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Revised generic level status of some taxa assigned to *Orthotylus* Fieber, 1858 with proposition of a new genus *Siamorthotylus* (Hemiptera: Heteroptera: Miridae: Orthotylinae)

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Abstract

A new genus of orthotyline plant bugs (Orthotylini), *Siamorthotylus* **gen. nov.**, is proposed to accommodate *Orthotylus taksini* Yasunaga & Yamada, 2009, which is known from central forest zone of Thailand. A new combination, *Siamorthotylus taksini* **comb. nov.**, is accordingly established, and SEM images of the detailed external morphology as well as genitalic structures are provided. Based on the distinctive morphological features, *Pseudorthotylus* Poppius, 1914 and *Yamatorthotylus* Yasunaga, 1999 (currently regarded as subgenera of *Orthotylus* Fieber, 1858) are herein suggested to be treated as independent genera.

Key words: *Siamorthotylus*, new genus, *Pseudorthotylus*, *Yamatorthotylus*, taxonomy, revised status, SEM documentation.

Resumen

***Revisión del estatus de nivel genérico de algunos taxones atribuidos a* Orthotylus *Fieber, 1858, con propuesta de un nuevo género* Siamorthotylus (*Hemiptera: Heteroptera: Miridae: Orthotylinae*)**

Se propone un nuevo género de míridos ortotilinos (Orthotylini), *Siamorthotylus* **gen. nov.**, para ubicar la especie *Orthotylus taksini* Yasunaga & Yamada, 2009, conocida de la zona forestal central de Tailandia. Se establece consecuentemente la nueva combinación *Siamorthotylus taksini* **comb. nov.** y se proporcionan imágenes MEB tanto de su morfología externa detallada como de sus estructuras genitálicas. Asimismo, sobre la base de características morfológicas distintivas, se propone tratar como géneros independientes *Pseudorthotylus* Poppius, 1914 y *Yamatorthotylus* Yasunaga, 1999 (actualmente considerados subgéneros de *Orthotylus* Fieber, 1858).

Palabras clave: *Siamorthotylus*, nuevo género, *Pseudorthotylus*, *Yamatorthotylus*, taxonomía, estatus revisado, documentación MEB.

Laburpena

Orthotylus *Fieber, 1858 barruan kokaturiko zenbait taxoiren genero-mailako estatusaren berrazterketa, eta* Siamorthotylus *genero berriaren proposamena* (*Hemiptera: Heteroptera: Miridae: Orthotylinae*)

Mirido ortotilinoen (Orthotylini) genero berri bat, *Siamorthotylus* **gen. nov.**, proposatzen da *Orthotylus taksini* Yasunaga & Yamada, 2009 espeziea kokatzeko, Tailandiaren erdialdeko baso-eremutik ezagutzen dena. *Siamorthotylus taksini* **comb. nov.** konbinazio berria sortzen da ondorioz, eta bere kanpo-morfologia zehatzaren zein bere genitalia-egituren EME irudiak eskaintzen dira. Halaber, beren ezaugarri morfologiko bereizgarriak direla eta, *Pseudorthotylus* Poppius, 1914 eta *Yamatorthotylus* Yasunaga, 1999 (gaur egun *Orthotylus* Fieber, 1858-ren subgenerotzat hartuta) genero independentetzat jotzea proposatzen da.

Gako-hitzak: *Siamorthotylus*, genero berria, *Pseudorthotylus*, *Yamatorthotylus*, taxonomia, estatus berraztertua, EME dokumentazioa.

Introduction

This paper represents part of recent attempts to re-evaluate and/or document the orthotyline plant bug taxa particularly in the Oriental Region, subsequent to Yasunaga and Duwal (2017), Yasunaga and Shishido (2020) and Yasunaga *et al.* (2022, 2023). As pointed out by some of these works, a number of undescribed or undetermined taxa still remain in tropical forest zones of Asia.

Orthotylus taksini was described by Yasunaga and Yamada (2009) from central dry-forest zone in central Thailand (*cf.* Yasunaga *et al.*, 2025), as the first representative of the nominotypical *Orthotylus* Fieber, 1858 from the tropical Asia. However, a series of recent updates for taxonomic status of *Orthotylus* and its traditional subgenera suggested some independent genera, such as *Kiiorthotylus* Yasunaga, 1993 and *Melanotrichus* Fieber, 1858 (*cf.* Yasunaga and Duwal, 2017; Yasunaga *et al.*, 2023). Our recent close morphological examination revealed that *O. taksini* obviously requires an independent generic status. Therefore, we herein propose a new genus, *Siamorthotylus*, to accommodate this Oriental taxon properly; a new combination, *S. taksini* (Yasunaga & Yamada, 2009) **comb. nov.**, is accordingly established.

In addition, the generic placements of *Orthotylus* (*Pseudorthotylus*) *bilineatus* (Fallén, 1807) and *O.* (*Yamatorthotylus*) *xanthopoda* Yasunaga, 1999 are reviewed and discussed. The former species is a typical Euro-Siberian element that has been placed in *Orthotylus*, although earlier works (Poppius, 1914; Southwood, 1953; Ribes and Ribes, 1998; Goula and Ribes, 2007) treated the taxon as a member of full genus *Pseudorthotylus* (or some synonymic names, *e.g. Neomecomma* Southwood, 1953; *Onychomiris* Ribes & Ribes, 1998). The latter is currently known only from the Japan proper and has several unique characters. Based on the significant morphological facies, we consider these species should be separated from typical *Orthotylus* members, and we herein propose to upgrade *Pseudorthotylus* and *Yamatorthotylus* as full genera.

Material and methods

The specimens examined in this study are deposited in Entomology & Zoology Group, Plant Protection Research & Development Office, Department of Agriculture, Bangkok, Thailand (DOAT) or T. Yasunaga collection, Nagasaki, Japan (TYCN). Synonymic lists of known taxa only include selected references, as several comprehensive catalogs are available (Schuh, 1995; Kerzhner and Josifov, 1999; Schuh, 2002-2013; Aukema, 2018). Terminology of the genitalia principally follows Yasunaga (1999), Schwartz (2011), Yasunaga and Duwal (2017), and Yasunaga *et al.* (2022).

Scanning Electron Micrographs were taken with a Hitachi Miniscope® (TM-4000 plus II); the genitalic structures were also observed using a Nikon Eclipse Ci upright microscope, with a photophase unit. All measurements are given in millimeters; for some of the SEM images, scale bars are shown in micrometers (µm). For SEM documentation of the genitalic structures, the delicate minute organs were dipped and washed in 60–70% ethyl alcohol after dissection under Olympus SZX-12 binocular stereoscopic microscope, placed on filter paper until dry, carefully attached to cards (ca. 5 × 15 mm) using water soluble wood glue, and finally placed in the SEM chamber for observation and imaging on a Laptop PC (without vapor deposition of metals).

Results

Siamorthotylus gen. nov.

Diagnosis:

Externally similar to *Orthotylus* Fieber, 1858 (*s. str.*), but the present new genus is distinct in having the following characters: body smaller in size; head pointed in front; eyes composed of rather convex, botryoidally arranged ommatidia (Fig. 5a); antennal segment III long, about 3/4 of segment II; hemelytron with flattened, lanceolate, scale-like setae mixed with simple setae (Fig. 5b); metathoracic scent efferent system narrow, triangular (Fig. 5c); relatively short parempodia, barely longer than half the claw length; and unique male and female genitalic structures as described below.

Description:

Body small (2.9–3.3 mm in total length), elongate oval, subparallel-sided, not sexually dimorphic in general shape; basic coloration green (usually kept and not fading to yellow or stramineous in dry-preserved specimens); dorsal surface somewhat matte,

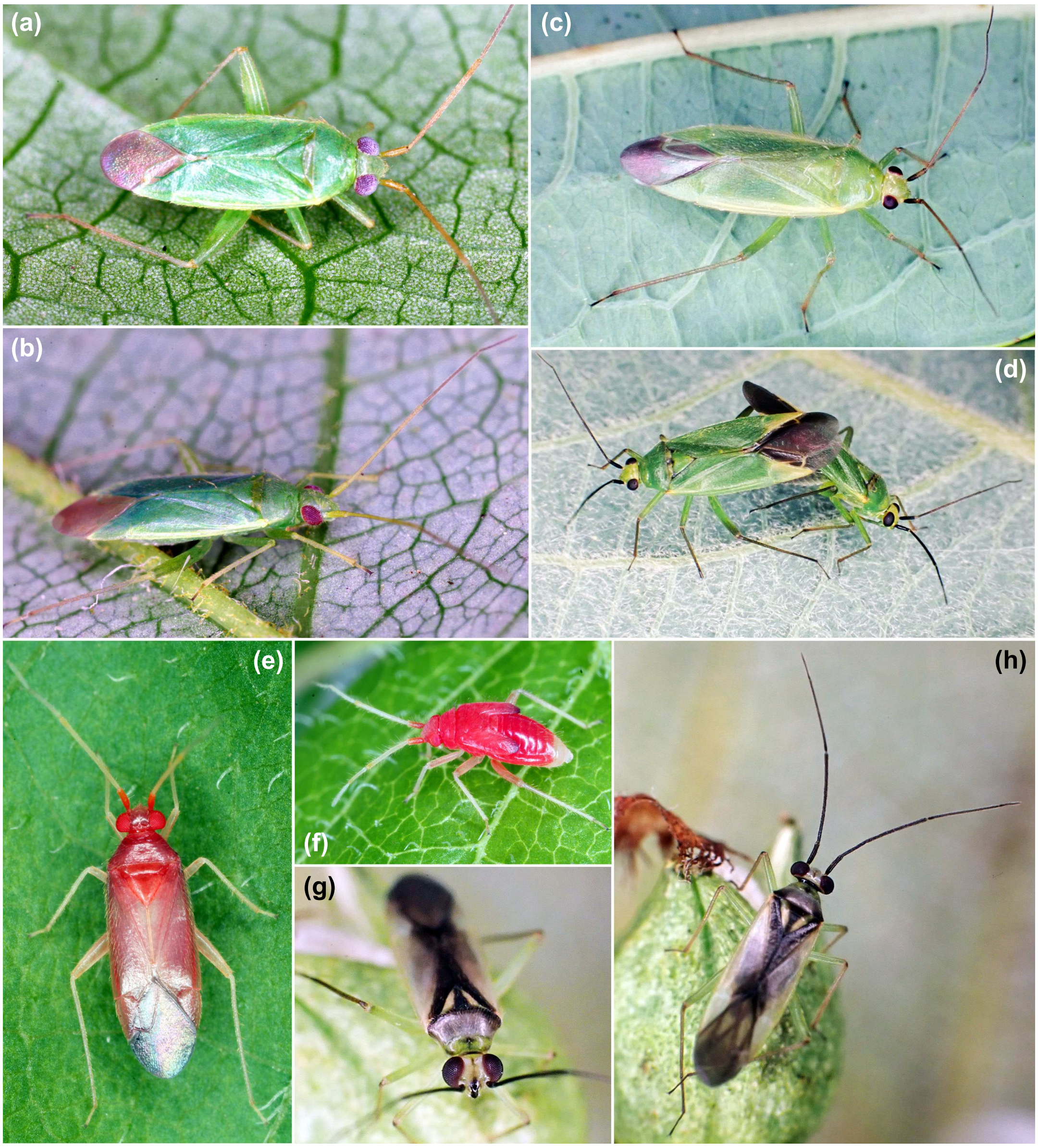

Figure 1. Habitus images for live individuals of: (a)-(b) *Siamorthotylus taksini*; (c) *Orthotylus interpositus*; (d) *Orthotylus kurilensis*; (e)-(f) *Yamatorthotylus xanthopoda*; (g)-(h) *Pseudorthotylus bilineatus* / (a), (e), (g)-(h) Male adult; (b)-(c) Female adult; (d) Mating pair (left male); (f) Final instar nymph, same individual as (e).

weakly shining, with uniformly distributed, simple, semierect setae. **Head:** Rather pointed in front, oblique in lateral view; eyes contiguous to anterior margin of pronotum, with rather convex, botryoidally arranged ommatidia (Fig. 5a); vertex with a weakly elevated basal transverse carina. **Antenna:** Comparatively thick, almost linear; segment I slightly longer than width of vertex (interocular space); segment II longer than basal width of pronotum, about as long as maximum width; segment III rather long in proportion to segment II (ca. 0.70–0.75 ×). **Labium:** Long, reaching or slightly surpassing apex of metacoxa, about as long as antennal segment II. **Thorax:** Pronotum trapezoidal, not narrowed or constricted anteriorly; calli indistinct, with uniformly distributed, simple, reclining or semierect setae; metathoracic scent efferent system narrow, triangular, with slender peritreme (Fig. 5c). **Hemelytron:** Weakly rounded laterally, with flattened, lanceolate, scale-like setae mixed with simple setae (socket size of each seta different, as in Fig. 5b). **Legs:** Moderate in length, generally slender; tibial spines short, sparse; metatarsomere II as long as III (Fig. 5e); pretarsal structure as in Fig. 5f; parempodia lamellate, rather short, barely longer than half the claw length.

Male genitalia (Figs. 2a-d, 5g-k): Pygophore generally small, pointed apically, rather smooth, without conspicuous process or spine (Figs. 2a, 5g-h). Left paramere medially with a sharp protuberance; hypophysis somewhat hooked, covered with scaly structures (Figs. 2c, 5i). Right paramere almost straight, bulbous apically, with notched processes apically and medially (Figs. 2b, 5j). Endosoma (vesica) bearing three slender sclerites as in Figs. 2d and 5k; two of the sclerites clearly serrate apically and each with a medial slender branch.

Female genitalia (Fig. 5l-o): Ovipositor (gonapophysis) I as in Fig. 5l. Posterior wall (Fig. 5m-o) with wide, thin interramal lobe that is densely furnished with scaly microstructures instead of noticeable spinules.

Etymology:

Named for Siam (old name of Thailand), combined with plant bug genus *Orthotylus*; all available specimens of the type species were collected from central Thailand. Gender masculine.

Siamorthotylus taksini (Yasunaga & Yamada, 2009) comb. nov.

(Figs. 1a-b, 2, 5)

Orthotylus taksini Yasunaga and Yamada, 2009: 282 (n. sp.); Yasunaga and Duwal, 2017: 282 (note).

Material examined:

6 ♂♂ + 3 ♀♀: THAILAND: Nakhon Rachasima, Wang Nam Khieo, Sakaerat Environmental Research Station, N14°30'27" E101°55'39", 410 m alt., UV lighting, 25-26.ii.2009, T. Yasunaga (paratypes, DOAT, TYCN).

2 ♂♂: Same locality, UV lighting, 27-28.x.2008, T. Yasunaga & K. Yamada (paratypes, TYCN).

1 ♀: Same locality, UV lighting, 13.iv.2013, T. Yasunaga (TYCN).

1 ♀: Chaiyaphum, Khon San District, Thung Lui Lai, Chulabhom Dam, N 16°32'05" E101°38'00", 787 m, UV lighting, 16-18.iv.2013, T. Yasunaga (TYCN).

3 ♂♂ + 3 ♀♀: Nakhon Nayok: Sarika (lodge garden), N14°18'39" E101°18'00", at FL light, 21.iii.2010, T. Yasunaga (TYCN).

Diagnosis:

Recognized readily by the characters mentioned in the above generic diagnosis and description, in addition to its unicolorously pale green body with wholly pale antenna and legs (Fig. 1a-b).

Measurements:

♂ (n=3): Body length 2.95–3.19; head width across eyes 0.62–0.63; vertex width (interocular space) 0.21–0.24; lengths of antennal segments I-IV: 0.25–0.28, 1.12–1.14, 0.72–0.77, 0.36–0.41; labial length 1.00–1.13; basal pronotal width 0.87–0.89; maximum width across hemelytron 1.05–1.13; lengths of metafemur, tibia and tarsus: 1.12–1.15, 1.45–1.63, 0.36–0.38.

♀ (n=2): Body length 3.13–3.28; head width across eyes 0.55–0.57; vertex width (interocular space) 0.25–0.27; lengths of antennal segments I-IV: 0.30–0.31, 1.17–1.23, 0.84–0.89, 0.42–0.44; labial length 1.24–1.26; basal pronotal width 0.85–0.87; maximum width across hemelytron 1.05–1.12; lengths of metafemur, tibia and tarsus: 1.09–1.13, 1.53–1.62, 0.34–0.38.

Distribution:

Thailand (Chaiyaphum, Nakhon Nayok, Nakhon Ratchasima).

Biology:

All available specimens of this species were collected by UV lighting method (*cf.* Yasunaga *et al.*, 2025) and its host association is yet to be confirmed. Presumably, the mirid is a canopy inhabitant. Based on collection records, a multivoltine life cycle is assumed for *Siamorthotylus taksini* **comb. nov.**

Discussion

Yasunaga and Yamada (2009) described *taksini* from central Thailand as a typical member of *Orthotylus* Fieber, 1858 (*s. str.*), which is at first sight similar to eastern Palaearctic *O. fuscipennis* Yasunaga, 1999 or

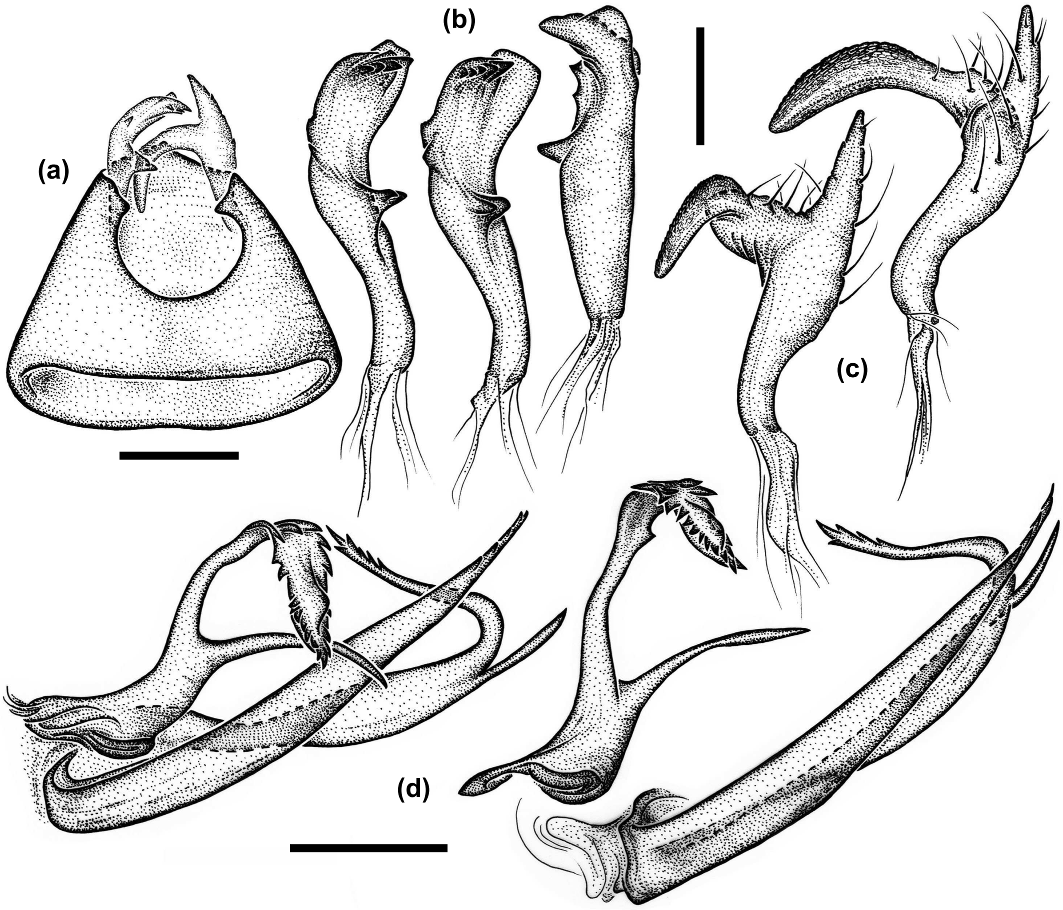

FIGURE 2. Male genitalia of *Siamorthotylus taksini*: (a) Genital segment (pygophore); (b) Right paramere; (c) Left paramere; (d) Endosoma (vesica) (Scale bars: (a) = 0.2 mm; (b)-(d) = 0.1 mm).

O. kurilensis Kerzhner, 1997 and was presumed to have been isolated in Indochina from a Palaearctic lineage after the Pleistocene (*cf.* Yasunaga and Duwal, 2017). However, our recent close reexamination of its morphological characters suggested that a relationship to *Orthotylus* is superficial and *Siamorthotylus* **gen. nov.** is herein established to accommodate the Thai species properly.

Our new genus is characterized by the diagnostic characters mentioned above. The following structures are of particular interest: Eyes composed of rather convex, botryoidally arranged ommatidia; relatively thick antenna; vestiture pattern on the hemelytron (with both simple and lanceolate scale-like setae); narrowed scent efferent system; small-sized pygophore, parameres and endosoma (vesica) compared with the overall body size; and female interramal lobe (covered with scaly microstructures instead of spinules). In typical *Orthotylus s. str.*, the dorsum lacks scale-like setae, the parameres are usually well developed, noticeably projecting from the genital capsule, and the interramal lobe is enlarged and densely covered with sharp spinules (*cf.* Yasunaga *et al.*, 2023: fig. 6G).

It should be emphasized that the comparison is with *Orthotylus s. str.* and that we take into account the whole combination of characters. In fact, one by one, some of the aforementioned characters may be

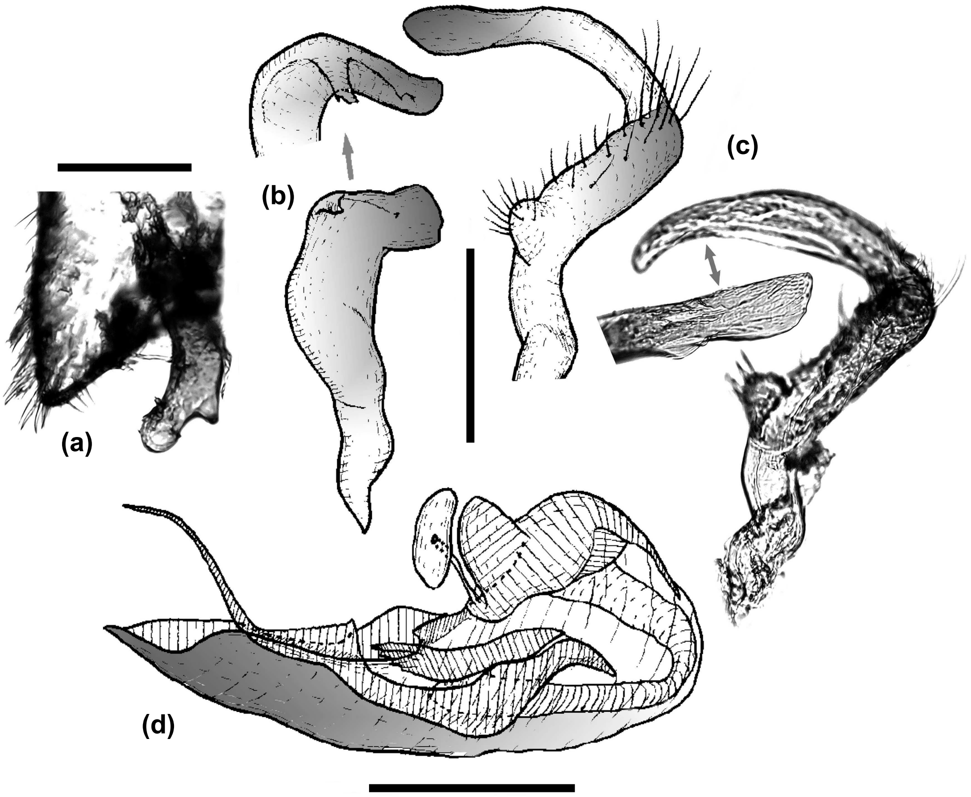

FIGURE 3. Male genitalia of *Pseudorthotylus bilineatus*: (a) Genital segment (pygophore); (b) Right paramere; (c) Left paramere; (d) Endosoma (vesica) (Scale bars = 0.2 mm).

shared with species nowadays belonging to one or another of the subgenera of *Orthotylus s. l.* or even to certain groups of species of *Orthotylus s. str.* For example, having scale-like setae in addition to simple ones is a distinguishing character of the mainly European subgenus *Pachylops* Fieber, 1858 (Wagner, 1974; Ehanno and Matocq, 1990) as well as of the African species of *Orthotylus s. str.* belonging to the *repandus*-group (Linnavuori, 1994). As to the small size of *Siamorthotylus* **gen. nov.** (see Diagnosis), it is also found among members of the subgenus *Parapachylops* Ehanno & Matocq, 1990 (Carapezza, 1997; Pagola-Carte and Matocq, 2020) and in more than a few species of *Pachylops* or even *Orthotylus s. str.* such as *O.* (*O.*) *priesneri* Schmidt, 1939. Moreover, *O.* (*Pachylops*) *empetri* Wagner, 1977 is always < 3 mm with some specimens < 2.5 mm (Pagola-Carte and Ribes, 2008).

Such kind of considerations emanate both from the high species richness of *Orthotylus* and its allied genera and from the intricate sets of characters that can be found within such diversity. We are compelled to proceed with great caution (see at the end of the present Discussion). As a matter of fact, the genus *Orthotylus* is composed of approximately 400 species of several different lineages and obviously non-monophyletic (*cf.* Linnavuori, 1994; Yasunaga, 1999; Pagola-Carte and Ribes, 2007; Matocq and Pagola-Carte, 2019; Yasunaga and Shishido, 2020; Yasunaga *et al.*, 2023). As already mentioned, this genus is traditionally subdivided into several subgenera. Nonetheless, these subdivisions are predominantly based on western Palaearctic elements, and, therefore, the current classification system is often inapplicable to the Oriental members. Even so, the subgeneric placement of some western Palaearctic species is similarly a challenge (see, for example: Matocq and Pagola-Carte, 2019). Furthermore, according to several authors (Gessé and Goula, 2004; Goula and Ribes, 2008), whereas some keys to subgenera (*e.g.* Ehanno and Matocq, 1990) are accurate and useful, some others (*e.g.* Wagner and Weber, 1964; Wagner, 1974) may lead to error in some cases. In our opinion, more research on *Orthotylus s. l.* should provide more accurate identification keys, not only as a result of better diagnoses of the taxa involved but also due to a necessary taxonomic rearrangement.

As to Asian orthotyline plant bugs, several latest works proposed new genera (Yasunaga *et al.*, 2022) and upgraded two subgenera of *Orthotylus*, *Kiiorthotylus* Yasunaga, 1993 (Yasunaga *et al.*, 2023) and *Melanotrichus* Reuter, 1875 (Yasunaga and Shishido, 2020), to full genera. Liu and Zheng (2014), dealing with the fauna of China, had considered a separate genus *Labopidea* but not *Melanotrichus*, similarly to Schuh (2002-2013). Currently, the following seven subgenera are remaining under Palaearctic *Orthotylus*; four of them, indicated by an asterisk (*), were originally given generic level status and downgraded subsequently:

Labopidea Uhler, 1877*
Litocoris Fieber, 1860*
Pachylops Fieber, 1858*
Parapachylops Ehanno & Matocq, 1990
Pinocapsus Southwood, 1953
Pseudorthotylus Poppius, 1914*
Yamatorthotylus Yasunaga, 1999

[In addition to Palaearctic subgenera, *Ericinellus* Linnavuori, 1994 was established to accommodate the African species *O. ericinellae* Poppius, 1910 and *O. selene* Linnavuori, 1994.]

We have examined the type species of *Pseudorthotylus* and *Yamatorthotylus*. A single Palaearctic representative of *Pseudorthotylus*, *P. bilineatus*, appears to be distinct from any other congeners, as the species was liable to be regarded as a taxon of independent genus (including synonymies, *e.g.* Poppius, 1914; Southwood, 1953; Southwood and Leston, 1959; Ribes and Ribes, 1998; Goula and Ribes, 2007). *Pseudorthotylus* can be characterized by some distinctive features such as the narrow, elongate body form (Fig. 1g-h), dorsal vestiture pattern (presence of both simple and lanceolate scale-like setae: Fig. 6i), long antennal segment III (about 3/4 of segment II); short parempodia (Fig. 6k); and unique genitalic structures (Figs. 3, 6l-o), which, in our opinion, warrant the generic level status.

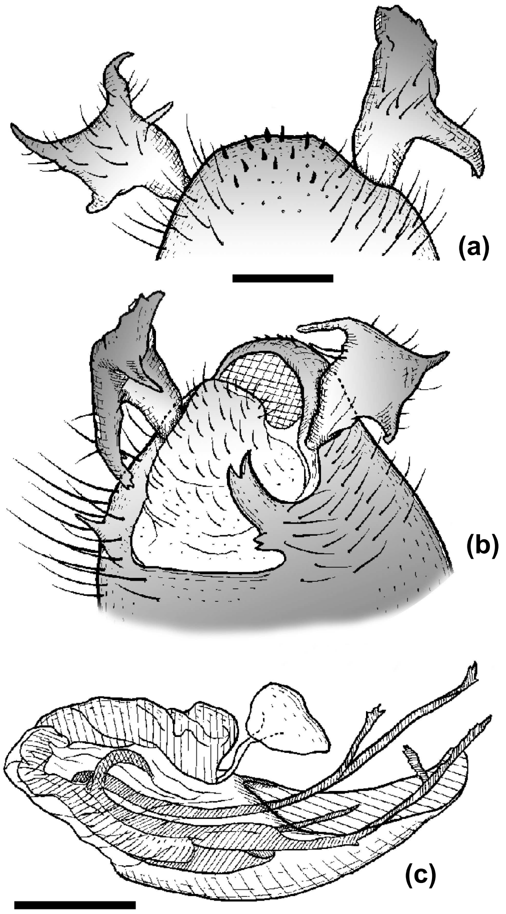

FIGURE 4. Male genitalia of *Yamatorthotylus xanthopoda*: (a)-(b) Genital segment (pygophore): (a) Ventral view; (b) Dorsal (slightly left lateral) view; (c) Endosoma (vesica) (Scale bars = 0.2 mm).

Also, the monotypic *Yamatorthotylus* can be separated from nominotypical *Orthotylus* in having the following distinct characters (*cf.* Figs. 1e, 4, 7): Body generally scarlet to reddish castaneous, small (total length < 4.5 mm), with contrastingly creamy yellow antennomeres II-IV and legs; very short antennal segment III (about 1/3 of segment II); metathoracic scent efferent system with narrow peritreme and opening (Fig. 7d); relatively short, elliptical parempodia (Fig. 7e-f); pygophore (male genital segment) dorsally with stout process base of left paramere (Fig. 4b), ventral apical part of pygophore with a field of short, stiff spinules

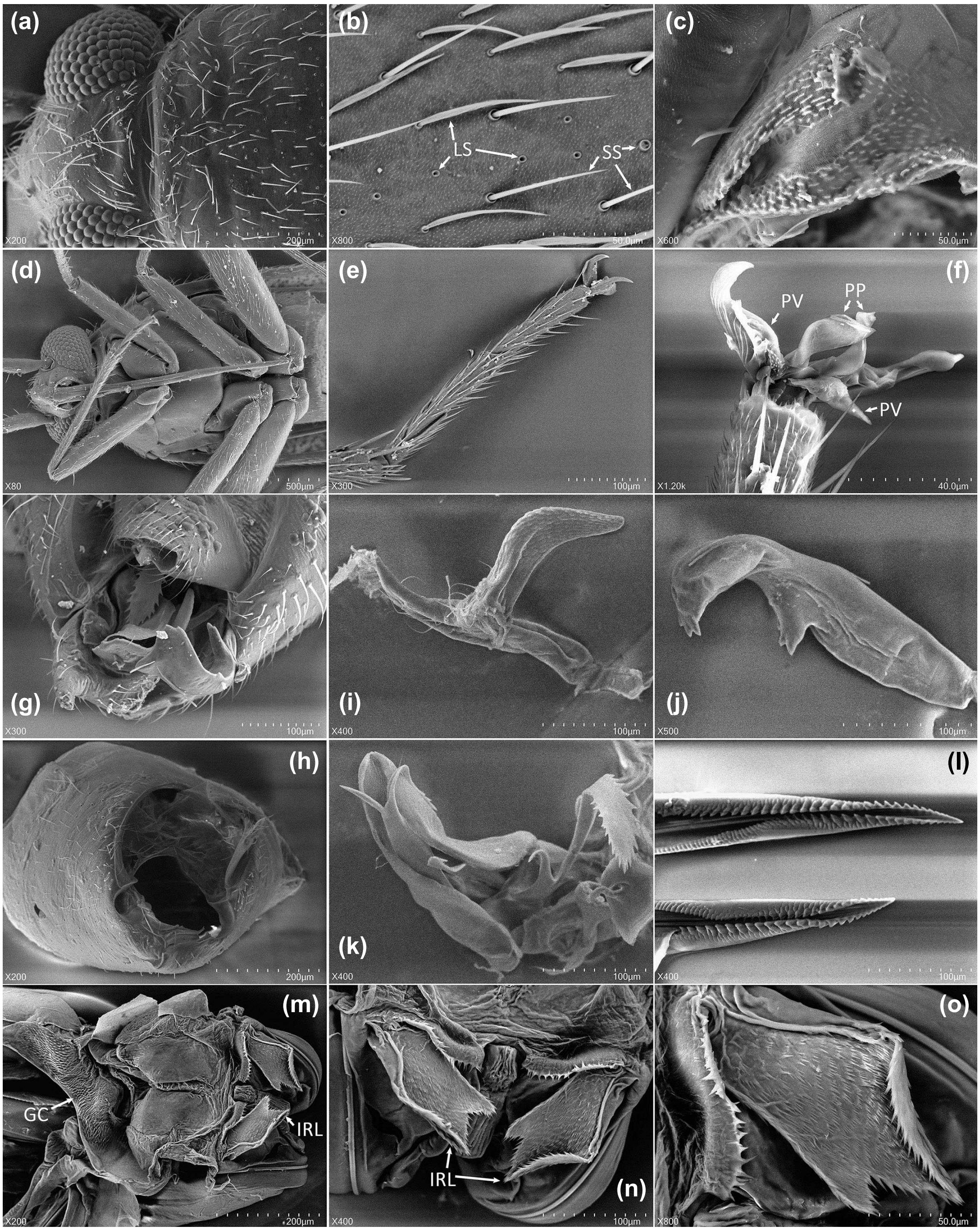

FIGURE 5. Scanning electron micrographs for *Siamorthotylus taksini*: (a) Head and pronotum, dorsal view (♂); (b) Vestiture on corium (♀); (c) Scent efferent system (♀); (d) Anterior body, ventral view (♂); (e) Metatarsus (♂); (f) Pretarsal structure of metaleg (♀); (g) Pygophore with parameres, dorsal view; (h) Same, parameres removed; (i) Left paramere; (j) Right paramere; (k) Endosoma (vesica) and phallotheca; (l) Ovipositor (gonapophysis I); (m) Genital chamber and posterior wall; (n)-(o) Posterior wall (Abbreviations: GC = genital chamber; IRL = interramal lobe; LS = lanceolate scale-like setae and socket; PP = parempodium; PV = pulvillus; SS = simple setae and socket).

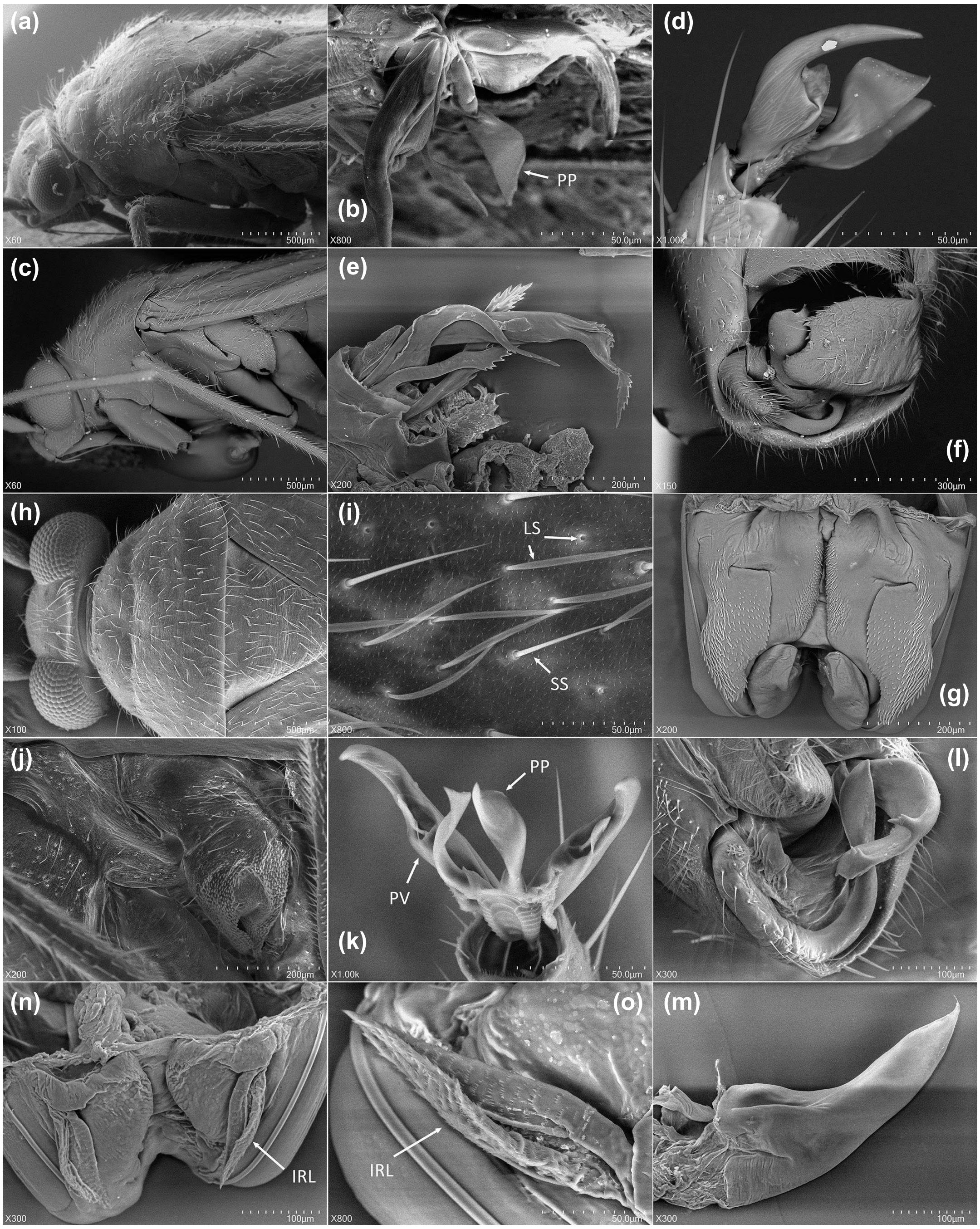

FIGURE 6. Scanning electron micrographs for: (a)-(b) *Orthotylus marginatus* from Germany (♀); (c)-(g) *Orthotylus pallens* (Matsumura, 1911) from Hokkaido, Japan (♂); (h)-(o) *Pseudorthotylus bilineatus* from Hokkaido, Japan / (a), (c) Anterior body, left lateral view: (a) ♀; (c) ♂; (b), (d), (k) Pretarsal structure of metaleg; (h) Anterior body, dorsal view (♂); (i) Vestiture on corium (♂); (e) Endosoma; (f) Pygophore, dorsal view; (g), (n)-(o) Posterior wall; (j) Thoracic pleura, left lateral view (♂); (l) Pygophore, left lateral view; (m) Phallotheca (Abbreviations: IRL = interramal lobe; LS = lanceolate scale-like setae and socket; PP = parempodium; PV = pulvillus; SS = simple setae and socket).

(Figs. 4a, 7i) similar to the so-called «cuspidate setae» recently found in several Halticini (Pagola-Carte, 2025); endosoma bearing two branched sclerites, rather slender and less dentate (Figs. 4c, 7j-k); and posterior wall with remarkably elongate, lanceolate, almost symmetrical interramal lobes (Fig. 7n-o). A single representative, *xanthopoda*, is an opportunist; the immature forms were found from various broadleaf trees, such as *Deutzia crenata* Sieb. & Zucc., *Hydrangea paniculata* Sieb. (Hydrangeaceae), *Fraxinus mandschurica* Rupr. (Bl.) Hara (Oleaceae), and *Mallotus japonicus* (Thunb. ex Murray) Muell. (Euphorbiaceae) (Yasunaga, 1999; Yasunaga *et al.*, 2001). The final instar nymph exhibits scarlet coloration (Fig. 1f), whereas those of typical *Orthotylus s. str.* species are generally pale green. Judging from the scarlet coloration, proportion of lengths between antennal segments II and III, general shape and zoophagous feeding habit, *Yamatorthotylus* appears to have closer relationship with *Pseudoloxops* Kirkaldy, 1905, rather than *Orthotylus*; both adult and immature forms of many *Pseudoloxops* congeners are known to have typically reddish antennomere I (Yasunaga *et al.*, 2001, 2022; Yasunaga and Duwal, 2017).

Again, it is worth remembering that the separation of both *Pseudorthotylus* and *Yamatorthotylus* from *Orthotylus s. str.* takes into account the whole combination of characters.

Eventually, we herein propose the following taxonomic changes:

Genus *Pseudorthotylus* Poppius, 1914 **stat. rev.**

Pseudorthotylus bilineatus (Fallén, 1807) **comb. nov.** [Transferred from *Orthotylus*]

Genus *Yamatorthotylus* Yasunaga, 1999 **stat. nov.** [Upgraded from subgen. of *Orthotylus*]

Yamatorthotylus xanthopoda (Yasunaga, 1999) **comb. nov.** [Transferred from *Orthotylus*]

Several previous authors, among them ourselves (*e.g.* Yasunaga, 1999; Goula and Ribes, 2008; Matocq and Pagola-Carte, 2019; Yasunaga *et al.*, 2023), have expressed the need of a world level revision of *Orthotylus s. l.* including a convergence of morphological, molecular and biological data. Such a comprehensive revision with acquisition of DNA sequence data is required for completing an unequivocal classification system. Meanwhile, we are compelled to proceed with great caution for taxonomic rearrangements, as previously stated. Nevertheless, in our opinion, the present proposals concerning *Siamorthotylus* **gen. nov.**, *Pseudorthotylus* Poppius, 1914 **stat. rev.** and *Yamatorthotylus* Yasunaga, 1999 **stat. nov.** fall outside that need for prudence, being feasible solutions to some specific weaknesses in current classification. Some of the other subgenera (*e.g. Litocoris* or *Pachylops*) also appear to differ significantly from *Orthotylus s. str.* For example, members of *Litocoris* bear only semi-erect black setae, their labium largely surpasses the apex of metacoxae and the endosomal sclerites are densely branched while the parameres are simple (Kožíšková, 1967; Wagner, 1974; Tamanini, 1976; Linnavuori, 1992). Concerning *Pachylops*, suffice to say that North American authors routinely include in *Melanotrichus* some of the species (*concolor* (Kirschbaum, 1856) and *virescens* (Douglas & Scott, 1865)) clearly belonging to *Pachylops* according to European ones (see: Henry, 1991; Wheeler and Henry, 1992). However, in the absence of a world-level comprehensive revision, we refrain from definitive nomenclatural treatment for those or other subgenera.

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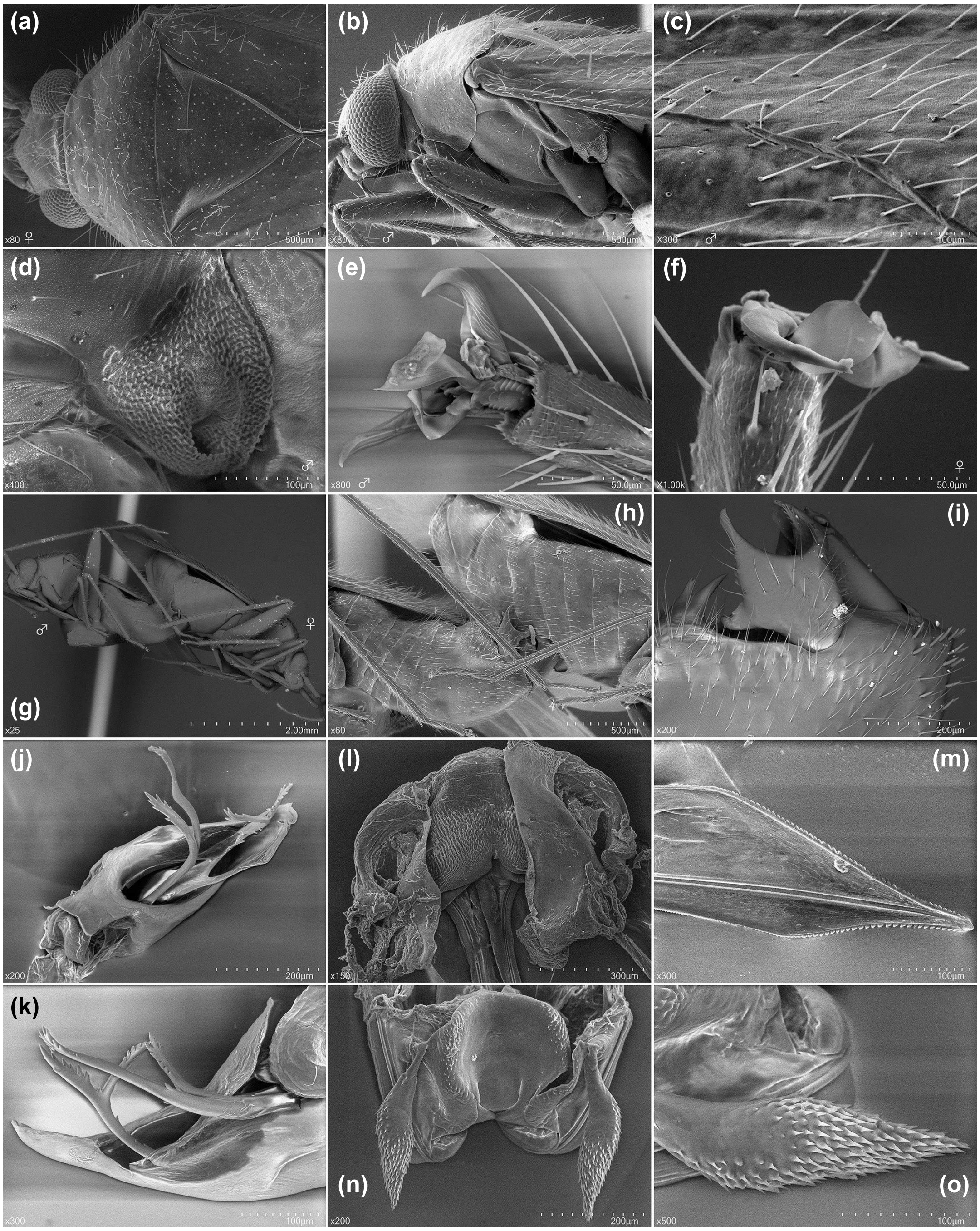

FIGURE 7. Scanning electron micrographs for *Yamatorthotylus xanthopoda* (paratypes): (a) Anterior body, dorsal view; (b) Same, left lateral view; (c) Vestiture on corium; (d) Scent efferent system; (e)-(f) Pretarsal structure of metaleg; (g)-(h) Copulation; (i) Pygophore with parameres; (j)-(k) Endosoma (vesica) and phallotheca; (l) Genital chamber; (m) Ovipositor (gonapophysis I); (n)-(o) Posterior wall.

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