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RESEARCH PAPER

Review of the genera *Stethorus* and *Parastethorus* from Japan (Coleoptera: Coccinellidae)

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Abstract. Japanese species of the genera *Stethorus* Weise, 1885 and *Parastethorus* Pang & Mao, 1975 (Coleoptera: Coccinellidae: Coccinellinae) were reviewed, recognizing seven species of the former and one species of the latter genus. Two new species are described: *Stethorus* (*Allostethorus*) *takakoae* sp. nov. from Hokkaido and *Parastethorus pinicola* sp. nov. from Honshu, Kyushu, and the Ryukyu Islands. *Stethorus* (*Stethorus*) *japonicus* Kamiya, 1959, syn. nov., and *S.* (*S.*) *aptus tsutsuii* Nakane & Araki, 1959, syn. nov., are synonymized with *S.* (*S.*) *siphonulus* Kapur, 1948. *Stethorus* (*A.*) *chengi* Sasaji, 1968 and *S.* (*A.*) *parapauperculus* Pang, 1966 are newly recorded from Japan (both from the Ryukyu Islands). The holotype specimens of *S.* (*A.*) *chengi* Sasaji, 1968, *S.* (*A.*) *emarginatus* Miyatake, 1966, *S.* (*A.*) *yezoensis* Miyatake, 1966, *S.* (*S.*) *aptus tsutsuii* Nakane & Araki, 1959, and *S.* (*S.*) *japonicus* Kamiya, 1959 were examined, and all species are redescribed or diagnosed. Additionally, diagnostic characters are illustrated together with distribution maps. The larvae and pupae of the new species *P. pinicola* sp. nov. are also illustrated.

Key words. Coleoptera, Coccinellidae, Stethorini, ladybird beetle, new record, new species, new synonym, larva, pupa, East Asia, Palaearctic Region

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Introduction

The tribe Stethorini, part of the subfamily Coccinellinae (Che et al. 2021), is represented in Japan by the genera *Stethorus* Weise, 1885 and *Parastethorus* Pang & Mao, 1975. *Stethorus* was initially treated as a subgenus of *Scymnus* Kugelann, 1794 by Weise (1885) but it was subsequently elevated to genus status independently by Weise (1899) and Casey (1899). This genus is distributed worldwide and comprises two subgenera, *Stethorus* s.str. and *Allostethorus* Iablokoff-Khnzorian, 1972, which include approximately 30 and 50 species, respectively (Casey 1899; Kapur 1948; Sasaji 1971; Britton & Lee 1972; Pang & Mao 1979; Hoàng 1982; Gordon & Chapin 1983; Poorani 2002, 2017; Li et al. 2013; Iqbal et al. 2018; Wang & Chen 2022). In Japan, three species of the subgenus *Stethorus* and two species of the subgenus *Allostethorus* have been recorded (Kamiya 1961, Sasaji 1971, Kishimoto et al. 2013, Kishimoto & Kitano 2017). The genus *Parastethorus* was originally described as a subgenus of *Stethorus* but was later elevated to genus level due to consistent morphological differences such as the incomplete abdominal postcoxal lines and the larva with short and apically frayed dorsal setae (Ślipiński 2007). This genus comprises 17 species primarily found in the Oriental Region, with ten species known from China and neighboring countries (Li et al. 2015, Iqbal et al. 2018, Wang & Chen 2022). Its members are recognized as predators of spider mites of the family Tetranychidae (Acari: Trombidiiformes) and some other small arthropod pests (Kaper 1948, Kamiya 1959, Gordon & Chapin 1983, Al-Duhawi et al. 2006, Kuznetsov & Proshchalykin 2006, Alves & Oliveira 2009, Biddinger et al. 2009, Kishimoto et al. 2013, Kishimoto & Kitano 2017, Poorani 2017, Iqbal et al. 2018, Vidya et al. 2022), although the ecological details of some species remain poorly understood. No species of *Parastethorus* is known from Japan.

Among the Japanese species of the genus *Stethorus*, *S.* (*S.*) *japonicus* was previously thought to be distributed

from Hokkaido to Kyushu. However, recent studies (Kishimoto et al. 2013, Kishimoto & Kitano 2017) revealed that many records were based on misidentifications with *S.* (*S.*) *pusillus*. As a result, *S.* (*S.*) *japonicus* is now known to occur only from Shizuoka-ken in Honshu southward to Kyushu, and it has not been found in the wide area from Hokkaido to northern Honshu. In contrast, *S.* (*S.*) *pusillus* (Herbst, 1797) is widely distributed from Hokkaido to Kyushu, but it has not been recorded from the Ryukyu Islands. Three additional species seem to be more local: *S.* (*A.*) *yezoensis* Miyatake, 1966, is reported from Hokkaido and Kuril Islands, *S.* (*A.*) *emarginatus* Miyatake, 1966, from Honshu, Shikoku, and Kyushu, and *S.* (*S.*) *tsutsuii* Nakane & Araki, 1959 from Ryukyu Islands (Nakane & Araki 1959, Miyatake 1966, Sasaji 1971, Kishimoto & Kitano 2017). However, comprehensive data on the distribution and ecological details of these species remain limited. Moreover, unidentified species have been recorded in Honshu (Kansai region) and Hokkaido, highlighting the need for further taxonomic studies (Kishimoto & Kitano 2017, Seki 2024). Additionally, an unknown species of *Parastethorus* has been discovered at several localities in Japan.

Despite the utilization of some Stethorini species as indigenous biological control agents of spider mites, comprehensive information about the biology of the Stethorini in Japan remains scarce. Accurate identification of all species is challenging due to their small size (<2 mm) and uniform black dorsal view. Molecular barcoding has been recognized as a promising tool for the species identification (Biddinger et al. 2009), and Vidya et al. (2022) further proposed that DNA barcoding combined with genetic distance estimation provides reliable methods for species identification. Nevertheless, most studies on Japanese *Stethorus* species still rely heavily on illustrations (Kamiya 1959, Nakane & Araki 1959, Miyatake 1966, Sasaji 1971), highlighting a significant gap in modern taxonomic research. This study aims to provide a detailed taxonomic revision and an identification guide to Japanese *Parastethorus* and *Stethorus* species based on morphological data.

Material and methods

The specimens examined were collected in Japan and preserved as dried specimens. Male and female genitalia were dissected, boiled in 10% KOH solution for several minutes, decolorized with oxidol solution, and their external morphology was observed using a Nikon SMZ 1500 dissecting stereomicroscope. The following measurements in mm were taken using an ocular micrometer:

EL elytral length, from apex to base including scutellar shield,
EW elytral width, equal to TW,
HW head width in frontal view,
PL pronotal length, from middle of anterior margin to base of pronotum,
PW pronotal width at widest part,
TH height measured across highest point of elytra,
TL total length, length from apical margin of clypeus to apex of elytra,
TW total width, width across both elytra at widest part.

Dorsal view images were captured using a Laowa 25 mm macro lens mounted on a Canon EOS 9000D digital camera, while male terminalia and genitalia images were taken with a Nikon LABOPHOT-2 equipped with a SWIFT 10MP USB 3.0. The resulting image data were combined using Combine ZP (Alan Hadley), processed in Adobe Photoshop Lightroom (Adobe Systems) and GIMP 2.10.38, and arranged as figures. Elytral puncture, pronotum and abdomen plates were photographed using a JEOL electron microscope (JCM-6000PLUS). The distribution map was edited using GSI Maps provided by the Ministry of Land, Infrastructure, Transport and Tourism of Japan. The terminology follows Ślipiński (2007) and Poorani (2023). The generic names *Pinus* and *Paracoccus* are abbreviated to *Pi*. and *Pa*., respectively.

The materials studied by the authors have been deposited in the following collections:

cItō private collection of J. Itō, Tokyo, Japan;
cSue private collection of H. Suenaga, Okayama, Japan;
BMNH Natural History Museum, London, United Kingdom;
ELKU Entomological Laboratory, Kyushu University, Fukuoka, Japan;
EUMJ Ehime University Museum, Matsuyama, Japan;
KUM The Kyushu University Museum, Fukuoka, Japan;
SEHU Laboratory of Systematic Entomology, Hokkaido University, Sapporo, Japan.

Distribution maps were produced by editing a blank base map obtained from the Geospatial Information Authority of Japan (GSI). The maps are based on all material examined by us plus the data from Kamiya (1964, 1965), Miyatake (1966), Sasaji (1971), Kuznetsov & Proshchalykin (2006) Kishimoto & Kitano (2017), and Saitō (2024). Distributions of *Stethorus* (*Allostethorus*) *emarginatus* Miyatake, 1966; *S.* (*S.*) *siphonulus* Kapur, 1948; *S.* (*S.*) *pusillus* (Herbst, 1797), and *Parastethorus pinicola* sp. nov. are accurately mapped in well-studied areas particularly around Tokyo and Fukuoka.

Taxonomy

Tribe Stethorini Dobzhansky, 1924

Japanese name: ダニヒメテントウ族

Diagnosis. Members of the tribe Stethorini may superficially resemble those of the tribe Scymnini, but they can be distinguished by their very small body size (1.0 to 1.5 mm), almost uniformly black bodies, straight-growing white to yellowish-white setae, predominantly yellow legs, and the morphology of the genitalia. Furthermore, their larvae do not secrete a waxy substance, nor are their pupae covered with such secretions. However, the morphology of Scymnini is highly variable, and some species possess body sizes and coloration very similar to those of Stethorini, requiring a careful identification. Therefore, it is more reliable to identify species within these tribes by examining the male genitalia. The characteristics of genitalia are provided in the diagnoses of each genus and subgenus.

Genus *Stethorus* Weise, 1885

Japanese name: ダニヒメテントウ属

Stethorus Weise, 1885: 65 (original description; subgenus of *Scymnus*). Type species: *Coccinella minimus* Rossi, 1794 (= *Scymnus pusillus* Herbst, 1797).

Stethorus: Weise (1899): 64 (treated as genus, diagnosis, list of African species); Casey (1899): 135 (treated as genus, diagnosis, key of North

American species); Kapur (1948): 297 (review of Oriental species); Gordon & Chapin (1983): 236 (review of New World species).

Diagnosis. The genus *Stethorus* can be distinguished from the genus *Parastethorus* by the complete abdominal postcoxal lines (Li et al. 2015). No additional distinguishing character exists at the generic level.

Distribution. Worldwide.

Remarks. Species identification within *Stethorus* is highly challenging. A diagnostic key is provided at the end of this paper. A reliable identification requires comparison of the male genitalia, and the identification of females is often difficult: *Stethorus* (*Allostethorus*) *emarginatus* Miyatake, 1966 and *S.* (*A.*) *takakoae* sp. nov. can be distinguished from *S.* (*A.*) *yezoensis* Miyatake, 1966 by the shape of the spermatheca, whereas identification of the other species must rely on subtle differences in body coloration and association with males collected at the same place and time.

Subgenus *Allostethorus* Iablokoff-Khnzorian, 1972

Allostethorus Iablokoff-Khnzorian, 1972: 120 (original description). Type species: *Stethorus* (*Allostethorus*) *amurensis* Iablokoff-Khnzorian, 1972, by original designation.

Allostethorus: Hoàng (1982): 117 (review of Vietnamese species); Pang & Mao (1979): 34 (review of Chinese species); Ren & Pang (1996): 323 (review of Chinese and Taiwanese species); Li et al. (2013): 320 (review of Chinese and Taiwanese species); Iqbal et al. (2018): 5 (review of Pakistani species).

Diagnosis. The subgenus *Allostethorus* can be distinguished from the subgenus *Stethorus* by its shorter penis (Figs 1e, 3e, 4c, 5e, 6d, 7d), stout penis guide (Figs 1h, 3h, 4c, 5h, 6g, 7g), and a tegminal strut that exceeds the length of the penis guide (Figs 1h, 3h, 4c, 5h, 6g, 7g). *Allostethorus* can be differentiated from the genus *Parastethorus* by the presence of complete abdominal postcoxal lines (Figs 1c, 3c, 4b, 5c, 6b, 7b). Additionally, several species possess sclerotized spermathecae (Figs 3i–j, 5j–k, 7h).

Stethorus (*Allostethorus*) *chengi* Sasaji, 1968

Japanese name: チェンダニヒメテントウ

(Figs 1, 2, 15)

Stethorus chengi Sasaji, 1968: 4 (original description). Type locality: Chiai [= Chiayi], Taiwan.

Stethorus chengi: Britton & Lee (1972): 55 (list).

Stethorus (*Allostethorus*) *chengi*: Pang & Mao (1975): 419 (diagnosis and key); Pang & Mao (1979): 34 (diagnosis); Ren & Pang (1996): 324 (diagnosis); Yu (1996): 32 (list); Yu (1997): 714 (redescription); (2011): 113 (diagnosis): Pang et al. (2004): 69 (catalogue); Kovář (2007): 591 (catalogue); Ren et al. (2009): 48 (diagnosis); Li et al. (2013): 322 (redescription); Wang & Chen (2022): 126 (diagnosis).

Type material. Holotype: **TAIWAN: Chiayi:** ♂, '[Formosa], Chia-yi, C. H. Cheng' (ELKU).

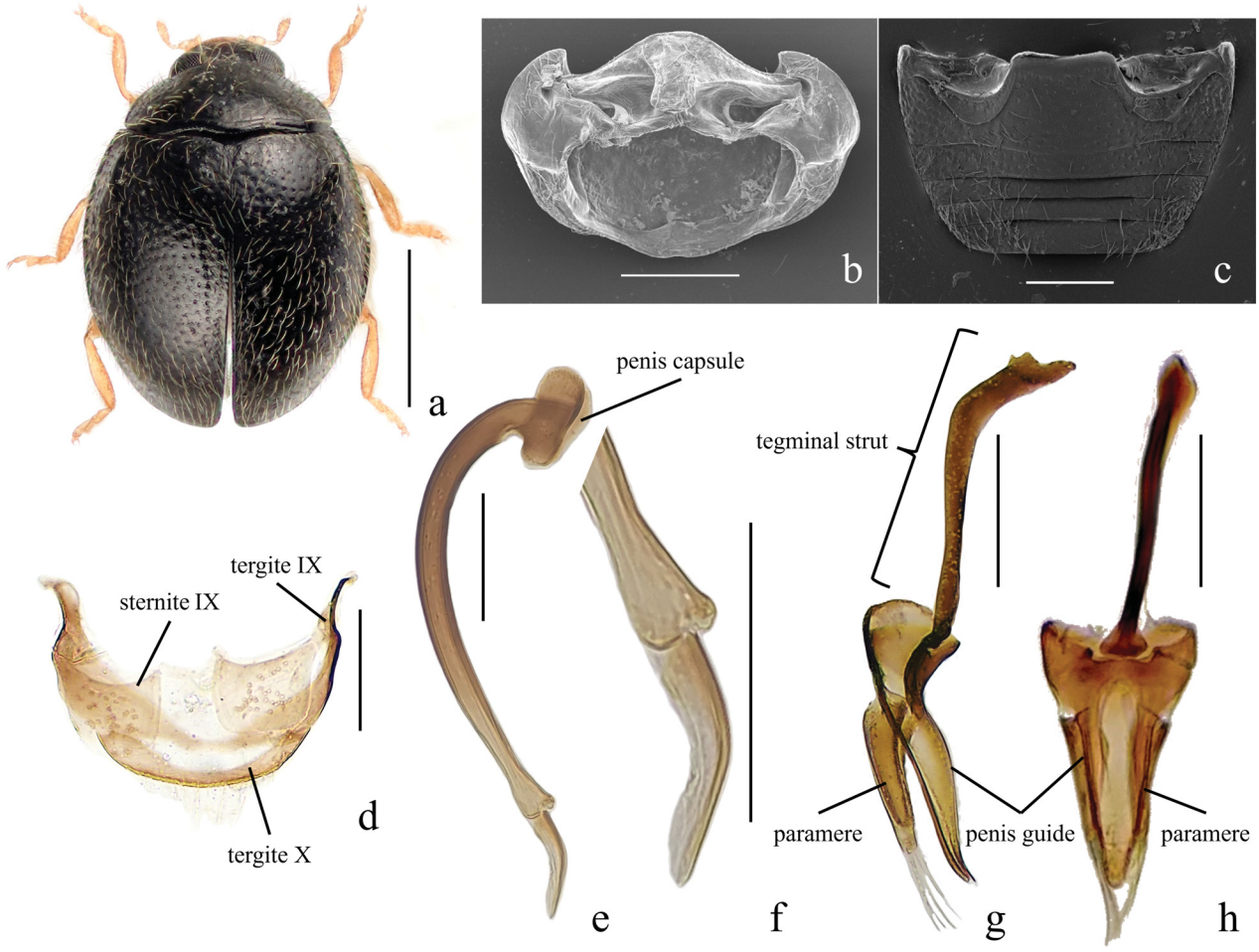

Fig. 1. *Stethorus* (*Allostethorus*) *chengi* Sasaji, 1968. a – dorsal view; b – prothorax; c – abdomen; d – male terminal abdominal segments IX and X; e – penis; f – penis apex; g – tegmen, lateral view; h – tegmen, ventral view. Scale bars = 0.5 mm for a; 0.2 mm for b, c; 0.1 mm for d–h.

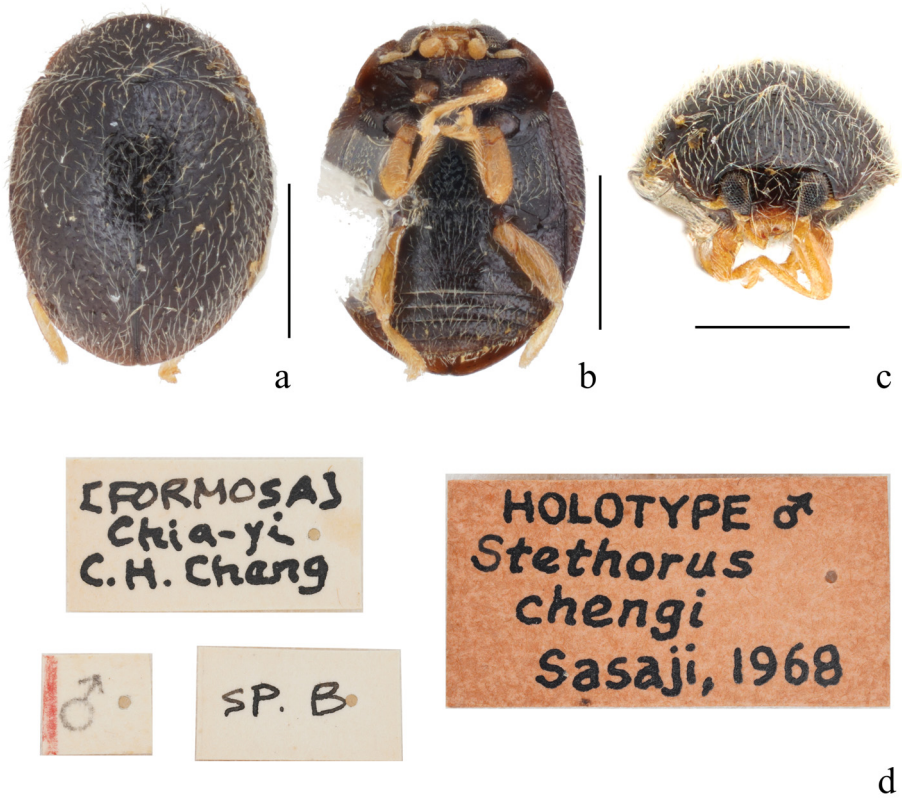

Fig. 2. Holotype of *Stethorus* (*Allostethorus*) *chengi* Sasaji, 1968. a – dorsal view; b – ventral view; c – frontal view; d – type label. Scale bars = 0.5 mm for a–c.

Non-type material examined. JAPAN: Ryukyus: Miyako-jima Is.: 1 ♀, Ōnosanrin, Miyakojima-shi (alt. 21–42 m), 11.ii.2025, R. Seki leg. (KUM); 6 ♂♂ 1 ♀, Hiraranikadori, Miyakojima-shi (alt. 11–20 m), 8.i.2023, R. Seki leg. (KUM). **Kurima-jima Is.:** 1 ♂, Tako-kōen Park, Shimojikurima, Miyakojima-shi (alt. 7–38 m), 8.i.2023, R. Seki leg. (KUM). **Ishigaki-jima Is.:** 1 ♂, Funakura-kōen Park, Arakawa, Ishigaki-shi (alt. 3.0–8.5 m), 16.iii.2025, R. Seki leg. (KUM); 1 ♂, Sakieda, Ishigaki-shi (alt. 9–16 m), 23.iv.2023, R. Seki leg. (KUM). **Yonaguni-jima Is.:** 1 ♀, Sonai, Yonaguni-chō, Yaeyama-gun (alt. 16.0–28.4 m), 8.ix.2023, R. Seki & Y. Mikami leg. (KUM); 1 ♂ 1 ♀, same locality and collector but 9.ix.2023 (KUM); 1 ♂, Higawa Beach, Higawa, Yonaguni-chō, Yaeyama-gun (alt. 1–8 m), 10.ix.2023, R. Seki leg. (KUM); 1 ♀, Irizaki, Yonaguni-chō, Yaeyama-gun (alt. 18.8–28.8 m), 9.ix.2023, R. Seki & Y. Mikami leg. (KUM).

Diagnosis. This species resembles *Stethorus* (*Stethorus*) *siphonulus* Kapur, 1948 in having U-shaped prosternal process and inconspicuous prosternal punctures (Fig. 1b), as well as abdominal ventrite VI being rounded at apex in male (Sasaji 1968: fig. 1L; Li et al. 2013: fig. 27), but can be distinguished by the shape of its penis (Figs 1e–f) and tegmen (Figs 1g–h). Additionally, this species is similar to *S.* (*Allostethorus*) *parapauperculus* Pang, 1966 in its body and leg coloration (Fig. 1a) but differs in having brownish anterior part of the head (Fig. 1a), narrowly U-shaped abdominal postcoxal lines (Fig. 1c), male abdominal sternite IX (Fig. 1d) with pleurites more square-shaped, more complex shape of the apex of its penis (Figs 1e–f), longer and thinner parameres in lateral view (Fig. 1g), and more rounded apex of penis guide in ventral view (Fig. 1h). Sclerotized spermatheca not visible.

Measurements. TL, 1.06–1.25 mm; TW, 0.80–0.97 mm; TH, 0.51–0.61 mm; TL/TW, 1.28–1.33; PL/PW, 0.39–0.54; EL/EW, 1.03–1.08.

Distribution. Japan (Ryukyu Isls.: Miyako-jima Is., Kurima-jima Is., Ishigaki-jima Is., Yonaguni-jima Is.); Taiwan, mainland China (Zhejiang, Anhui, Jiangxi, Hubei, Hunan, Sichuan, Guizhou, Shaanxi).

Remarks. Our identification is based on Sasaji (1968), Li et al. (2013) and the comparison with the holotype (Figs 2a–d). This species is recorded from Japan for the first time. This species was primarily collected by sweeping in disturbed grassy environment along roadsides.

Stethorus (*Allostethorus*) *emarginatus* Miyatake, 1966

Japanese name: エグリダニヒメテントウ
(Figs 3, 4, 15, 18, 19)

Stethorus emarginatus Miyatake, 1966: 51 (original description; type locality: Matsuyama, Shikoku, Japan).
Stethorus emarginatus: Sasaji (1971): 87 (redescription); Britton & Lee (1972): 55 (list).
Stethorus (*Parastethorus*) *emarginatus*: Sasaji (1985): 248 (diagnosis, as subgenus *Parastethorus*); Hirashima (1989): 390 (checklist).
Stethorus (*Allostethorus*) *emarginatus*: Kovář (2007): 592 (catalogue, as subgenus *Allostethorus*); Kishimoto & Kitano (2017): 29 (additional record from Japan).

Type material. Holotype: **JAPAN: Shikoku: Ehime-ken:** ♂, 'Matsuyama, Ehime Pref., xi.29.1958, S. Hisamatsu' (EUMJ).
Non-type material examined. JAPAN: Honshu: Yamagata-ken: 1 ♂ 2 ♀♀, Mt. Tochikubo, Sumomoyama, Yonezawa-shi (alt. 570–605 m), 6.vi.2025, R. Seki leg. (KUM). **Kanagawa-ken:** 2 ♂♂ 1 ♀, Minami-ku, Sagamihara-shi (alt. 92.3 m), 13.ii.2021, R. Seki leg. (KUM); 6 ♂♂ 3 ♀♀, Minami-ku, Sagamihara-shi (alt. 92.3 m), 16.ii.2021, R. Seki leg. (KUM); 1 ♂ 1 ♀, Minami-ku, Sagamihara-shi, (alt. 94.5 m), 16.ii.2021, R. Seki leg. (KUM); 2 ♂♂, Minami-ku, Sagamihara-shi (alt. 96.2 m), 16.ii.2021, R. Seki leg. (KUM); 1 ♀, Isehara-tōnoyama-ryokuchi-kōen Park, Sanomiya, Isehara-shi (alt. 130 m), 8.vii.2024, S. Hayashi leg. (KUM). **Yamanashi-ken:** 1 ♂, Utsubuna-kōen Park, Utsubuna, Nanbu-chō, Minamikoma-gun (alt. 212–233 m) [Cherry blossom], 19.viii.2023, R. Seki & M. Kondō leg. (KUM). **Fukui-ken:** 1 ♀, Mt. Monju-san, 19.v.1979, H. Sasaji leg. (KUM). **Shikoku: Ehime-ken:** 1 ♂, Matsuyama-jō Castle, Marunouchi, Matsuyama-shi, 7.iv.2021. R. Tamura leg. (KUM); 1 ♂ 1 ♀, Ishitegawa-kōen Park, Ishite, Matsuyama-shi (alt.

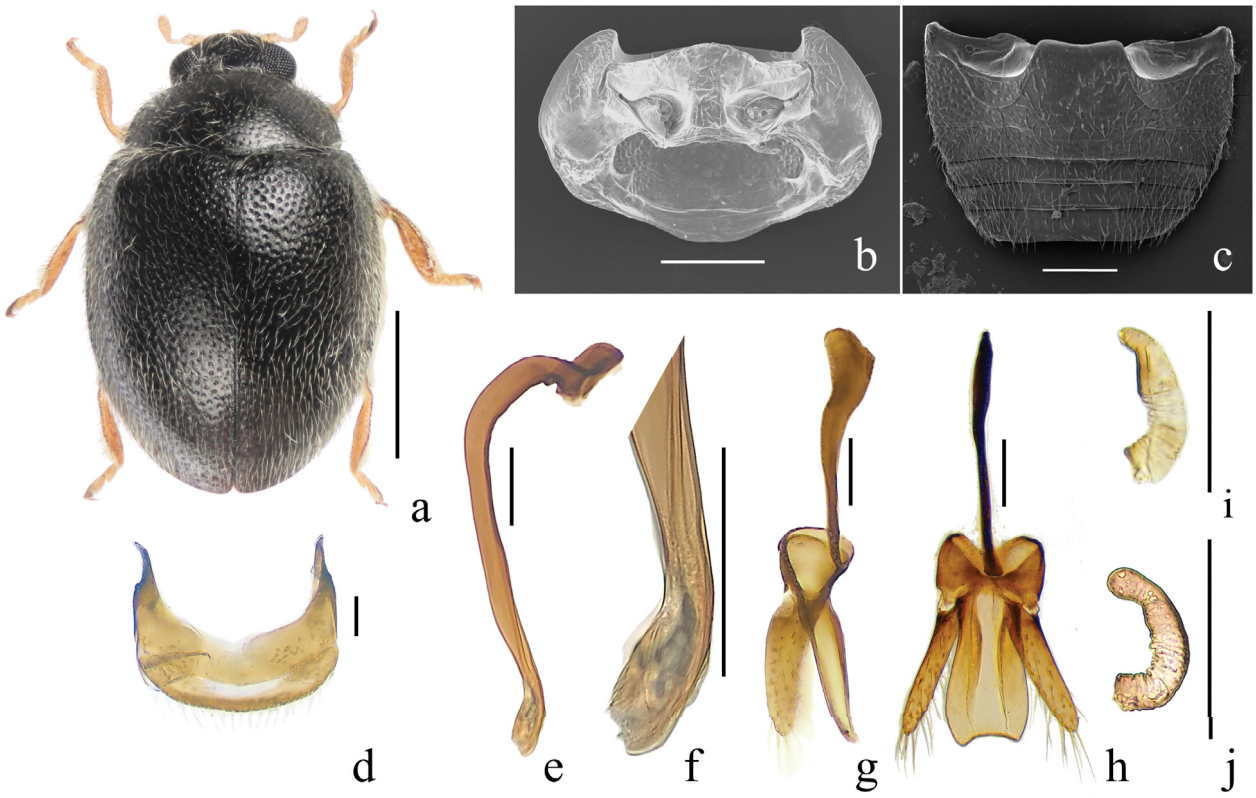

Fig. 3. *Stethorus* (*Allostethorus*) *emarginatus* Miyatake, 1966. a – dorsal view; b – prothorax; c – abdomen; d – male terminal abdominal segments IX and X; e – penis; f – penis apex; g – tegmen, lateral view; h – tegmen, ventral view; i, j – spermatheca. Scale bars = 0.5 mm for a; 0.2 mm for b, c; 0.1 mm for d–j.

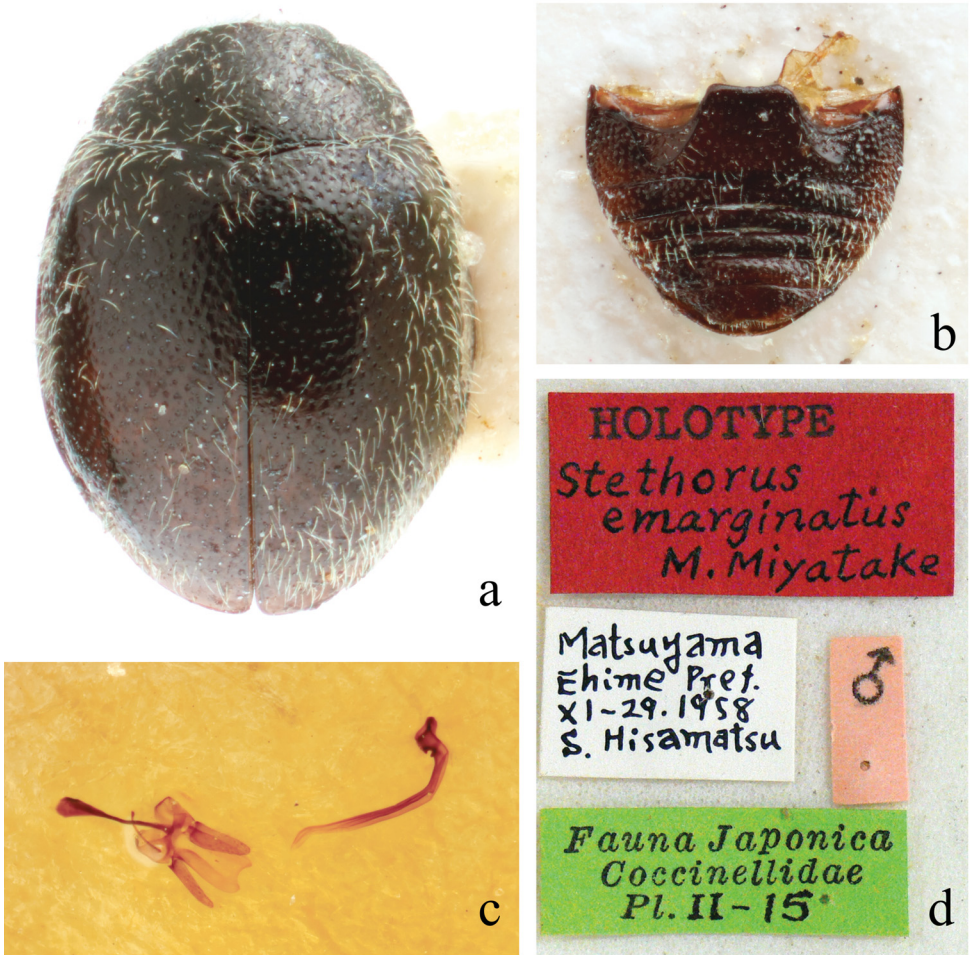

Fig. 4. Holotype of *Stethorus* (*Allostethorus*) *emarginatus* Miyatake, 1966. a – dorsal view; b – abdomen; c – male genitalia; d – type label.

40–43 m), 1.xii.2023, R. Seki leg. (KUM); 3 ♀♀, Tachibana, Matsuyama-shi [Cherry blossom], 17.viii.2023, M. Kondō leg. (KUM). **Kyushu: Fukuoka-ken:** 1 ♂, Motooka, Fukuoka-shi, 11.vi.2019, T. Hashizume leg. (KUM); 1 ♂, Iwaya, Tōhō-mura, Asakura-gun, 22.vi.2018, K. Kido leg. (KUM). **Kumamoto-ken:** 2 ♀♀, Ichifusa-dam-ko Lake, Yuyama, Mizukami-mura, Kuma-gun (alt. 270–280 m), 23.x.2023, R. Seki leg. (KUM); 1♂, same locality and collector but 20.x.2024 (KUM).

Diagnosis. This species closely resembles *Stethorus* (*Allostethorus*) *takakoae* sp. nov. in body coloration (Figs 3a, 4a) and U-shaped prosternal process with inconspicuous punctures (Fig. 3b). Additionally, abdominal ventrite VI in male exhibits distinctly deep emargination at apex (Miyatake 1966: fig. 3; Sasaji 1971: fig. 28C). However, it can be distinguished from the latter by its narrowly U-shaped abdominal postcoxal lines (Figs 3c, 4b), width of abdominal ventrite III (excluding coxal cavities), which is 1.40–1.67 times the height of the abdominal postcoxal lines (Fig. 3c), slightly curved male abdominal sternite IX (Fig. 3d), more basally curved penis (Figs 3e, 4c), slightly larger penile capsule (Figs 3e, 4c), penis capsule with distinct incision on inner basal margin (Figs 3e, 4c), truncated penis apex shape (Figs 3f, 4c), and by penis guide with slightly curved base in ventral view (Figs 3h, 4c). Spermatheca (Figs 3i–j) is extremely small, sometimes deformed, and thus not considered morphological characteristic highly reliable for identification.

Measurements. TL, 1.29–1.45 mm; TW, 0.93–1.15 mm; TH, 0.60–0.68 mm; TL/TW, 1.34–1.50; PL/PW, 0.47–0.55; EL/EW, 1.07–1.16.

Distribution. Japan (Honshu, Shikoku, Kyushu).

Remarks. Our identification is based on Miyatake (1966) and the comparison with the holotype (Figs 4a–d). The distribution data (Fig. 15) of *Stethorus* (*Allostethorus*) *emarginatus* are incomplete, with data from large areas in Hokuriku and Tōhoku regions where significant gaps exist. This highlights the necessity for further detailed surveys to clarify its geographic range. Furthermore, although Kitano & Kishimoto (2017) reported the collection of three specimens identified as *S.* (*A.*) *emarginatus* in Aomori-ken, it remains unclear whether these specimens belong to *S.* (*A.*) *emarginatus* or the closely related *S.* (*A.*) *takakoae* sp. nov. given their morphological similarities.

Stethorus (*Allostethorus*) *takakoae* sp. nov.

Japanese name: エゾエグリダニヒメテントウ
(Figs 5, 15)

Stethorus (*Allostethorus*) sp.: Seki (2024): 11 (record from Hokkaido, Japan).

Type material. Holotype: ♂, **JAPAN: Hokkaido:** Enetokomappu-gawa River, Kussharo, Teshikaga-chō, Kawakami-gun (alt. 134.2 m), 3.vi.2021, R. Seki leg. (KUM). Paratypes: **JAPAN: Hokkaido:** 1 ♂ 24 ♀♀, Wakkanai, 15.ix.1974, Y. Furuki leg. (EUMJ); 2 ♂♂ 2 ♀♀, Kamuikotan, Asahikawa-shi, 4.ix.1974, Y. Furuki leg. (EUMJ); 2 ♀♀, Biruwa, Teshikaga-chō, Kawakami-gun (alt. 120–153 m), 10–11.vi.2022, R. Seki leg. (KUM); 1 ♂ 1 ♀, Enetokomappu-gawa River, Kussharo, Teshikaga-chō, Kawakami-gun (alt. 134.2 m), 3.vi.2021, R. Seki leg. (KUM); 1 ♀, Wakoto-hantō Peninsula, Teshikaga-chō, Kawakami-gun, 28.viii.2012, M. Nakatani leg. (KUM); 1 ♂, same locality and collector but 21.ix.2012 (KUM); 1 ♀, same locality and collector but 7.vi.2013 (KUM); 1 ♂, same locality and collector but 28.vi.2014 (KUM); 1 ♂, same locality and collector but 23.v.2015 (KUM); 1 ♀, same locality and collector but 3.vi.2018 (KUM); 5 ♂♂ 4 ♀♀, same

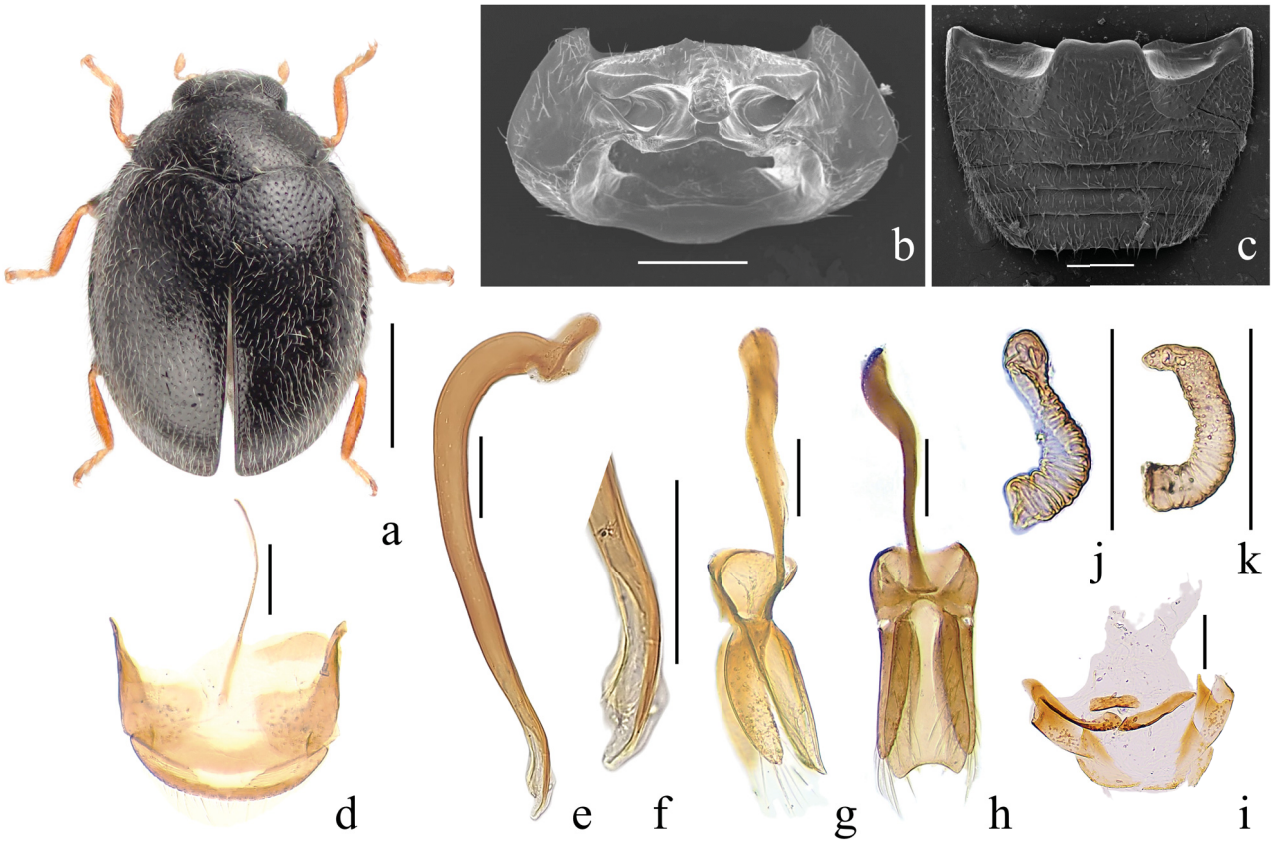

Fig. 5. *Stethorus* (*Allostethorus*) *takakoae* sp. nov. a – dorsal view; b – prothorax; c – abdomen; d – male terminal abdominal segments IX and X; e – penis; f – penis apex; g – tegmen, lateral view; h – tegmen, ventral view; i – female terminalia and genital track; j – spermatheca; k – spermatheca deformation. Scale bars = 0.5 mm for a; 0.2 mm for b, c; 0.1 mm for d–k.

locality but (alt. 120–180 m), 8.vi.2022, R. Seki leg. (KUM); 1 ♂ 1♀, same locality and collector but 14.vii.2022 (KUM); 1 ♀, Misumai, Sapporo-shi, 3.ix.1974, Y. Furuki leg. (EUMJ); 1 ♂, Ōnuma Lake, Nanae-chō, Kameda-gun, 20.ix.1974, Y. Furuki leg. (EUMJ).

Diagnosis. This species closely resembles *Stethorus* (*Allostethorus*) *emarginatus* in body coloration (Fig. 5a) and U-shaped prosternal process with inconspicuous punctures (Fig. 5b). Additionally, abdominal ventrite VI is distinctly and deeply emarginate at apex in males. However, the new species can be distinguished from the latter by its broadly U-shaped abdominal postcoxal lines (Fig. 5c), width of abdominal ventrite III (excluding coxal cavities), which is 1.31–1.69 times the height point of the abdominal postcoxal lines (Fig. 5c). Furthermore, by straight male abdominal sternite IX (Fig. 5d), penis less curved at base (Fig. 5e), slightly smaller penis capsule (Fig. 5e), inner basal margin of penis capsule without distinct incision (Fig. 5e), thin membrane at penis apex with pointed shape (Fig. 5f), and by penis guide gently widening apically in ventral view (Fig. 5g). The spermatheca (Figs 5j–k) is extremely small and occasionally deformed (Fig. 5k), making its morphological characteristic unreliable for identification.
Description. TL, 1.32–1.45 mm; TW, 0.95–1.11 mm; TH, 0.64–0.77 mm; TL/TW, 1.38–1.42; PL/PW, 0.47–0.53; EL/EW, 1.12–1.17.

Body small, elongate oval, moderately convex, densely covered with long, white setae (Fig. 5a). Dorsum and venter entirely black, except for yellow antennae, mouthparts testaceous and posterior half of frons yellowish brown; femora pitchy brown, and tibiae and tarsi yellowish brown to dark brown with yellowish basal part.

Head small, 0.55 times as wide as pronotum, punctures on frons fine and sparsely distributed, 1.0–3.0 diameters apart. Eyes small and oval, widest interocular distance 0.47 times head width. Pronotum 0.73 times as wide as elytra; pronotal punctures fine and moderately densely distributed, similar to those on head, 1.0–3.0 diameters apart. Elytral punctures consisting of both large and small ones, sparsely distributed, 1.5–2.0 diameters apart, larger than those on head. Prosternum matt and shagreened, punctures fine, 1.0–2.0 diameters apart, sparsely covered with long, white setae. Prothorax (Fig. 5b) with prosternal process U-shaped, prosternal lines nearly parallel. Mesoventral punctures fine, moderately densely distributed, 1.0–2.0 diameters apart, sparsely covered with long, white setae. Metaventrite punctures fine, moderately densely distributed, 1.0–2.5 diameters apart, sparsely covered with long, white pubescence. Width of abdominal ventrite III (Fig. 5c), excluding coxal cavities of ventrite III, 1.31–1.69 times highest point of abdominal postcoxal lines. Abdominal ventrite VI distinctly and deeply emarginated in male.

Male terminalia and genitalia. Tergite IX (Fig. 5d) stout, sternite IX (Fig. 5d) stout and short, tergite X (Fig. 5d) transverse; penis (Fig. 5e) stout and short, nearly as long as tegmen including median strut, weakly curved in basal 1/3 and nearly straight in apical part; penis capsule small and short but with distinct inner and outer processes; penis apex (Fig. 5f) with membranous swellings; tegmen (Figs 5g–h) stout, with penis guide broad, about 2 times as long as wide, slightly broadened apically and with broadly and deeply emarginate apex in ventral aspect; parameres (Figs 5g–h) shorter than penis guide in lateral view, narrowing and slightly arcuate in lateral aspect, with rather long setae on apical and ventral sides; median strut nearly as long as remaining part of tegmen and fairly stout (Fig. 5g).

Female genitalia. Coxite slender (Fig. 5i); spermatheca (Figs 5j–k) sclerotized and gently curved, rarely deformed.
Etymology. The species name is dedicated to the first author's grandmother, Mrs. Takako Ōtsuki, who has supported his entomological pursuits since his childhood.
Distribution. Japan (Hokkaido).
Remarks. In Hokkaido, three species, *Stethorus* (*Allostethorus*) *takakoae* sp. nov., *S.* (*A.*) *yezoensis*, and *S.* (*S.*) *pusillus* are present. However, prior to Kishimoto et al. (2013), only *S.* (*A.*) *yezoensis* and *S.* (*S.*) *japonicus* Kamiya, 1959 were recognized, suggesting that many literature records may contain misidentifications.

Stethorus (*Allostethorus*) *parapauperculus* Pang, 1966

Japanese name: ケシダニヒメテントウ
(Figs 6, 15)

Stethorus parapauperculus Pang, 1966: 79. Type locality: Nada, Hainan, China.
Stethorus parapauperculus: Britton & Lee (1972): 55 (list).
Stethorus (*Allostethorus*) *parapauperculus*: Pang & Mao (1975): 419 (diagnosis and key, as subgenus *Allostethorus*); Pang & Mao (1979): 35 (diagnosis); Pu & Pang (1986): 37 (diagnosis); Cao (1992): 114 (diagnosis); Ren & Pang (1996): 325 (diagnosis); Yu (1996): 32 (list); Pang et al. (2004): 70 (catalogue); Kovář (2007): 592 (catalogue); Li et al. (2013): 326 (redescription); Wang & Chen (2022):128 (diagnosis).
See Li et al. (2013: 322) for detailed list of synonyms.

Material examined. JAPAN: Ryukyus: Okinawa-jima Is.: 2 ♀♀, Unten, Nakijin-son, Kunigami-gun (alt. 15–47 m), 3.xii.2024, R. Seki leg. (KUM); 7 ♂♂ 3 ♀♀ 1 ex., Nago, Nago-shi, 5.ii.1956, K. Iha leg. (EUMJ); 1 ♂, Henoko, Nago-shi (alt. 9–18 m), 4.ii.2023, R. Seki & Y. Mikami leg. (KUM). **Kume-jima Is.:** 3 ♂♂, Janadō, Kumejima-chō, Shimajiri-gun (alt. 1.2–6.0 m), 10.x.2024, R. Seki leg. (KUM). **Ishigaki-jima Is.:** 1 ♂, Sakibaru-kōen Park, Ōhama, Ishigaki-shi (alt. 12 m), 26.iv.2023, R. Seki leg. (KUM); 2 ♂♂ 1 ♀, Sakieda, Ishigaki-shi (alt. 9–16 m), 15.iii.2025, R. Seki leg. (KUM).

Diagnosis. This species resembles *Stethorus* (*Allostethorus*) *chengi* Sasaji, 1968 in coloration of the body and legs (Fig. 6a), and abdominal ventrite VI being rounded at apex in males (Fig. 6b; Pang 1966: fig. 5; Li et al. 2013: fig. 67). However, it is distinguished from the latter by its entirely black head (Fig. 6a), broadly U-shaped abdominal postcoxal lines (Fig. 6b), male abdominal sternite IX that are closer to horizontally elongated rectangle (Fig. 6c), simpler shape of the penis (Figs 6d–e), parameres that are shorter and thicker in lateral view (Fig. 6f), and more pointed apex of penis guide in ventral view (Fig. 6g). Sclerotized spermatheca is not visible.
Measurements. TL, 0.94–1.18 mm; TW, 0.70–0.80 mm; TH, 0.48–0.55 mm; TL/TW, 1.34–1.47; PL/PW, 0.46–0.57; EL/EW, 1.07–1.20.
Distribution. Japan (Ryukyu Isls.: Okinawa-jima Is., Kume-jima Is., Ishigaki-jima Is.); Mainland China (Fujian, Guangdong, Guangxi, Hainan, Yunnan).

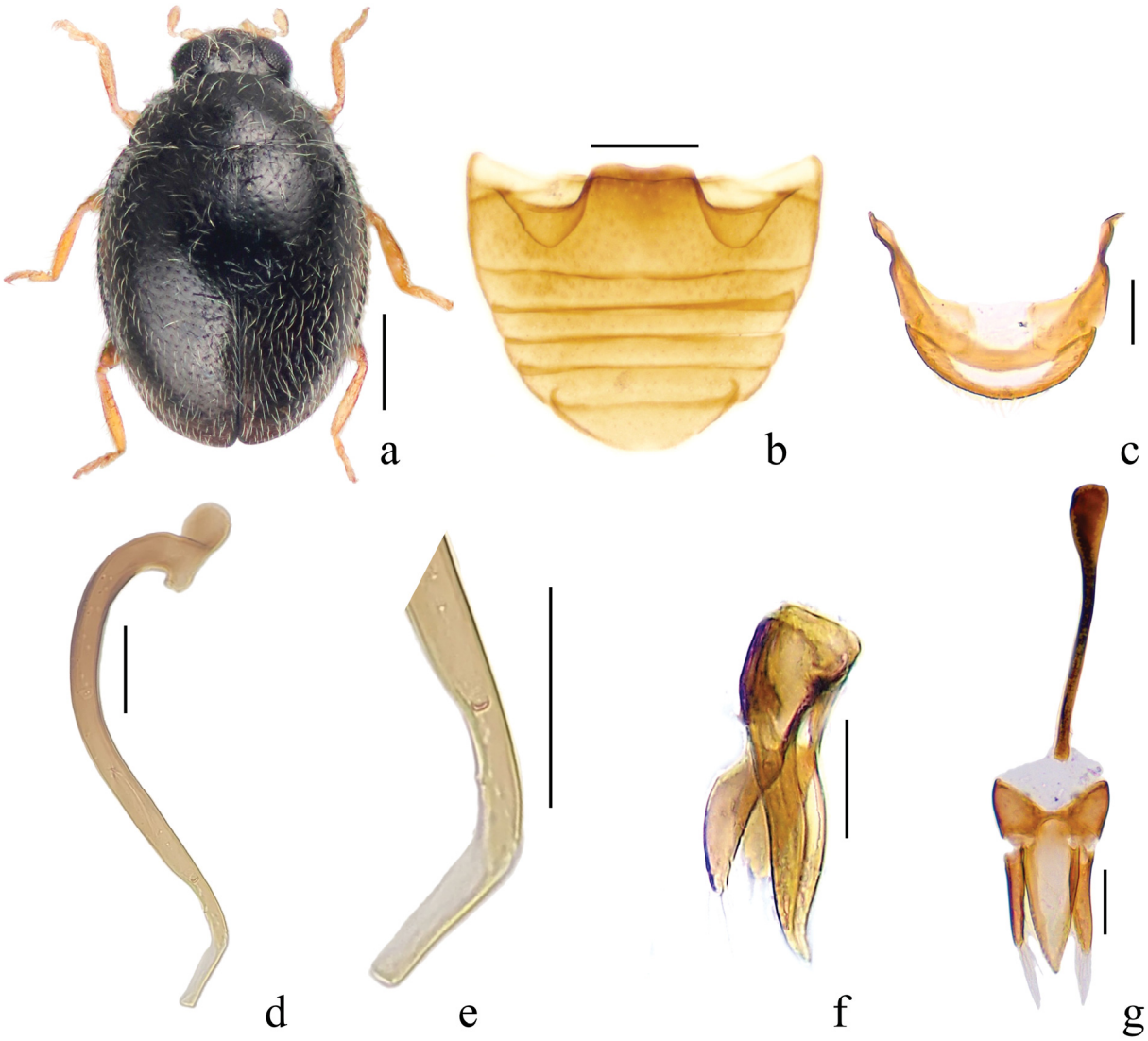

Fig. 6. *Stethorus* (*Allostethorus*) *parapauperculus* Pang, 1966. a – dorsal view; b – abdomen; c – male terminal abdominal segments IX and X; d – penis; e – penis apex; f – tegmen, lateral view; g – tegmen, ventral view. Scale bars = 0.25 mm for a; 0.1 mm for b; 0.05 mm for c–g.

Remarks. Our identification is based on Li et al. (2013). This species is recorded from Japan for the first time. This species was primarily collected by sweeping in disturbed grassy environment along roadsides.

Stethorus (*Allostethorus*) *yezoensis* Miyatake, 1966

Japanese name: ナガダニヒメテントウ

(Figs 7, 8, 15)

Stethorus yezoensis Miyatake, 1966: 53. Type locality: Aizankei, Kamikawa–gun, Hokkaido, Japan.

Stethorus yezoensis: Sasaji (1971): 89 (redescription); Britton & Lee (1972): 56 (list).

Stethorus (*Allostethorus*) *yezoensis*: Sasaji (1985): 248 (diagnosis, as subgenus *Allostethorus*); Hirashima (1989): 390 (checklist); Kuznetsov & Proshchalykin (2006): 265 (new record from Kuril Islands); Kovář (2007): 592 (catalogue); Seki (2024): 11 (additional record from Hokkaido, Japan); Saitō (2024): 61 (new record from Honshu, Japan).

Type material. Holotype: **JAPAN: Hokkaido:** ♂, '(Hokkaido), Aizankei, Kamikawa-gun, Jul.18.1962, Y. Miyatake leg.' (EUMJ).

Non-type material examined. JAPAN: Hokkaido: 1 ♀, Wakoto-hantō Peninsula, Teshikaga-chō, Kawakami-gun, 29.v.2014, M. Nakatani leg. (KUM); 1 ♂, Enetokomappu-gawa River, Kussharo, Teshikaga-chō, Kawakami-gun (alt. 124 m), 3.vi.2021, R. Seki leg. (KUM); 1 ♀, Enetokomappu-gawa River to Wakoto-hantō Peninsula, Kussharo, Teshikaga-chō, Kawakami-gun (alt. 119–138 m), 7.vi.2022, R. Seki leg. (KUM); 1 ♀, Aizankei, Kamikawa-chō, Kamikawa-gun, 8.ix.1974, Y. Furuki leg. (EUMJ); 1 ♂, Mt. Sapporo-dake, Sapporo-shi, 5.viii.1970, M. Sakai leg. (EUMJ); 1 ♂, Hokkaido University campus, Sapporo-shi [FIT], vi.2011, T. Lackner leg. (BMNH).

Diagnosis. This species can be reliably distinguished from other Japanese *Stethorus* by its black tibia (Fig. 7a), slightly emarginated apex of abdominal ventrite VI in male (Fig. 7b; Miyatake 1966: fig. 12; Sasaji 1971: fig. 29C), more rounded male abdominal sternite IX (Fig. 7c), fishing hook-shaped penis apex (Figs 7d–e), rounded apex of penis guide in both lateral and ventral view (Figs 7f–g), and by thick, short spermatheca with a projection at its apex (Fig. 7h). Additionally, this species exhibits a distinctive morphology among Japanese *Stethorus*, characterized by its elongated body shape (Fig. 7a; Miyatake 1966, Sasaji 1971). However, since some individuals of *S.* (*Allostethorus*) *takakoae* sp. nov. also

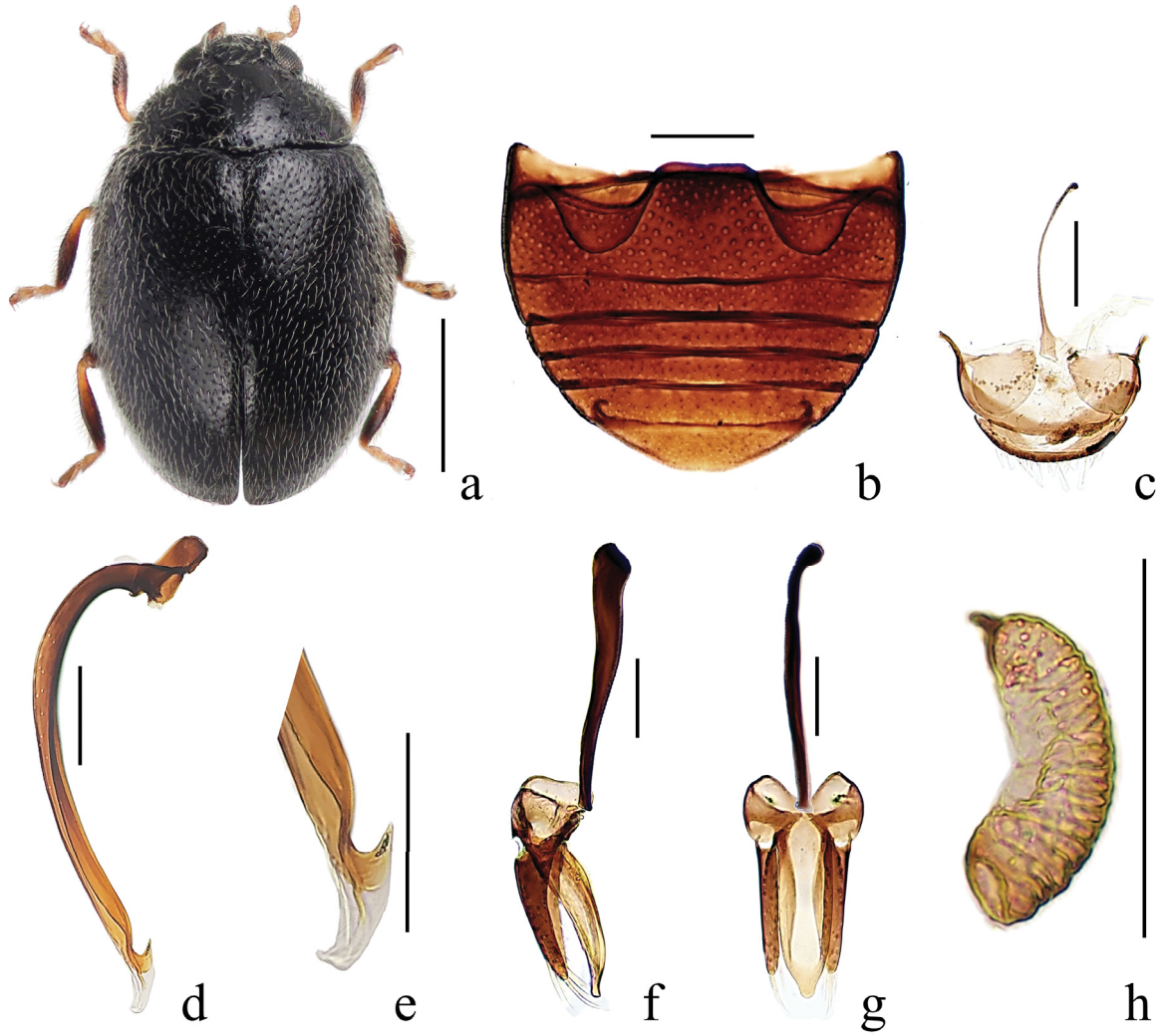

Fig. 7. *Stethorus* (*Allostethorus*) *yezoensis* Miyatake, 1966. a – dorsal view; b – abdomen; c – male terminal abdominal segments IX and X; d – penis; e – penis apex; f – tegmen, lateral biew; g – tegmen, ventral view; h – spermatheca. Scale bars = 0.5 mm for a; 0.2 mm for b; 0.1 mm for c–h.

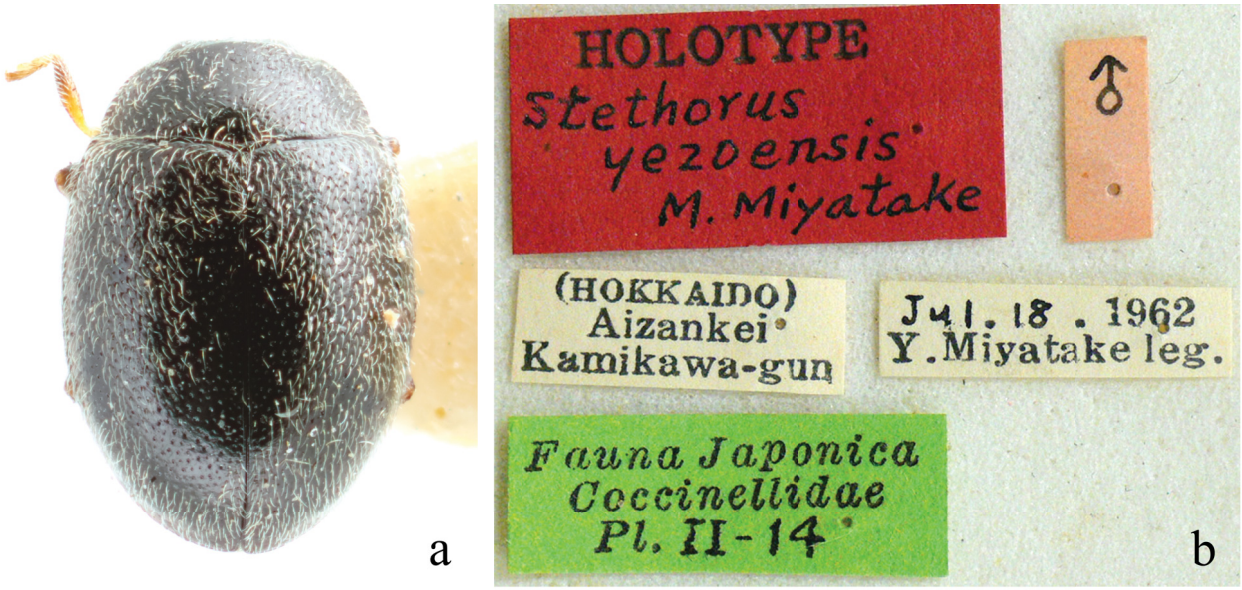

Fig. 8. Holotype of *Stethorus* (*Allostethorus*) *yezoensis* Miyatake, 1966. a – dorsal view; b – type label.

exhibit an elongated body shape, reliable identification requires examination of the male genitalia (Figs 7d–g) and spermatheca (Fig. 7h).

Measurements. TL, 1.47–1.50 mm; TW, 1.01–1.03 mm; TH, 0.68–0.73 mm; TL/TW, 1.43–1.48; PL/PW, 0.50–0.52; EL/EW, 1.17.

Additional description. ***Female genitalia.*** Spermatheca (Fig. 7h) sclerotized, simple in form, and projecting apex.

Distribution. Japan (Hokkaido, Honshu: Yamanashi; Saitō 2024); Kuril Isls. (Kunashiri-tō Is.; Kuznetsov & Proshchalykin 2006).

Remarks. Our identification is based on Miyatake (1966) and the comparison with the holotype (Figs 8a–b). *Stethorus* (*Allostethorus*) *yezoensis* Miyatake, 1966 was previously considered to be endemic to Hokkaido (Miyatake 1966, Sasaji 1971, Hirashima 1989, Seki 2024). However, Saitō (2024) recently recorded its occurrence on Mt. Fuji-san in Yamanashi-ken (Fig. 15), indicating that its distribution may extend beyond Hokkaido and encompass the central mountainous regions of Honshu.

Subgenus *Stethorus* Weise, 1885

Stethorus Weise, 1885: 65 (original description). Type species: *Scymnus punctillum* Weise, 1891 (= *Scymnus pusillus* Herbst, 1797) by original designation.

Stethorus: Pang & Mao (1979): 30 (review of Chinese species); Hoàng (1982): 113 (review of Vietnamese species); Gordon & Chapin (1983): 236 (review of New World species); Ren & Pang (1996): 318 (review of Chinese and Taiwanese species); Iqbal et al. (2018): 8 (review of Pakistani species).

Diagnosis. The subgenus *Stethorus* can be distinguished from the subgenus *Allostethorus* by long and slender penis (Figs 9f, 11e, 13e), slender penis guide (Figs 9h, 11g, 13h), and tegminal strut shorter than penis guide (Figs 9g, 11f, 13g).

Stethorus (*Stethorus*) *siphonulus* Kapur, 1948

Japanese name: キアシダニヒメテントウ

(Figs 9–12, 16, 19)

Stethorus punctillium Weise, 1891 (misidentifications): Sicard (1907): 211 (Tokio); Ohta (1931): 18 (Tokio).

Stethorus siphonulus Kapur, 1948: 314. Type locality: Penang; Browing's Bequest, Malaya.

Stethorus siphonulus: Pang & Mao (1975): 419 (diagnosis, in subgenus *Stethorus*); Pang & Mao (1979): 31 (diagnosis); Chunram & Sasaji (1980): 476 (list); Ren & Pang (1996): 319 (diagnosis); Pang et al. (2004): 69 (catalogue); Kovář (2007): 592 (catalogue); Wang & Chen (2022): 134 (diagnosis).

Stethorus japonicus Kamiya, 1959: 140. Type locality: Mt. Wakasugi-yama, Fukuoka Pref., Kyushu, Japan. **New junior subjective synonym.**

Stethorus japonicus: Kamiya (1961): 281 (diagnosis); Sasaji (1971): 84 (redescription); Britton & Lee (1972): 55 (list); Sasaji (1985): 248

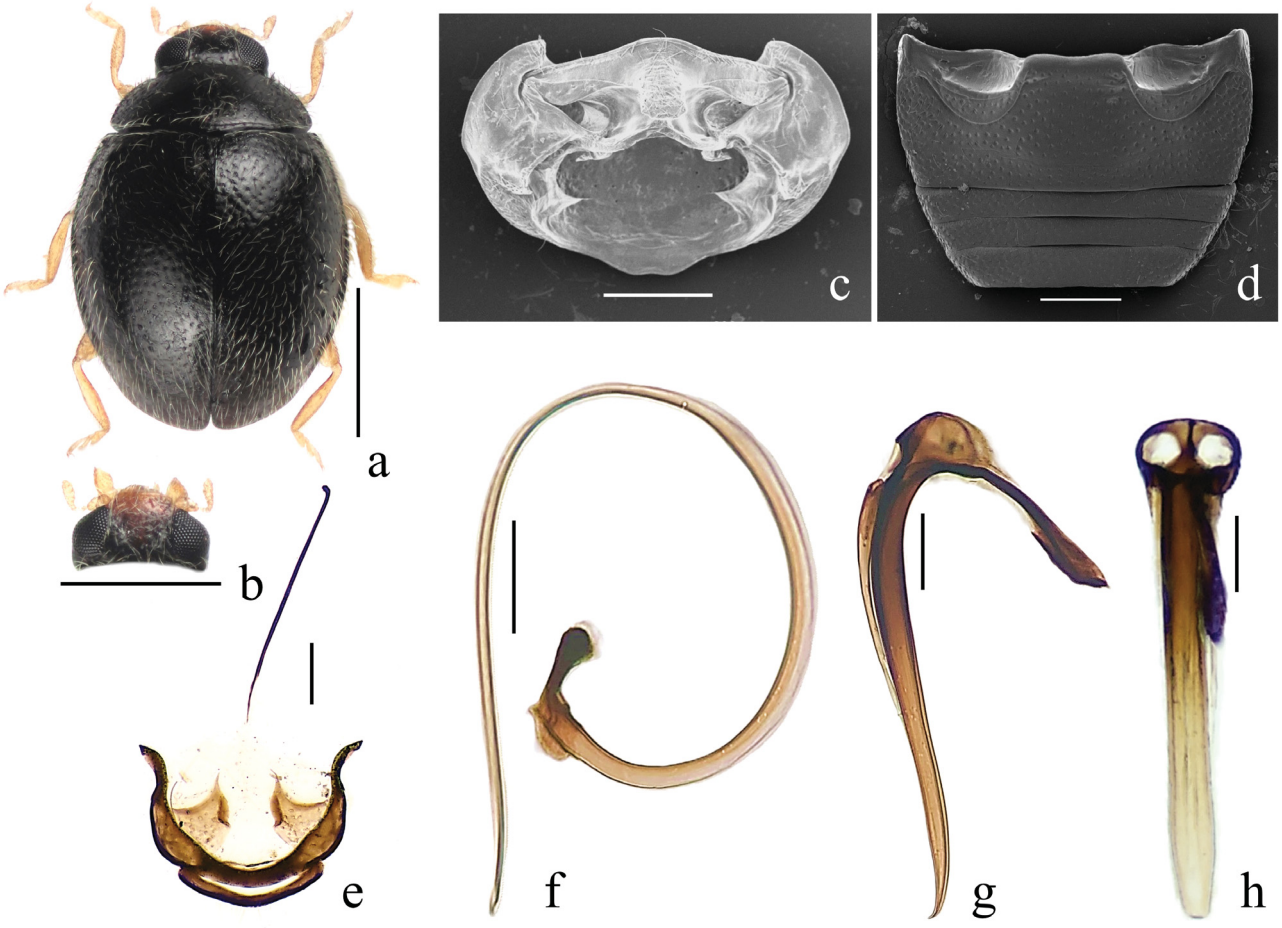

Fig. 9. *Stethorus* (*Stethorus*) *siphonulus* Kapur, 1948 from Ryukyu Islands. a – dorsal view; b –head; c – prothorax; d – abdomen; e – male terminal abdominal segments IX and X; f – penis; g – tegmen, lateral view; h – tegmen, ventral view. Scale bars = 0.5 mm for a, b; 0.2 mm for c, d; 0.1 mm for e–h.

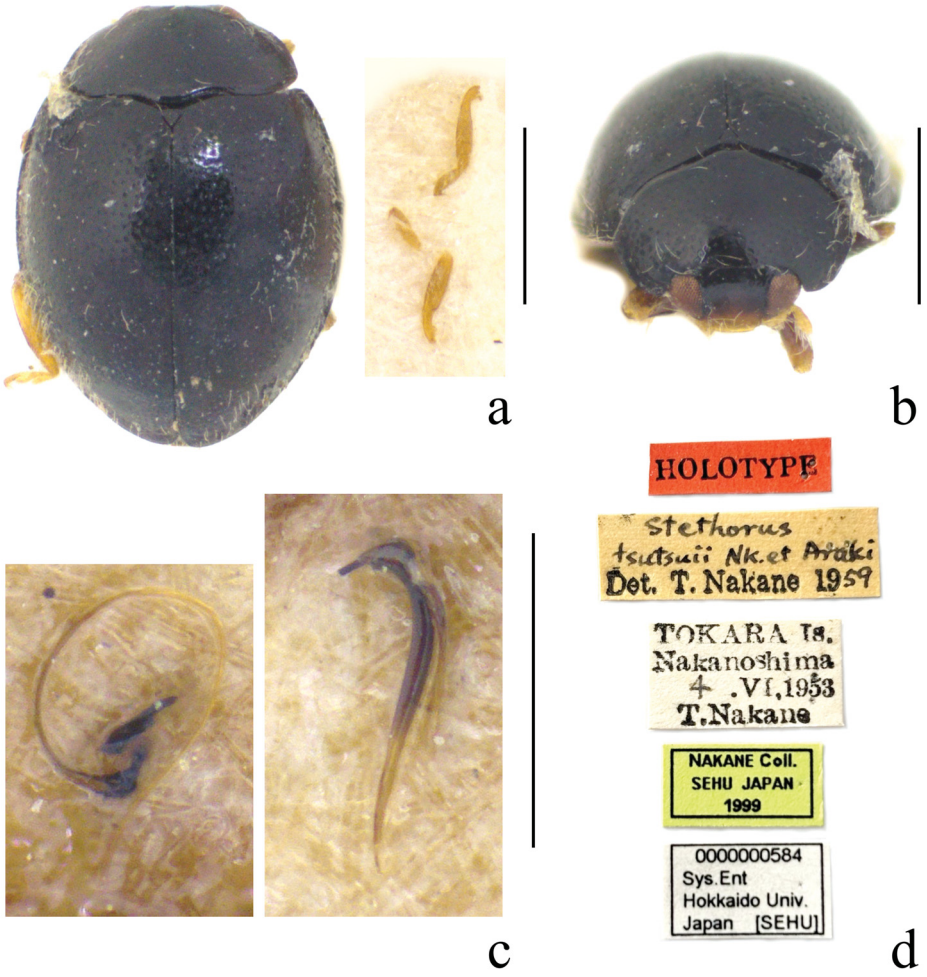

Fig. 10. Holotype of *Stethorus* (*Stethorus*) *aptus tsutsuii* Nakane & Araki, 1959. a – dorsal view; b – frontal view; c – male genitalia; d – type label. Scale bars: 0.5 mm for a–c.

(diagnosis, as subgenus *Stethorus*); Hirashima (1989): 390 (checklist); Kovář (2007): 592 (catalogue); Kishimoto et al. (2013): 48 (discrimination technique); Kishimoto & Kitano (2017): 28 (additional record from Japan).

Stethorus aptus tsutsuii Nakane & Araki, 1959: 48. Type locality: Nakanoshima [= Nakano-shima Island], Tokara Islands, Japan. **New junior subjective synonym.**

Stethorus aptus tsutsuii: Kamiya (1961): 282 (diagnosis); Sasaji (1971): 86 (diagnosis); Britton & Lee (1972): 55 (list); Sasaji (1985): 248 (diagnosis, as subgenus *Stethorus*); Hirashima (1989): 390 (checklist); Kovář (2007): 592 (catalogue).

Type material. Holotypes: *Stethorus japonicus*: ♂, **JAPAN: Kyushu: Fukuoka-ken:** '[Kyushu], Mt. Wakasugi, Near Fukuoka, 9.iv.1959, Col. H. Kamiya' (ELKU). *Stethorus aptus tsutsuii*: ♂, **JAPAN: Kagoshima-ken: Nakano-shima Is.:** 'Tokara Is., Nakanoshima, 4.vi.1953, T. Nakane' (SEHU).

Non-type material examined. **JAPAN: Honshu: Wakayama-ken: Kii-ōshima Is.:** 1 ♂, (Shirano), Sue, Kushimoto-chō, Higashimuro-gun, 19.xi.1971, M. Miyatake leg. (EUMJ); 1 ♂, Ōshima, Kushimoto-chō, Higashimuro-gun, 1.v.1959, Y. Kimura leg. (EUMJ). **Hyogo-ken: Awaji-shima Is.:** 1 ♀, Mt. Sen-zan, Kaminaizen, Sumoto-shi, 15.iv.1971, M. Tomokuni leg. (EUMJ). **Tottori-ken:** 9 ♂♂ 7 ♀♀, Kurayoshi-shi, 14.viii.1973, Y. Furuki leg. (EUMJ). **Hiroshima-ken:** 1 ♀, Hiroshima-shi, 10.ix.1955, T. Ishihara leg. (EUMJ). **Ikuchi-jima Is.:** 1 ♀, Onomichi-shi, 18–21.ix.1972, Y. Furuki leg. (EUMJ). **Yamaguchi-ken:** 1 ♀, Mt. Shizuki-san, Hagi-shi, 23.iv.1970, S. Hisamatsu leg. (EUMJ). **Shikoku: Kagawa-ken: Yo-shima Is.:** 1 ♂, Sakaide-shi, 10–12.xi.1972, S. Kinoshita leg. (EUMJ). **Ehime-ken:** 1 ♂ 2 ♀♀, Matsuyama-shi, 8.vii.1974, Y. Furuki leg. (EUMJ); 2 ♂♂ 3 ♀♀, Ōzu-shi, 30.iv.1974, Y. Furuki leg. (EUMJ); 3 ♂♂ 2 ♀♀, Sunokawa, Ainan-chō, Minamiuwa-gun, 20–21.vii.1967, M. Miyatake leg. (EUMJ); 3 ♂♂ 9 ♀♀, same locality but 20–21.vii.1967, M. Miyatake, M. Iga & H. Ohnishi leg. (EUMJ); 2 ♀♀, (Uchiumi–mura), Ainan-chō, Minamiuwa-gun, 16.vii.1967, S. Hisamatsu leg. (EUMJ). **Naka-jima Is.:** 1 ♂, Nakajima, Matsuyama-shi, 30.viii.1957, F. Takechi leg. (EUMJ). **Kochi-ken:** 3 ♀♀, Sagawa-chō [Cherry blossom beating], 27.vii.1967, M. Miyatake leg. (EUMJ); 2 ♀♀, Ashizurimisaki, Tosashimizu-shi, 6.vii.1961, M. Miyatake leg. (EUMJ); 1 ♂, Cape Ashizuri-misaki, Tosashimizu-shi, 25–26.vii.1967, M. Iga & H. Ohnishi leg. (EUMJ). **Kashiwa-jima Is.:** 1 ♀, Kashiwajima, Ōtsuki-chō, Hata-gun, 16.vi.1961, S. Hisamatsu leg. (EUMJ); 1 ♂, same locality but 4.vii.1961, Unknown collector (EUMJ). **Kyushu: Fukuoka-ken:** 1 ♂, Mt. Konomi-yama, Munakata-shi, 4.v.2006, K. Kido leg. (KUM); 1 ♀, Mt. Wakasugi-yama, 1.v.1960, H. Kamiya leg. (KUM); 1 ♀, Motooka, Nishi-ku, Fukuoka-shi, 14.x.2018, T. Hashizume leg. (KUM); 1 ♂, Mt. Kōra-san, Kurume-shi, 14.ix.1958, Y. Miyatake leg. (KUM); 1 ♀, Mt. Kumado-yama, 29.v.1959, Y. Miyatake leg. (KUM). **Jino-shima Is.:** 1 ♀, Jino-shima, Genkai-chō, 28.iv.1996, K. Kido leg. (KUM); 1 ♀, Jino-shima, Genkai-chō, 29.iv.1997, K. Kido leg. (KUM); 1 ♂, Jino-shima, Genkai-chō, 13.vii.1997, K. Kido leg. (KUM); 1 ♀, Jino-shima, Munakata-shi, 18.v.2016, K. Kido leg. (KUM). **Ōshima (Chikuzen-ōshima) Is.:** 1 ♀, Chikuzen-ōshima, Ōshima-mura, 5.v.1993, K. Kido leg. (KUM); 2 ♂♂, Chikuzen-ōshima, Ōshima-mura, 25.ix.1994, K. Kido leg. (KUM); 1 ♂, Chikuzen-ōshima, Ōshima-mura, 26.iv.1997, K. Kido leg. (KUM); 1 ♀, Ōshima, Munakata-shi, 3.v.2006, K. Kido leg. (KUM). **Aino-shima Is.**: 1 ♂, Aino-shima, Shinguu-machi, 30.iv.1990, K. Kido leg. (KUM). **Shiga-shima Is.:** 1 ♀, Siga-shima, Fukuoka-shi, 21.ix.2017, K. Kido leg. (KUM); 1 ♂, Siga-shima, Fukuoka-shi [FIT], 20.iii–13.iv.2017, K. Kido leg. (KUM). **Hime-shima Is.:** 1 ♀, Hime-shima, Itoshima-shi, 12.v.2012, K. Kido leg. (KUM). **Saga-ken: Kakara-shima Is.:** 1 ♀, Kakara-shima, Karatsu-shi, 9.viii.2008, K. Kido leg. (KUM). **Muku-shima Is.:** 1 ♀, Muku-shima, Karatsu-shi, 3.v.2010, K. Kido leg. (KUM). **Matsu-shima Is.:** 1 ♀, Matsu-shima, Karatsu-shi, 12.vi.2010, K. Kido leg. (KUM). **Nagasaki-ken:** 1 ♀, Nagasaki, 20.

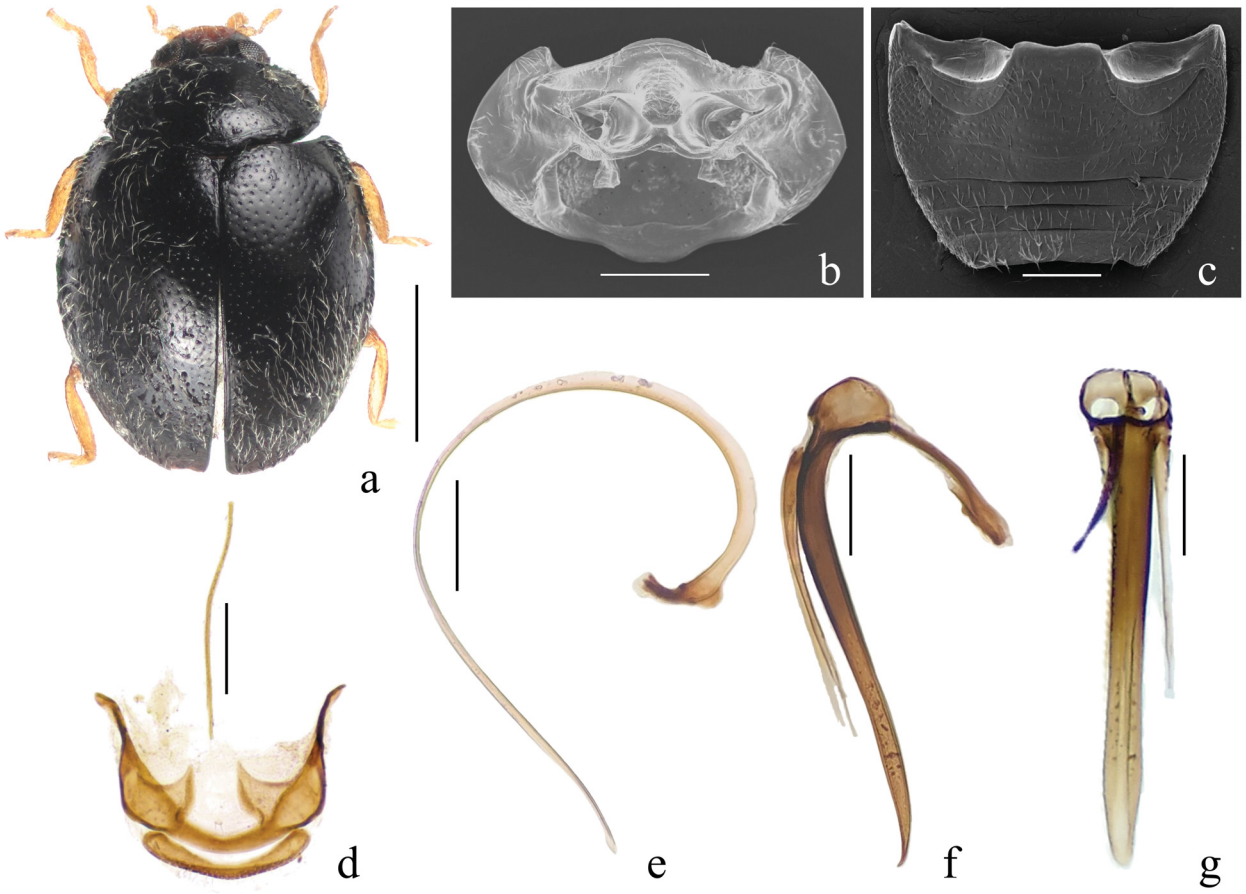

Fig. 11. *Stethorus* (*Stethorus*) *siphonulus* Kapur, 1948 from Fukuoka-ken. a – dorsal view; b – prothorax; c – abdomen; d – male terminal abdominal segments IX and X; e – penis; f – tegmen, lateral view; g – tegmen, ventral view. Scale bars = 0.5 mm for a; 0.2 mm for b, c; 0.1 mm for d–g.

ix.1955, Y. Nonaka (KUM). **Tsushima Is.:** 1 ♀, Mt. Tatera-san, Azamo, 13.vii.1960, H. Kamiya leg. (KUM). **Nakadōri-jima Is.:** 1 ♂, Shinkamigotō-chō, Minamimatsuura-gun, 27.iv.1972, S. Kinoshita leg. (EUMJ). **Fukue-jima Is.:** 1 ♀, Mt. Nanatsu-dake, Kishiku-machi-nakadake, Gotō-shi, 2.v.1972, S. Kinoshita leg. (EUMJ). **Kagoshima-ken:** 1 ♂, Oneshime ("Onejime-shi?"), Osumi, 17.v.1959, Y. Miyatake leg. (KUM); 2 ♂♂ 1 ♀, Uchizume, Minamiōsumi-chō, 26.iv.2008, K. Kido leg. (KUM). **Tanega-shima Is.:** 1 ♀, Yakugawa-rindō, Furuta, Nishinoomote-shi, 10.vii.2021, T. Saeki leg. (KUM). **Yaku-shima Is.:** 1 ♀, Hinokamiyama-ryokuchi Park, Miyanoura, Yakushima-chō, Kumage-gun (alt. 1.5–3.0 m), 26.vii.2024, R. Seki leg. (KUM); 1 ♂, Anbō, Yakushima-chō, Kumage-gun, 19.v.1960, Y. Kimura leg. (EUMJ); 1 ♀, Onoaida, Yakushima-chō, Kumage-gun, 21.v.1960, Y. Kimura leg. (EUMJ); 1 ♀, same locality and collector but 22.v.1960 (EUMJ); 1 ♀, same locality but (alt. 75–85 m), 24.vii.2024, R. Seki leg. (KUM). **Ryukyus: Nakano-shima Is.:** 1 ♂ 1 ♀, Nakanoshima, Toshima-mura, Kagoshima-gun, 1.v.1971, M. Sakai leg. (EUMJ); 1 ♀, same locality and collector but 2.v.1971 (EUMJ). **Amami-ōshima Is.:** 1 ♀, Mt. Yuwan-dake, Naon, Yamato-son, 19.iv.1971, M. Sakai leg. (EUMJ); 1 ♀, (Hatsuno), Shinokawa ~ Kachiura, Setouchi-chō, 13.iv.1971, M. Sakai leg. (EUMJ). **Tokuno-shima Is.:** 1 ♂, Todoroki, Tokunosima-chō, Ōshima-gun, 9.iv.1968, M. Tomokuni leg. (EUMJ); 1 ♀, Mikyō, Amagi-chō, Ōshima-gun, 11.iv.1968, M. Tomokuni leg. (EUMJ); 1 ♀, same locality and collector but 12.iv.1968 (EUMJ). **Okinoerabu-jima Is.:** 1 ♀, Takarada Dam, Shimojiro, China-chō, Ōshima-gun (alt. 175–195 m), 18.iii.2024, K. Goino leg. (KUM); 1 ex., Serikaku, China-chō, Ōshima-gun (alt. 185–195 m), 14.iii.2024, K. Goino leg. (KUM); 1 ex., same locality and collector but (alt. 145–155 m), 20.iii.2024 (KUM); 2 ♂♂, Cape Tamina-misaki, Tamina, China-chō, Ōshima-gun (alt. 3–8 m), 21.iii.2023, R. Seki leg. (KUM). **Okinawa-ken: Okinawa-jima Is.:** 1 ♂, Nakayama, 11.iv.1976, H. Sasaji leg. (KUM); 1 ♀, Tōbaru-kōen Park, Yoshihara, Cyatan-chō, Nakagami-gun (alt. 81.2–96.9 m), 24.ii.2023, R. Seki leg. (KUM); 4 ♂♂ 4 ♀♀, Morikawa-kōen Park, Mashiki, Ginowan-shi (alt. 35.4–69.5 m), 22.ii.2023, R. Seki leg. (KUM); 7 ♂♂ 7 ♀♀, Sueyoshi, Shuri-shi, 11.x.1988, H. Sasaji leg. (KUM); 1 ♀, Sueyoshi-kōen Park, Sueyoshi, Shuri-shi (alt. 33–88 m), 21.ii.2023, R. Seki leg. (KUM); 4 ♀♀, Gajanbira-kōen Park, Kanagusuku, Naha-shi (alt. 28.6–38.9 m), 3.ii.2023, R. Seki leg. (KUM); 1 ♂, same locality and collector but 21.ii.2023 (KUM). **Kōri-jima Is.:** 1 ♀, Nakijin-son, Kunigami-gun (alt. 48–67 m), 4.ii.2023, R. Seki & Y. Mikami leg. (KUM). **Miyagi-jima Is.:** 1 ♀, Miyagichūō-kōen Park, Yonashirouehara, Uruma-shi (alt. 55–60 m), 22.ii.2023, R. Seki leg. (KUM). **Yabuchi-jima Is.:** 1 ♀, Yonashiroyakena, Uruma-shi (alt. 15–25 m), 22.ii.2023, R. Seki leg. (KUM). **Kume-jima Is.:** 1 ♂, Janadō, Kumejima-chō, Shimajiri-gun, (alt. 1.2–6.0 m), 10.x.2024, R. Seki leg. (KUM). **Miyako-jima Is.:** 1 ♂ 2 ♀♀, Karimata, 2.ix.1968, T. Hidaka leg. (KUM); 1 ♀, Hirara-shi, 2.iv.1976, H. Sasaji leg. (KUM); 1 ♂, Hiraranikadori, Miyakojima-shi, (alt. 11–20 m), 8.i.2023, R. Seki leg. (KUM). **Irabu-jima Is.:** 1 ♂ 2 ♀♀, Irabuikemasoe, Miyakojima-shi (alt. 70–80 m), 9.i.2023, R. Seki leg. (KUM); 1 ♂, Irabukantori-kōen Park, Irabumaesatosoe, Miyakojima-shi (alt. 50–52 m), 10.x.2024, M. Kondō leg. (KUM); 1 ♂, same locality but (alt. 48–50 m), 12.ii.2025, R. Seki leg. (KUM). **Ishigaki-jima Is.:** 1 ♀, Tōzato, Ishigaki-shi (alt. 9.3 m), 23.ii.2020, R. Seki leg. (KUM); 1 ex., Shiraho, Ishigaki-shi (alt. 55–60 m), 15.iii.2025, R. Seki leg. (KUM); 1 ♂ 1 ♀, Ishigaki, Ishigaki-shi (alt. 11.2 m), 20.ii.2020, R. Seki leg. (KUM); 1 ♂ 1 ♀, Sakieda, Ishigaki-shi (alt. 8.2 m), 19.ii.2020, R. Seki leg. (KUM); 4 ♂♂, locality and collector but (alt. 9–16 m), 15.iii.2025. (KUM). **Iriomote-jima Is.:** 1 ex, Komi, Taketomi-chō, Yaeyama-gun (alt. 26–39 m), 24.iv.2023, R. Seki leg. (KUM); 1 ex., Takana, Taketomi-chō, Yaeyama-gun (alt. 10.1–28.2 m), 14.iii.2025, R. Seki leg. (KUM);1 ♂ 1 ♀, Uehara, Taketomi-chō, Yaeyama-gun (alt. 39 m), 15.ii.2022, R. Seki & Y. Mikami leg. (KUM); 2 exs., same locality but (alt. 40.0–43.4 m), 24.iv.2023, R. Seki leg. (KUM); 2

Fig. 12. Holotype of *Stethorus* (*Stethorus*) *japonicus* Kamiya, 1959. a – dorsal view; b – frontal view; c – type label. Scale bars: 0.5 mm for a, b.

exs., same locality and collector but (alt. 4–15 m), 14.vi.2024. (KUM); 5 exs., same locality but (alt. 35–40 m), 17.vi.2024, R. Seki & M. Hanai leg. (KUM); 2 exs., same locality but (alt. 2.9–10.4 m), 14.iii.2025, R. Seki leg. (KUM); 2 exs., Ōtomi-rindō forest road, Ōhara, Taketomi-chō, Yaeyama-gun (alt. 9.5–242 m), 13.vi.2024, R. Seki & M. Hanai leg. (KUM); 1 ♂ 4 ♀♀ 1 ex., Haiminaka, Taketomi-chō, Yaeyama-gun (alt. 31 m), 14–15.ii.2022, R. Seki & Y. Mikami leg. (KUM). **Yonaguni-jima Is.:** 1 ♀, Higawa-beach, Higawa, Yonaguni-chō, Yaeyama-gun (alt. 1–8 m), 10.ix.2023, R. Seki leg. (KUM); 2 ♂♂ 1 ♀, Kataburu-beach, Higawa, Yonaguni-chō, Yaeyama-gun (alt. 2–7 m), 10.ix.2023, R. Seki leg. (KUM).

Diagnosis. This species resembles *Stethorus* (*Stethorus*) *pusillus* (Herbst, 1797), with nearly identical shape of the prosternal process (Figs 9c, 11b) and deeply emarginate apex of abdominal ventrite VI in male (Kapur 1948: fig. 56; Sasaji 1971: fig. 26H). However, this species is distinguished from the latter by yellowish-brown anterior part of head and labrum (Figs 9a–b, 10b, 11a, 12b), more U-shaped abdominal postcoxal lines (Figs 9d, 11c), broader male abdominal sternite IX (Figs 9e, 11d), shorter penis (Figs 9f, 10c, 11e), penis guide approximately 1.5 times the length of parameres in lateral view (Figs 9g–h, 10c, 11f–g), and uninflated apex of penis guide in ventral view. Additionally, identification can also be facilitated by the patterns of pupae and the final instar larvae, as well as the coloration of eggs (Kishimoto et al. 2013): The egg coloration ranges from red to reddish-white (Kishimoto et al. 2013: fig. 4b); pronotal shield of the final instar larva exhibits black punctate patterns (Kishimoto et al. 2013: fig. 4d), the pupa is slightly dull black, with a triangular white to light brown marking on the central dorsal region of the metathorax and a pair of white to light brown markings on the lateral sides of the first abdominal tergite (Kishimoto et al. 2013: fig. 4f).

Measurements. TL, 1.11–1.53 mm; TW, 0.88–1.17 mm; TH, 0.55–0.70 mm; TL/TW, 1.26–1.35; PL/PW, 0.39–0.51; EL/EW, 1.04–1.10.

Distribution. Japan (Honshu, Shikoku, Kyushu, Ryukyu Isls: Nakano-shima Is., Takara-jima Is.; Kamiya 1965, Amami-ōshima Is., Tokuno-shima Is., Okinoerabu-jima Is., Okinawa-jima Is., Miyagi-jima Is., Yabuchi-jima Is., Kōri-jima Is., Kume-jima Is., Miyako-jima Is., Irabu-jima Is., Ishigaki-jima Is., Iriomote-jima Is., Hatoma-jima Is.; Kamiya 1964 and Sasaji 1971, Yonaguni-jima Is.); Mainland China (Fujian, Guangdong, Guangxi, Hainan), Malaysia, Thailand.

Remarks. Identification is based on Kamiya (1959), Nakane & Araki (1959), and the holotype (Figs 10a–d, 12a–c). Sicard (1907) and Ohta (1931) recorded the species from Tokyo (Tokio) as "*Stethorus punctillium* Weise, 1891." However, Kamiya (1959) stated that these records were misidentifications and subsequently described the species previously regarded as "*S. punctillium"* as *S. japonicus* Kamiya, 1959. In the same year, Nakane & Araki (1959) described *S. aptus tsutsuii* Nakane & Araki, 1959 based on specimens collected from Nakano-shima Island in the Tokara Islands. Comparison of the male genitalia illustrations in the original descriptions by Kamiya (1959) and Nakane & Araki (1959) revealed no morphological differences. Furthermore, an extensive examination of numerous specimens collected from Honshu to the Ryukyu Islands showed no evidence of geographical variation. Additionally, detailed examination of *S.* (*S.*) *japonicus* confirmed that its morphological characteristics are completely consistent with those of *S.* (*S.*) *siphonulus* Kapur, 1948 based on the drawings from the original description and type specimens (Figs 10a–d, 12a–c). Therefore, *S.* (*S.*) *japonicus* and *S.* (*S.*) *aptus tsutsuii* should be considered synonyms of *S.* (*S.*) *siphonulus*. Moreover, since *S.* (*S.*) *siphonulus* itself may be a synonym of *S.* (*S.*) *aptus* described by Kapur (1948), further clarification is required. However, as *S.* (*S.*) *aptus* was described based on a female specimen, detailed comparisons are not possible. Babu et al. (2020) redescribed males of *S.* (*S.*) *aptus* but did not examine the type specimen, leaving the accuracy of their identification uncertain. Future research should focus on re-examining the type specimen of *S.* (*S.*) *aptus* to resolve these synonymic relationships definitively. The distribution data for *S.* (*S.*) *siphonulus* in Japan indicate a concentration in southern regions (Fig. 16). Additionally, it is rarely observed in urban areas and tends to inhabit coastal regions (Figs 16, 19). Therefore, the species appears

to exhibit a preference for relatively warm environments with high levels of natural integrity. Given the distribution pattern of *S.* (*S.*) *siphonulus*, it is plausible that this species occupies a broad area range extending from the southern Palearctic Region to Southeast Asia.

Stethorus (*Stethorus*) *pusillus* (Herbst, 1797)

Japanese name: ハダニヒメテントウ
(Figs 13, 17–19)

Coccinella minimus Rossi, 1794: 89 (original description). Type locality: Etruria; junior homonym of *Coccinella minima* Müller, 1776: 65).
Coccinella minimus: Paykull (1798): 150 (diagnosis); Paykull (1799): 8 (diagnosis); Gyllenhal (1827): 195 (diagnosis).
Scymnus minimus: Stephens (1831): 392 (as a combination of *Scymnus*); Stephens (1839): 318 (diagnosis); Redtenbacher (1843): 17 (diagnosis); Redtenbacher (1844): 123 (diagnosis); Costa (1849): 98 (diagnosis); Redtenbacher (1849): 579 (key); Redtenbacher (1858): 973 (key); Thomson (1866): 395 (diagnosis); Redtenbacher (1874): 539 (key); Clément (1880): 343 (description of developmental stage).
See Korschefsky (1931: 112) for complete synonymy.
Scymnus pusillus Herbst, 1797: 346. Type locality: neighborhood of Berlin.
Scymnus pusillus: Harold (1875): 188 (as junior synonym of *Scymnus minimus*).
Scymnus testaceus var. *concolor* Weise, 1887: 213.
Stethorus punctillum Weise, 1891: 391 (unnecessary replacement name for *Coccinella minimus* Rossi).
Stethorus punctillum: Cassy (1899): 136 (key); Mader (1924): 15 (key); Korschefsky (1931): 112 (catalogue); Kapur (1948): 302 (redescription); Pope (1953): 4 (key); Bielawski (1959): 36 (diagnosis); Liu (1963): 86 (diagnosis); Fürsch (1967): 255 (diagnosis); Pang & Mao (1975): 419 (diagnosis and key, as subgenus *Stethorus*); Pang & Mao (1979): 33 (diagnosis); Gordon & Chapin (1983): 270 (diagnosis); Gordon (1985): 96 (diagnosis); Kim et al. (1994): 170 (list); Pu & Pang (1986): 35 (diagnosis); Yu (1996): 32 (list); Ren & Pang (1996): 322 (diagnosis); Pang et al. (2004): 69 (catalogue); Kuznetsov & Proshchalykin (2006): 265 (new record of Kuril Islands); Ren et al. (2009): 50 (diagnosis); Wang & Chen (2022): 132 (diagnosis).
Stethorus punctillum var. *investitus* Roubal, 1920: 79 (description).
Stethorus punctillum var. *investitus*: Mader (1924): 15 (key); Mader (1927):193 (as a synonym of *Stethorus punctillum*).
Coccinella atra Illiger, 1798: 413 (preoccupied, nec *Coccinella atra* Gmelin, 1789: 1664), Gyllenhal (1827): 195 (description).
Stethorus pusillus: Kovář (2007): 72 (as combination of *Stethorus*), 592 (catalogue, as subgenus *Stethorus*); Khabibullin & Muravitsky (2011): 20 (diagnosis); Kishimoto et al. (2013): 48 (new record from Japan); Kishimoto & Kitano (2017): 28 (additional record from Japan); Roy & Brown (2018): 145 (field guide of United Kingdom); Karjalainen (2020): 72 (diagnosis of Finland); Nedvěd & Djurić (2022): 162 (field guide of Europe); Sakamoto (2018): 80 (field guide of Japan); Seki (2024): 11 (additional record from Hokkaido, Japan).

Material examined. JAPAN: Hokkaido: 1 ♂, Wakoto-hantō Peninsula, Teshikaga-chō, Kawakami-gun (alt. 120–180 m), 8.vi.2022, R. Seki leg. (KUM); 1 ♀, Aizankei, Kamikawa-chō, Kamikawa-gun, 18.vii.1962, Y. Miyatake leg. (EUMJ); 1 ♂, Kiyomigaoka, Ikeda-chō, Nakagami-gun (alt. 48.4 m), 31.v.2021, R. Seki leg. (KUM); 3 ♂♂ 1 ♀, Iwamizawa, 30.viii.1974, Y. Furuki leg. (EUMJ); 1♂, Hokkaido Univrsity, Kita-ku, Sapporo-shi, 3.v.2011, H. Suenaga leg. (cSue); 5 ♂♂ 1 ♀, Mt. Moiwa-yama, Minami-ku, Sapporo-shi, 29–30.viii.1974, Y. Furuki leg. (EUMJ); 1 ♂ 2 ♀♀, Misumai, Minami-ku, Sapporo-shi, 3.ix.1974, Y. Furuki leg.

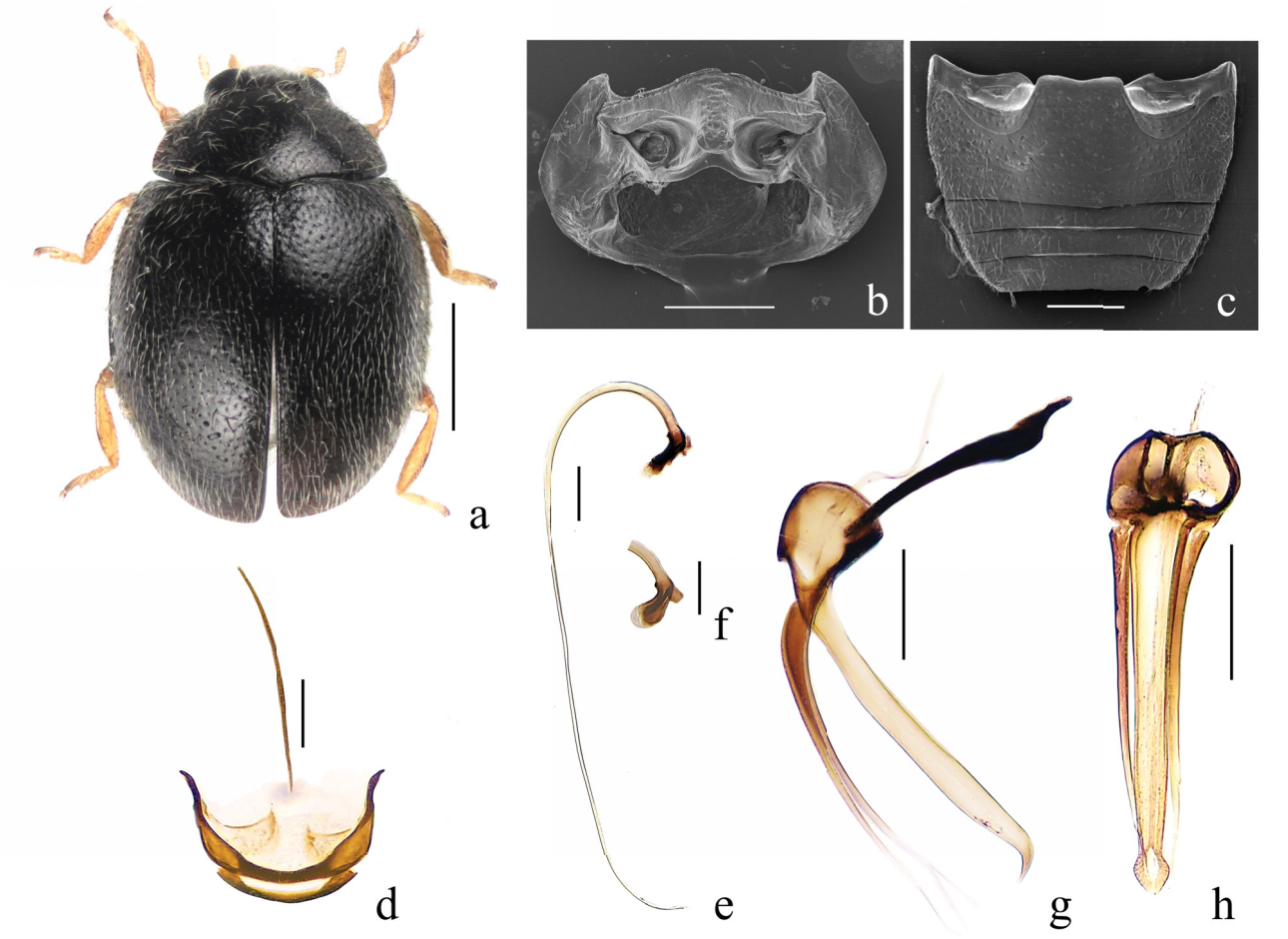

Fig. 13. *Stethorus* (*Stethorus*) *pusillus* (Herbst, 1797). a – dorsal view; b – prothorax; c – abdomen; d – male terminal abdominal segments IX and X; e – penis; f – penis capsule; g – tegmen, lateral view; h – tegmen, ventral view. Scale bars = 0.5 mm for a; 0.2 mm for b, c; 0.1 mm for d–h.

(EUMJ). **Honshu: Yamagata-ken:** 4 ♀♀, Mogami-gawa River, Fukuda-machi, Yonezawa-shi (alt. 255–265 m), 5.vi.2025, R. Seki leg. (KUM). **Saitama-ken:** 2 ♀♀, Sayama-ko Lake, Tokorozawa-shi (alt. 100–135 m), 22.ix.2022, R. Seki leg. (KUM). **Tokyo-to:** 2 ♂♂ 2 ♀♀, Minamiaoyama, Minato-ku (alt. 30 m), 9.x.2021, R. Seki leg. (KUM); 9 ♂♂ 17 ♀♀, Denenchōfu, Ōta-ku (alt. 24.8 m), 16.i.2021, R. Seki leg. (KUM); 1 ♂ 1 ♀, same locality but 14.ii.2021, E. Ueda leg. (KUM); 2 ♂♂ 9 exs., Todoroki-keikoku Valley, Todoroki, Setagaya-ku, 26.xii.2019, R. Seki leg. (KUM); 26 exs., same locality and collector but 29.xii.2020 (KUM); 5 exs., Tama-gawa River, Noge, Setagaya-ku (alt. 29–41 m), 13.iii.2017, R. Seki leg. (KUM); 1 ♂ 1 ♀, same locality and collector but (alt. 13–17 m), 9.vi.2019 (KUM); 2 ♀♀, same locality and collector but (alt. 9–10 m), 2.vii.2019 (KUM); 3 ♂♂ 1 ♀, same locality and collector but (alt. 9 m), 19.ix.2019 (KUM); 1 ♂ 1 ♀, same locality and collector but , 5.x.2019 (KUM); 2 ♂♂, Noge, Setagaya-ku (alt. 32.5 m), 3.i.2020, R. Seki leg. (KUM); 30 exs., same locality and collector but (alt. 33–34 m), 29. xii.2020 (KUM); 1 ♂ 1 ♀, same locality and collector but (alt. 40 m), 7.x.2021 (KUM); 1 ex., Nakamachi, Setagaya-ku (alt. 30 m), 25.vi.2019, R. Seki leg. (KUM); 2 exs., same locality and collector but 28.vi.2019 (KUM); 1 ♀, same locality and collector but 25.vii.2019 (KUM); 7 exs., same locality and collector but (alt. 33 m), 20.xii.2019 (KUM); 3 exs., same locality and collector but 23.vi.2020 (KUM); 4 exs., same locality and collector but 30.iv.2021 (KUM); 1 ♂, same locality and collector but (alt. 34 m), 9.x.2021 (KUM); 2 ♂♂ 4 ♀♀, Tamagawa, Setagaya-ku (alt. 11.8 m), 22.iv.2022, R. Seki leg. (KUM); 5 ♂♂ 6 ♀♀, Kinuta-kōen Park, Setagaya–ku (alt. 39 m), 12.ii.2020, R. Seki leg. (KUM); 8 ♂♂ 1 ♀, same locality and collector but (alt. 39.1 m), 11.i.2021 (KUM); 1 ♀, Komaimachi, Komae-shi (alt. 18.3 m), 12.vii.2020, R. Seki leg. (KUM); 2 ♀♀ 4 exs., same locality and collector but 19.ix.2020 (KUM); 1♂, same locality and collector but 8.xi.2020 (KUM); 3 ♀♀, Izumi, Komae-shi (alt. 23.9 m), 14.V.2020, R. Seki leg. (KUM); 1 ♂, same locality and collector but (alt. 22–25 m), 25.v.2020 (KUM); 2 ♀♀, same locality and collector but (alt. 24.6 m), 21.vi.2021 (KUM); 1 ♀, same locality and collector but (alt. 24.5 m), 24.ix.2021 (KUM); 1 ex., Tama-gawa River, Komaimachi, Komae-shi (alt. 12–21 m), 28.ix.2016, R. Seki leg. (KUM); 1 ex., same locality and collector but (alt. 30–35 m), 6.x.2018 (KUM); 1 ♀, same locality and collector but (alt. 13–17 m), 23.iv.2019 (KUM); 1 ♀, same locality and collector but 30.ix.2019 (KUM); 2 exs., same locality and collector but 4.iv.2021 (KUM); 1 ♂, Somechi, Chōfu–shi (alt. 24.6 m), 24.ix.2021, R. Seki leg. (KUM); 1 ♀, Tama-gawa River, Chōfu-shi (alt. 40 m), 12.v.2016, K. Matsumoto leg. (BMNH); 1 ♂, Tamagawa, Chōfu-shi (alt. 30 m), 24.ix.2021, R. Seki leg. (KUM); 3 ♀♀, Tama-reien, Tama-chō, Fuchū-shi (alt. 50 m), 3.i.2021, R. Seki leg. (KUM); 2 ♂♂ 3 ♀♀, same locality and collector but 8.x.2021 (KUM); 9 exs., same locality and collector but 15.x.2021 (KUM); 1 ♂, same locality and collector but 23.v.2022 (KUM); 1 ♀, same locality and collector but 24.viii.2022 (KUM); 2 ♂♂ 6 ♀♀, Oshitate, Inagi-shi (alt. 34 m), 23.ii.2020, R. Seki leg. (KUM); 4 ♂♂ 1 ♀, same locality and collector but (alt. 34.3 m), 8.xi.2020 (KUM); 7 ♂♂ 4 ♀♀ 1 ex., same locality and collector but 19.xii.2020 (KUM); 2 ♂♂ 1 ♀, same locality and collector but 19.iv.2021 (KUM); 1 ex, same locality and collector but 21.vi.2021 (KUM); 3 exs., Tama-gawa River, Oshitate, Inagi-shi (alt. 30–34 m), 16.iv.2019, R. Seki leg. (KUM); 2 ♂♂, same locality and collector but 27.iv.2019 (KUM); 1 ♀, same locality and collector but 4.ix.2019 (KUM);1 ♀, same locality and collector but (alt. 32.5 m), 1.vi.2019 (KUM); 1 ex., same locality and collector but 4.xi.2019 (KUM); 1 ♀, same locality and collector but (alt. 35 m), 1.i.2020 (KUM); 2 ♂♂ 1 ♀, same locality and collector but (alt. 30–35 m), 19.iv.2021 (KUM); 1 ex., same locality and collector but 22.ix.2021 (KUM); 1 ♂ 1 ♀, Nagamine, Inagi-shi (alt. 97.7 m), 14.xii.2019, R. Seki leg. (KUM); 5 ♂♂ 5 ♀♀, Inagichūō-kōen Park, Nagamine, Inagi-shi (alt. 100 m), 1.i.2023, R. Seki leg. (KUM); 1ex., same locality and collector but 3.i.2023 (KUM); 3 ♂♂ 3 ♀♀, Shimizuyato-ryokuchi, Sakahama, Inagi-shi (alt. 60–110 m), 6.v.2022, R. Seki leg. (KUM); 1 ex., same locality and collector but 16–17.vi.2022 (KUM); 1 ex., same locality and collector but 28.vi.2022 (KUM); 1 ex., same locality and collector but 30.vi.2022 (KUM); 36 exs., same locality and collector but 12.ix.2022 (KUM); 38 exs., same locality and collector but 26.ix.2022 (KUM); 2 ♂♂ 18 exs., Momura, Inagi-shi (alt. 72.9 m), 14.xii.2019, R. Seki leg. (KUM); 1 ex., Kanai-machi, Machida-shi, (alt. 66–77 m), 18.iv.2019, R. Seki leg. (KUM); 1 ex., Tamagawagakuen, Machida–shi (alt. 65–70 m), 7.iv.2018, R. Seki leg. (KUM); 2 ♂♂ 2 ♀♀, same locality and collector but (alt. 60–80 m), 8.i.2021 (KUM); 5 ♂♂ 4 ♀♀, same locality and collector but (alt. 72.3 m), 1.iii.2021 (KUM); 6 ♂♂ 15 ♀♀, same locality and collector but (alt. 87.8 m), 1.iii.2021 (KUM); 1 ex., same locality and collector but (alt. 60–65 m), 21.iv.2021 (KUM); 1 ex., same locality and collector but (alt. 85 m), 23.xii.2021 (KUM); 2 ♂♂ 1 ♀, same locality and collector but 9.ii.2022 (KUM); 1 ex., same locality and collector but 15.ix.2022 (KUM); 53 exs., Kogasaka, Machida–shi (alt. 68–70 m) [under the bark of a *Zelkova serrata*], 5.i.2021, R. Seki leg. (KUM); 4 ♂♂ 10 ♀♀, Haramachida, Machida-shi (alt. 75 m), 2.ii.2020, R. Seki leg. (KUM); 3 ♂♂, Narahashi, Higashiyamato-shi (alt. 120–135 m), 22.ix.2022, R. Seki leg. (KUM); 4 exs., Renkōji, Tama-shi (alt. 100–135 m), 24.v.2020, R. Seki leg. (KUM); 2 exs., Karakida, Tama-shi (alt. 131.8 m), 10.v.2021, R. Seki leg. (KUM); 13 exs., same locality and collector but (alt. 122–146 m), 14.ix.2022 (KUM); 1 ex., Shimooyamada-machi, Machida-shi (alt. 122–156 m), 14.ix.2021, R. Seki leg. (KUM); 1 ♀, Aihara-machi, Machida-shi (alt. 163–183 m) [under the bark of a *Zelkova serrata*], 18.ii.2025, R. Seki leg. (KUM); 1 ♀, Mogusa, Hino-shi (alt. 54.5 m), 14.v.2020, R. Seki leg. (KUM); 73 exs., Kitano-machi, Hachiōji-shi (alt. 94.7 m) [under the bark of a *Zelkova serrata*], 26.ii.2021, R. Seki leg. (KUM); 1 ♂ 2 ♀♀, Katakura-machi, Hachiōji-shi (alt. 160–165 m) [under the bark of a *Zelkova serrata*], 18.ii.2025, R. Seki leg. (KUM). **Kanagawa-ken:** 1 ♀, Tono-machi, Kawasaki-ku, Kawasaki-shi (alt. 1.2 m), 24.v.2021, R. Seki leg. (KUM); 3 exs., Daishigawara, Kawasaki-ku, Kawasaki-shi (alt. 1.4 m), 16.i.2021, R. Seki leg. (KUM); 4 ♂♂ 4 ♀♀, Shimosakunobe, Takatsu-ku, Kawasaki-shi (alt. 30–55 m), 10.iv.2022, R. Seki leg. (KUM); 10 exs., Nōkendai, Kanazawa-ku, Yokohama-shi (alt. 20–100 m), 16.ix.2022, R. Seki leg. (KUM); 5 exs., Kamariya–chō, Kanazawa-ku, Yokohama–shi (alt. 78–100 m), 16.ix.2022, R. Seki leg. (KUM); 9 ♂♂ 5 ♀♀, Anjindai, Yokosuka-shi (alt. 67.4 m), 25.ii.2021, R. Seki leg. (KUM); 25 ♂♂ 35 ♀♀, Hemigaoka, Yokosuka-shi (alt. 58.2 m), 25.ii.2021, R. Seki leg. (KUM); 1 ♂, Okaue, Mashō-ku, Kwasaki-shi (alt. 64.5 m), 30.x.2019, R. Seki leg. (KUM); 1 ♀, same locality and collector but (alt. 70.7 m), 12.v.2020 (KUM); 1 ♂ 2 ♀♀, same locality and collector but (alt. 79.5 m), 13.x.2020 (KUM); 1 ♂, same locality and collector but (alt. 68 m), 13.x.2020 (KUM); 1 ♀, same locality and collector but (alt. 65–80 m), 12.v.2021 (KUM); 1 ♀, same locality and collector but (alt. 70.7 m), 12.v.2021 (KUM); 1 ♀, same locality and collector but (alt. 65–80 m), 1.xi.2021 (KUM); 1 ♂, same locality and collector but 5.iv.2022, R. Seki leg. (KUM); 2 exs., same locality and collector but 10.v.2022 (KUM); 1 ♂ 5 ♀♀, same locality and collector but 20.vi.2022 (KUM); 1 ♂ 1 ♀, same locality and collector but 1.ix.2022 (KUM); 3 ♂♂ 5 ♀♀, same locality and collector but 5.ix.2022 (KUM); 1 ♀, same locality and collector but 8.ix.2022 (KUM); 17 exs., same locality and collector but 15.ix.2022 (KUM); 9 exs., same locality and collector but 27.ix.2022 (KUM); 1 ♂, Kamisōyanagi, Yamato-shi, [24.vii pupation, 26.vii emergence], 22.vii.2022, K. Toshikiyo leg. (KUM); 7 ♂♂ 4 ♀♀, Minami-ku, Sagamihara-shi (alt. 92.3 m), 13.ii.2021, R. Seki leg. (KUM); 4 ♂♂ 4 ♀♀, same locality and collector but (alt. 102.8 m), 13.ii.2021 (KUM); 11 ♂♂ 9 ♀♀, same locality and collector but (alt. 91.8 m), 16.ii.2021 (KUM); 9 ♂♂ 8 ♀♀, same locality and collector but (alt. 92.3 m), 16.ii.2021 (KUM); 4 ♂♂, same locality and collector but (alt. 92.4 m), 16.ii.2021 (KUM); 1 ♂, same locality and collector but (alt. 93.6 m), 16.ii.2021 (KUM); 7 ♂♂ 7 ♀♀, same locality and collector but (alt. 94.5 m), 16. ii.2021 (KUM); 4 ♂♂ 1 ♀, same locality and collector but (alt. 95.5 m), 16.ii.2021 (KUM); 1 ♂ 1 ♀, same locality and collector but (alt. 96.2 m), 16.ii.2021 (KUM); 1 ex., Shimomizo, Minami-ku, Sagamihara-shi, 13. ii.2021, R. Seki leg. (KUM); 46 ♂♂ 48 ♀♀, same locality but (alt. 90.6–104.8 m) [under the bark of a *Zelkova serrata*], 3.iii.2023, R. Seki & M. Kondō leg. (KUM). **Niigata-ken:** 3 exs., Murakami, North-Echigo, 8.iii.1984, K. Baba leg. (KUM); 12 exs., Kurokawa, North-Echigo, 14.iii.1984, K. Baba leg. (KUM); 29 ♂♂ 48 ♀♀, Niigata, North-Echigo, 15.iii.1984, K. Baba leg. (KUM); 2 ♂♂ 4 ♀♀ 5 exs., Mt. Kakuda-yama, Middle-Echigo, 20.iii.1984, K. Baba leg. (KUM). **Nagano-ken:** 4 ♂♂ 5 ♀♀, Matsumoto-shi, 4.iv.1993, H. Sasaji leg. (KUM). **Yamanashi-ken:** 1 ♀, Tachino, Yanagawa-machi, Ōtsuki-shi (alt. 277–378 m), 24.ix.2023, R. Seki leg. (KUM); 1 ♀, Utsubuna-kōen Park, Utsubuna, Nanbu-chō, Minamikoma-gun (alt. 212–233 m), 19.viii.2023, R. Seki & M. Kondō leg. (KUM). **Fukui-ken:** 4 ♂♂ 1 ♀, Kameyama, 18.v.1969, H. Sasaji leg. (KUM); 1 ♂ 1 ♀, Kameyama, 17.v.1970, H. Sasaji leg. (KUM); 15 ♂♂ 19 ♀♀, Kameyama, Oono "Ōno", 1.iv.1978, H. Sasaji leg. (KUM); 1 ♀,

Mt. Monju-san, 10.viii.1977, H. Sasaji leg. (KUM); 2 ♂♂ 3 ♀♀, Toda, Sabae, 21.v.1967, H. Sasaji leg. (KUM). **Kyoto-fu:** 1 ♀, Ide, Tuzuki-gun, 21.viii.1985, S. Takahashi (KUM). **Osaka-fu:** 10 ♂♂ 14 ♀♀, Hattori-ryokuchi, Toyonaka-shi, 6.ii.2021, H. Nishino leg. (KUM); 26 ♂♂ 34 ♀♀, Turumi-ryokuchi, Tsurumi-ku, Ōsaka-shi, 11.ii.2021, H. Nishino leg. (KUM); 16 ♂♂ 12 ♀♀, Utsubo-kōen Park, Utsubohonmachi, Nishi-ku, Ōsaka-shi, 13.ii.2021, H. Nishino leg. (KUM); 3 ♂♂ 5 ♀♀, Hamakōgyō--kōen Park, Jizōhama-chō, Kishiwada-shi, 10.ii.2021, H. Nishino leg. (KUM). **Wakayama-ken:** 1 ♀, Susami-chō, 12.v.2007, T. Lacker leg. (BMNH). **Tottori-ken:** 1 ♂, Tottori ("Tottori-shi?"), ii–iii.1971, T. Kawai leg. (KUM); 9 ♂♂ 2 ♀♀, Kurayoshi-shi, 14.viii.1973, Y. Furuki leg. (EUMJ). **Okayama-ken:** 1 ♂, Tateda, Kita-ku, Okayama-shi, 15.x.2012, H. Suenaga leg. (KUM); 1 ♀, Mt. Tsurugata-yama, Honmachi, Kurashiki-shi, 28.iv.2002, H. Suenaga leg. (KUM); 1 ♀, same locality and collector but 21.vii.2002 (KUM); 1 ♀, Rōmatsu-chō, Kurashiki-shi, 23.v.2003, H. Suenaga leg. (KUM); 1 ♂ 1 ♀ 1 ex., Sakazu-kōen Park, Sakazu, Kurashiki-shi, 17.ix.2002, H. Suenaga leg. (KUM); 1 ♂, same locality and collector but 16.ii.2007 (KUM); 1 ♂, Nishiachi, Kurashiki-shi, 16.iii.2007, H. Suenaga leg. (KUM). **Shimane-ken:** 1 ♀, Gōno-kawa River, 23.ix.1994, S. Nakamura leg. (KUM). **Hiroshima-ken:** 1 ♂, Gōno-kawa River, 13.viii.1994, S. Nakamura leg. (KUM); 1 ♀, same locality and collector but 10.x.1994 (KUM); 2 ♂♂ 1 ♀, same locality and collector but 11.x.1994 (KUM). **Shikoku: Ehime-ken:** 4 ♂♂ 1 ♀, Shiroyama-kōen Park, Horinouchi, Matsuyama-shi (alt. 20 m), 30.x.2024, R. Seki leg. (KUM); 3 ♂♂ 3 ♀♀, Ishitegawa-kōen Park, Ishite, Matsuyama-shi (alt. 40–43 m), 9.xii.2023, R. Seki leg. (KUM); 1 ♀, Tarumi, Matsuyama-shi, 8.xi.2007, H. Suenaga leg. (KUM); 1 ♀, same locality and collector but 24.i.2008, H. Suenaga leg. (KUM); 1 ♀, same locality and collector but ii.2008 (KUM); 1 ♀, Tachibana, Matsuyama-shi, 17.viii.2023, M. Kondō leg. (KUM). **Kyushu: Fukuoka-ken:** 1 ♀, Shiraiwaike-kōen Park, Shirauiwa-machi, Yahatanishi-ku, Kita-kyūshū-shi, [under the bark of a *Zelkova serrata*], 25.ii.2006, K. Kido leg. (KUM); 1 ♂, Tokuzen-kōen Park, Tokuzen, Iizuka-shi, [under the bark of a *Zelkova serrata*], 23.xii.2006, K. Kido leg. (KUM); 1 ♀, Mt. Jō-yama, Munakata-shi, 1.vi.1991, K. Kido leg. (KUM); 1 ♂, Yasunosato-kōen Park, Sginokuma, Chikuzen-machi, [under the bark of a *Zelkova serrata*], 1.iv.2006, K. Kido leg. (KUM); 3 ♀♀, Fureai-hiroba, Shinmachi, Chikuzen-machi, [under the bark of a *Zelkova serrata*], 1.iv.2006, K. Kido leg. (KUM); 1 ♀, Dazaifushi-rekishi--sports-kōen Park, Mukaizano, Dazaifu-shi, [under the bark of a *Zelkova serrata*], 18.ii.2006, K. Kido leg. (KUM); 1 ♀, Tenpaitsuu-kōen Park, Kamikoga, Chikushino-shi, [under the bark of a *Zelkova serrata*], 4.iii.2006, K. Kido leg. (KUM); 2 ♂♂ 2 ♀♀, Hakozaki Satellite (in front of Kyushu University Museum), Hakozaki, Higashi-ku, Fukuoka-shi (alt. 3–4 m), 5.x.2024, R. Seki leg. (KUM); 6 ♂♂ 4 ♀♀, same locality and collector but 6.x.2024 (KUM); 1 ♀, Tsukigumanishi-kōen Park, Tsukiguma, Hakata-ku, Fukuoka-shi, [under the bark of a *Zelkova serrata*], 20.i.2007, K. Kido leg. (KUM); 1 ♂, Ōikita-kōen Park, Ōi, Hakata-ku, Fukuoka-shi, [under the bark of a *Zelkova serrata*], 20.iii.2009, K. Kido leg. (KUM); 1 ♀, Shiobaruchūō-kōen Park, Shiobaru, Minami-ku, Fukuoka-shi, [under the bark of a *Zelkova serrata*], 20.iii.2006, K. Kido leg. (KUM); 2 ♂♂ 6 ♀♀, Fukuokajō-ato, Jōnai, Chūō-ku, Fukuoka-shi, 2.iii.2003, K. Kido leg. (KUM); 1 ♀, Hirao, Chūō-ku, Fukuoka-shi, 9.vii.1954, H. Kamiya leg. (KUM); 1 ♂, Nagaokachūō-kōen Park, Nagaoka, Minami-ku, Fukuoka-shi, [under the bark of a *Zelkova serrata*], 28.ii.2007, K. Kido leg. (KUM); 1 ♂, Nagazumichūō-kōen Park, Nagazumi, Minami-ku, Fukuoka-shi, [under the bark of a *Zelkova serrata*], 14.i.2007, K. Kido leg. (KUM); 2 ♀♀, Shigedomechūō-kōen Park, Shigedome, Sawara-ku, Fukuoka-shi, [under the bark of a *Zelkova serrata*], 28.i.2007, K. Kido leg. (KUM); 1 ♀, Hirasoko-kōen Park, Nokata, Nishi-ku, Fukuoka-shi, [under the bark of a *Zelkova serrata*], 14.i.2007, K. Kido leg. (KUM); 2 ♂♂ 1 ♀, Hikota-kōen Park, Mikasagawa Yonchōme, Ōnojō-shi, [under the bark of a *Zelkova serrata*], 19.iii.2006, K. Kido leg. (KUM); 1 ♂, Nakahatachūō-kōen Park, Nakahata, Ōnojō-shi, [under the bark of a *Zelkova serrata*], 18.i.2007, K. Kido leg. (KUM); 1 ♂ 1 ♀, Kenei–kasuga-kōen Park, Haramachi, Kasuga-shi, 4.iii.2006, K. Kido leg. (KUM); 1 ♀, Shitouzu hachimangū, Kasuga–shi, 21.vi.1990, K. Kido leg. (KUM); 1 ♂, Antokukinrin-kōen Park, Imamitsu, Nakagawa–machi, [under the bark of a *Zelkova serrata*], 10.xii.2006, K. Kido leg. (KUM); 2 ♂♂ 1 ♀, Jidōfukushi-shisetsu Tenshien-nakaniwa, Miimachi, Kurume-shi, [under the bark of a *Zelkova serrata*], 29.i.2006, K. Kido leg. (KUM). **Saga-ken:** 2 ♀♀, Shinrin-kōen Park, Kubota-machi, Saga-shi, 24.xii.2008, K. Kido leg. (KUM).

Diagnosis. This species resembles *Stethorus* (*Stethorus*) *siphonulus* Kapur, 1948, particularly in the nearly identical shape of the prosternal process (Fig. 13b), and deeply emarginated apex of abdominal ventrite VI in male. However, it is distinguished from the latter by its entirely black head (Fig. 13a) in both sexes, with only margins of clypeus slightly brownish; narrowly U-shaped abdominal postcoxal lines (Fig. 13c), narrower pleurites of male abdominal sternite IX (Fig. 13d), slenderer and more elongated penis (Fig. 13e), penis guide (Figs 13g–h) being slightly longer than parameres, featuring strongly hooked apex in lateral view and constricted near apex in ventral view. Notably, there is variation in the shape of the penis capsule (Figs 13e–f) even within individuals of the same species. Additionally, identification can also be achieved based on the patterns observed in pupae and the final instar larvae, as well as the coloration of eggs (Kishimoto et al. 2013): The egg coloration varies from yellowish white to milky white (Kishimoto et al. 2013: fig. 4a), the pronotal shield of the final instar larva bears a pair of black markings (Kishimoto et al. 2013: fig. 4c), and the pupa is entirely glossy black (Kishimoto et al. 2013: fig. 4e).

Measurements. TL, 1.13–1.53 mm; TW, 0.85–1.11 mm; TH, 0.55–0.77 mm; TL/TW, 1.30–1.39; PL/PW, 0.47–0.53; EL/EW, 1.06–1.13.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu); Kuril Isls. (Kunashiri-tō Is.; Kuznetsov & Proshchalykin 2006), Korean Peninsula, Northeastern and Central China, Mongolia, Central Asia, Western Asia, Caucasus, Europe, North Africa, North America, Eurasia.

Remarks. Identification is based on Kishimoto et al. (2013). Specimens collected by Ryōta Seki were overwintered under the bark of *Zelkova serrata* (Thunb.) Makino (Ulmaceae) from December to March. *Stethorus* (*Stethorus*) *pusillus* (Herbst, 1797) exhibits a cosmopolitan distribution and is known as a beneficial predator of tetranychid mites (Chazeau 1985, Biddinger et al. 2009). In Japan, it is the most commonly observed species within the genus *Stethorus* and is also found in urban areas (Figs 17–19). As a generalist species, *S.* (*S.*) *pusillus* demonstrates remarkable adaptability to diverse ecological conditions and likely plays a crucial role as a natural enemy, contributing to the sustainable health of agricultural ecosystems and urban vegetation.

Genus *Parastethorus* Pang & Mao, 1975

Japanese name: ニセダニヒメテントウ属

Stethorus (*Parastethorus*) Pang & Mao, 1975: 421. Type species: *Stethorus* (*Parastethorus*) *yunnanensis* Pang & Mao, 1975, by original designation

Stethorus (*Parastethorus*): Pang & Mao (1979): 36 (fauna of Chianese species); Hoàng (1982): 117 (fauna of Vietnamese species); Gordon & Chapin (1983): 272 (review of New World species); Ren & Pang (1996): 325 (review of Chinese and Taiwanese species).

Parastethorus: Ślipiński (2007): 114 (promoted to the genus level); Li et al. (2015): 109 (review of Chinese and Taiwanese species); Iqbal et al. (2018): 5 (review of Pakistani species).

Diagnosis. The genus *Parastethorus* can be distinguished from the genus *Stethorus* by the following combination of characters: abdominal postcoxal lines incomplete (Fig.

14d), penis slender (Fig. 14f), penis guide stout (Figs 14h,j), and tegminal strut about 1.5–2.5 times as long as penis guide (Figs 14h,j).

See Li et al. (2015: 109) for diagnosis.

Distribution. Probably worldwide (Ślipiński 2007).

Parastethorus pinicola sp. nov.

Japanese name: マツダニヒメテントウ

(Figs 14, 15, 18, 19)

Type material. Holotype: ♂, **JAPAN: Kyushu: Fukuoka-ken:** Hakozaki Satellite of Kyushu University (in front of the Kyushu University Museum), Hakozaki, Higashi-ku, Fukuoka-shi (alt. 3–4 m), 6.x.2024, R. Seki leg. (KUM). Paratypes: **JAPAN: Honshu: Tokyo-to:** 2 ♂♂ 2 ♀♀, Aoyama-reien, Minamiaoyama, Minato-ku (alt. 30 m), 9.x.2021, R. Seki leg. (KUM); 1 ♀ 2 exs., Noge, Setagaya-ku (alt. 36 m), 31.x.2019, R. Seki leg. (KUM); 1 ♂, same locality and collector but (alt. 40 m), 7.x.2021 (KUM); 1 ex., Nakamachi, Setagaya-ku (alt. 30 m), 25.vi.2019, R. Seki leg. (KUM); 1 ♂, same locality and collector but (alt. 33 m), 23.vi.2020 (KUM); 1 ♂ 2 ♀♀, same locality and collector but 30.iv.2021 (KUM); 1 ♂, same locality and collector but (alt. 34 m), 30.x.2021 (KUM); 1 ♀, Tama-gawa River, Noge, Setagaya-ku (alt. 13–17 m), 9.vi.2019, R. Seki leg. (KUM); 1 ♂, same locality and collector but (alt. 9–10 m), 2.vii.2019 (KUM); 1 ♂ 2 ♀♀, Tama-gawa River, Komaimachi, Komae-shi (alt. 18.3 m), 21.vi.2021, R. Seki leg. (KUM); 1 ♀, same locality and collector but 15.v.2021 (KUM); 1 ♂ 1 ♀, Izumi, Komae-shi (alt. 22–25 m), 25.v.2020, R. Seki leg. (KUM); 1 ♀, Kamifuda, Chōfu-shi (alt. 30.3 m), 25.v.2020, R. Seki leg. (KUM); 1 ♀, Tamagawa, Chōfu-shi (alt. 30 m), 24.ix.2021, R. Seki leg. (KUM); 4 ♂♂ 1 ♀, Tama-reien, Tama-chō, Fuchū-shi, 5.x.2021, J. Itō leg. (cItō); 2 ♂♂ 2 ♀♀, same locality and collector but 11.x.2021 (cItō); 1 ♂ 1 ♀, same locality and collector but 6.xi.2021 (cItō); 1 ♂, same locality and collector but 14.xii.2022 (KUM); 1 ♂, same locality and collector but 3.i.2023 (cItō); 1 ♀, same locality but (alt. 50 m), 8.x.2021, R. Seki leg. (KUM); 4 ♂♂ 3 ♀♀ 1 ex., 15.x.2021 (KUM); 24 ♂♂ 8 ♀♀ 1 ex., same locality and collector but 15.xi.2021 (KUM); 6 ♂♂ 1 ♀, same locality and collector but 16.xi.2021 (KUM); 1 ♀, same locality and collector but 23.v.2022 (KUM); 1 ♂ 5 ♀♀, same locality and collector but 3.i.2023 (KUM); 1 ♀, Tama-gawa River, Oshitate, Inagi-shi (alt. 32.5 m), 1.vi.2019, R. Seki leg. (KUM); 1 ♂ 2 ♀♀, Tama-gawa River, Ōmaru, Inagi-shi, 18.vi.2019, J. Itō leg. (cItō); 1 ♂, same locality and collector but 22.vi.2019 (cItō); 1 ♀, same locality and collector but 16.iv.2017 (cItō); 2 ♂♂ 2 ♀♀, Tokinohiroba, Momura, Inagi-shi, 12.iii.2019, J. Itō leg. (cItō); 8 ♂♂ 9 ♀♀, same locality and collector but 14.iii.2019 (cItō); 1 ♂ 2 ♀♀, same locality and collector but 20.iii.2019 (cItō); 1 ♂ 2 ♀♀, same locality and collector but 6.iv.2019 (cItō); 1 ♀, same locality and collector but 13.iv.2019 (cItō); 1 ♀, same locality and collector but 11.iii.2020 (cItō); 1 ♀, same locality and collector but 27.iii.2021 (cItō); 5 ♂♂ 1 ♀, same locality but 26.v.2019, K. Toshikiyo leg. (KUM); 1 ♂, Shimizuyato-ryokuchi, Sakahama, Inagi-shi, 25.v.2021, J. Itō leg. (cItō). **Okayama-ken:** 1 ♂, Sakazu-kōen Park, Sakazu, Kurashiki-shi, 16.v.2016, H. Suenaga leg. (cSue). **Kyushu: Fukuoka-ken:** 2 ♂♂ 1 ♀, Hakozaki Satellite of Kyushu University (in front of the Kyushu University Museum), Hakozaki, Higashi-ku, Fukuoka-shi (alt. 3–4 m), 5.x.2024, R. Seki leg. (KUM); 1 ♂ 2 ♀♀, same locality and collector but 6.x.2024 (KUM). **Ryukyus: Okinawa-ken:** Okinawa-jima Is.: 8 ♂♂ 4 ♀♀ 1 ex., Zakimi, Nakagami-gun Yomitan-son (alt. 80–126 m) [*Carica papaya*], 4.xii.2024, R. Seki leg. (KUM); 2 ♂♂, Tōbaru-kōen Park, Yoshihara, Chatan-chō, Nakagami-gun (alt. 81.2–96.9 m), 24.ii.2023, R. Seki leg. (KUM).

Diagnosis. This species closely resembles *Parastethorus yunnanensis* (Pang & Mao, 1975) from China but can be distinguished from the latter by differently shaped penis apex (Figs 14f–g), which is curved and more elongated, apex of penis guide (Fig. 14j) bears deeper indentation, and apex of parameres bearing thicker, V-shaped projection (Figs 14h–i).

Description. TL, 1.03–1.23 mm; TW, 0.77–0.90 mm; TH, 0.51–0.62 mm; TL/TW, 1.30–1.37; PL/PW, 0.37–0.54; EL/EW, 1.06–1.15.

Body small, elongate oval, moderately convex, densely covered with long, yellowish-white setae (Figs 14a,n). Dorsum and underside entirely black, except for yellowish-brown antennae, mouthparts, and legs.

Head small, 0.58 times as wide as pronotum, punctures on frons fine and sparsely distributed, 1.0–3.0 diameters apart. Eyes small and oval, widest interocular distance 0.43 times head width. Pronotum 0.72 times as wide as elytra, pronotal punctures fine and moderately densely distributed, similar to those on head, 1.0–3.0 diameters apart. Elytral punctures (Fig. 14b) fine, sparsely distributed, 1.5–3.0 diameters apart, as small as those on head. Prosternum matt and shagreened, punctures extremely fine, sparsely covered with long, white setae. Prothorax (Fig. 14c) with prosternal process U-shaped, prosternal lines nearly parallel. Mesovental punctures fine, moderately densely distributed, 1.0–3.0 diameters apart, sparsely covered with long, white setae. Metaventrite punctures fine, moderately densely distributed, 1.0–3.0 diameters apart, sparsely covered with long, white pubescence. abdominal ventrite VI rounded in male.

Male terminalia and genitalia. Abdominal segments with tergite IX (Fig. 14e) stout, sternite IX (Fig. 14e) with stout lateral sclerites and stout short median sclerite, spiculum gastrale (Fig. 14e) elongate, tergite X (Fig. 14e) transverse; penis (Figs 14f–g) slender, gradually tapering to apex, with several split spinules at its tip; penis capsule (Fig. 14f) with short outer arm and inconspicuous inner one; tegmen (Figs 14h–j) stout, penis guide gradually broadened up to basal 2/3, then abruptly tapering to apex, apical 1/5 narrowed towards medially large semicircular notched apex in ventral view, widest at base, tapering to apex and with pair of acutely pointed protuberances at inner sides in lateral view; parameres (Figs 14h–i) oblong-ovate, measuring approximately 3/5 of penis guide length, numerous long setae apically on inner side and apex, with pair of arched projections visible laterally.

Female genitalia. Coxite distinctly elongated and triangular (Fig. 14k), styli highly reduced and barely visible; spermatheca distinctly curved, with basal ramus and nodulus.

Etymology. The species name *pinicola* is derived from the Latin name of pine (*Pinus*) and the Latin word for inhabitant (*incola*), referring to the fact that the species is frequently collected from pine trees. Noun in apposition.

Distribution. Japan (Honshu: Tokyo, Okayama; Kyushu: Fukuoka; Ryukyu Isls.: Okinawa-jima Is.).

Remarks. *Parastethorus pinicola* sp. nov. shows significant gaps in its distributional data (Figs 15, 18, 19), and further research is likely to reveal its presence in various other regions. Kishimoto & Kitano (2017) reported obtaining a small *Stethorus* sp., approximately 1.0 mm in body length, from cherry trees in Mie-ken, Nara-ken, Kyoto-fu and Hyogo-ken. Based on its body size, this specimen likely corresponds to *P. pinicola*. Ryōta Seki has been conducting ongoing survey of ladybird beetles occurring on *Pinus luchuensis* Mayr (Pinaceae) in the Ryukyu Islands. However, since specimens of *P. pinicola* have only been collected from urban parks on Okinawa-jima Island, it is

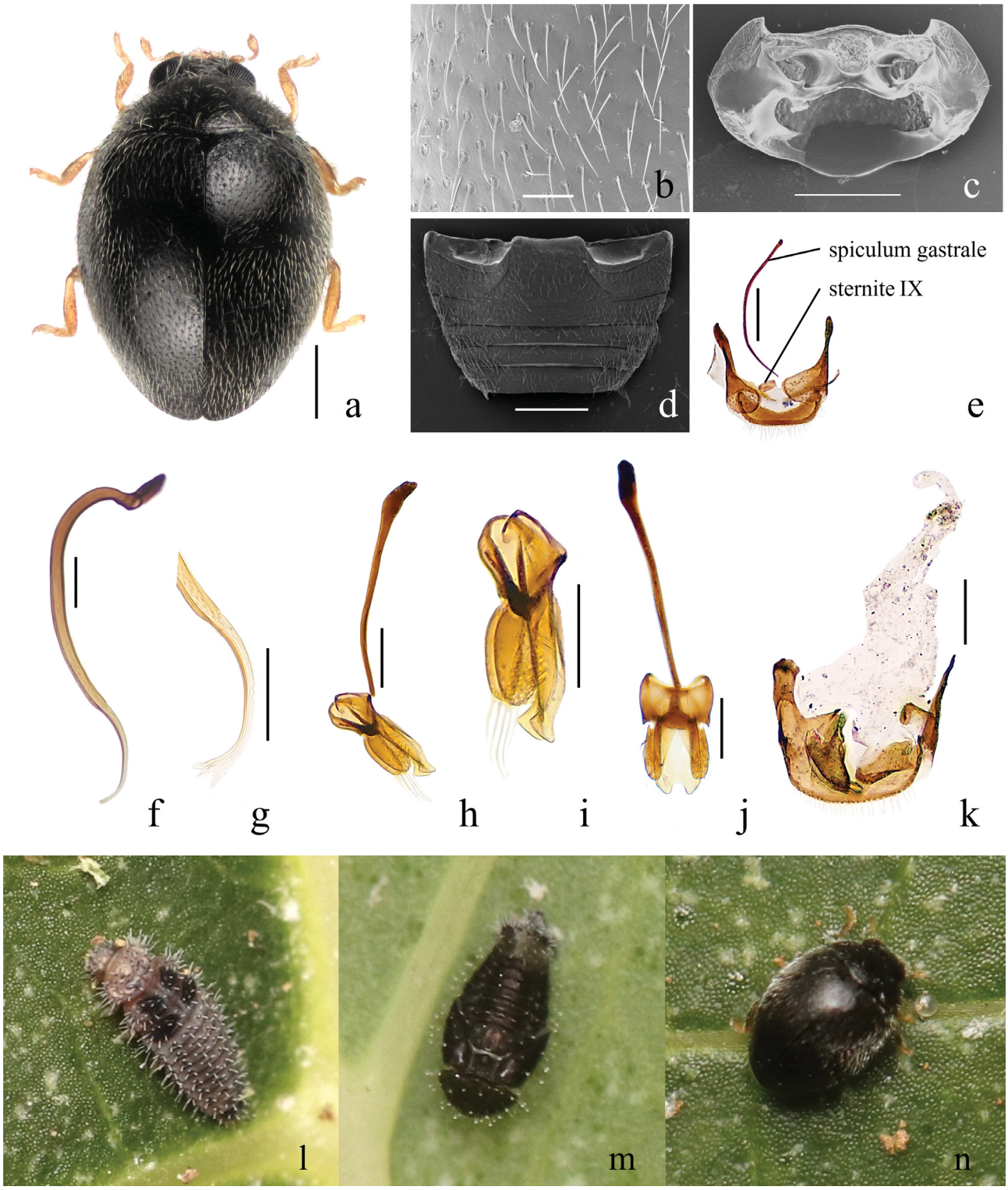

Fig. 14. *Parastethorus pinicola* sp. nov. a – dorsal view; b – puncture of elytra; c – prothorax; d – abdomen; e – male terminal abdominal segments IX and X; f – penis; g – penis apex; h – tegmen, lateral view; i – tegmen, enlarged lateral view; j – tegmen, ventral view; k – female terminalia and genital track; l – alive larva; m – alive pupa; n – alive, adult. Scale bars = 0.25 mm for a; 0.05 mm for b; 0.2 mm for c, d; 0.1 mm for e–k.

likely that its occurrence there represents an introduction rather than a native population. It has been collected from *Pinus densiflora* Siebold & Zucc. and *Pi. thunbergii* Parl. in Tokyo and Fukuoka-ken. Since a large dense population of Tetranychidae has been observed on *Pinus thunbergii* in Fukuoka-ken, it is likely that this species preys on these mites. Additionally, this species has been collected from *Pi. luchuensis* Mayr and *Carica papaya* L. (Caricaceae) on Okinawa-jima Island. *Paracoccus marginatus* Williams & Granara de Willink, 1992 was abundant on *C. papaya*, where the leaf surfaces were coated with a wax-like substance secreted by *Pa. marginatus*. Adults of this species were observed on the wax-coated leaves, whereas larvae and pupae were observed on the underside of the leaves

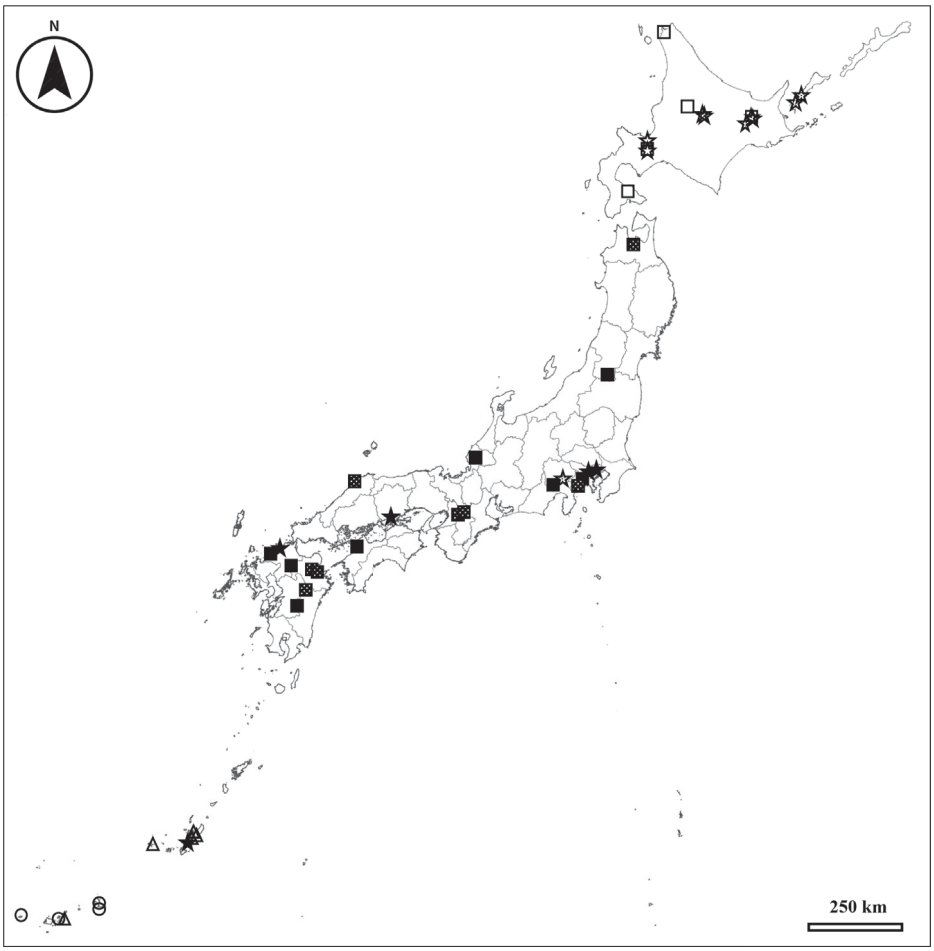

Fig. 15. Distribution map of *Stethorus* (*Allostethorus*) and *Parastethorus*. (○) *Stethorus* (*Allostethorus*) *chengi* Sasaji, 1968; (■) *Stethorus* (*Allostethorus*) *emarginatus* Miyatake, 1966; (□) *Stethorus* (*Allostethorus*) *takakoae* sp. nov.; (△) *Stethorus* (*Allostethorus*) *parapauperculus* Pang, 1966; (☆) *Stethorus* (*Allostethorus*) *yezoensis* Miyatake, 1966; (★) *Parastethorus pinicola* sp. nov. Black symbols of *S.* (*A.*) *emarginatus* and white symbols of *S.* (*A.*) *yezoensis* with spots represent data quoted from Miyatake (1966), Kuznetsov & Proshchalykin (2006), Kishimoto & Kitano (2017) and Saitō (2024).

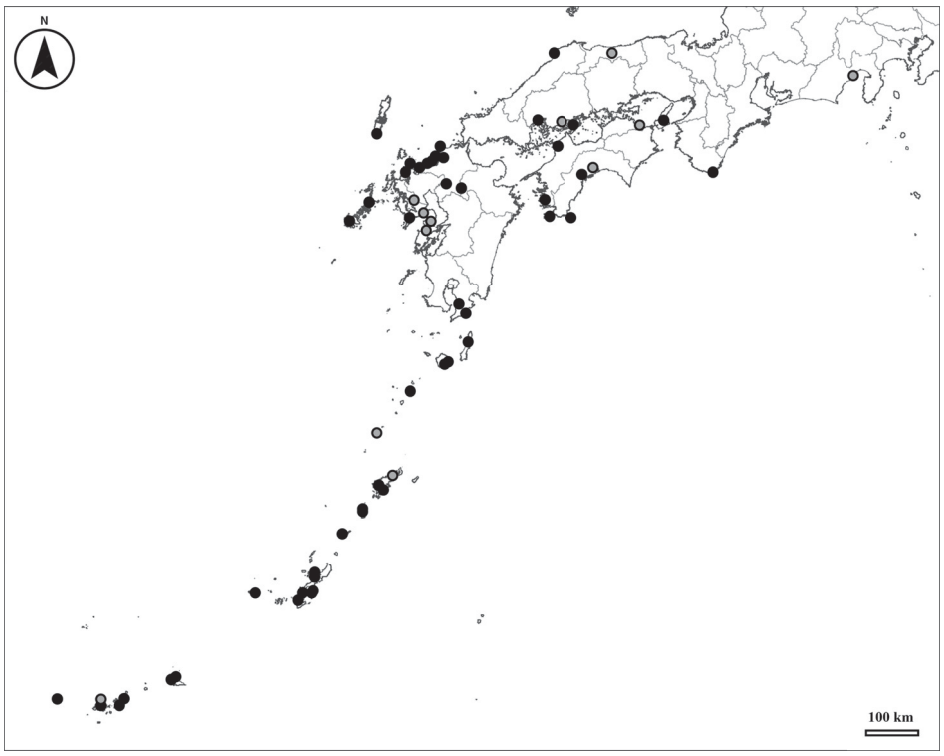

Fig. 16. Distribution map of *Stethorus* (*Stethorus*) *siphonulus* Kapur, 1948 (●). Gray symbols represent data adopted from Kamiya (1964, 1965), Sasaji (1971) and Kishimoto & Kitano (2017).

(Figs 14l–n). This observation suggests that the wax-like substance secreted by *Pa. marginatus* could also serve as a food resource for this species. Interestingly, *P. pinicola* may feed both on spider mites and scale insects. Species of *Stethorus* belonging to the same tribe have been recorded to attack not only spider mites but also scale insects, aphids, whiteflies and thrips (Kaper 1948, Kamiya 1959, Al-Duhawi et al. 2006, Biddinger et al. 2009). Moreover, the larvae of *S. gilvifrons* (Mulsant, 1850) are known to feed on honeydew secreted by aphids (Mathur 1969). Therefore, many species of *Parastethorus* may likewise possess a broad feeding range and exhibit feeding habits similar to those of *Stethorus*. Further studies on their feeding ecology are needed. Finally, this species was also collected from

Fig. 17. Distribution map of *Stethorus* (*Stethorus*) *pusillus* (Herbst, 1797) (▲). Gray symbols represent data adopted from Kuznetsov & Proshchalykin (2006) and Kishimoto & Kitano (2017).

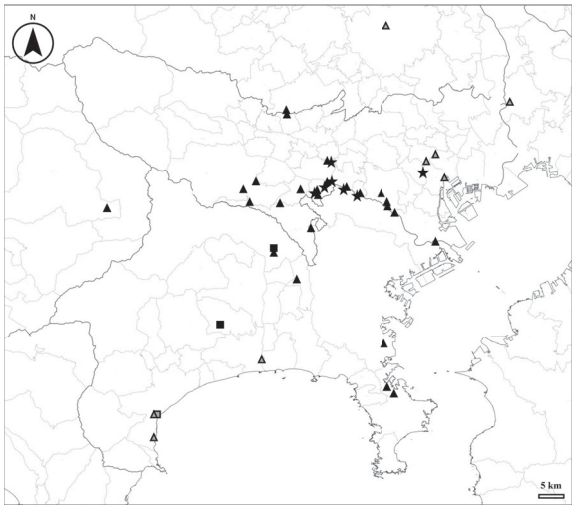

Fig. 18. Distribution map around Tokyo-to. (■) *Stethorus* (*Allostethorus*) *emarginatus* Miyatake, 1966; (▲) *Stethorus* (*Stethorus*) *pusillus* (Herbst, 1797); (★) *Parastethorus pinicola* sp. nov. Gray symbols represent data adopted from Kishimoto & Kitano (2017).

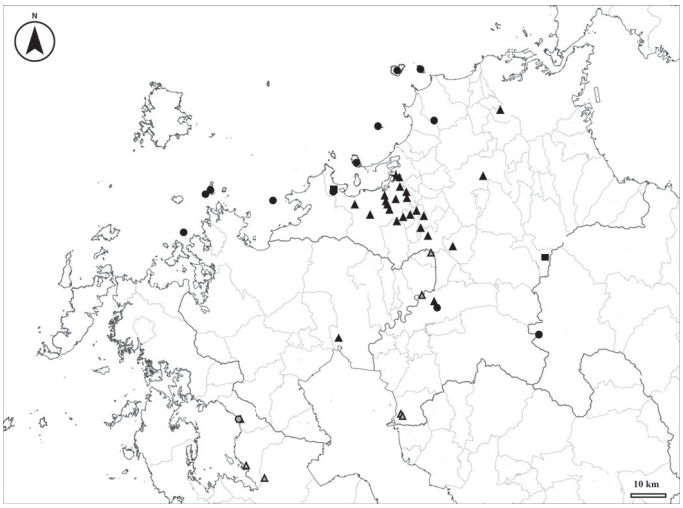

Fig. 19. Distribution map around Fukuoka–ken. (■) *Stethorus* (*Allostethorus*) *emarginatus* Miyatake, 1966; (●) *Stethorus* (*Stethorus*) *siphonulus* Kapur, 1948; (▲) *Stethorus* (*Stethorus*) *pusillus* (Herbst, 1797); (★) *Parastethorus pinicola* sp. nov. Gray symbols represent data adopted from Kishimoto & Kitano (2017).

Pleioblastus chino (Franch. et Savat.) Makino (Poaceae) in Tokyo. The specimen obtained from Okayama-ken was collected under unknown circumstances.

Key to the Japanese species of the tribe Stethorini

1 Abdominal postcoxal lines incomplete (Fig. 14d). ..... ***Parastethorus pinicola* sp. nov.**
– Abdominal postcoxal lines complete. Genus *Stethorus*. 2
2 Penis and tegmen long and slender. Subgenus *Stethorus.* 3
– Penis and tegmen short and stout. Subgenus *Allostethorus.* 4
3 Labrum yellowish brown at apex. Anterior part of the head: in male widely reddish brown, in female narrowly reddish-brown; penis guide straight (Figs 9a,b,g,h, 10b,c, 11a,f,g, 12b). .... ***S.* (*S.*) *siphonulus*** Kapur, 1948
– Labrum entirely black. Anterior part of the head: in both male and female extremely narrow reddish--brown; penis guide strongly bent at tip in lateral view (Figs 13a,f,g). .... ***S.* (*S.*) *pusillus*** (Herbst, 1797)
4 Penis apex curved, with hook-shaped appendage, TL, 1.47–1.50; TW, 1.01–1.03; TH, 0.68–0.73 (Figs 7a,d,e). ..... ***S.* (*A.*) *yezoensis*** Miyatake, 1966
– Penis apex straight, without hook-shaped appendage. 5
5 Apex of penis guide U-shaped emarginate in ventral view. 6
– Apex of penis guide acutely pointed in ventral view. 7
6 Penis apex not sharp. In ventral view, penis guide with slightly curved base and gradually widening toward apex. TL, 1.29–1.45; TW, 0.93–1.15; TH, 0.60–0.68 (Figs 3a,e,f,h, 4c). .... ***S.* (*A.*) *emarginatus*** Miyatake, 1966
– Penis apex slightly pointed. In ventral view, penis guide gradually widens apically. TL, 1.32–1.45; TW, 0.95–1.11; TH, 0.64–0.77 (Figs 5a,e,f,h). .... ***S.* (*A.*) *takakoae* sp. nov.**
7 Penis apex simple, TL, 0.94–1.18; TW, 0.70–0.80; TH, 0.48–0.55 (Figs 6d,e). .... ***S.* (*A.*) *parapauperculus*** Pang, 1966
– Penis apex complex, TL, 1.06–1.25; TW, 0.80–0.97; TH, 0.51–0.61 (Figs 1e,f). .... ***S.* (*A.*) *chengi*** Sasaji, 1968

List of species of Stethorini from Japan

Stethorus (*Allostethorus*) *chengi* Sasaji, 1968
Stethorus (*Allostethorus*) *emarginatus* Miyatake, 1966
Stethorus (*Allostethorus*) *takakoae* Seki & Maruyama **sp. nov.**
Stethorus (*Allostethorus*) *parapauperculus* Pang, 1966
Stethorus (*Allostethorus*) *yezoensis* Miyatake, 1966
Stethorus (*Stethorus*) *siphonulus* Kapur, 1948
Stethorus (*Stethorus*) *pusillus* (Herbst, 1797)
Parastethorus pinicola Seki & Maruyama **sp. nov.**

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