.80 (1.59) mm; PL 0.93–1.18 (1.07) mm; PL 0.98–1.38 (1.16) mm; EL 2.98–3.60 (3.32) mm; EW 2.02–2.45 (2.25) mm. Female (n = 20). TL 4.17–5.10 (4.57) mm; PW 1.60–1.86 (1.71) mm; PL 1.02–1.20 (1.11) mm; PL 1.14–1.35 (1.25) mm; EL 3.15–3.90 (3.46) mm; EW 2.10–2.59 (2.32) mm.

Larvae (Figs. 9 & 11B). Close description see HAYASHI & NAKAMURA (1953). Body flattened dorsally, closely covered with minute spines; body length about 3.5 mm. Head large, as wide as prothorax. Lateral process on tergum relatively long, cylindrical, smallest in that of 1st abdominal segment. Urogomphi smaller than lateral process on tergum.

Pupae (Figs. 10 & 11C). Body length about 4.0 mm. Head and pronotum irregularly covered with small spines. Antennae reaching about 3rd segment of abdomen, bearing relatively large spines in apical part. Abdomen with long serrate lateral processes in segments II–VI; caudal part of abdomen covered by exuvia of larva.

Distribution. Japan: Hokkaido, Honshu, Oki (Dogo), Shikoku, Kyushu, Tsushima, Tokara (Nakano-shima), Ishigaki-jima; Korea, Taiwan, China, India, Vietnam. This is the first record of this species from Hokkaido, Oki, and Tokara.

Remarks. *Ancylopus pictus* (WIEDEMANN, 1823), nominotypical subspecies, was described from Java, and is subdivided into six subspecies (STROHECKER, 1972; SHOCKLEY *et al.*, 2009a). Based on the figures of median lobe showed by STROHECKER (1972), the shapes of apical and subapical branches are quite different between subspecies. It is thought that these are not subspecies but independent species, but the taxonomic treatment is pending in this paper. *Ancylopus villiersi* DAJOZ, 1973 was de-

scribed based on the holotype (Nilgiri Hills, India) and 26 paratypes including four specimens from Japan, and Sasaji (1980, 1983) dealt with this species as a junior synonym of *A. pictus asiaticus*.

Jung (2014) figured Korean specimens of *A. pictus asiaticus*, but the figures on habitus and male genitalia (figs. 3 & 10) indicate probably not *A. pictus asiaticus* but another species.

Biological notes. This is the most common endomychid species in Japan, and collected from open land, grass land, marsh, and paddy field. Both the larvae and adults are collected from decaying vegetable matter. Hibernation is occurred in the adult stage in the soil or under stone.

Sugiyama (1974) wrote that *Rickia ancylopi* Thaxter, 1916 (Laboulbeniaceae, Laboulbeniales) is frequently parasitic on *Ancylopus pictus asiaticus*. In our investigation, *R. ancylopi* were parasitic on 6 % (24/428) specimens collected from Ibaraki, Tokyo, Kanagawa, Kagawa, Tokushima, Ehime and Nagasaki Prefectures, and thalli of this ascomycota were attached on the surface of pronotum, elytra, legs, meso- and metaventrites and abdomen.

Ancylopus phungi Pic, 1926

[Japanese name: Beni-yotsuboshi-tentoudamashi]
(Figs. 1C, D, 2D–G, 3B, E, 4C, D, H, 5B, E, I, 6B, E, H, 7B, E, H, 8B & E)

Ancylopus phungi Pic, 1926: 10.
Ancylopus phungi phungi: Strohecker, 1972: 706 [note]; Sasaji, 1980: 1; 1983: 6 [list]: Tomaszewska, 2007: 562 [catalogue]; Shockley *et al*., 2009 a: 32 [list].
Ancylopus melanocephalus: Strohecker, 1953: 75 [list].

Specimens examined. [Hokkaido] 1 ♀ (EUMJ), Kumaishi-kuroiwa-chô, Yakumo-chô, Futaumi-gun, 23.VIII.2015, A. Kashizaki leg. [Honshu] <Aomori Pref.> 1 ♂, 1 ♀ (EUMJ), Kobokutai, 25.VIII.1954, K. Shimoyama leg.; 1 ♂ (EUMJ), Kuzuhara, Hiraka-machi, 15.VI.1956, K. Shimoyama leg.; 1 ♀ (EUMJ), ditto, 21.VIII.1957, K. Shimoyama leg.; 1 ♀ (EUMJ), ditto, 24.VI.1957, K. Shimoyama leg.; 1 ♂ (EUMJ), ditto, 8.VI.1956, K. Shimoyama leg.; 1 ♂, 1 ♀ (EUMJ), Takinomata, 5.V.1952, K. Shimoyama leg. <Fukushima Pref.> 4 ♂♂, 3 ♀♀ (SEHU), Kadota-mura, 5.IV.1949, K. Nagayama leg.; 2 ♂♂, 1 ♀ (SEHU), Monden, 5.IV.1949, K. Nagayama leg.; 1 ♂ (EUMJ), Oda-yama, 28.VII.1948, Y. Kurosawa leg.; 1 ♂, 3 ♀♀ (SEHU), Yugawa, 5.IV.1948, K. Nagayama leg.; 1 ♂, 3 ♀♀ (SEHU), Yukawa, 28.III.1949, K. Nagayama leg. <Nagano Pref.> 1 ♀ (SEHU), Kisofukushima, 29.X.1983, T. Nakane leg.; 2 ♂♂, 1 ♀ (EUMJ), Kisofukushima-chô, Kiso-gun, 29.X.1983, K. Ando leg.; 1 ♀ (PKA), Todai, 21.VII.1992, K. Akita leg.

Compared specimens. China: 7 ♂♂, 4 ♀♀ (EUMJ), Mt. Tianmu, Linan City, Zhejiang Province, 13–21.VIII.2004, J. Ogawa leg. Korea: 1 ♂ (EUMJ), Taejon, 5.VIII.1997, Nishikawa leg.

Description. Adults. M a l e (Fig. 1C). Body oblong, glossy, yellowish brown to dark reddish brown, with distinct large marking on elytra black though variable in shape (Fig. 2D–G); basal maculation (b) wide, straight in posterior margin; sutural maculation (s) wide; latero-median maculation (lm) large, attached to lateral margins; latero-apical maculation (la) large, connected with s in most specimens; legs black or dark brown, but coxa, trochanter, basal 1/6 of femur and tarsus light brown.

Head densely and irregularly covered with small punctures. Antennae shorter than 1/2 of TL; antennomere 9 slightly acute at inner angle; antennomere 7 bulbous; approximate ratio of each antennomere (Fig. 3B; n = 1) as 1.80 : 1.07 : 1.27 : 1.00 : 1.13 : 1.13 : 1.13 : 1.27 : 2.47 : 1.00 : 2.50.

Pronotum (Fig. 4C) transverse, glossy, densely and irregularly covered with definite punctures; anterior angles acute; posterior angles right angled; lateral margins curved at apical 1/3; lateral sulci straight, deep, long and subparallel; PW/PML 1.4–1.51 (1.46); PW/PSL 1.27–1.38 (1.33); PML/PSL 0.88–0.93 (0.91). Elytra glossy, elongate, densely and irregularly covered with definite punctures; EL/EW 1.38–1.52 (1.43); EL/PL 2.84–3.18 (3.00); EW/PW 1.38–1.50 (1.43); TL/EW 1.86–2.01 (1.91).

Fig. 11. *Ancylopus pictus asiaticus* STROHECKER, 1972 in nature (in Seiyo, Ehime Pref.). —— A, Adult; B, larva; C, pupa; D, habitat.

Intercoxal process of mesoventrite (Fig. 4H) long, slightly wide, subparallelly carinate. Metaventrite transverse, punctate, pubescent, having a pair of knobs at middle of metathoracic discrimen; anterior margin widely bordered and having three pairs of mycangia; inner pair located in base of intercoxal process; median and outer pairs located in latero-anterior margin of metaventrite. Fore tibia (Fig. 5B) with wide process at middle of inner margin; middle tibia (Fig. 5E) with tooth at basal 2/5 of inner margin; hind tibia (Fig. 5I) with serrae from middle to apex. Ventrite 5 (Fig. 7B) triangular, emarginate at apex. Sternite 8 (Fig. 6E) narrow, emarginate at middle, both side strongly curved; tergite 8 (Fig. 6H) large, rounded at apex. Aedeagus (Fig. 8B & E) stout; median lobe strongly excavate in apico-dorsal 1/9, curved ventrally; apical branch (ab) very long, wide and subangulate, dorsally recurved; subapical branch (sb) long and slender; dorsal process (dp) right angled, very short.

F e m a l e (Fig. 1D). Sexual dimorphism distinct in the following characteristics: antennomere 9 slender; approximate ratio of each antennomere (Fig. 3E; n = 1) as 1.92 : 1.23 : 1.38 : 1.00 : 1.31 : 1.23 : 1.31 : 1.46 : 2.69 : 1.15 : 3.00; pronotum (Fig. 4D) widely grooved at middle; lateral sulci of pronotum longer, curved inwardly and connected with each other in basal 1/3 of PML, forming M-shape; legs slender and without projection in tibiae; ventrite 5 (Fig. 7E) slightly rounded at apex; tergite 8 slightly pointed at apex; ovipositor (Fig. 7H) stout, slightly slender and apico-inner margin right angled; PW/PML 1.45–1.63 (1.55); PW/PSL 1.27–1.47 (1.34); PML/PSL 0.78–0.93 (0.87); EL/EW 1.21–1.50 (1.42); EL/PML 2.8–3.37 (3.09); EW/PW 1.34–1.46 (1.41); TL/EW 1.64–1.98 (1.88).

Measurements. Male (n = 14). TL 4.23–5.41 (4.95) mm; PW 1.49–2.08 (1.81) mm; PL 1.03–1.41 (1.24) mm; PL 1.11–1.60 (1.36) mm; EL 3.19–4.00 (3.71) mm; EW 2.20–2.88 (2.60) mm.

Female (n = 10). TL 4.37–5.17 (4.75) mm; PW 1.63–2.03 (1.80) mm; PL 1.00–1.28 (1.17) mm; PL 1.23–1.53 (1.34) mm; EL 3.30–3.89 (3.59) mm; EW 2.34–2.90 (2.54) mm.

Immature stages unknown.

Distribution. Japan: Hokkaido, Honshu; China, Korea, Tibet, Vietnam. This is the first record of this species from Hokkaido and Korea. In Chinese specimens, elytral maculations of s, lm and la are wide and connected with each other (Fig. 2G).

Remarks. This species is subdivided into two subspecies, *Ancylopus phungi phungi* PIC, 1926 and *A. phungi borealior* STROHECKER, 1972, but these are clearly independent species judging from the characteristics of male and female genitalia and male legs (STROHECKER, 1972). In the present paper, we treated them as independent species.

Biological notes. This is rare species in Japan, and was collected from mountainous zone of Hokkaido and Tohoku and Chûbu Districts, Honshu. *Rickia ancylopi* THAXTER, 1916 (Laboulbeniaceae, Laboulbeniales) was parasitic on one specimen collected from Nagano Prefecture.

Ancylopus borealior STROHECKER, 1972

[Japanese name: Nise-yotsuboshi-tentoudamashi]

(Figs. 1E, F, 2H, I, 3C, F, 4E, F, I, 5C, F, J, 6C, F, I, 7C, F, I, 8C & F)

Ancylopus phungi borealior STROHECKER, 1972: 708: TOMASZEWSKA, 2007: 562 [catalogue]: SHOCKLEY *et al*., 2009 a: 32 [list].

Specimens examined. [Honshu] <Fukushima Pref.> 1 ♂, 2 ♀♀ (SEHU), Monden, 5.IV.1948, K. NAGAYAMA leg.; 1 ♂, 2 ♀♀ (SEHU), Yugawa, 25.VIII.1954, K. NAGAYAMA leg.

Description. Adults. M a l e (Fig. 1E). Body oblong, glossy, reddish brown, with distinct black marking on elytra variable in shape (Fig. 2H & I); basal maculation (b) narrow at middle; sutural maculation (s) long, slender and slightly widened at near latero-median (lm) and latero-apical (la) maculations; lm small, partly attached to lateral margins in one specimen; la small; legs black or dark brown, but coxa, trochanter, basal 1/2 of femur and tarsus light brown.

Head densely and irregularly covered with small punctures. Antennae shorter than 1/2 of TL; apico-inner corner of antennomere 9 right angled; antennomere 7 slender; approximate ratio of each antennomere (Fig. 3C, n = 1) as 1.79 : 1.07 : 1.36 : 1.07 : 1.14 : 1.07 : 1.36 : 1.29 : 2.36 : 1.00 : 2.79.

Pronotum (Fig. 4E) transverse, glossy, densely and irregularly covered with definite punctures; anterior angles acute; posterior angles right angled; lateral margins curved at apical 1/3; lateral sulci straight, deep and short, running outwardly. PW/PL 1.44–1.54 (1.48); PW/PSL 1.30–1.33 (1.32); PML/PSL 0.86–0.92 (0.89). Elytra glossy, elongate, densely and irregularly covered with definite punctures; EL/EW 1.34–1.43 (1.39); EL/PML 2.75–2.84 (2.80); EW/PW 1.33–1.38 (1.36); TL/EW 1.81–1.96 (1.89). Intercoxal process of mesoventrite (Fig. 4I) long and narrow, subparallelly carinate. Metaventrite transverse, punctate, pubescent, having a pair of knobs at middle of metathoracic discrimen; anterior margin widely bordered and having three pairs of mycangia. Mycangia with inner pair located in basal intercoxal process of metaventrite; median and outer pairs located in latero-anterior margin of metaventrite and the both pairs closed with each other. Fore tibia (Fig. 5C) with wide process in basal 4/9 of inner margin; middle tibia (Fig. 5F) without tooth; hind tibia (Fig. 5J) minutely serrate from middle to apex. Ventrite 5 (Fig. 7C) subtriangular, slightly emarginate at apex. Sternite 8 (Fig. 6F) narrow, narrowly emarginate at middle, both side basally curved; tergite 8 (Fig. 6I) large, slightly flattened at apex. Aedeagus (Fig. 8C, F) stout; median lobe ventrally curved; apical branch (ab) short, slender and falcate, dorsally recurved; subapical branch (sb) short and slender; dorsal pro-

cess (dp) absent.

F e m a l e (Fig. 1F). Sexual dimorphism distinct in the following characteristics: antennomere 9 slender; approximate ratio of each antennomere (Fig. 3F, n = 1) as 1.92 : 1.08 : 1.25 : 1.00 : 1.17 : 1.08 : 1.25 : 1.42 : 2.33 : 1.08 : 2.58; pronotum (Fig. 4F) shallowly and widely grooved at middle and lateral sulci slightly longer, turned inward and not fusing; legs slender and without projection in tibiae; ventrite 5 (Fig. 7F) slightly pointed at apex; tergite 8 emarginate at apex; ovipositor (Fig. 7I) sclerotized, stout, slender and apico-inner margin blunt; PW/PML 1.53–1.59 (1.56), PW/PSL 1.37–1.40 (1.38), PML/PSL 0.88–0.90 (0.89), EL/EW 1.45–1.54 (1.49), EL/PML 3.09–3.22 (3.15), EW/PW 1.31–1.40 (1.36), TL/EW 1.91–2.02 (1.97).

Measurements. Male (n = 3). TL 4.50–4.80 (4.66) mm; PW 1.73–1.93 (1.82) mm; PL 1.20–1.25 (1.23) mm; PL 1.30–1.45 (1.38) mm; EL 3.30–3.55 (3.43) mm; EW 2.30–2.65 (2.48) mm. Female (n = 2). TL 4.50–4.85 (4.68) mm; PW 1.68–1.83 (1.76) mm; PL 1.10–1.15 (1.13) mm; PL 1.23–1.31 (1.27) mm; EL 3.40–3.70 (3.55) mm; EW 2.35–2.40 (2.38) mm.

Immature stages unknown.

Distribution. Japan: Honshu; China.

Remarks. This species was described as a subspecies of the preceding species, but we regard it as an independent species in this paper. This is rare species in Japan, and we examined only six specimens from Fukushima Pref.

Biological notes. This species was collected with *A. phungi* Pic, 1926 in same place.

Acknowledgments

We wish to express our deep gratitude to Dr. Masahiro Ohara (SEHU), Mr. Katsumi Akita (Tsushi), Dr. Masaaki Nishikawa, Dr. Toshihumi Nonaka, Mr. Akira Kashizaki for giving us the chance to examine the precious materials, and Mr. Yukihiko Hirano (Odawara-shi) and Mr. Nobuyuki Narukawa (Suzuka-shi) for their useful information.

要　　約

十川晃一・吉富博之：日本産ヨツボシテントウダマシ属の再検討（鞘翅目テントウムシダマシ科）．――ヨツボシテントウダマシ属 *Ancylopus* Costa, 1850 は，これまで日本からヨツボシテントウダマシ *Ancylopus pictus asiaticus* Strohecker, 1972 とベニヨツボシテントウダマシ *Ancylopus phungi* Pic, 1926 の 2 種が知られてきた．日本から採集された約 500 個体の標本を基に再検討した結果，広域に分布するヨツボシテントウダマシのほか，東日本（北海道～中部地方）からベニヨツボシテントウダマシを再確認し，福島県からニセヨツボシテントウダマシ（和名新称）*Ancylopus borealior* Strohecker, 1972 を日本初記録した．日本の標本を基に 3 種を再記載し検索表を示すとともに，ヨツボシテントウダマシの幼虫と蛹の形態を記載した．

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Manuscript received 14 September 2017;
revised and accepted 5 November 2017.