European Journal of Taxonomy 957: 1–229
https://doi.org/10.5852/ejt.2024.957.2651
ISSN 2118-9773
www.europeanjournaloftaxonomy.eu
2024 · Selnekovič D. *et al.*

Monograph

urn:lsid:zoobank.org:pub:9957F2DF-3F31-4B58-84BC-2F8E0F45C6E3

Taxonomic revision of the genus *Elmomorphus* Sharp, 1888. II. Redescription of the genus and review of the species from India, Nepal, Bhutan, Myanmar, China, Thailand, Laos, Cambodia, and Vietnam (Coleoptera: Dryopidae)

Dávid SELNEKOVIČ [1,*], Manfred A. JÄCH [2] & Ján KODADA [3]

[1,3] Department of Zoology, Faculty of Natural Sciences, Comenius University in Bratislava, Ilkovičova 6, SK-842 15 Bratislava, Slovakia.
[2] Naturhistorisches Museum Wien, Burgring 7, A–1010 Wien, Austria.

[*] Corresponding author: david.selnekovic@uniba.sk
[2] Email: manfred.jaech@nhm-wien.ac.at
[3] Email: jan.kodada@uniba.sk

[1] urn:lsid:zoobank.org:author:D930D757-D929-4248-A29C-A857E0505345
[2] urn:lsid:zoobank.org:author:D749707A-8823-4110-8D51-BF5AF4E2820F
[3] urn:lsid:zoobank.org:author:6E88BFBB-8769-44EC-8285-29E357CEC064

Abstract. The genus *Elmomorphus* Sharp, 1888 is redescribed based on morphological characters. *Elmomorphus bryanti* Hinton, 1935, *E. montanus* (Grouvelle, 1913), *E. prosternalis* Hinton, 1935, and *E. striatellus* Delève, 1968 are redescribed based on type material. *Elmomorphus nepalensis* Satô, 1981 is redescribed based on material collected in the vicinity of the type locality. Eighteen species of *Elmomorphus* were known so far world-wide, and only five species have been recorded from the study area (India, Nepal, Bhutan, Myanmar, China, Thailand, Laos, Cambodia, and Vietnam). In the present revision, 45 new species are described: *E. auratus* sp. nov. (China), *E. auripilosus* sp. nov. (Vietnam), *E. bispinosus* sp. nov. (China), *E. calvus* sp. nov. (China, Vietnam), *E. catenatus* sp. nov. (China), *E. comosiclunis* sp. nov. (China), *E. corpulentus* sp. nov. (China), *E. cuneatus* sp. nov. (Thailand), *E. curvipes* sp. nov. (China, Vietnam), *E. dentipes* Kodada, Selnekovič & Jäch sp. nov. (China, Laos, Myanmar, Thailand, Vietnam), *E. depressus* sp. nov. (China), *E. donatus* Kodada, Selnekovič & Jäch sp. nov. (China, Vietnam), *E. ellipticus* sp. nov. (China), *E. elmoides* sp. nov. (Vietnam), *E. fusiformis* sp. nov. (China), *E. glabriclunis* sp. nov. (China), *E. globosus* sp. nov. (China), *E. hamatus* sp. nov. (China), *E. hongkong* sp. nov. (China), *E. horaki* Kodada, Selnekovič & Jäch sp. nov. (Cambodia, Myanmar, Thailand), *E. jendeki* Kodada, Selnekovič & Jäch sp. nov. (Vietnam), *E. jii* sp. nov. (China), *E. longitarsis* sp. nov. (Thailand), *E. mazzoldii* sp. nov. (Thailand), *E. minutus* sp. nov. (China), *E. oblongus* sp. nov. (Vietnam), *E. ovalis* Kodada, Selnekovič & Jäch sp. nov. (China), *E. parabrevicornis* sp. nov. (China), *E. paradonatus* Kodada, Selnekovič & Jäch sp. nov. (China), *E. paramontanus* Kodada, Selnekovič & Jäch sp. nov. (China, Laos, Malaysia, Myanmar, Thailand, Vietnam), *E. parvulus* sp. nov. (Thailand), *E. punctulatus* sp. nov. (China), *E. reticulatus* sp. nov. (China), *E. sausai* Kodada, Selnekovič & Jäch sp. nov. (Vietnam), *E. schillhammeri* sp. nov. (China), *E. schoenmanni* sp. nov. (China), *E. siamensis* Kodada, Selnekovič & Jäch sp. nov. (Cambodia, Laos, Myanmar, Thailand, Vietnam), *E. similis* sp. nov. (China, Laos, Vietnam), *E. simplex* sp. nov. (China), *E. simplipes* sp. nov. (Vietnam), *E. superficialis*

sp. nov. (China), *E. sulcatus* sp. nov. (China), *E. umphangicus* Kodada, Selnekovič & Jäch sp. nov. (Thailand), *E. vietnamensis* sp. nov. (Vietnam), and *E. yunnanensis* Kodada, Selnekovič & Jäch sp. nov. (China). The genus *Elmomorphus* is recorded for the first time from Bhutan, Cambodia, Myanmar, and Laos. In China (31 spp. from Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hong Kong, Hubei, Hunan, Jiangxi, Shaanxi, Yunnan, Zhejiang) and Vietnam (16 spp.), this genus is especially diverse.

Keywords. New species, morphology, taxonomy, key, water beetles.

Selnekovič D., Jäch M.A. & Kodada J. 2024. Taxonomic revision of the genus *Elmomorphus* Sharp, 1888. II. Redescription of the genus and review of the species from India, Nepal, Bhutan, Myanmar, China, Thailand, Laos, Cambodia, and Vietnam (Coleoptera: Dryopidae). *European Journal of Taxonomy* 957: 1–229.
https://doi.org/10.5852/ejt.2024.957.2651

Introduction

The genus *Elmomorphus* was erected by Sharp (1888) to include a single species, *E. brevicornis* Sharp, 1888, from Japan. Seventeen species were subsequently added by Grouvelle (1896, 1913), Hinton (1935), Nomura (1959), Chûjô & Satô (1964), Delève (1968, 1973), and Satô (1973, 1981, 1992). The genus is distributed from Sri Lanka northwards to the Himalayas, eastwards to China, Korea and Japan, and southwards through SE Asia (including the Philippines, see Freitag *et al.* 2016) to New Guinea.

Members of the genus are generally associated with running water. Adults inhabit streams and rivers, primarily in forested areas. They are usually found in accumulated waterlogged leaf packs, submerged wood, and rootlets. The larva of *E. brevicornis* was described by Hayashi & Kadowaki (2008) and Hayashi (2015); it was collected from submerged rootlets of willows and sedges.

Although no described species of *Elmomorphus* had been recorded from China, it became evident during the "China Water Beetle Survey" (1992–2004), that this country is home to an unexpectedly high number of *Elmomorphus* species (Kodada & Jäch 1995). Only four species, *Elmomorphus montanus* (Grouvelle, 1913) (NE India), *E. nepalensis* Satô, 1981 (Nepal), *E. prosternalis* Hinton, 1935 (Thailand), and *E. striatellus* Delève, 1968 (Vietnam), have been described from the entire study area so far. A fifth one, *E. bryanti* Hinton, 1935 (described from Malaysia), was subsequently recorded from Thailand (unfortunately without detailed locality data) by Shepard & Sites (2016), and it cannot be excluded that the specimens from Thailand were incorrectly identified. Here, we add another 45 species, all of them new to science.

The present revision of the species of *Elmomorphus* from India, Nepal, Bhutan, Myanmar, China, Thailand, Laos, Cambodia, and Vietnam is based partly on the unpublished study of Kodada (1993).

Material and methods

The present study is based on more than 6100 specimens from India, Nepal, Bhutan, Myanmar, China, Thailand, Laos, and Vietnam. A high percentage of the Chinese specimens were collected during the "China Water Beetle Survey" (CWBS) (1992–2004), a joint project of the Naturhistorisches Museum Wien, Vienna, Austria, and the Chinese Academy of Sciences (see Jäch & Ji 1995, 1998, 2003).

Label data of holotypes deposited in IAECAS and NMW are cited verbatim between quotation marks (labels of other specimens may deviate from the actual labels with regard to spaces, punctuation, and sequence of the data); individual labels are separated by a vertical bar; additional information and

corrections are provided between square brackets. The label data of the specimens of *E. nepalensis* are presented in coordinated standardised form.

In some widely distributed or morphologically variable new species, type specimens are designated only from the type locality or the type area, because due to the absence of molecular data, we could not decide whether certain morphological differences are to be regarded as intra- or interspecific.

The material used in the present study is deposited in the following institutions and private collections:
CBB = coll. David Boukal, České Budějovice, Czechia
CKB = coll. Ján Kodada, Comenius University, Bratislava, Slovakia
CPE = coll. Andreas Pütz, Eisenhüttenstadt, Germany
CSS = coll. William D. Shepard, Sacramento, California, USA
CWW = coll. A. Weigel, Wernburg, Germany
HNHM = Magyar Természettudományi Múzeum, Budapest, Hungary
IAECAS = Institute of Applied Ecology, Chinese Academy of Sciences, Shenyang, China
MNHN = Muséum national d'Histoire naturelle, Paris, France
NHMUK = Natural History Museum (formerly British Museum, Natural History), London, United Kingdom
NMB = Natural History Museum, Basel, Switzerland
NME = Naturkundemuseum Erfurt, Germany
NMPC = National Museum, Natural History Museum, Prague, Czechia
NMW = Naturhistorisches Museum Wien, Vienna, Austria

Dry specimens were relaxed in water with a small amount of concentrated acetic acid. Male genitalia were dissected, cleared in lactic acid for several days and temporarily mounted in Berlese's fluid on cavity slides. Female genitalia were observed in water or glycerol. After examination, the male genitalia were mounted in a drop of dimethyl hydantoin formaldehyde (DMHF) on the same card with the specimen. Female genitalia were stored in microvials filled with glycerol and pinned under the respective specimen. General observations and dissections were made under a Leica MZ16 stereo microscope with magnifications up to 120× and diffuse LED lighting. Drawings were hand-made with pencil, using a Leica drawing tube attached to a Leica DM 1000 microscope and subsequently inked. The specimens were photographed under a Zeiss Axio-Zoom.V16 stereo microscope and an attached Canon 5D Mark IV camera. For scanning electron microscopy, specimens were dehydrated in a series of graded ethanol and then air-dried from absolute ethanol, mounted on a stub, sputter-coated with gold and viewed and imaged using a TESCAN microscope.

Measurements were made with a Leica eyepiece micrometre. The following abbreviations for the measured characters are used in the text:
APD = linear distance between anterior angles of pronotum in dorsal aspect
EL = elytral length from anterior margin of scutellum to elytral apices
EW = greatest elytral width in dorsal aspect
ID = minimum linear distance between eyes in dorsal aspect
MsTL = maximum length of mesotibia
MtTL = maximum length of metatibia
PhL = greatest linear distance between base and apex of phallobase in lateral aspect
PL = pronotal length along midline
PrL = greatest linear distance between base and apex of parameres in lateral aspect
PrTL = maximum length of protibia
PW = maximum pronotal width
TL = linear distance between anterior pronotal margin and elytral apices along midline

The range of measured values and ratios is followed by the mean standard deviation, and the number of individuals measured.

The terminology primarily follows Kodada *et al.* (2016) with some additions to hind-wing venation (Kukalová-Peck & Lawrence 1993; Lawrence *et al*. 2011). For convenience, in the key to species and the species (re-)descriptions, the term "plastron" generally refers to "microplastron" (Thorpe 1950; Kodada & Jäch 1995), because the species of *Elmomorphus* do not possess a macroplastron.

Several species share morphological similarities, e.g., in the distribution of the plastron, the presence or absence of elytral striae, and in males, the presence of long setae on the labrum, prosternum, metaventrite, and near the apex of the fifth ventrite. Nevertheless, because of the lack of molecular data, we could not evaluate these morphological similarities phylogenetically and therefore decided not to define species groups.

Results

Taxonomy

Class Insecta Linnaeus, 1758
Order Coleoptera Linnaeus, 1758
Superfamily Dryopoidea Billberg, 1820 (1817)
Family Dryopidae Billberg, 1820 (1817)

Elmomorphus Sharp, 1888

Elmomorphus Sharp, 1888: 242–243 (type species: *E. brevicornis* Sharp, 1888, fixed by monotypy).
Dryopidius Grouvelle, 1896: 33 (type species: *D. castaneus* Grouvelle, 1896, fixed by subsequent designation (Kodada & Jäch 2006a: 61); synonymised by Hinton (1935: 170)).
Elmomorphus subgenus *Elmomorphellus* Chujô & Satô, 1964: 193 (type species: *E. sarawakensis* Chujô & Satô, 1964, fixed by monotypy; synonymised by Kodada *et al*. (2003)).

Elmomorphus – Zaitzev 1910: 19. — Hinton 1935: 170. — Bollow 1940: 59. — Jäch 1984: 313.

Type species

Elmomorphus brevicornis Sharp, 1888, fixed by monotypy.

Differential diagnosis

Elmomorphus is characterised by short, densely setose antennae with moderately enlarged pedicel (Figs 1A, 2A); antennomeres moderately produced mediad and gradually narrowed from the fourth to the terminal antennomere (Figs 1A, D, F, 2A–B); the mesofemur possesses a row of long setae (Fig. 4D); the lateral sensory area on the terminal maxillary palpomere is well delimited, but not located in a depression (Fig. 2F); the microplastron consists of flat oval scales on the dorsal surface (Fig. 4B), and of thin flattened setae on the ventral surface (Fig. 4C); macroplastron absent.

Several *Elmomorphus* species may resemble *Stenomystax* Kodada, Jäch, Čiampor, 2003 in the body form, in the sparsely setose dorsal surface, and the similar distribution of the microplastron. However, the latter genus lacks the row of long setae on the mesofemur, the pedicel is enormously enlarged and nearly as long as all following segments combined, the lateral sensory area on the terminal maxillary palpomere is placed in a distinct depression, and the dorsal microplastron consists of long thin flattened setae (see Kodada *et al*. 2003).

Redescription

Body form variously oblong-ovate to broadly oval, moderately to strongly convex dorsally, length without head (TL) 2.2–4.5 mm. Colouration of most species dark brown to black, except for usually

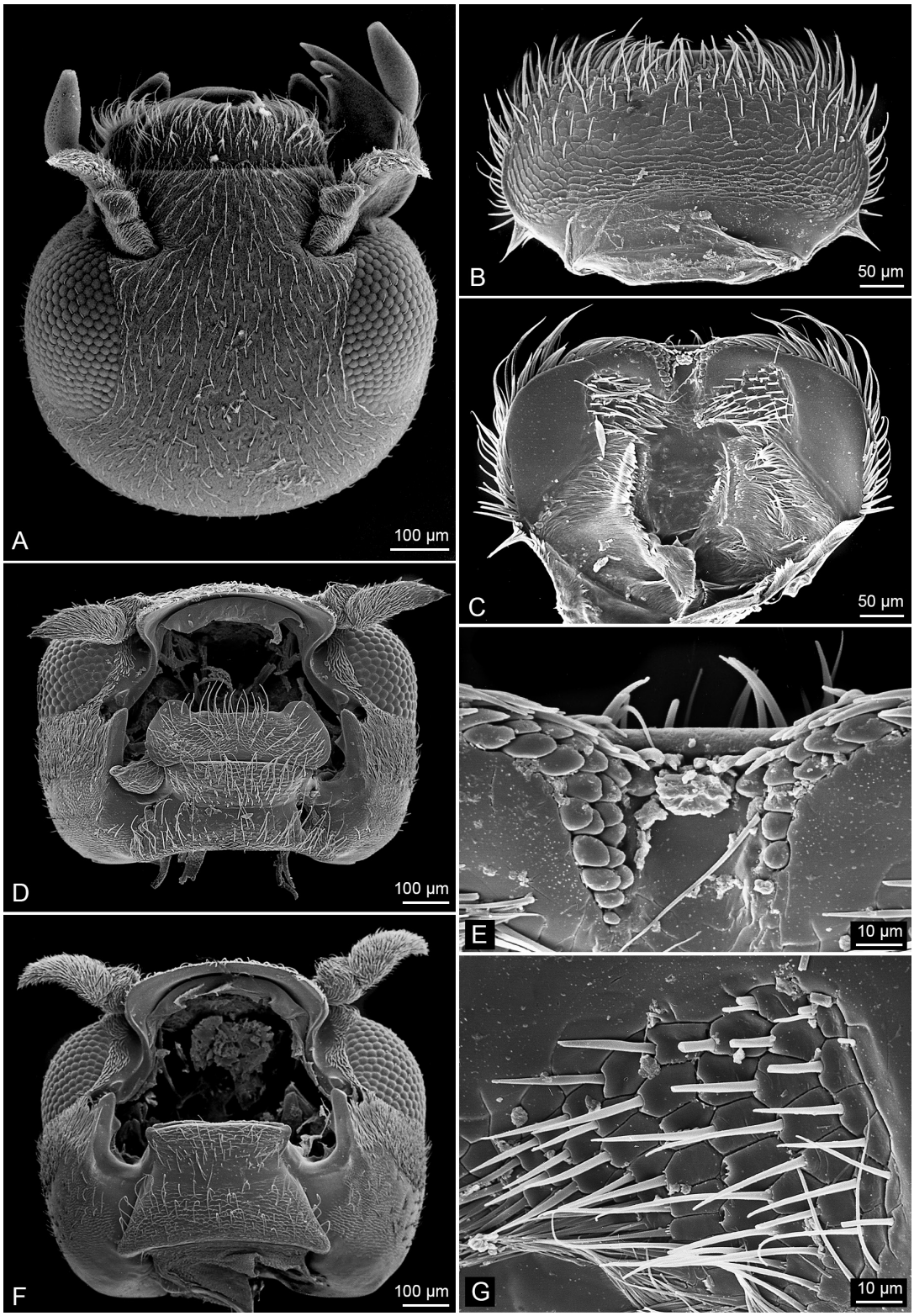

Fig. 1. Details of head. **A**. *Elmomorphus brevicornis* Sharp, 1888, male head. **B**. *E. paramontanus* Kodada, Selnekovič & Jäch sp. nov., labrum, dorsal aspect. **C**. *E. paramontanus*, labrum, ventral aspect. **D**. *E. brevicornis*, head, ventral aspect. **E**. *E. paramontanus*, medio-anterior portion of labrum in ventral aspect with flat setae. **F**. *E. paramontanus*, head, ventral aspect. **G**. *E. paramontanus*, flat papillae with seta on ventral side of labrum.

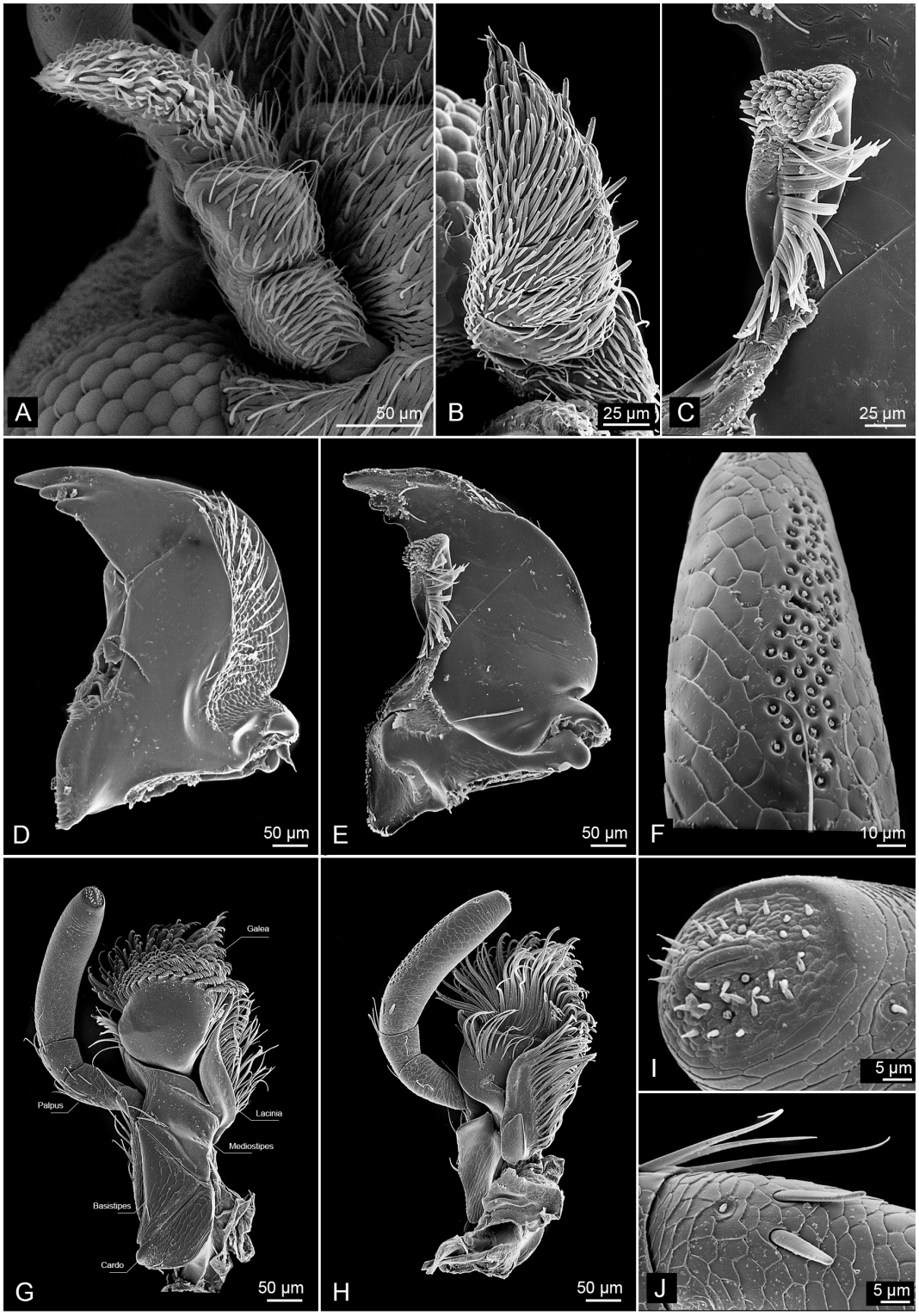

Fig. 2. Details of antennae and mouthparts. **A**. *Elmomorphus brevicornis* Sharp, 1888, left antenna, dorsal aspect. **B**. Same, frontal aspect. **C**. *E. brevicornis*, lacinia. **D**. *E. brevicornis*, right mandible, dorsal aspect. **E**. *E. brevicornis*, left mandible, ventral aspect. **F**. *E. paramontanus* Kodada, Selnekovič & Jäch sp. nov., lateral sensory area on terminal maxillary palpomere. **G**. *E. paramontanus*, maxilla, ventral aspect. **H**. Same, dorsal aspect. **I**. *E. paramontanus*, apical sensory area on terminal maxillary palpomere. **J**. *E. paramontanus*, basal sensory area on terminal maxillary palpomere.

paler reddish-brown mouthparts, antennae, trochanters, and tarsi. Immature specimens paler, sometimes entirely reddish-brown; pronotum and elytra in some species with weak metallic bronze lustre. Punctation consists of round setiferous, variously sized and dense punctures; surface between punctures smooth or microreticulate with irregular polygonal meshes, transverse lines, or minute round dimples; some species with flat ellipsoid microgranules located near edge of punctures. Pubescence uniform, without distinct patterns, consisting of thin, whitish or yellowish hair-like setae. Males of some species with clusters of conspicuous, long and erect setae on labrum, prosternal process, median part of metaventrite, and fifth ventrite. Microplastron consisting of flat oval scales on dorsal surface (Fig. 4B), and long thin flattened setae on ventral surface (Fig. 4C).

Head (Fig. 1) hypognathous, moderately retracted into prothorax, occipital region microreticulate, postoccipital region smooth. Cranium with round setiferous punctures (Fig. 1A); interstices smooth or microreticulate; microplastron present in varying extent or absent; microgranules present or absent. Anterior margin of frontoclypeus straight to weakly emarginate, with row of short, densely arranged setae (Fig. 1A); anterolateral angles rectangular; frontoclypeal suture absent. Eye large, oval, and moderately protuberant, interfacetal setae short (Fig. 1A). Antennal insertion concealed dorsally by margin of antennal fossa (Fig. 1A). Subantennal groove deep, reaching to about midlength of eye (Fig. 1D, F). Foramen occipitale large, shallowly emarginate dorsomedially, divided by narrow tentorial bridge. Anterior and posterior tentorial arms slightly invaginated, with two flat dorsal arms arising from anterior arms before connection with tentorial bridge. Cervical sclerite large; gula short, wider than long, microreticulate, not in the same plane as mentum; gular sutures convergent, straight (Fig. 1F). Submentum short, wider than long, microreticulate, separated from gula by distinct transverse groove corresponding to endocarina (Fig. 1D, F).

Labrum wider than long (Fig. 1B), concealed by clypeus; anterior margin straight or shallowly emarginate in middle; anterolateral angles rounded; dorsal surface with small round setiferous punctures; exposed part microreticulate; setae oriented anteromedially, gradually increasing in length anterolaterally; males in some species with transverse row of conspicuous, long and erect setae. Lateral tormal process narrow, inclined mesally; posteromedian process absent. Epipharynx with short anteromedian squamose setae (Fig. 1C, E), two admedian subapical groups of flat papillae, mesally oriented, thin setae (Fig. 1C, G), and with two dense clusters of medially oriented setae in basal half (Fig. 1C).

Antennae short, pectinate, densely setose (Figs 1A, D, F, 2A–B), 9- to 11-segmented, scapus longest, with transverse constriction dividing scapus into smaller basal and larger apical part (visible only when the antenna is detached); pedicel wider than long, moderately produced and rounded posterolaterally; antennomere 3 small, slightly longer than wide, expanded apically; following antennomeres wider than long, produced medially, each antennomere slightly narrower than preceding one; scapus and pedicel with sensilla chaetica, each following segment with numerous sensilla chaetica and two stout sensilla basiconica, and several bifurcated sensilla.

Mandible with four teeth apically (Fig. 2D–E), two of these teeth overlap in vertical axis and are therefore difficult to spot in dorsal view; exposed dorsolateral parts microreticulate and setose, separated by carinae. Mola short and slightly asymmetrical, without denticles (Fig. 2D). Prostheca well developed (Fig. 2E), broad, apically rounded, with densely arranged, hair-like setae along medial margin, and short conical sensilla dorsoapically.

Maxilla cardo microreticulate distally (Fig. 2G); basistipes triangular, microreticulate or smooth; mediostipes and palpifer with hair-like and short basiconical sensilla. Basigalea short (Fig. 2G–H), separated from other sclerites by distinct sutures; with row of thick hair-like sensilla along medial margin and thin hair-like sensilla medioventrally. Distigalea flattened (Fig. 2G–H), expanded apically,

with transverse rows of dense flat, medially curved sensilla on entire dorsal surface and in apical part of ventral surface, sensilla gradually decreasing in length medially. Lacinia narrow (Fig. 2G–H), pointed apically, with rows of long hair-like sensilla along mesal edge. Maxillary palpus about as long as maxilla (Fig. 2G–H), 4-segmented, palpomeres microreticulate; palpomere 1 short; palpomere 2 ca twice as long as wide, expanded apically; palpomere 3 slightly shorter than preceding ones; palpomere 4 long, fusiform, slightly longer than all preceding segments combined; palpomeres 1–3 with several hair-like sensilla laterally. Palpomere 4 with sensory areas: 1) lateral sensory area consisting of short sensilla arising from deep wide pits (Fig. 2F); 2) apical sensory area consisting of short basiconical sensilla and two elongate oval areas separated by ridge (Fig. 2I); 3) basal sensory area consisting of large flat sensilla with rounded apices (Fig. 2J); additional short basiconical sensilla scattered on basal and apical parts.

Mentum (Fig. 3A) ca 3.0 × as wide as long, microreticulate, with hair-like sensilla; anterior and posterior margin broadly emarginate; lateral margins rounded; anterolateral angles protruding, rounded; mental apodemes short, stout, curved medially. Submentum and mentum flat, prementum inclined dorsally. Palpigers partly concealed by mentum, fused mesally (Fig. 3B). Labial palpus short (Fig. 3B), 3-segmented; palpomere 1 short; palpomere 2 ca twice as long as wide, expanded apically, curved medially; palpomere 3 broad, fusiform; palpomeres 1–2 with long hair-like apical sensilla; palpomere 3 with short basiconical sensilla apically (Fig. 3D) and peg-like sensilla basally. Ligula strongly sclerotised mesally, weakly sclerotised anterolaterally; surface with several hair-like sensilla mesally and row of stout, apically rounded, basiconical sensilla anteriorly (Fig. 3B–C). Hypopharynx with various groups of sensilla; adoral surface with short L-shaped sclerite on each side.

Pronotum transverse, widest at base (Fig. 3E); disc slightly to strongly convex; with round setiferous punctures, smooth or microreticulate, with minute round dimples; microgranules present or absent; setae short, thin, decumbent; microplastron usually present, rarely completely absent; anterior angles deflexed, strongly protruding, acute; posterior angles acute; anterior margin concave, marginal bead broad, often interrupted in middle; posterior margin trisinuate; lateral sides convergent, straight to broadly rounded, sometimes slightly concave near anterior angles, lateral bead complete and narrow. Hypomeron slightly wider than profemur, punctate, covered with microplastron. Prosternum in front of coxae slightly longer than prosternal process (Fig. 3F); surface with microplastron, except for anterior narrow triangular area in some species. Prosternal process wider than long (Fig. 3F), expanded posteriorly; lateral edges divergent, straight to rounded, apical margin rounded or broadly V-shaped; lateral margins often raised, median keel often present; males of some species possess a cluster of long erect setae anterolaterally; microplastron present or absent. Procoxal cavities open posteriorly; trochantin large, strongly sclerotised (Fig. 3F). Mesonotum short, transverse, microreticulate, punctate; scutellar shield abruptly elevated, small, subtriangular; surface smooth or microreticulate, with small sparse setiferous punctures; microplastron absent. Mesoventrite short, with deep cavity for reception of prosternal process, laterally separated from oblique procoxal rests by strongly raised, semicircular carinae protruding near anterior margin. Mesanepisternum large, trapezoidal, with strongly raised oblique carina separating exposed parts from those covered by prosternum; surface with microplastron. Mesepimeron narrow, transverse, covered with microplastron; mesocoxal cavities oval. Metanotum weakly sclerotised, with distinctly separated sclerites. Metaventrite large (Fig. 3G), distinctly longer than prosternum in front of procoxae; lateral parts with microplastron; disc lacking microplastron, convex, flat or depressed, in males of several species with two clusters of long semierect setae (Fig. 3G). Metaventral discrimen present, rather indistinct, forming longitudinal keel in some species; metakatepisternal suture complete, separating laterally narrowed metakatepisterna; metaventral process as wide as prosternal process, lateral margins often raised. Metanepisternum narrow, trapezoidal exposed part covered with microplastron, separated laterally by longitudinal carina. Metanepimerite small, trapezoidal, concealed by elytral epipleuron. Metacoxal cavities large, transverse, oblique.

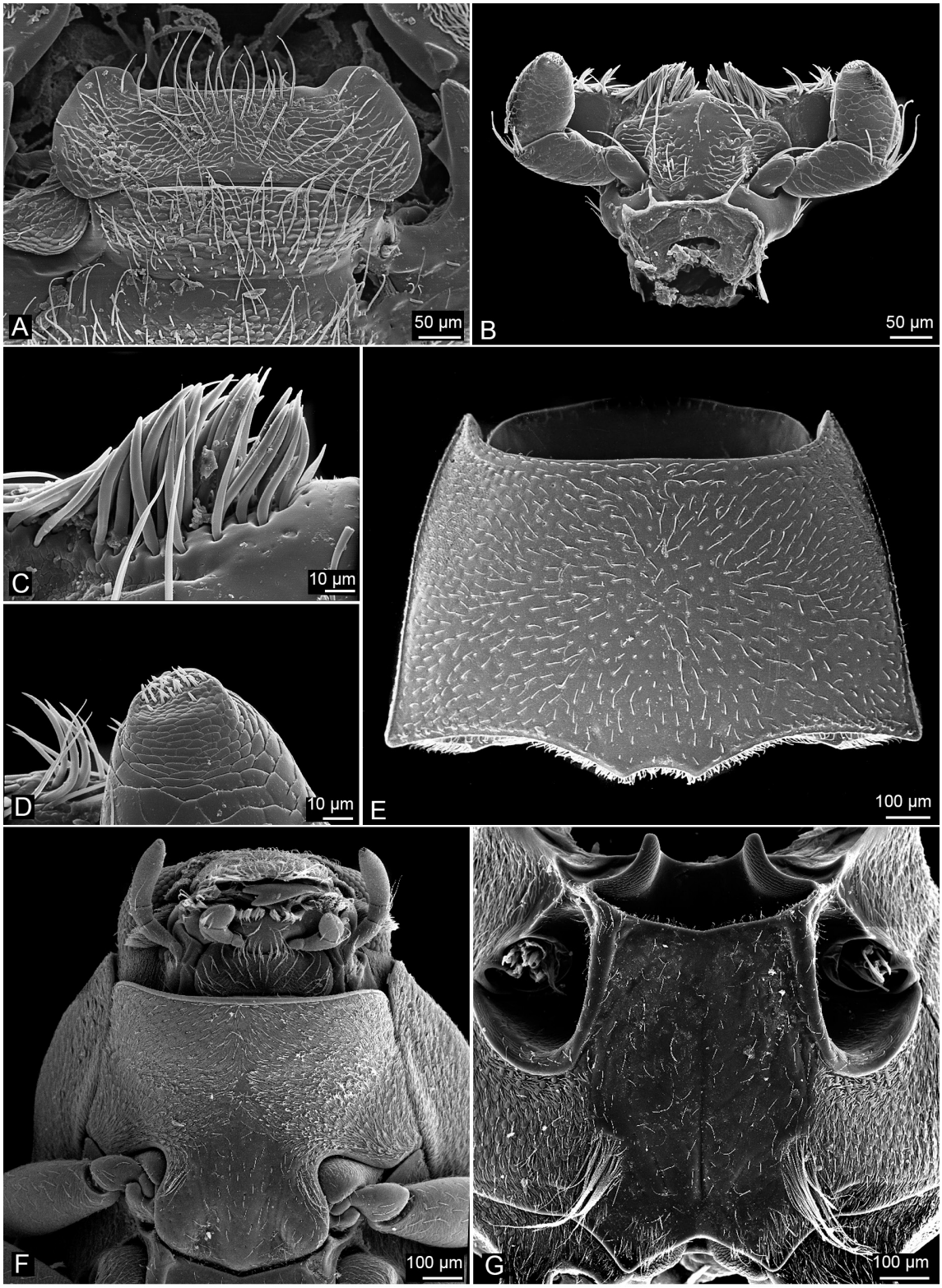

Fig. 3. Details of mouthparts and thorax. **A**. *Elmomorphus brevicornis* Sharp, 1888, mentum and submentum. **B**. *E. brevicornis*, labium, ventral aspect. **C**. *E. brevicornis*, setae in distal portion of ligula. **D**. *E. brevicornis*, apical sensory area on terminal labial palpomere. **E**. *E. paramontanus* Kodada, Selnekovič & Jäch sp. nov., pronotum. **F**. *E. brevicornis*, male head and prosternum. **G**. *E. amamiensis* Nomura, 1959, male metaventrite.

Elytra ovate to broadly-ovate, moderately to strongly convex; lateral margins variously arched to nearly subparallel; humeral protuberances indistinct; apices acute. Surface microreticulate or smooth, round setiferous punctures scattered over entire surface and large punctures arranged in nine longitudinal rows (striae). Striae variously evolved or absent; microgranules present or absent; microplastron usually present, absent only in a few species; epipleura narrow, covered with microplastron; oval stridulatory ventral area located near elytral base (Fig. 4A).

Hind wing well developed, ca twice as long as elytra (Fig. 5A); subcosta posterior (ScP) subparallel with anterior margin and radial bar; radial bar strong; radial cell incomplete, radial cross vein r4 distinct; radius posterior (RP) reduced basally; cross vein rp-mp2 distinct; media posterior (MP_{1+2}) distinct; medial spur short; MP_{1+2} and MP_{3+4} connected by cross-vein; first cubito-anal cell present; second cubito-anal cell absent; medial field with five veins almost reaching margin: MP_3, MP_4, CuA_2, AA_3, AA_4 (according to Lawrence *et al.* 2011); anal field with single distinct vein AP_{3+4}; apical field with two pigmented strips interrupted in the middle.

Legs long and strong. Procoxa transverse, trapezoidal, expanded basally; mesocoxa subglobular, with small ventral protuberance near trochanter attachment; metacoxa large, transverse, expanded medially, excavate posteriorly for reception of metafemur. Trochanter prominent, with oblique femoral attachment. Femora all clavate, widest around middle, excavate distally for reception of tibia; surface microreticulate, with small, sparse setiferous punctures; mesofemur dorsally with longitudinal row of long semierect setae (Fig. 4D). Tibiae slightly widened apically, nearly straight or more or less curved medially, with minute sparse setiferous punctures, and with densely arranged short setae on mesal face along apical half (Fig. 4F); tibial spurs short. Males in some species with apically expanded meso- or metatibia, or with metatibia bearing a tooth on the mesal face. Tarsal formula 5/5/5; tarsus shorter than tibia; tarsomeres 1–4 short, subequal in length; tarsomere 5 at least as long as the three preceding segments combined. Claws long (Fig. 4E), large, strongly curved, foreclaws in males of several species shortened and dorsoventrally expanded; empodium with two conspicuous setae.

Abdomen with five ventrites (Fig. 4G); lateral margins of ventrites feebly arched; all ventrites covered with microplastron, which may be absent in median parts of ventrites 1, 2 and 5; ventrite 1 usually with two longitudinal admedian keels, intercoxal process rounded. Apex of male ventrite 5 rounded, excised or emarginate (Fig. 4H), in some species with clusters of long setae (Fig. 4J). Female ventrite 5 rounded at apex, usually with short narrow longitudinal keel (Fig. 4I). Most tergites weakly sclerotised; tergite VIII membranous medially. Sternite VIII in both sexes sclerotised laterally, membranous medially; in males with short strut on anterior edge (Fig. 5B); in females, strut almost as long as abdomen (Fig. 5D). Sternite IX in males clavate, strongly sclerotised laterally, strut long (Fig. 5C); in females forming part of the ovipositor. Phallobase tubular, expanded proximally; partly overlapping parameres; with basal opening on left side. Parameres long, curved ventrad, narrowed apically, bearing scattered short sensilla. Median lobe shorter than parameres, apex narrowly rounded in ventral aspect; basal apophyses short; ventral sac without spines; sclerotised fibula absent or present, varying in size. Each of the two testes consists of three tubular follicles in peritoneal membrane; vas deferens relatively short; glandulae accessoriae large; ductus ejaculatorius covered by muscle tissue. Bursa copulatrix often with microspines. Spermatheca tubular, accessory gland large. Ovipositor long (Fig. 5E), strongly sclerotised; valvifers fused medially, expanded distally, up to 4.0× as long as right coxite; coxites flattened laterally, acute apically, right one ca 1.30× as long as left one, bearing scattered short sensilla. Six ovarioles on each side joined to lateral oviducts connecting to oviductus communis.

Secondary sexual dimorphism

Males of several species possess clusters of conspicuous semierect setae on the labrum, prosternal process, metaventrite, and near the apex of the fifth ventrite (Fig. 3G). Metaventral disc often depressed

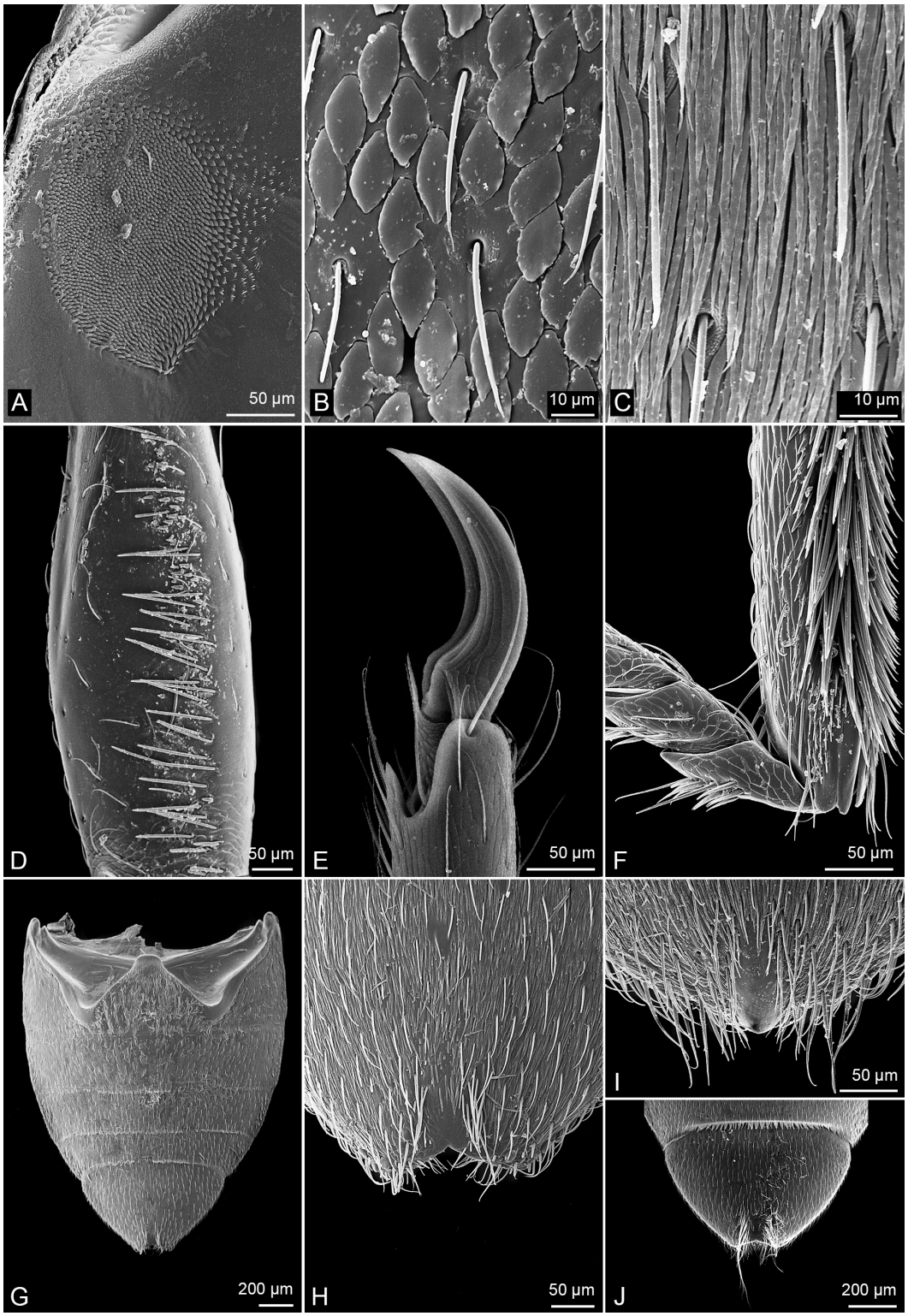

Fig. 4. Details of elytra, legs, and abdomen. **A**. *Elmomorphus paramontanus* Kodada, Selnekovič & Jäch sp. nov., stridulatory area on anterolateral ventral surface of elytron. **B**. *E. brevicornis* Sharp, 1888, dorsal plastron on elytra (scales). **C**. *E. brevicornis*, ventral plastron on abdomen (setae). **D**. *E. brevicornis*, dorsal face of left mesofemur. **E**. *E. brevicornis*, male foreclaws, lateral aspect. **F**. *E. paramontanus*, apex of protibia. **G**. *E. brevicornis*, male abdomen, ventral aspect. **H**. *E. brevicornis*, apex of male ventrite 5. **I**. *E. paramontanus*, apex of female ventrite 5. **J**. *E. amamiensis* Nomura, 1959, male ventrite 5.

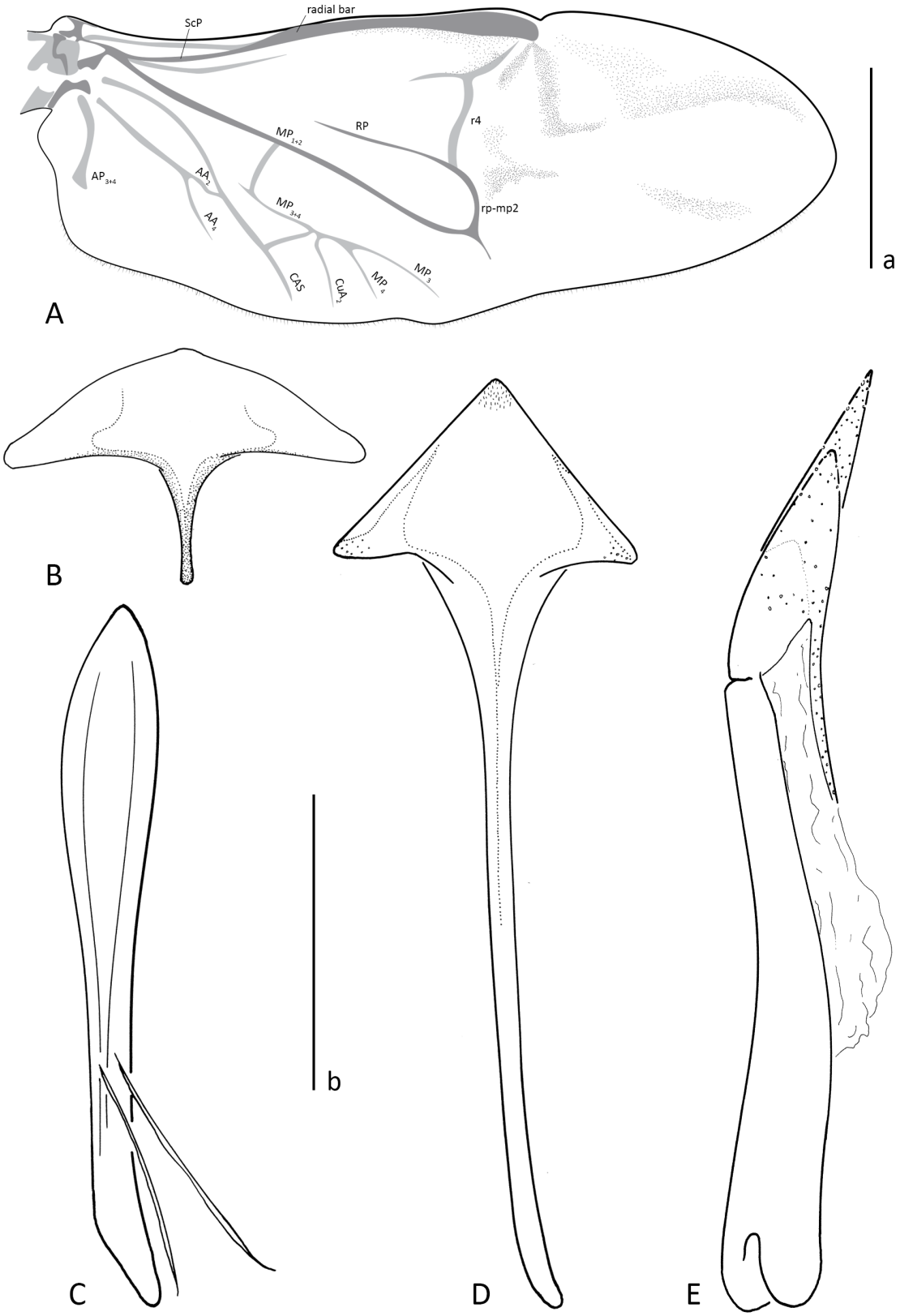

Fig. 5. *Elmomorphus brevicornis* Sharp, 1888 (CKB). **A**. Hind wing. **B**. Male sternite VIII. **C**. Male sternite IX. **D**. Female sternite VIII. **E**. Ovipositor, lateral aspect. Scale bars: a = 1.0 mm; b = 0.5 mm.

in males. Male mesotibiae in some species abruptly expanded in the distal half (Fig. 72); metatibiae of some species with a more or less prominent subapical tooth on the mesal face (Figs 68, 70, 72). Male ventrite 5 in some species with transverse depression and apical convexity.

Females lack long setae on the labrum, prosternal process and metaventrite; tibiae simple; ventrite 5 often with a short longitudinal subapical keel (Fig. 4I) and posterior margin excised in some species.

Immature stages

The larva of *E. brevicornis* was described by Hayashi & Kadowaki (2008) and Hayashi (2015). It was found in submerged rootlets of *Salix* and *Carex* (Hayashi, pers. comm.).

Distribution

From Sri Lanka northwards to the Himalayas, eastwards to China, Korea and Japan, southwards through SE Asia (incl. the Philippines, see Freitag *et al.* 2016) to New Guinea.

Habitat

Adults inhabit streams and rivers, primarily in forested areas (Fig. 107). Specimens can be found in waterlogged packs of partly decaying leaves, on rootlets and submerged wood, where they probably feed on algae or decaying plant tissue.

Key to the species of Elmomorphus Sharp, 1888 of India, Nepal, Bhutan, Myanmar, China, Thailand, Laos, Cambodia, and Vietnam

1. Elytra at least partly covered with plastron 2
– Elytra without plastron, or with only several plastron scales along lateral sides 35

2. Elytra entirely covered with plastron..... 3
– Elytra partly covered with plastron..... 8

3. Pronotum almost entirely covered with plastron, only narrow transverse area along posterior pronotal margin without plastron 4
– Pronotal disc smooth, plastron present only in lateral bands..... 5

4. Elytron has nine hardly discernible rows of large punctures in shallow striae (Fig. 6). Parameres in lateral aspect subequal in width from base nearly to apical third, then gradually moderately narrowed to relatively broad, rounded apex (Fig. 7); phallobase wide. Bursa copulatrix with few moderately sized sclerotised spines in proximal and distal parts (Fig. 12A). Body large, TL: ♂♂ 3.36–3.84 mm (3.53±0.16, n=10), ♀♀ 3.41–3.77 mm (3.54±0.12, n=10). Distribution: Laos, Vietnam..... ***E. striatellus*** Delève, 1968
– Elytron without longitudinal rows of large punctures and striae (Fig. 8). Parameres in lateral aspect gradually narrowed nearly from base to narrow, rounded apex (Fig. 9), phallobase slender. Bursa copulatrix with numerous moderately large, sclerotised spines (Fig. 12B) scattered along whole length. Body small, TL: ♂♂ 2.73–3.20 mm (3.00±0.16, n=10), ♀♀ 2.78–3.25 mm (2.99±0.14, n=10). Distribution: Cambodia, Myanmar, Thailand, Laos, Vietnam .... ***E. siamensis*** Kodada, Selnekovič & Jäch sp. nov.

5. Male with conspicuous long erect setae on labrum, and small clusters of setae on prosternal process, median part of metaventrite and ventrite 5. Body elongate oval, slender; legs slender (Fig. 10). Lateral pronotal sides convergent and nearly straight (Fig. 10). Lateral plastron bands on pronotum wide, each ca one-third of pronotal width. Phallobase remarkably long in relation to parameres (Fig. 11A–B); PhL/PrL: 2.59–2.89 mm (n=3). TL: ♂♂ 3.04–3.18 mm (3.12±0.07, n=4), ♀♀ 3.27–3.47 mm (3.38±0.09, n=6). Distribution: China (Fujian, Guangdong, Hunan).... ***E. parabrevicornis*** sp. nov.

– Male with several hardly discernible erect setae on labrum, and clusters of setae on prosternal process and median part of the metaventrite or lacking such setae. Body wider, legs shorter and stouter (Figs 13, 14, 16). Lateral pronotal sides convergent and weakly rounded. Phallobase short to relatively long (Figs 15, 17); PhL/PrL at most 2.30 6

6. Phallobase long and slender (Fig. 11C), PhL/PrL: 1.84–2.26 (2.09 ± 0.16, n = 10). Male with several long and erect setae on labrum, and with inconspicuous clusters of erect setae on prosternal process and median part of metaventrite. Lateral plastron bands on pronotum wide, each at least one-third of pronotal width. Large species, TL: ♂♂ 3.07–3.38 mm (3.23 ± 0.09, n = 10), ♀♀ 3.06–3.51 mm (3.29 ± 0.14, n = 10). Distribution: Vietnam ..... ***E. auripilosus*** sp. nov.
– Phallobase short (Figs 15, 17), PhL/PrL up to 1.83. Male without long and erect setae on labrum, prosternal process, or median part of metaventrite. Moderately large species, TL up to 3.21 mm..... 7

7. Lateral plastron bands on pronotum narrow, each covering about one fifth of pronotal width. Body broadly ovate (Fig. 14), strongly convex, moderately large, TL: ♂♂ 2.69–3.07 mm (2.89 ± 0.09, n = 20), ♀♀ 2.89–3.21 mm (3.03 ± 0.09, n = 22); elytral sides broadly rounded. Parameres in lateral aspect weakly curved ventrad and weakly narrowed apically (Fig. 15). Bursa copulatrix with distal cluster of spines, and one small sclerite near midlength (Fig. 18B). Distribution: China (Anhui, Fujian, Guangdong, Jiangxi, Zhejiang). ..... ***E. auratus*** sp. nov.
– Lateral plastron bands on pronotum moderately wide, each covering about one quarter of pronotal width. Body narrow, small, TL: ♂♂ 2.21–2.67 mm (2.49 ± 0.13, n = 10), ♀♀ 2.21–2.89 mm (2.61 ± 0.20, n = 10); elytral sides less rounded (Fig. 16). Parameres in lateral aspect more strongly curved and strongly narrowed apically (Fig. 17). Bursa copulatrix with distal cluster of numerous small spines and with several larger spines scattered on proximal and intermediate parts (Fig. 18C). Distribution: Cambodia, Myanmar, Thailand, Vietnam .... ***E. horaki*** Kodada, Selnekovič & Jäch sp. nov.

8. Elytron with large strial punctures arranged in nine longitudinal rows, striae usually well impressed; small punctures scattered over entire surface 9
– Elytron without larger punctures arranged in striae, small punctures scattered over entire surface 14

9. Large species, elongate-oval (Fig. 19), TL: ♂♂ 3.86–4.13 mm (4.00 ± 0.11, n = 7), ♀♀ 3.95–4.29 mm (4.17 ± 0.14, n = 5). Cranium almost entirely covered with plastron, except for narrow median line on vertex. Pronotum with large microgranules. Elytra with plastron arranged in wide lateral bands reaching from elytral side to third stria. Distribution: China (Yunnan)..... ***E. fusiformis*** sp. nov.
– Moderately large species, TL up to 3.60 mm. Head with triangular or semicircular area on vertex without plastron. Pronotum without microgranules. Lateral plastron bands on elytra narrower, reaching fourth longitudinal row at most..... 10

10. Males with conspicuous long setae on labrum, and with clusters of setae on prosternal process and metaventrite. Body elongate, slender, weakly to moderately convex, widest behind elytral midlength 11
– Males without long setae on labrum, prosternal process, or metaventrite. Body wide and strongly convex 12

11. Pronotum with narrow plastron bands along entire lateral sides. Body elongate, weakly convex (Fig. 21), widest behind elytral midlength, TL: ♂♂ 2.47–2.68 mm (2.55 ± 0.06, n = 10), ♀♀ 2.65–2.94 mm (2.81 ± 0.09, n = 10). Lateral pronotal sides straight. Parameres narrow, subequal in width nearly to apex, strongly curved in apical half (lateral aspect); phallobase almost straight (Fig. 22). Proximal and distal parts of bursa copulatrix with large sclerotised spines (Fig. 28A). Longitudinal

rows on elytra may be obliterated and hardly discernible in some specimens. Distribution: Vietnam ..... ***E. elmoides*** sp. nov.

– Pronotal plastron confined to anterolateral parts. Body convex (Fig. 23) and large, TL: ♂♂ 3.17–3.35 mm (3.25 ± 0.06, n = 7), ♀♀ 3.15–3.45 mm (3.30 ± 0.11, n = 10). Lateral pronotal sides distinctly rounded. Parameres wider, gradually narrowed from base nearly to apex, nearly straight (lateral aspect); phallobase strongly curved (Fig. 24). Bursa copulatrix without sclerotised spines (Fig. 28B). Distribution: China (Guangxi), Vietnam ..... ***E. calvus*** sp. nov.

12. Elytron with nine longitudinal rows of large punctures, but without distinct striae (Fig. 25). Plastron bands in anterior two-thirds of elytra narrow, reaching only eighth longitudinal row. Prosternal process with median keel flat, without depression. Ventrite 1 lacking plastron medially. Aedeagus as in Fig. 26. TL: ♂♂ 2.31–2.55 mm (n = 3), ♀♀ 2.53–2.94 mm (2.71 ± 0.17, n = 4). Distribution: China (Hong Kong). ..... ***E. hongkong*** sp. nov.

– Elytron with nine well impressed striae with large punctures. Plastron bands in anterior two-thirds of elytra wider, reaching sixth stria..... 13

13. Prosternal process with transverse depression posteromedially. Strial punctures separated by ca 0.5–1.0 × puncture diameter. Ventrite 2 entirely covered with plastron. TL: 3.58 mm (n = 1). Bursa copulatrix without microsclerites (Fig. 28C). Distribution: China (Guangxi) .. ***E. depressus*** sp. nov.

– Prosternal process without depression posteromedially. Strial punctures close to each other, often confluent. Ventrite 2 without plastron medially. Parameres shorter than phallobase, widest at basal third, strongly narrowed to acute apices, dorsal outline strongly arcuate, ventral one almost straight (Fig. 30) (all in lateral aspect); phallobase narrow, PhL/PrL: 1.40–2.00 (1.80 ± 0.17, n = 10). TL: ♂♂ 2.36–2.61 mm (2.44 ± 0.08, n = 10), ♀♀ 2.53–2.76 mm (2.63 ± 0.07, n = 10). Distribution: China (Fujian, Guangdong, Guangxi) ..... ***E. sulcatus*** sp. nov.

14. Pronotum with plastron present at least anterolaterally, or along entire lateral sides. Elytral plastron in lateral band 15

– Pronotum without plastron. Elytra with plastron confined to posterolateral parts 28

15. Pronotum with plastron confined to anterolateral parts..... 16

– Pronotum with plastron along entire lateral sides..... 22

16. Elytral plastron bands narrow, covering less than one-tenth of elytron width (in elytral midlength); plastron absent on basal fourth of elytra. Elytra widest around midlength (Fig. 31). Broadly oval and strongly convex. Phallobase short and robust; parameres long and narrow, moderately curved (Fig. 32). TL: ♂ 3.32 mm (n = 1), ♀ 3.31 mm (n = 1). Distribution: China (Fujian) .... ***E. corpulentus*** sp. nov.

– Plastron bands on elytra moderately wide, each covering at least one-quarter of elytron width (in elytral midlength); plastron nearly reaching elytral base. Body form slenderer. Aedeagus different from above 17

17. Elytra widest before middle..... 18

– Elytra widest at or behind the middle. Usually larger species..... 19

18. Plastron bands on elytra wide, each covering nearly half of elytron width (in elytral midlength). Pronotum and elytra weakly convex (Fig. 33). Larger, TL: ♂ 2.71 mm (n = 1), ♀♀ 2.79–3.01 mm (n = 2). Phallobase moderately long and slender; parameres long and slender, PhL/PrL: 1.53 (n = 1) (Fig. 34). Distribution: China (Guangxi)..... ***E. ellipticus*** sp. nov.

– Plastron bands on elytra narrow, each covering approximately one-quarter of elytron width (in elytral midlength). Pronotum and elytra strongly convex (Fig. 35). Smaller, TL: ♂ 2.63 mm

(n = 1), ♀♀ 2.60–2.83 mm (n = 2). Phallobase short and wide, parameres short, PhL/PrL: 1.67 (n = 1) (Fig. 36). Distal part of bursa copulatrix with numerous scattered spines (Fig. 37B). Distribution: Thailand ..... ***E. mazzoldii*** sp. nov.

19. Male with transversal row of long setae on labrum and two clusters of long setae in lateral portions of prosternal process. Plastron bands on elytra wide, each covering approximately two-thirds of elytron width (behind elytral midlength). Parameres long and slender, PhL/PrL: 1.36 (Fig. 38). TL: 2.60–2.80 mm. Distribution: Malaysia, ? Thailand ..... ***E. bryanti*** Hinton, 1935
– Male without clusters of long setae on labrum and prosternal process. Plastron bands on elytra narrower than above 20

20. Prosternal process with strongly arched median keel (Fig. 39A). Metaventrite posteriorly with short median keel (raised discrimen). [Description based on a single female from southern Thailand; no additional specimens known.] ..... ***E. prosternalis*** Hinton, 1935
– Prosternal process with median keel only moderately raised. Metaventrite without median keel.. 21

21. Phallobase long and robust, 2.3 × as long as parameres (Fig. 39C–E). TL 3.35 mm. Known only from NE India (Arunachal Pradesh) ..... ***E. montanus*** (Grouvelle, 1913)
– Phallobase shorter and slenderer, 1.37–1.81 × as long as parameres; parameres longer and slenderer (Fig. 41). TL: ♂♂ 2.90–3.33 mm (3.07 ± 0.12, n = 26), ♀♀ 2.88–3.35 mm (3.20 ± 0.14, n = 9). Distribution: China (Guangdong, Hong Kong, Yunnan), Laos, Malaysia, Myanmar, Thailand, Vietnam ..... ***E. paramontanus*** Kodada, Selnekovič & Jäch sp. nov.

22. Cranium and ventrites entirely covered with plastron. Elytra with wide lateral plastron bands, each covering more than two-thirds of elytron width (measured in elytral midlength) (Fig. 42). Phallobase short and robust (Fig. 43). Body small, TL: ♂♂ 2.69 mm (n = 1), ♀♀ 2.66–2.74 mm (2.71 ± 0.04, n = 4). Distribution: Thailand ..... ***E. cuneatus*** sp. nov.
– Head with small, triangular, or semicircular area on vertex without plastron. First two ventrites medially without plastron 23

23. Body ovate, elytra widest behind middle (Fig. 44). Small, TL: ♂♂ 2.64–2.90 mm (2.76 ± 0.10, n = 5), ♀♀ 2.46–3.12 mm (2.83 ± 0.30, n = 6). Pronotal disc weakly convex; pronotal sides nearly straight. Elytral plastron band covers nearly half of elytron width (in midlength). Body with weak bronze lustre. Parameres rather short and broad (Fig. 45). Distribution: Thailand ..... ***E. umphangicus*** Kodada, Selnekovič & Jäch sp. nov.
– Body oval, elytra widest around middle (Figs 46, 48, 52, 54) 24

24. Small species, TL: ♂♂ 2.41–2.62 mm (2.54 ± 0.07, n = 6), ♀♀ 2.60–2.81 mm (2.71 ± 0.07, n = 6). Pronotal disc strongly convex; pronotal sides distinctly rounded (Fig. 46). Tarsus short; terminal protarsomere approximately as long as preceding segments combined. Distal part of bursa copulatrix with numerous small microsclerites arranged in row dorsally and with small clusters of microsclerites in lateral parts (Fig. 55A). Aedeagus as in Fig. 47. Distribution: Thailand..... ***E. parvulus*** sp. nov.
– Moderately large species, with TL at least 2.93 mm. Pronotal disc weakly to moderately convex. Terminal protarsomere as long as, or longer than preceding tarsomeres combined. Microsclerites on bursa copulatrix not arranged in dorsal row 25

25. Elytral plastron bands wide, each covering approximately two-thirds of elytron width (in elytral midlength). Elytra oval, widest around middle (Fig. 48). Pronotum and elytra black with weak bronze lustre. Aedeagus as in Fig. 49. TL: ♂♂ 3.07–3.15 mm (3.10 ± 0.03, n = 4), ♀♀ 3.15–3.28 mm (3.21 ± 0.05, n = 5). Distribution: Vietnam ..... ***E. sausai*** Kodada, Selnekovič & Jäch sp. nov.
– Elytral plastron bands narrower, each covering less than half of elytron width (in elytral midlength) 26

26. Tarsi rather short, terminal protarsomere as long as preceding segments combined (Fig. 53A). Pronotum moderately convex, elytra strongly so (Fig. 52). Distal part of bursa copulatrix with several small lateral microsclerites, except distally (Fig. 55B). Aedeagus as in Fig. 51. TL: ♂♂ 3.29–3.67 mm (3.37±0.15, n=4), ♀♀ 3.51 mm (n=1). Distribution: China (Yunnan) ..... ***E. yunnanensis*** Kodada, Selnekovič & Jäch sp. nov.
– Tarsi long, terminal protarsomere approximately 1.3× as long as preceding segments combined..... 27

27. Bursa copulatrix with four, rather large, lateral spines (Fig. 55C). Small and slender species (Fig. 52), TL: ♂♂ 2.93–3.09 mm (n=3), ♀♀ 3.15–3.32 mm (n=2). Aedeagus as in Fig. 53C. Distribution: Thailand ..... ***E. longitarsis*** sp. nov.
– Bursa copulatrix on each side with one sizeable sclerite bearing one spine (Fig. 55D). Moderately large and wide species (Fig. 54), TL: ♀♀ 3.38–3.54 mm (n=3). Distribution: China (Hunan) ..... ***E. bispinosus*** sp. nov.

28. Male: labrum, prosternal process, and median part of metaventrite without conspicuous clusters of long setae; disc of metaventrite weakly convex; tibiae without teeth, not abruptly expanded in distal half. Female: distal part of bursa copulatrix with large separate spines located laterally and dorsally, or with dorsal and lateral microsclerites bearing small spines (Fig. 60) 29
– Male: labrum with conspicuous long erect setae in a transverse row; anterolateral parts of prosternal process and median part of metaventrite with small clusters of setae; disc of metaventrite depressed; metatibiae simple (Figs 61, 63, 65), or each with conspicuous tooth (Figs 68, 70, 72). Female: distal part of bursa copulatrix with small spines arranged in dorsal row or scattered over lateral parts (Figs 67, 74)..... 30

29. Pronotum moderately convex, lateral sides straight (Fig. 56). Plastron areas on elytra narrower than length of metatarsus (measured along elytral suture). Elytra with weak but apparent microreticulation. Aedeagus (Fig. 57): phallobase long and slender, slightly widened near base, PhL/PrL: 1.70–2.19 (1.92±0.15, n=8); parameres widest near base, toward apices almost equally wide and moderately curved ventrad, apex widely rounded (lateral aspect); penis narrowly rounded apically (lateral aspect); sclerotised fibula long, relatively slender. Bursa copulatrix with one dorsal and two lateral microsclerites bearing small spines (Fig. 60A). TL: ♂♂ 2.41–2.70 mm (2.59±0.10, n=8), ♀♀ 2.65–3.06 mm (2.86±0.12, n=11). Distribution: Bhutan, Nepal..... ***E. nepalensis*** Satô, 1981
– Pronotum strongly convex, lateral sides broadly rounded (Fig. 58). Plastron areas on elytra as wide as, or wider than metatarsus length (measured along elytral suture). Elytral microreticulation almost inapparent. Aedeagus (Fig. 59): phallobase relatively short and slender, slightly expanded toward base, PhL/PrL: 1.35–1.48 (n=3); parameres evenly narrowed to apices, slightly curved ventrad, apex narrowly rounded (lateral aspect); penis narrowly rounded apically. Bursa copulatrix with sizeable, separate dorsal and lateral spines (Fig. 60B). TL: ♂♂ 2.55–2.68 mm (n=3), ♀♀ 2.65–2.95 mm (n=2). Distribution: China (Yunnan)..... ***E. punctulatus*** sp. nov.

30. Male metatibia simple, without tooth (Figs 61, 63, 65); mesotibia not abruptly expanded in distal half..... 31
– Male metatibia with conspicuous tooth; mesotibia sometimes abruptly expanded in distal half (Figs 68, 70, 72)..... 33

31. Smaller, slender, less convex species (Fig. 61), TL: ♂♂ 2.59–2.97 mm (2.81±0.09, n=25), ♀♀ 2.91–3.19 mm (3.01±0.08, n=20). Penis weakly expanded before apex (lateral aspect) (Fig. 62). Distal part of bursa copulatrix with dorsal spines, sometimes forming irregular dorsal row (Fig. 67A). Distribution: Vietnam ..... ***E. simplipes*** sp. nov.

– Larger, wider, and more convex species, TL over 3.0 mm (Figs 63, 65). Penis not expanded apically, rounded in lateral aspect (Figs 64, 66). Distal part of bursa copulatrix with spines arranged in dorsal row and small groups laterally; spines may also be present on ventral side of proximal part of bursa copulatrix (Fig. 67B–D)..... 32

32. Bursa copulatrix (Fig. 67B–C) with large sclerite; spines arranged in distinct dorsal row and in two small groups ventro-laterally; proximal part of bursa copulatrix with semicircular sclerotised strip ventrally. TL: ♂♂ 3.09–3.50 mm (3.30 ± 0.10, n = 20), ♀♀ 3.35–3.66 mm (3.51 ± 0.09, n = 19). Distribution: China (Jiangxi, Yunnan), Vietnam..... ***E. donatus*** Kodada, Selnekovič & Jäch sp. nov.
– Distal part of bursa copulatrix with spines dorsally and lateraly, and also ventrally on proximal part (Fig. 67D). TL: ♂♂ 2.97–3.58 mm (3.24 ± 0.14, n = 20), ♀♀ 3.14–3.79 mm (3.34 ± 0.14, n = 20). Distribution: China (Guizhou, Yunnan)..... ***E. paradonatus*** Kodada, Selnekovič & Jäch sp. nov.

33. Parameres constricted in the middle (ventral aspect); apices subtruncate in lateral aspect (Fig. 69). Distal part of bursa copulatrix with spines scattered over lateral parts, dorsal row absent (Fig. 74A). TL: ♂♂ 2.94–3.33 mm (3.13 ± 0.08, n = 29), ♀♀ 2.81–3.32 mm (3.11 ± 0.12, n = 22). Distribution: China (Guangdong, Yunnan), Laos, Vietnam ..... ***E. similis*** sp. nov.
– Parameres evenly narrowed to apices or slightly constricted medially; apices narrowly rounded (Figs 71, 73). Distal part of bursa copulatrix always with distinct dorsal row of spines; sometimes few spines scattered on lateral parts (Fig. 74B–C)..... 34

34. Male: metatibia slender, straight; mesotibia without expansion on mesal side of distal half (Fig. 70). Female: Distal part of bursa copulatrix with spines arranged in dorsal row and scattered over lateral parts (Fig. 74B). TL: ♂♂ 2.67–3.32 mm (2.89 ± 0.14, n = 63), ♀♀ 2.71–3.37 mm (3.03 ± 0.15, n = 38). Distribution: Myanmar, China (Yunnan), Laos, Thailand, Vietnam..... ..... ***E. dentipes*** Kodada, Selnekovič & Jäch sp. nov.
– Male: metatibia strongly curved; mesotibia with expansion on mesal side of distal half (Fig. 72). Female: distal part of bursa copulatrix with spines arranged in dorsal row, lateral spines absent (Fig. 74C). TL: ♂♂ 2.78–3.48 mm (3.22 ± 0.11, n = 66), ♀♀ 2.83–3.45 mm (3.24 ± 0.14, n = 27). Distribution: China (Anhui, Fujian, Guangdong, Guangxi, Hong Kong, Hunan, Jiangxi, Yunnan, Zhejiang), Vietnam ..... ***E. curvipes*** sp. nov.

35. Plastron on pronotum distinct, covering large areas anterolaterally. Cranial surface almost entirely covered with plastron, except for small median longitudinal area on vertex. Remarkedly large, elongate oval (Fig. 75), TL: ♂♂ 4.06–4.34 mm (n = 3), ♀♀ 4.46 mm (n = 1). Aedeagus as in Fig. 76. Distribution: China (Shaanxi)..... ***E. catenatus*** sp. nov.
– Pronotum without plastron, or rarely (*E. jendeki* sp. nov.) with several plastron scales in extremities of anterior angles 36

36. Elytra with nine longitudinal rows of large punctures, usually located in striae. Small punctures scattered over entire elytral surface. Ventrite 1 without plastron medially (except *E. jii* sp. nov.) 37
– Elytra with small punctures scattered over entire surface, longitudinal rows of larger punctures usually absent, if present (*E. superficialis* sp. nov.), then first ventrite entirely covered with plastron. 44

37. Head covered with plastron, except for median semicircular area on vertex. Anterior angles of pronotum seldom with several plastron scales. Relatively large species, TL: ♂♂ 3.47–3.85 mm (3.60 ± 0.14, n = 7), ♀♀ 3.64–4.16 mm (3.87 ± 0.17, n = 10). Aedeagus as in Fig. 78. Distribution: Vietnam..... ***E. jendeki*** Kodada, Selnekovič & Jäch sp. nov.
– Plastron on head confined to small areas around antennal insertions. Pronotum without plastron..... 38

38. Pronotal surface between punctures with distinct microreticulation forming minute, densely arranged dimples 39
– Pronotal surface between punctures smooth, without microreticulation 40

39. Larger species, TL: ♂♂ 4.15–4.36 mm (4.27±0.07, n=8), ♀♀ 4.03–4.38 mm (4.24±0.13, n=5). Elytra widest behind middle (Fig. 79). Pronotum and elytra microgranulate on entire surface. Lateral sides of pronotum distinctly rounded. Phallobase remarkably long and slender (Fig. 80). Distribution: China (Guizhou) ..... ***E. schillhammeri*** sp. nov.
– Smaller species, TL: ♂♂ 3.42–3.56 mm (n=2), ♀♀ 3.42–3.70 mm (3.55±0.09, n=10). Elytra widest before middle (Fig. 81). Microgranules present on posterolateral parts of pronotum, absent on elytra. Lateral sides of pronotum weakly rounded. Distribution: China (Guizhou, Hubei, Hunan) ..... ***E. globosus*** sp. nov.

40. Cranial surface strongly microreticulate, with large confluent punctures and microgranules. Microgranules also present on entire surface of pronotum and elytra. Phallobase very long and slender (Fig. 84), PhL/PrL: 2.85 (n=1). Ventrite 5 rounded at apex in both sexes. Large, TL: ♂♂ 3.80–3.84 mm (n=2), ♀♀ 3.87–4.13 mm (n=3). Distribution: China (Yunnan) ..... ***E. ovalis*** Kodada, Selnekovič & Jäch sp. nov.
– Microgranules confined to lateral parts of pronotum, absent on elytra; head sometimes with minute, rather indistinct microgranules 41

41. Males with long erect setae on labrum, small setal clusters on prosternal process and median part of metaventrite. Ventrite 5 rounded at apex. Head with indistinct microgranules in some specimens. Elytral microreticulation formed by small irregular meshes. Body relatively small, TL: ♂♂ 2.92–3.27 mm (3.10±0.15, n=4), ♀ 3.58 mm (n=1). Aedeagus as in Fig. 86. Distribution: China (Yunnan) ..... ***E. minutus*** sp. nov.
– Specimens of both sexes without groups of long setae on labrum, prosternal process, or median part of metaventrite 42

42. Vertex surface distinctly microreticulate. Elytral microreticulation formed by irregular meshes. Ventrite 5 rounded at apex. Phallobase short in relation to parameres (Fig. 88), PhL/PrL: 1.28–1.32 (n=2). TL: ♂ 3.72 mm (n=1), ♀♀ 4.05–4.13 mm (n=2). Distribution: China (Hunan) ..... ***E. jii*** sp. nov.
– Vertex smooth, without microreticulation or microgranules 43

43. Elytral microreticulation formed by transverse lines. Pronotum strongly convex, anterior angles strongly deflexed. Ventrite 5 in males with small excision at apex. Phallobase long (Fig. 91A), PhL/PrL: 2.03 (n=1); parameres wide, their ventral outline nearly straight almost to apex, dorsal one along basal half and then moderately curved to narrow, acute apices (lateral aspects). TL: ♂ 2.98 mm (n=1), ♀♀ 3.07–3.21 mm (n=2). Distribution: China (Guangxi) ..... ***E. schoenmanni*** sp. nov.
– Elytral microreticulation formed by polygonal meshes. Pronotum less convex, anterior angles moderately deflexed. Ventrite 5 without apical excision in both sexes. Phallobase long (Fig. 91B–C), PhL/PrL: 1.76–2.29 (2.02±0.13, n=9); parameres with moderately curved ventral and dorsal outline, widest basally, gradually evenly narrowed to narrow acute apices (lateral aspect). TL: ♂♂ 3.14–3.34 mm (3.27±0.06, n=9), ♀♀ 3.36–3.47 mm (3.41±0.05, n=4). Distribution: Vietnam ..... ***E. vietnamensis*** sp. nov.

44. Elytral microreticulation strong, consisting of dense irregular meshes (Fig. 92). Elytral punctures very small, indistinct, scattered. Aedeagus as in Fig. 93. TL: ♂♂ 3.00–3.54 mm (3.30±0.17, n=11), ♀♀ 3.29–3.50 mm (3.39±0.10, n=4). Distribution: China (Hainan) ..... ***E. reticulatus*** sp. nov.

– Elytral microreticulation fine, consisting of small irregular meshes. Punctures on elytra distinct, scattered; if arranged in longitudinal rows, then ventrite 1 entirely covered with plastron 45

45. Elytra with large shallow punctures arranged in nine longitudinal rows and small punctures scattered over entire surface..... 46
– Elytra with small, scattered punctures, longitudinal rows absent..... 47

46. Smaller species, TL: ♂♂ 3.21–3.52 mm (3.36 ± 0.10, n = 13), ♀♀ 3.24–3.75 mm (3.49 ± 0.14, n = 13), body strongly convex and broadly oval (Fig. 94). Punctures on pronotal disc approximately as large as those on head. Parameres near apex slightly curved ventrad (Fig. 95, lateral aspect). Distribution: China (Anhui, Fujian, Jiangxi) ..... ***E. superficialis*** sp. nov.
– Larger species, TL: ♂♂ 3.58–4.11 mm (3.75 ± 0.14, n = 10), ♀♀ 3.74–4.00 mm (3.88 ± 0.08, n = 10), body moderately convex and elongate (Fig. 96). Punctures on pronotal disc distinctly smaller than those on head. Parameres near apex strongly curved ventrad (Fig. 97, lateral view). Distribution: China (Hunan) ..... ***E. hamatus*** sp. nov.

47. Plastron covering almost entire frontoclypeus. Body oblong oval, moderately convex (Fig. 98), TL: ♂♂ 3.21–3.50 mm (3.34 ± 0.09, n = 8), ♀♀ 3.42–3.58 mm (3.48 ± 0.05, n = 8). Ventrite 5 emarginate at apex in males. Aedeagus as in Fig. 99. Distal part of bursa copulatrix with numerous scattered small spines (Fig. 106B). Distribution: Vietnam..... ***E. oblongus*** sp. nov.
– Plastron on head confined to small areas around antennal insertions..... 48

48. Ventrite 5 in both sexes strongly convex anteriorly, deflexed posteriorly; plastron absent on large median portion; conspicuous long setae absent in both sexes. TL: ♂♂ 3.14–3.63 mm (3.39 ± 0.11, n = 15), ♀♀ 3.36–3.70 mm (3.50 ± 0.12, n = 10). Distribution: China (Fujian, Guangdong, Guangxi, Hong Kong) ..... ***E. glabriclunis*** sp. nov.
– Ventrite 5 evenly convex in both sexes; simple or with large oval area bearing long conspicuous setae in males..... 49

49. Ventrite 5 simple in both sexes, without plastron along posterior margin. Punctures on pronotum and elytra weak. Aedeagus (Fig. 103) with parameres moderately curved behind middle, widest at base, then evenly gradually narrowed into rounded apices (lateral aspect). Phallobase robust, expanded near middle, moderately curved, longer than parameres, PhL/PrL: 1.39–1.75 (1.55 ± 0.10, n = 15). Distal part of bursa copulatrix with small scattered lateral microsclerites (Fig. 106D). TL: ♂♂ 3.36–3.89 mm (3.57 ± 0.12, n = 15), ♀♀ 3.24–3.96 mm (3.70 ± 0.20, n = 15). Distribution: China (Fujian, Hunan, Jiangxi, Zhejiang)..... ***E. simplex*** sp. nov.
– Ventrite 5 in male with large oval area bearing long setae, conspicuously protruding posterior margin of ventrite (Fig. 104). Punctures on pronotum and elytra rather deep. Aedeagus (Fig. 105) with parameres strongly curved near middle, widest at base; subequal in width until apical third, then distinctly narrowed into acute apices (lateral aspect). Phallobase as long or moderately longer than parameres: PhL/PrL: 1.00–1.24 (1.14 ± 0.07, n = 7), relatively robust, widest and moderately bent near middle. Bursa copulatrix with numerous small microsclerites scattered on proximal and distal part (Fig. 106E). TL: ♂♂ 3.59–3.87 mm (3.69 ± 0.08, n = 10), ♀♀ 3.41–4.03 mm (3.69 ± 0.26, n = 5). Distribution: China (Fujian, Guangdong)..... ***E. comosiclunis*** sp. nov.

The species of Elmomorphus Sharp, 1888 of India, Nepal, Bhutan, Myanmar, China, Thailand, Laos, Cambodia, and Vietnam

The species are listed in the same sequence as they appear in the identification key.

Elmomorphus striatellus Delève, 1968
Figs 6–7, 12A, 107A, 108A

Elmomorphus striatellus Delève, 1968: 150–151 (original description; figure).

Differential diagnosis

Elmomorphus striatellus (Fig. 6) is characterised by having the dorsal surface covered with plastron, except for a narrow area along the posterior pronotal margin. The presence of plastron on the prosternal process is also a characteristic feature. Each elytron possesses nine shallow longitudinal striae. Phallobase and parameres are rather short and robust (Fig. 7). Proximal and distal part of bursa copulatrix with sclerotised spines (Fig. 12A).

This species most closely resembles *E. siamensis* sp. nov., but it differs from the latter in the presence of elytral striae and the larger size, TL: ♂♂ 3.36–3.84 mm (3.53±0.16, n=10), ♀♀ 3.41–3.77 mm (3.54±0.12, n=10) versus TL: ♂♂ 2.73–3.20 mm (3.00±0.16, n=10), ♀♀ 2.78–3.25 mm (2.99±0.14, n=10) in *E. siamensis*; the parameres are distinctly broader, with broadly rounded apices; the phallobase is shorter and wider (Fig. 7); the bursa copulatrix has distinctly fewer spines (Fig. 12A).

Type material

Holotype

VIETNAM • ♂; " ♂ | VIETNAM, Prov. Nghe-An, forestière Quy-shâu, à la lumière | forêt pluv. trop. semidecid., 24.VIII.1963, T. PÓCS | Holotypus 1967 Elmomorphus striatellus Delève [white label with red margins] | Holotype [red label] | J. Delève det. 1967 Elmomorphus striatellus n. sp. | Elmomorphus striatellus Deleve"; HNHM.

Paratype

VIETNAM • 1 ♀; same collection data as for holotype; " ♀"; "Paratypus 1967 Elmomorphus striatellus Delève"; HNHM.

Additional material examined

LAOS – **Nam Ngang Province** • 2 ♂♂, 4 ♀♀; "LAOS-CE, 1-18.v.2001, Boli Kham Xai prov., 18°21′N 105°08′E BAN NAPE (8 km NE), ~600m, C.L.Peša leg."; CKB, NMW.

VIETNAM – **Hoa Binh Province** • 1 ex.; "Vietnam, Hoa Binh, 4.-7. 6. 1986 Ha Son Binh prov. [today: Hoa Binh Province] lgt. J. Rybníček"; CKB. – **Lao Cai Province** • 8 ♂♂, 3 ♀♀, 6 ex.; "N-VIETNAM 1991 Sapa (Lao Cai) leg. E. Jendek | 26.5.-10.6., 22°20′N 103°50′E"; CKB, NMW • 2 ex.: "N VIETNAM 5. 1991 SA PA, 1200 m Hong Lien Sond D. T. TU leg."; CKB, NMW. – **Ninh Binh Province** • 5 ex.; "N-VIETNAM 1991 Cuc-Phuong Nationalpark | 2.-12.V.400 km S Hanoi leg. Jendek"; CKB, NMW • 2 ♀♀; "VIETNAM Cuc Phuong 2.-11.V.91 Strnad Jan lgt."; CKB • 1 ex.; "N-VIETNAM, Cuc Phuong NP, N20° 17.572′ E105° 40.052′, 270m, 22.5. – 24.5.2015, leg. A. Skale"; NME • 1 ex.; "N-VIETNAM, P: Nin Binh 90 Km SW Hanoi Cuc Phuong NP env. centre 07.V.2017, 270 m, 21°17′572″N, 105°40′052″E, leg. A. Weigel LFF [light trap] primary forest"; CWW. – **Thua Thien Hue Province** • 22 ex.; "VIETNAM, Thua Thien Hue Pr., Phong Điền Distr., Phong Mỹ, 16°31′15.3″N, 107°15′00.3″E, 27 m a.s.l., 18.11.2022, Selnekovič & Kodada leg. (15)"; CKB. – **Vinh Phúc Province** • 3 ♀♀; "NORTH VIETNAM Pr. VINH PHU[C], TAM DAO 5.-25.5.1990 O. ŠAUŠA LGT."; CKB • 2 ex.;

Fig. 6. *Elmomorphus striatellus* Delève, 1968, male from Ban Nape, Laos (CKB), TL: 3.50 mm.

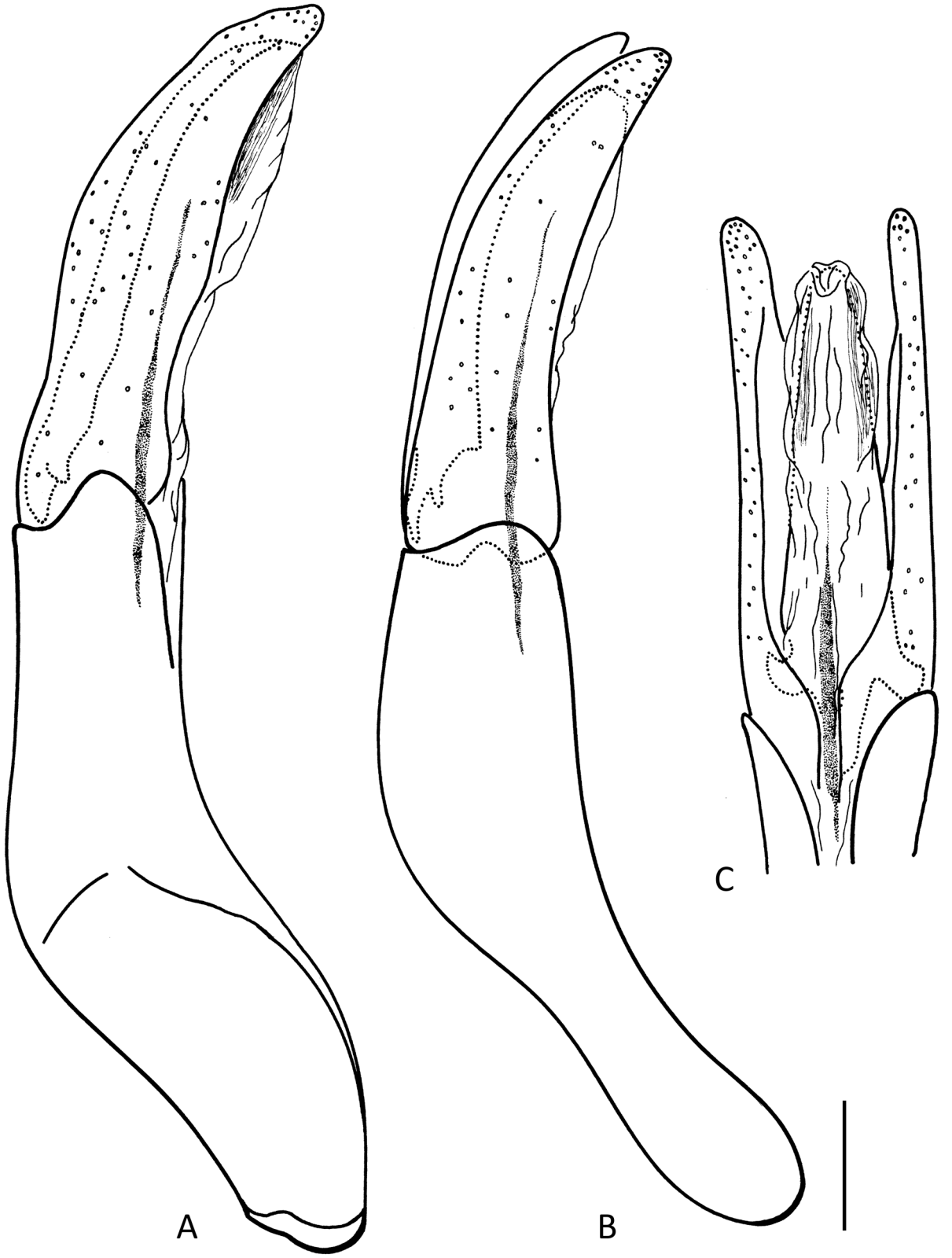

Fig. 7. *Elmomorphus striatellus* Delève, 1968, aedeagus, specimens from Sa Pa, Vietnam (CKB). **A**. Lateral aspect. **B**. Lateral aspect. **C**. Ventral aspect. Scale bar: 0.1 mm.

"N-VIETNAM: Thai Ngayen Prov. [Vinh Phúc Province], vic.[inity of] Ngoc Thanh, Me Linh (IEBR [Institute of Ecology and Biological Resources] station) 21°23′3″N 105°42′44″E 60-80m, 12.V.2012 leg. A. Skale"; NME • 6 ex.; "N- VIETNAM, P: Tai Nguyen [Vinh Phúc Province], vic. Ngoc Than, Me Linh (IEBR station) 13.V.2017, 21°23′3″N, 105°42′44″E, 65 m NN leg. A. Weigel LFF"; CWW. – **Yen Bai Province** • 1 ♂, 2 ♀♀; "VIETNAM NORTH, YEN BAI, 6.-25. 5. 1990 O ŠAUŠA LGT."; CKB • 2 ex.; "N VIETNAM (Tonkin) pr. Hoang Lien Son YEN BAI 10.V.1990 P. Pacholátko leg."; CKB, NMW. – **Thua Thien Hue Province** • 9 ex.; "C-VIETNAM, Thừa Thiên-Huế Pr. ca. 30km W Huế, River valley 16°17′59″N, 107°20′22″E, 80m 10.V.2019, leg. A. Skale, LF [light trap]"; NME • 4 ex.; "C-VIETNAM, Thua Thien-Hue Prov. ca. 30 km W Hue, 80 m, 16°17′59″N 107°20′22″E, 10.V.2019, by light river valley leg. A. Weigel"; CWW • 2 ex.; same collection data as for preceding, but different label: "C- VIETNAM, Thua Thien-Hue, ca. 30 km W Hue, River valley, 80 m, LF [light trap] 16°17′59″N 107°20′22″E, 10.V.2019, leg. A. Weigel"; CWW • 6 ex.; "C-VIETNAM, Thừa Thiên-Huế Prov., ca. 30km NW Huế, Sôn Ô Lâu River, 16°31′3″N, [1]07°15′36″E, 30m, 11.V.2019, leg. A. Skale, LF [light trap]"; NME • 4 ex.; "C- VIETNAM, Thua ThienHue ca. 30km NW Hue Son O Lau River valley, 30 m, by light 16°31′3″N 107°15′36″E, 11.V.2019, leg. A. Weigel"; CWW.

Type locality

Vietnam, Nghệ An Province, Quỳ Châu.

Redescription

Measurements (mm): TL: ♂♂ 3.36–3.84 (3.53±0.16, n=10), ♀♀ 3.41–3.77 (3.54±0.12, n=10); PL: ♂♂ 0.70–0.85 (0.78±0.04, n=10), ♀♀ 0.72–0.85 (0.77±0.04, n=10); PW: ♂♂ 1.33–1.50 (1.39±0.05, n=10), ♀♀ 1.37–1.47 (1.41±0.03, n=10); EL: ♂♂ 2.60–2.99 (2.75±0.12, n=10), ♀♀ 2.70–2.93 (2.77±0.08, n=10); EW: ♂♂ 1.56–1.76 (1.66±0.07, n=10), ♀♀ 1.63–1.79 (1.69±0.05, n=10); PhL: 0.53–0.62 (0.59±0.03, n=10); PrL: 0.35–0.40 (0.38±0.02, n=10).

Body ovate (Fig. 6), widest behind midlength of elytra, strongly convex dorsally, highest point in anterior third of elytra. Colouration black, except for reddish brown mouthparts, trochanters and tarsi. Pubescence on dorsal surface consists of short thin decumbent yellowish setae arising from small round setiferous punctures. Plastron present on entire cranial surface, on pronotum, except for narrow transverse area before scutellum, and on entire elytral surface. Plastron present on entire ventral surface, except for median keel of prosternal process and median part of metaventrite.

Cranial surface entirely covered with plastron; round setiferous punctures separated by ca 0.5 × puncture diameter, each puncture ca 0.75 × as wide as an eye facet. Labrum transverse, anterior margin straight, anterolateral angles rounded; exposed part microreticulate, with small setiferous punctures; setae short, decumbent, similar in both sexes. Clypeus with straight anterior margin, with a row of short thin setae. Eyes large, oval, moderately protruding; ID: ♂♂ 0.42–0.49 mm (0.45±0.02, n=10), ♀♀ 0.43–0.48 mm (0.45±0.02, n=10). Antennae short, 11-segmented, densely covered with setae.

Pronotum transverse, widest at base, moderately convex, PW/PL: ♂♂ 1.69–1.93 (1.84±0.07, n=10), ♀♀ 1.69–1.93 (1.84±0.07, n=10); surface entirely covered with plastron, except for narrow transverse area before scutellum; round setiferous punctures as wide as those on cranium, separated by ca 1–2 × puncture diameters; anterolateral pronotal angles moderately deflexed, produced and acute; lateral sides weakly curved in the middle. Prosternal process covered with plastron, except on median keel; lateral and posterior margins rounded; lateral parts raised, without clusters of long setae in males; median keel strongly arcuate. Scutellum longer than wide, smooth, with several setiferous punctures. Metaventrite covered with plastron, except for narrow, posteriorly narrowed median part; disc flat, without clusters of long setae in males; lateral sides of metaventral process raised. Elytra ovate, convex, widest around middle, lateral sides regularly rounded; EL/EW: ♂♂ 1.58–1.71 (1.66±0.05, n=10), ♀♀ 1.60–1.68

(1.64±0.03, n=10); surface entirely covered with plastron; each elytron with nine shallow striae; small, round setiferous punctures scattered over entire surface. Tibiae straight; male protibia slightly longer than tarsus; PTL/PL: ♂♂ 1.06–1.23 (1.15±0.05, n=10), ♀♀ 1.09–1.34 (1.20±0.06, n=10). Terminal tarsomere in male foreleg ca 1.25× as long as all preceding segments combined; foreclaws similar in both sexes, narrow and strongly curved.

Ventrites entirely covered with plastron. Lateral margins of intercoxal process flat; admedian keels absent. Ventrite 5 evenly convex, apex narrowly truncate in both sexes; females with indistinct longitudinal keel at apex. Aedeagus (Fig. 7): phallobase short and robust, PhL/PrL: 1.38–1.67 (1.55±0.10, n=10); parameres wide in lateral aspect, apices broadly rounded; penis long, almost reaching apex of parameres, apex narrowly rounded; sclerotised fibula long and slender. Proximal and distal part of bursa copulatrix with few large spines (Fig. 12A).

Secondary sexual dimorphism

Average body dimensions similar in both sexes. Females can be distinguished by the presence of a small, hardly discernible longitudinal subapical keel on ventrite 5.

Distribution

Laos (first record), Vietnam (Fig. 108A).

Elmomorphus siamensis Kodada, Selnekovič & Jäch sp. nov.
urn:lsid:zoobank.org:act:C608129B-35C2-460F-8D17-DD59FA30F14A
Figs 8–9, 12B, 107A, 108B

Differential diagnosis

Elmomorphus siamensis sp. nov. (Fig. 8) is characterised by having the dorsal surface covered with plastron, except for a narrow transverse area along the posterior pronotal margin. The ventral plastron is absent only on the median keel of the prosternal process and on the median part of the metaventrite. Elytral punctures are scattered over the entire surface. Aedeagus (Fig. 9): parameres long and slender, apices narrowly rounded; penis long, nearly reaching the apex of the parameres. Proximal and distal part of bursa copulatrix with large sclerotised spines (Fig. 12B).

The species most closely resembles *E. striatellus*, but it differs in the absence of elytral striae. *Elmomorphus siamensis* sp. nov. is smaller, TL: ♂♂ 2.73–3.20 mm (3.00±0.16, n=10), ♀♀ 2.78–3.25 mm (2.99±0.14, n=10) versus TL: ♂♂ 3.36–3.84 mm (3.53±0.16, n=10), ♀♀ 3.41–3.77 mm (3.54±0.12, n=10) in *E. striatellus*, its aedeagus is longer and more slender than in *E. striatellus* (Fig. 7); and the large sclerotised spines on the proximal and distal part of the bursa copulatrix are less numerous (see Fig. 12A–B).

Etymology

The epithet is a Latin adjective in the nominative singular referring to Siam, the former name of Thailand.

Type material

Holotype

THAILAND • ♂; "NW Thailand CHON [CHOM] THONG 24-27.IV.1991 J.Horak lgt."; NMW.

Paratypes

CAMBODIA • 1 ex.; "CAMBODIA, PREAH VIHEAR, CHOAM KHSANT, 01.-12.05.2012 LOCAL COLLECTOR"; NMW.

Fig. 8. *Elmomorphus siamensis* Kodada, Selnekovič & Jäch sp. nov., paratype, male from Umphang, Thailand (CKB), TL: 3.00 mm.

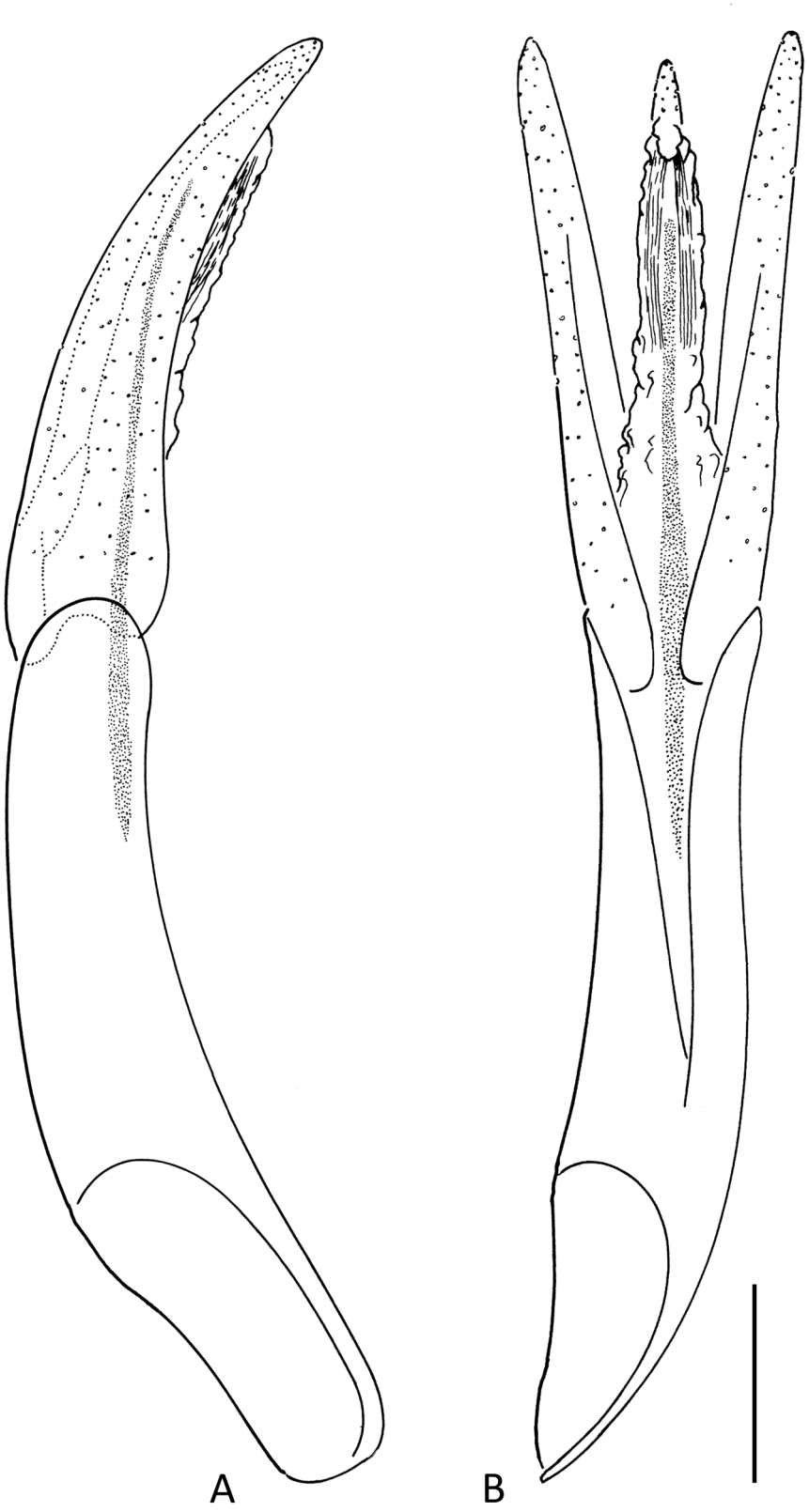

Fig. 9. *Elmomorphus siamensis* Kodada, Selnekovič & Jäch sp. nov., paratype from Umphang, Thailand (CKB), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

LAOS – **Attapeu Province** • 3 ex.; "LAOS, ATTAPEU prov. Annam Highlands Mts. Dong Amphan NBCA, ca. 1160 m Nong Fa (crater lake) env., 15°05.9′N, 107°25.6′E Jiří Hájek leg. 30.iv.–6.v.2010"; NMPC. – **Bolikhamxai Province** • 2 ex.; "LAOS-CE, 1-18.v.2001, Boli Kham Xai prov., 18°21′N 105°08′E, Ban Nape (8 km NE) ~600 m, C.L. Peša leg."; CKB. – **Luang Namtha Province** • 5 ex.; "N-LAOS: Prov. Lg. Nam Tha ca. 5 km S Muang Sing, 650m, Huay Giulom riv., 10.6. 1996, leg. Schillhammer (21)"; NMW • 2 ex.; LAOS north, 24.-30.V.1997 20 km NW Louang Namtha N 21°09.2, E 101°18.7, alt. 900 ± 100 m, E. Jendek & O. Šauša leg."; CKB.

MYANMAR • 2 ex.; "MYANMAR: Sagaing Division Alaungdaw Katthapa NP 22°19.113′N 94°28.518′E 3.-13.5.2003, ca. 350 m, light, leg. Boukal & Schillhammer (101)"; NMW • 1 ex.; "MYANMAR: Sagaing Div. Alaungdaw Kathapa NP Pagoda Str. at Ku Mara Monastery, 6.5.2003 leg. D. Boukal (MBS [Myanmar Biodiversity Survey] 111) | up-stream of Log Cabin Camp, ca. 400 m 22°18.560′N 94°27′679′E"; NMW • 2 ex.; "MYANMAR: Sagaing Div. Alaungdaw Kathapa NP 8.5.2003 leg. D. Boukal (MBS 115)"; NMW • 1 ex.; "Maronych. Mülleri mihi, Tenasser. II. | TENASSERIM, Birmania coll. J.V. Helfer National Museum Prague"; NMPC.

THAILAND – **Chiang Mai Province** • 10 ♂♂, 5 ♀♀, 47 ex.; same collection data as for holotype; CKB • 15 ex.; "NE Thailand, 23.-27.4.1991, Chom Thong S. Bilý Leg."; NMW • 5 ex.; "NW Thailand 1991 Chom Thong, 24.-27.4., 1. 26. N, 98. 41. E L. Dembický leg."; NMW • 4 ex.; "Thailand occ. bor. 24.-28.4.1991 Chom Thong Jan Farkac leg."; NMW • 1 ex.; "NW Thailand 24.-27.4.1991 Chom Thong Leg. Pacholatko"; NMW • 13 ex.; "N-Thailand: Ch. Mai, Chom Thong, 24.-26. 4. 1991 leg. Pacholatko"; NMW • 1 ex.; "NW THAI 24.-27.IV. CHON [CHOM] THONG 1991 J.Horak leg."; CKB • 4 ex.; "N-THAILAND: Chiang Mai 12 km W Chom Thong Mae Klang riv., 27.12.1998, 550 m, leg. P. Mazzoldi (7)"; NMW • 1 ex.; "Thailand 91 Thanon Thong Chai D. Král & V. Kubáň | THAI, 25.5.1991 FANG 300 m 19° 55′ N 99° 12′ E David Král lgt."; NMW • 4 ex.; "THAI, 25. 5. 1991 FANG 300m 19° 55′ N 99° 12′E Vit Kubáň leg."; NMW • l ex.; "Thailand 91 Thanon Thong Chai D. Král & V. Kubáň, THAI, 26.-28.V. 1991 Palong 750m 19° 55′ N 99° 06′ E Vit Kubáň leg."; NMW • 1 ex.; "Thailand 91 Thanon Thong Thai D. Král & V. Kubáň, THAI, 10.-16.v. 1991 Chiang Dao 600 m 19° 24′ N 98° 55′ E Vit Kubáň leg."; NMW • 2 ex.; "THAILAND, Mae Ping 19.-20.6.1991 leg.Malicky"; NMW • 3 ex.; "THAILAND, Mae Ping 19.-20.6.1991 leg.Malicky (Licht) [at light]"; NMW. – **Chaiyaphum Province** • 70 ex.; "Thailand: Chaiyaphun, Phu Kheio Wld. Sact. [Phu Khiao Wildlife Sanctuary] 12.III.1994, Nam Prom, WDS-A-1037 | Collection W.D. Shepard"; CSS • 70 ex.; "Thailand: Chayiaphum, Phu Kheio Wld. Sanct. 4.IV.1994, Nam Prom, William D. Shepard leg. | WDS-A-1053"; CSS. – **Loei Province** • 5 ex.; "Thailand: Loei, Kaeng Hai, 9.III.1994, Nam San Khe, WDS-A-1035, William D. Shepard leg."; CSS • 5 ex.; "N-THAILAND, Nan Lom Sak - Dan Sai, 17.-19. 5. 1993 Pacholatko & Dembicky"; NMW • 2 ex.; "N-THAILAND NW Chiang Mai Pai City, 29.4.1993 Pacholatko & Dembicky"; NMW. – **Mae Hong Son Province** • 2 ♂♂, 1 ♀, 3 ex.; "NW THAI 23.-31.V. Mae Hong Son 1200 m Ban Si Lang 1991 J.Horák leg."; CKB • 10 ♂♂, 8 ♀♀; "NW THAI 1.-8. V. 1992 Mae Hong Son 1200 m Ban Si Lang J. Horák & J. Strnad leg."; CKB • 10 ex.; "N-THAILAND Mae Hong Son Huai Sue Tao leg. Dembicky"; NMW. – **Nachon Ratchasima Province** • 1 ex.; "Thailand: Nakhon Ratchasima Prov., Lam Takhong, nr. Khao Yai NP, stream, 380 m 8.1.2009, leg. H. Zettel (50)"; NMW. – **Nan Province** • 3 ex.; "NO-THAILAND Nan-Pha Khab 11.-16. V. 1993 leg. Pacholatko"; NMW. – **Petchabun Province** • 11 ex.; "Thailand: Petchabun, 5 km E Sila, 2.III.1994, Mae Nam Pa Sak, WDS-A-1025 William D. Shepard leg. | Collection W.D. Shepard"; CSS. – **Phitsanulok Province** • 22 ex.; "THAILAND: 15.4.1996 Tung [=Thung] Salaeng NP, 600m 16°49′N 100°57′E Malicky & Chantaramongkol"; NMW • 1 ex.; "THAIL.: Prov. Phitsanulok, 6km NNE Chat Trakan, Rd. 1237 km 5, Lam Nam Khwae, Noi Riv. trib., riffle & run, leafpacks, wood, gravel; rural farmland; c. 190 m asl, c. 17°17′N 100°38′E, 10. 1. 2009, leg. Freitag (6)"; CKB. – **Songkhla Province** • 8 ex. (three of the labels deviate slightly); "S-THAIL. 10.5. 1993 13km W Hat Yai, 50m, 6°59′N 100°22′ E Ban Ko Muang-Malicky"; NMW. – **Tak Province:** 6 ♂♂, 7 ♀♀, 43 ex.; "Thailand 91 Thanon Thong Chai D. Král & V. Kubáň | THAI, 26.IV.-6.V.1991 UMPHANG 500m 16°

04′ N 98° 53′ E Vit Kubáň leg.”; CKB, NMW • 12 ex.; “Thailand 91 Thanon Thong Chai D. Král & V. Kubáň | THAI, 26.IV.-6.V.[19]91 UMPHANG 500m 16° 04′ N 98° 53′ E David Král lgt.”; NMW • 1 ♀; “Thailand 91 Thanon Thong Chai D. Král & V. Kubáň | THAI, 28/IV.-6/V.[19]91 UMPHANG river 16° 07′ N 99° 00′ E lgt. David Král 1000m”; NMW.

VIETNAM – **Dong Nai Province** • 1 ex.; “VIETNAM: Nam Cat Tien, 11°26′N 107°26′E, 200 m, 17.-25.6.1995 leg. Malicky”; NMW. – **Thua Thien Hue Province** • 10 ex.; “VIETNAM, Thua Thien Hue Pr., Phong Điền Distr., Phong Mỹ, 16°31′15.3″N, 107°15′00.3″E, 27 m a.s.l., 18.11.2022, Selnekovič & Kodada leg. (15)”; CKB • 1 ex.; “C- VIETNAM, Thua Thien-Hue Prov. ca. 30 km W Hue, 80 m, 16°17′59″ N, 107°20′22″ E, 10.V.2019, by light river valley leg. A. Weigel | collection NATURKUNDE-MUSEUM ERFURT”; NME.

Type locality

Thailand, Chiang Mai Province, Chom Thong.

Description

Measurements (mm): TL: ♂♂ 2.73–3.20 (3.00±0.16, n=10), ♀♀ 2.78–3.25 (2.99±0.14, n=10); PL: ♂♂ 0.59–0.73 (0.67±0.04, n=10), ♀♀ 0.60–0.72 (0.66±0.04, n=10); PW: ♂♂ 1.09–1.29 (1.21±0.06, n=10), ♀♀ 1.11–1.27 (1.20±0.05, n=10); EL: ♂♂ 2.15–2.47 (2.34±0.11, n=10), ♀♀ 2.18–2.54 (2.33±0.11, n=10); EW: ♂♂ 1.30–1.50 (1.43±0.07, n=10), ♀♀ 1.33–1.53 (1.42±0.07, n=10); PhL: 0.52–0.61 (0.57±0.03, n=10); PrL: 0.34–0.37 (0.36±0.01, n=10).

Body ovate, widest around midlength of elytra, moderately convex dorsally with highest point between first and second quarters of elytral length (Fig. 8). Colouration black, except for reddish brown mouthparts, antennae, trochanters, and tarsi. Vestiture consisting of short thin decumbent yellowish setae. Plastron present on entire dorsal surface, except for narrow transverse area at middle of posterior pronotal margin. Plastron present on entire ventral surface, except for median keel of prosternal process and median part of metaventrite.

Head with dorsal surface entirely covered with plastron; and with round setiferous punctures, puncture diameter slightly smaller than eye facet, separated by 0.5–1.0× puncture diameter. Labrum transverse, anterior margin straight, anterolateral angles rounded, exposed part microreticulate, with small setiferous punctures; setae short, arranged mostly along anterior margin. Anterior margin of clypeus straight. Eyes large, oval, protruding; ID: ♂♂ 0.37–0.45 mm (0.40±0.02, n=10), ♀♀ 0.39–0.43 mm (0.40±0.01, n=10). Antennae short, 11-segmented.

Pronotum transverse, widest at base, moderately convex, PW/PL: ♂♂ 1.71–1.88 (1.82±0.06, n=10), ♀♀ 1.74–1.92 (1.82±0.06, n=10); plastron present on entire surface, except for narrow transverse area at middle of posterior margin; round setiferous punctures slightly larger than those on head, separated by 2–3× puncture diameters. Anterior pronotal angles strongly deflexed, produced, acute; lateral sides convergent, weakly arcuated along entire length. Prosternal process with lateral and posterior sides rounded; lateral parts raised, without plastron; median keel strongly raised, without plastron. Scutellum longer than wide, smooth with several setiferous punctures. Metaventrite covered with plastron, except for median, posteriorly narrowed part; disc flat; lateral sides of metaventral process raised. Elytra oval, convex, widest slightly behind middle, EL/EW: ♂♂ 1.57–1.71 (1.64±0.04, n=10), ♀♀ 1.59–1.68 (1.64±0.03, n=10); surface entirely covered with plastron; small setiferous punctures scattered. Tibiae straight, male protibia slightly longer than protarsus, PTiL/PL: ♂♂ 1.12–1.25 (1.17±0.04, n=10), ♀♀ 1.06–1.21 (1.13±0.04, n=10). Terminal segment of male tarsus ca 1.2× as long as all preceding segments combined; tarsal claws large, strongly curved.

Ventrites entirely covered with plastron. Lateral sides of intercoxal process slightly raised; admedian keels absent. Ventrite 5 evenly arcuate, narrowly truncate at apex. Aedeagus (Fig. 9): phallobase short, slightly expanded proximally, PhL/PrL: 1.45–1.74 (1.59±0.09, n=10); parameres long, moderately curved ventrad, narrowly rounded at apices (lateral aspect); penis long, nearly reaching apices of parameres, narrowly rounded at apex; sclerotised fibula long and slender. Proximal and distal part of bursa copulatrix with large sclerotised spines on lateral parts (Fig. 12B).

Secondary sexual dimorphism

The average body size is similar in both sexes. The only apparent difference is the presence of a small subapical keel on the female ventrite 5.

Distribution

Cambodia, Laos, Myanmar, Thailand, and Vietnam (Fig. 108B).

Elmomorphus parabrevicornis sp. nov
urn:lsid:zoobank.org:act:4E9FE872-0589-4FB7-83A7-9430AAA6D4F7
Figs 10, 11A–B, 12C, 108C

Differential diagnosis

Elmomorphus parabrevicornis sp. nov. (Fig. 10) is characterised by having a plastron on the entire cranial surface, along the lateral sides of the pronotum, and the entire surface of the elytra. Males possess conspicuous long setae arranged in a transverse row on the labrum and in clusters on the prosternal process, the median part of the metaventrite, and the apex of ventrite 5. The phallobase is remarkably long and slender (Fig. 11A–B). The proximal and distal part of the bursa copulatrix has many small sclerotised spines (Fig. 12C).

A similar combination of characters is also known in *E. amamiensis* Nomura, 1959 from Japan, which is smaller, TL: ♂♂ 2.80–2.99 mm (2.91±0.06, n=9), ♀♀ 3.09–3.22 mm (3.16±0.05, n=7) in *E. amamiensis* versus TL ♂♂ 3.04–3.18 mm (3.12±0.07, n=4), ♀♀ 3.27–3.47 mm (3.38±0.09, n=6) in *E. parabrevicornis* sp. nov., and has distinctly fewer spines in the bursa copulatrix (see Fig. 12C, and Kodada *et al*. 2021: fig. 9e). *Elmomorphus brevicornis* and *E. auripilosus* sp. nov. also resemble *E. parabrevicornis*, while males of these species differ in having only several longer inconspicuous and hardly discernible setae on the labrum, prosternal process, median part of the metaventrite and ventrite 5. *Elmomorphus auratus* sp. nov. and *E. horaki* sp. nov. have a similar plastron distribution, but these species do not possess any clusters of long setae in males and have a distinctly shorter phallobase, PhL: 1.10–1.19 mm (n=3) in *E. parabrevicornis* versus up to 0.64 mm in *E. auratus* and 0.45 mm in *E. horaki*.

Etymology

The epithet, an adjective, refers to the high morphological similarity with *E. brevicornis*.

Type material

Holotype

CHINA – **Hunan Province** • ♂; "CHINA: SW-Hunan 1993 SW Huitong, 7.11., Umg. Guangping, 350m leg. Schillhammer (16) [CWBS 37]"; IAECAS.

Paratypes

CHINA – **Hunan Province** • 1 ♂, 1 ♀; same collection data as for holotype; CKB, NMW • 1 ♀; same collection data as for holotype, but "leg. L. JI" (16) [CWBS 37]; NMW • 2 ♂♂; "CHINA: SW Hunan,

Fig. 10. *Elmomorphus parabrevicornis* sp. nov., holotype (IAECAS), male, TL: 3.12 mm.

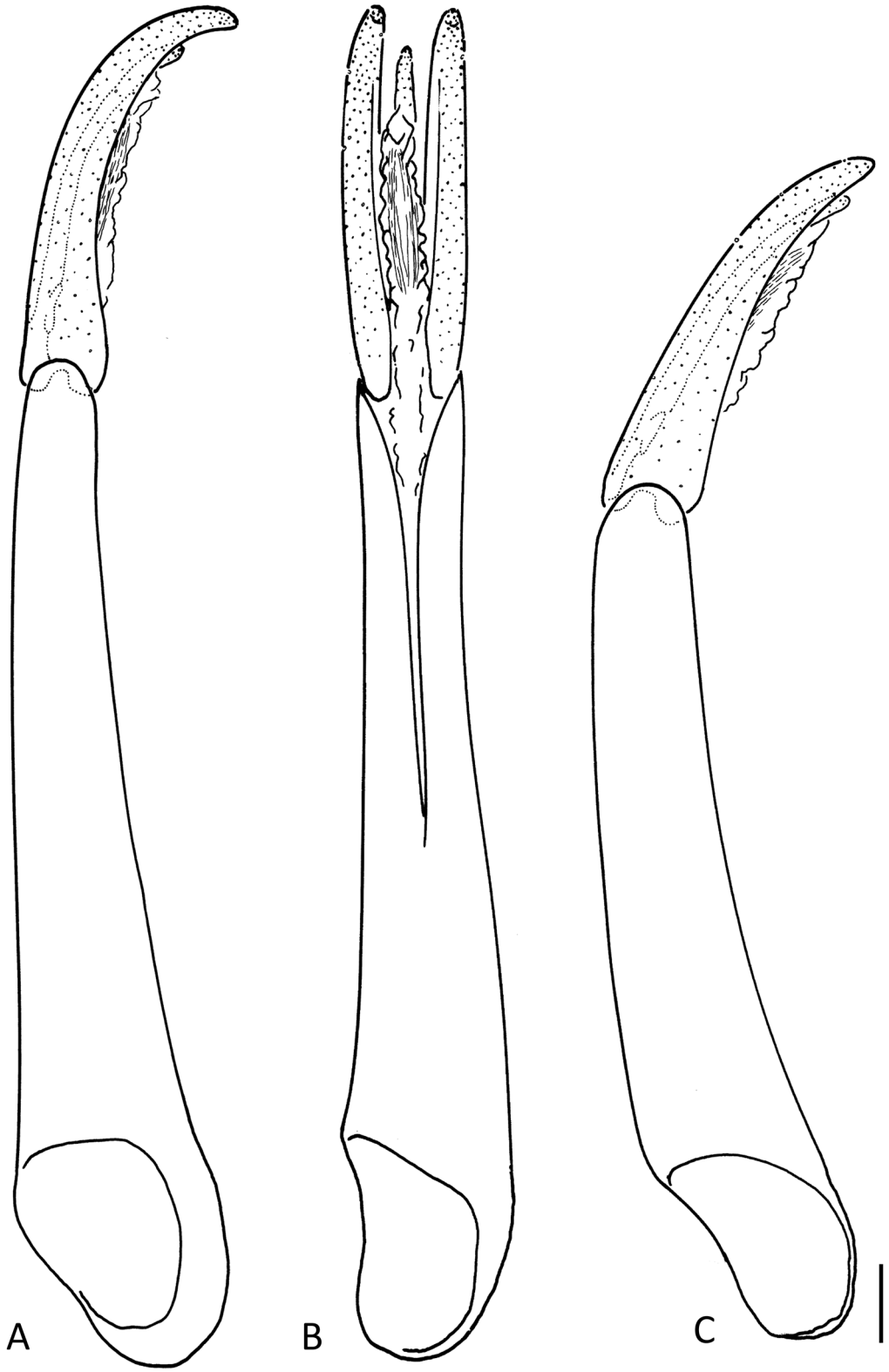

Fig. 11. A. *Elmomorphus parabrevicornis* sp. nov., holotype (IAECAS), aedeagus, lateral aspect. **B**. Same, ventral aspect. **C**. *E. auripilosus* sp. nov., paratype from Vietnam, Tam Dao (CKB), aedeagus, lateral aspect. Scale bar: 0.1 mm.

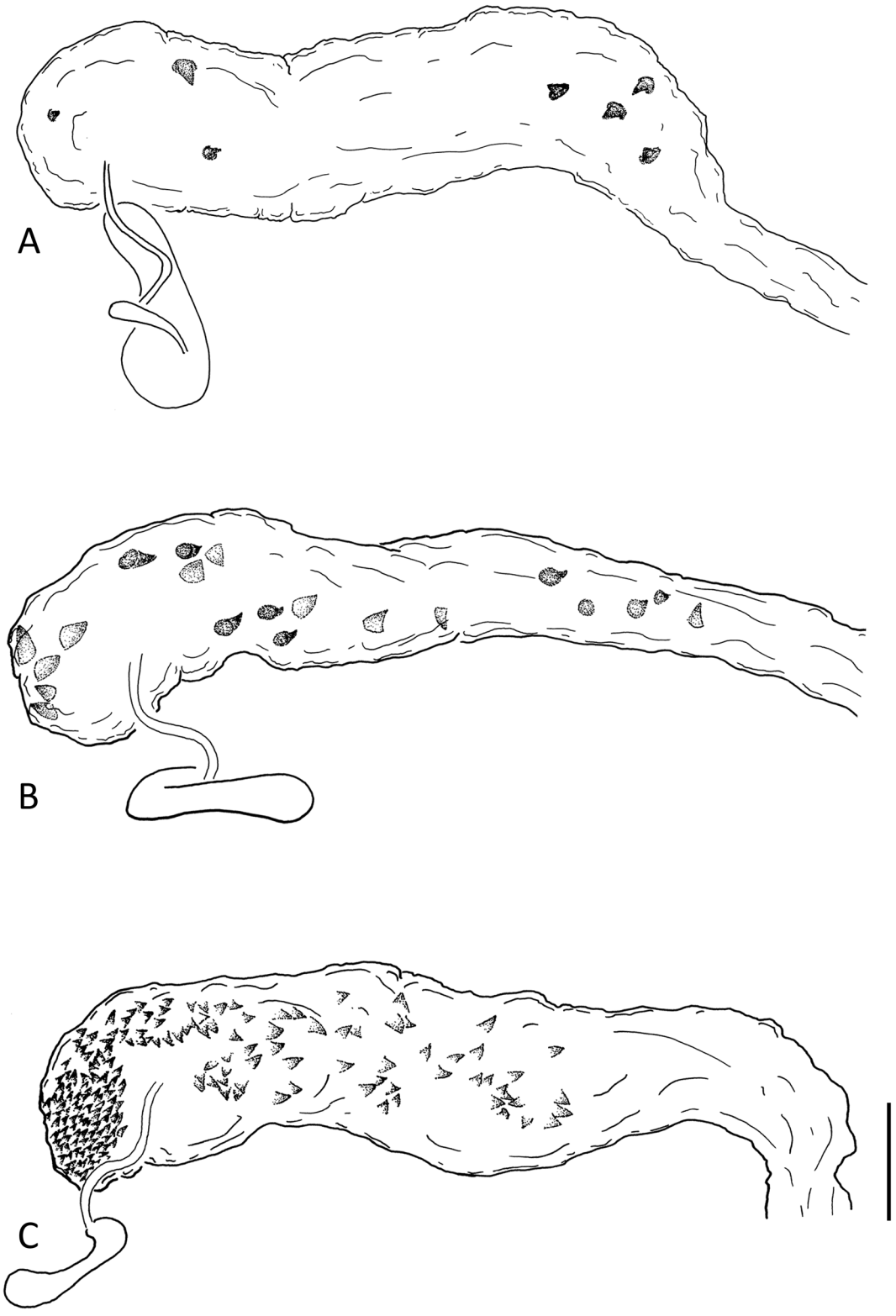

Fig. 12. Bursa copulatrix and vagina. **A**. *Elmomorphus striatellus* Delève, 1968, Cuc Phuong, Vietnam (CKB). **B**. *E. siamensis* Kodada, Selnekovič & Jäch sp. nov., paratype, Umphang, Thailand (CKB). **C**. *E. parabrevicornis* sp. nov., paratype from type locality (NMW). Scale bar: 0.1 mm.

1993, SW Huitong, 7. 11., Umg. Guangping, 400 m, leg. Schönmann (14) [CWBS 35]"; NMW. – **Anhui Province** • 1 ♀; "CHINA: Anhui Huang Shan 50km W Tunxi, 29.10.1997 Yi Xian Shan, 350 - 400m leg. M. Wang (CWBS 290)"; NMW. – **Fujian Province** • 1 ♀; "CHINA: FUJIAN, Chong'an Wuyi Shan, 3 km NW Wuyi Gong 300 m, 17.1.1997, leg. H.Schönmann (CWBS 246)"; NMW • 1 ♀: "CHINA: FUJIAN, Chong'an Wuyi Shan, 3 km W Da'an 500 m, 19.1.1997, leg. Ji & Wang (CWBS 250)"; NMW. – **Guangdong Province** • 2 ♀♀; "CHINA: Guangdong Prov. Chebaling - Siqian rd., 24°41′11″N 114°07′17″E 7.11.2001, ca. 270 m Jäch & Komarek (CWBS 480)"; CKB, NMW.

Type locality

China, Hunan Province, Huaihua Prefecture, Huitong County, Guangping Township; river, slowly flowing, with riffle areas, ca 3–5 m wide, slightly polluted; 350 m a.s.l. (CWBS 37; Jäch & Ji 1995).

Description

Measurements (mm): TL ♂♂ 3.04–3.18 (3.12 ± 0.07, n = 4), ♀♀ 3.27–3.47 (3.38 ± 0.09, n = 6); PL ♂♂ 0.70–0.78 (0.74 ± 0.03, n = 4), ♀♀ 0.75–0.81 (0.79 ± 0.02, n = 6); PW ♂♂ 1.19–1.29 (1.23 ± 0.04, n = 4), ♀♀ 1.24–1.37 (1.29 ± 0.04, n = 6); EL ♂♂ 2.34–2.44 (2.38 ± 0.05, n = 4), ♀♀ 2.47–2.65 (2.59 ± 0.07, n = 6); EW ♂♂ 1.47–1.53 (1.50 ± 0.03, n = 4), ♀♀ 1.52–1.69 (1.61 ± 0.06, n = 6); PhL: 1.10–1.19 (n = 3); PrL: 0.39–0.43 (n = 3).

Body oblong-ovate, moderately convex dorsally, widest behind midlength of elytra (Fig. 10). Colouration dark brown to black; mouthparts, antennae, and legs reddish brown. Pubescence consisting of short decumbent yellowish setae. Dorsal plastron present on entire dorsal surface, except for median part of pronotum; ventral plastron missing on prosternal process and median part of metaventrite.

Head covered with plastron on cranial surface; punctures round setiferous, their diameter smaller than eye facet diameter, separated by 0.75–1.00 × puncture diameter. Labrum transverse, anterior margin slightly rounded; anterolateral angles rounded; exposed part microreticulate, with small setiferous punctures; setae in males conspicuously long and erect. Anterior margin of clypeus slightly emarginate. Eyes oval, moderately protruding, interfacetal setae short; ID: ♂♂ 0.36–0.37 mm (0.37 ± 0.00, n = 4), ♀♀ 0.40–0.43 mm (0.41 ± 0.01, n = 6). Antennae 10-segmented. Terminal maxillary palpomere fusiform, lateral sensory area located laterally on distal half.

Pronotum transverse, PW/PL: ♂♂ 1.58–1.72 (1.66 ± 0.06, n = 4), ♀♀ 1.59–1.68 (1.64 ± 0.03, n = 6), plastron present on wide lateral portions reaching level of second elytral row; median part smooth; entire surface densely punctate, distance between punctures less than half a puncture diameter; bead of anterior margin twice as wide as eye facet, interrupted in middle; anterior angles protruding, acute; lateral sides convergent, straight to slightly rounded in dorsal aspect. Hypomeron widest behind middle in lateral aspect. Prosternal process with lateral edges divergent and rounded; posterior edge rounded; lateral margins raised; median keel moderately arcuate. Scutellum longer than wide, surface smooth, with several setiferous punctures. Median part of metaventrite flat to slightly convex; metaventral process with lateral margins raised, each delimited medially by deep longitudinal groove. Elytra elongate oval, entirely covered with plastron, moderately convex dorsally, widest behind middle, EL/EW: ♂♂ 1.55–1.62 (1.58 ± 0.03, n = 4), ♀♀ 1.53–1.71 (1.60 ± 0.06, n = 6); surface microreticulate, small setiferous punctures scattered over entire surface and large round punctures arranged in nine longitudinal rows; diameter of large punctures decreasing towards elytral apices. Tibiae straight to slightly curved; protibia ca 1.3 × as long as protarsus; PrTL/PL: ♂♂ 1.14–1.26 (1.18 ± 0.05, n = 4), ♀♀ 1.07–1.08 (1.08 ± 0.00, n = 6). Terminal segment of protarsus slightly longer than combined length of preceding tarsomeres.

Ventrites entirely covered with plastron. Ventrite 5 in males convex anteriorly, apex triangularly emarginate, with two clusters of long setae; in females evenly convex, with minute excision at apex.

Aedeagus (Fig. 11A–B): phallobase long and slender, expanded proximally, PhL/PrL: 2.59–2.89 (n = 3); parameres strongly curved ventrad in apical half, apices narrowly rounded (lateral aspect); penis slightly expanded apically, rounded in lateral aspect; sclerotised fibula absent. Ovipositor: valvifers long, flattened; coxites asymmetrical, right one ca 1.40 × as long as left one. Proximal and distal part of bursa copulatrix with large number of sclerotised spines, especially distally (Fig. 12C). Sternite VIII with long anterior strut, slightly shorter than ovipositor.

Secondary sexual dimorphism

Males can be easily recognised by the conspicuous long setae on the labrum, prosternal process, and median part of the metaventrite. Moreover, the male ventrite 5 is strongly deflexed behind the base, emarginate at the apex, and possesses two clusters of long setae near the apex.

Distribution

China (Fujian, Guangdong, Hunan) (Fig. 108C).

Elmomorphus auripilosus sp. nov.
urn:lsid:zoobank.org:act:B1D72FC6-85A8-401E-9C58-D0577692D47A
Figs 11C, 13, 18A, 108D

Differential diagnosis

Elmomorphus auripilosus sp. nov. (Fig. 13) is characterised by having a plastron on the entire cranial surface, along the lateral margins of the pronotum, and on the entire surface of the elytra. The ventral plastron is absent in the prosternal process and the median part of the metaventrite. Males possess several long and erect setae on the labrum and hardly discernible clusters of few erect setae anterolateral of the prosternal process and on posterolateral parts of metaventral disc. Proximal and distal part of bursa copulatrix with numerous sclerotised spines, especially distally (Fig. 18A).

Elmomorphus auripilosus sp. nov. most closely resembles *E. brevicornis*, from which it differs in the wider pronotal plastron bands, the distinctly shallower elytral strial punctures, the shorter phallobase (Fig. 11C), and the differently arranged spines on the bursa copulatrix (Fig. 18A). Males of *E. amamiensis* and *E. parabrevicornis* sp. nov. differ in the presence of conspicuous long setae on the labrum, prosternal process and median part of the metaventrite. In *E. auripilosus*, the phallobase is proportionally shorter, PhL/PrL: 1.84–2.26 (2.09 ± 0.16, n = 10) (Fig. 11C) than in *E. amamiensis* (PhL/PrL: 2.32–2.74 (2.43 ± 0.12, n = 7)), *E. brevicornis* (PhL/PrL: 2.14–2.36 (2.24 ± 0.07, n = 11)), and *E. parabrevicornis* (PhL/PrL: 2.59–2.89 (n = 3); Fig. 11A–B) but distinctly more prolonged than in *E. auratus* sp. nov. (PhL/PrL: 1.29–1.62 (1.43 ± 0.08, n = 20); Fig. 15) and *E. horaki* sp. nov. (PhL/PrL: 1.63–1.83 (1.75 ± 0.06, n = 10); Fig. 17).

Etymology

The epithet is a Latin adjective in the nominative singular, referring to the golden colour of the pubescence and plastron, covering almost the entire body surface.

Type material

Holotype

VIETNAM – **Lao Cai Province** • ♂; "N-VIETNAM 1991 Sapa (Lao Cai) leg. E. Jendek | 25.5. - 10.6. 22°20′N 103°50′E"; NMW.

Paratypes

VIETNAM – **Lao Cai Province** • 27 ex.; same collection data as for holotype; CKB, NMW. – **Ninh Binh Province** • 21 ex.; "N-VIETNAM 1991 Cuc-Phuong Nationalpark | 2. – 12. V. 100 km S Hanoi

Fig. 13. *Elmomorphus auripilosus* sp. nov., paratype, male from Tam Dao, Vietnam (CKB), TL: 3.20 mm.

leg. E. Jendek"; CKB, NMW • 1 ex.; "N-VIETNAM 2. - 12.V. CUC PHUONG N. P. 100 km S Hanoi leg. E. Jendek 1991"; CKB • 4 ex.; "VIETNAM N. Cuc Phuong 2. - 11.V.91 Strnad Jan lgt."; CKB. – **Vinh Phúc Province** • 21 ex.; "VIETNAM NORTH Pr. VINH PHU[C], TAM DAO 6.-25.5. 1990 O. ŠAUŠA LGT."; CKB.

Type locality

Vietnam, Lao Cai Province, Sa Pa, 22°20′ N, 103°50′ E.

Description

Measurements (mm): TL: ♂♂ 3.07–3.38 (3.23 ± 0.09, n = 10), ♀♀ 3.06–3.51 (3.29 ± 0.14, n = 10); PL: ♂♂ 0.70–0.78 (0.74 ± 0.02, n = 10), ♀♀ 0.68–0.78 (0.75 ± 0.03, n = 10); PW: ♂♂ 1.19–1.33 (1.28 ± 0.05, n = 10), ♀♀ 1.17–1.40 (1.31 ± 0.06, n = 10); EL: ♂♂ 2.37–2.60 (2.49 ± 0.07, n = 10), ♀♀ 2.37–2.73 (2.54 ± 0.11, n = 10); EW ♂♂ 1.37–1.56 (1.49 ± 0.05, n = 10), ♀♀ 1.43–1.61 (1.54 ± 0.05, n = 10); PhL: 0.72–0.85 (0.80 ± 0.05, n = 4); PrL: 0.36–0.39 (0.38 ± 0.01, n = 10).

Body ovate, widest around midlength of elytra, moderately convex dorsally, highest point in anterior third of elytral length (Fig. 13). Body black, except for reddish brown mouthparts, antennae, tarsi, trochanters, and proximal portions of femora; remaining parts of legs dark brown to black. Dorsal vestiture consisting of moderately long thin decumbent yellowish setae arising from small round punctures. Plastron on entire cranial surface, in wide lateral pronotal bands, each covering about a third of pronotal width, and on entire surface of elytra. Plastron on entire ventral surface, except for prosternal process and median part of metaventrite.

Cranial surface entirely covered with plastron, and round setiferous punctures ca 0.75 × as wide as the eye facet and separated by approximately half of the facet diameter. Labrum transverse, anterior margin slightly rounded; exposed portion microreticulate with short decumbent setae in both sexes, and with transverse row of several long semierect setae in males. Eyes oval, moderately protruding; ID: ♂♂ 0.35–0.41 mm (0.39 ± 0.02, n = 10), ♀♀ 0.32–0.43 mm (0.40 ± 0.03, n = 10); APD/ID: ♂♂ 2.06–2.32 (2.18 ± 0.08, n = 10), ♀♀ 2.04–2.64 (2.18 ± 0.16, n = 10). Antennae short, 10-segmented, densely setose.

Pronotum transverse, widest at base, strongly convex, PW/PL: ♂♂ 1.65–1.80 (1.72 ± 0.04, n = 10), ♀♀ 1.71–1.79 (1.74 ± 0.03, n = 10); surface smooth, with round setiferous punctures slightly larger than those on head; plastron forming posteriorly tapering lateral bands, separated before anterior pronotal margin by less than eye diameter, and before pronotal base by ca one-third of pronotal width. Anterior pronotal angles strongly deflexed, protruding, and acute; pronotal sides convergent, weakly rounded posteriorly and straight to slightly concave anteriorly. Prosternal process with lateral margins divergent and rounded, posterior edge rounded; lateral margins moderately raised, wide; median keel moderately raised; plastron absent; males with hardly discernible cluster of few erect setae on each side. Scutellum slightly longer than wide, smooth, with several small setiferous punctures. Metaventrite with plastron, except for median, posteriorly narrowed part; metaventral process with lateral margins slightly raised; metaventral disc flat; males with two small, hardly discernible clusters of erect setae posterolaterally. Elytra oblong, widest behind middle, moderately convex, highest point at anterior third; sides rounded, slightly diverging in anterior two-thirds and strongly converging in posterior third; PW/PL: ♂♂ 1.65–1.80 (1.72 ± 0.04, n = 10), ♀♀ 1.71–1.79 (1.74 ± 0.03, n = 10). Elytral surface entirely covered with plastron; each elytron with small setiferous punctures scattered over entire surface, and larger punctures arranged in nine longitudinal rows in weakly impressed striae; strial punctures about as wide as those on pronotum and separated by 0.5–1.0 × puncture diameter. Tibiae straight; protibia ca 1.2 × as long as protarsus; PrTL/PL: ♂♂ 1.08–1.21 (1.15 ± 0.03, n = 10), ♀♀ 1.09–1.18 (1.15 ± 0.03, n = 10). Terminal protarsomere slightly longer than all preceding segments combined; foreclaws long and strongly curved.

Ventrites entirely covered with plastron; intercoxal process subtriangular, lateral sides flat, admedian keels hardly discernible. Ventrite 5 slightly declivous behind anterior margin; in males, apex shallowly emarginate and with small cluster of erect setae; females with small keel at apex and small cluster of erect setae. Aedeagus (Fig. 11C): phallobase rather long and slender, distally narrowed, PhL/PrL: 1.84–2.26 (2.09±0.16, n=10); parameres weakly curved ventrad, apices narrowly rounded in lateral aspect; apex of penis slightly expanded and rounded. Ovipositor: right coxite ca 1.30× as long as left one; valvifers ca 1.5× as long as right coxite. Bursa copulatrix (Fig. 18A) with numerous small sclerotised spines distally, and fewer ones proximally.

Secondary sexual dimorphism

Average length of females larger than those of males. Apex of male ventrite 5 shallowly emarginate, in females with minute excision and small longitudinal keel. Males possess several long erect setae on labrum and small, often inconspicuous clusters of erect setae on anterolateral portions of prosternal process and on posterolateral portions of metaventral disc.

Distribution

Vietnam (Fig. 108D).

Elmomorphus auratus sp. nov.
urn:lsid:zoobank.org:act:75C3290A-F4C8-458A-8B40-83D2456243EF
Figs 14–15, 17B, 108E

Differential diagnosis

Elmomorphus auratus sp. nov. (Fig. 14) is characterised by the plastron covering the entire cranial surface, the lateral portions of the pronotum, and the entire elytral surface. The lateral pronotal plastron bands are narrow, each covering about one-fifth of the pronotal width. The plastron bands are wider in *E. amamiensis*, *E. auripilosus* sp. nov., *E. brevicornis*, and *E. parabrevicornis* sp. nov., each covering approximately one-third of the pronotal width. In addition, males of *E. auratus* do not possess any clusters of longer setae on the labrum, prosternal process and metaventrite, in contrast to *E. amamiensis* and *E. parabrevicornis*. The phallobase is short and robust in *E. auratus* (Fig. 15) (PhL/PrL: 1.29–1.62 (1.43±0.08, n=20), the parameres are relatively long, weakly curved, their apices are broadly rounded (lateral aspect). In *E. amamiensis*, *E. auripilosus*, *E. brevicornis*, and *E. parabrevicornis*, the phallobase is significantly longer than the paramere length (PhL/PrL at least 1.8). *Elmomorphus auratus* rather closely resembles *E. horaki* sp. nov., from which it differs in the larger and broader body, TL: ♂♂ 2.69–3.07 mm (2.89±0.09, n=20), ♀♀ 2.89–3.21 mm (3.03±0.09, n=22) versus TL: ♂♂ 2.21–2.67 mm (2.49±0.13, n=10), ♀♀ 2.21–2.89 mm (2.61±0.20, n=10) in *E. horaki*, strongly rounded lateral elytral sides (Fig. 14), narrower pronotal plastron bands, different shape of the aedeagus (Fig. 15), and different arrangement of the spines of the bursa copulatrix (Fig. 17B).

Etymology

The epithet is a Latin adjective in the nominative singular, referring to the yellowish colour of the pubescence and plastron, covering almost the entire body surface.

Type material

Holotype

CHINA – **Fujian Province** • ♂ ; "CHINA: FUJIAN, Guangze Wuyi Shan, 12 km S Zhima Li Fang, 400m, 22.1.1997, leg. Ji & Wang (CWBS 252)"; IAECAS.

Fig. 14. *Elmomorphus auratus* sp. nov., paratype, male from type locality (NMW), TL: 2.90 mm.

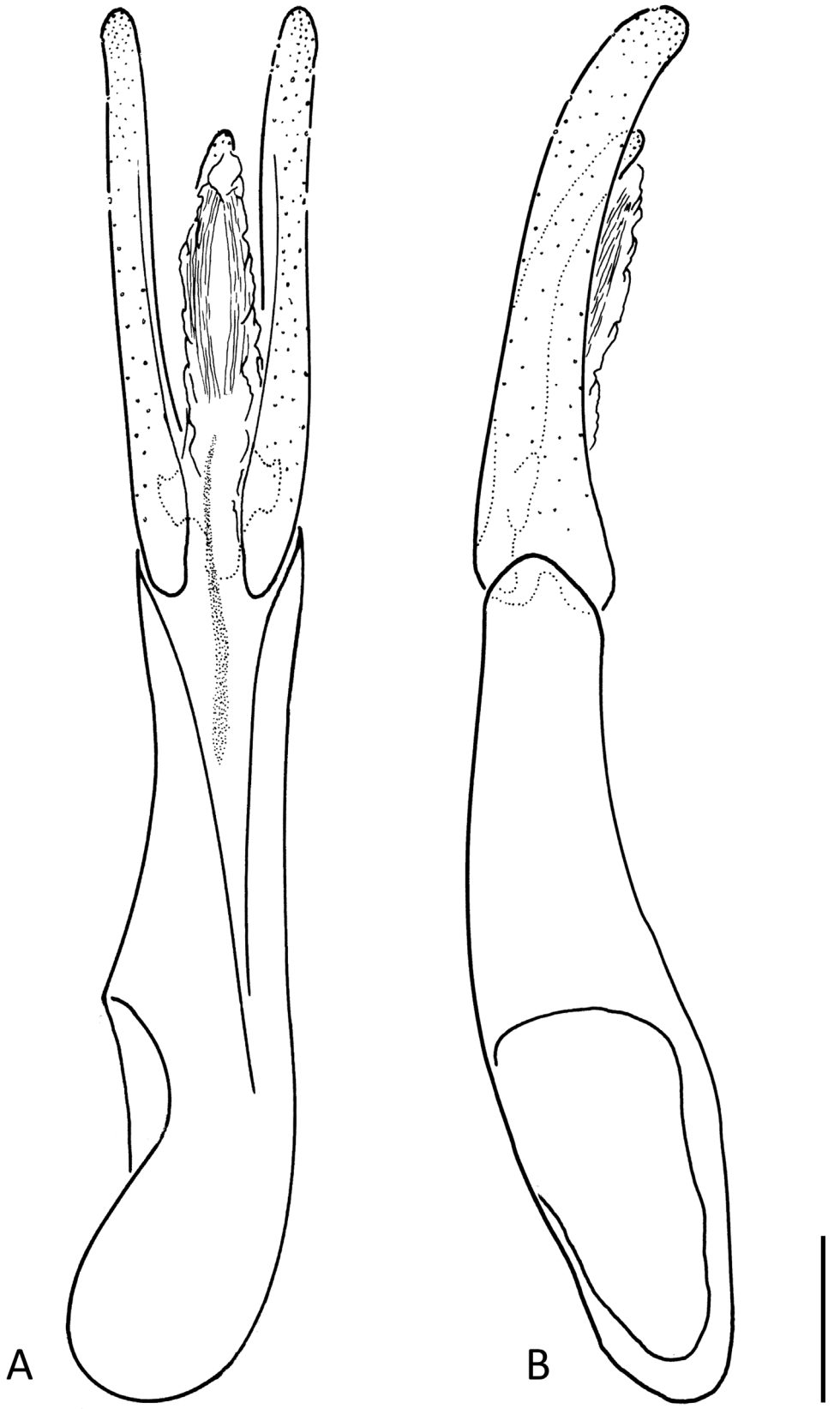

Fig. 15. *Elmomorphus auratus* sp. nov., paratype from type locality (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar = 0.1 mm.

Paratypes

CHINA – **Anhui Province** • 1 ♂, 2 ♀♀; "CHINA: Anhui, Huang Shan, 30 km W Tunxi, 24.10.1997, Qi Yun Shan, 250 m, leg. Schönmann (CWBS 285)"; NMW • 1 ♀; "CHINA: Anhui, Huang Shan, 40 km NW Tunxi, 26. 10. 1997, rd. to Tang Kou, 350-400 m, leg. Schönmann (CWBS 287)"; NMW • 2 ♂♂, 2 ♀♀; "CHINA: Anhui, Huang Shan, 30 km NW Tunxi, 28.10.1997, 5 km E Nantang, 350-400 m, leg. Schönmann (CWBS 288)"; NMW • 1 ♀; "CHINA: Anhui, Huang Shan, 30 km NW Tunxi, 28.10.1997, 4 km E Nantang, 300-350 m, leg. M. Wang (CWBS 289)"; NMW • 3 ♀♀; "CHINA: Anhui, Huang Shan, 50 km W Tunxi, 29.10.1997, Yi Xian Shan, 350-400 m, leg. M. Wang (CWBS 290)"; NMW • 1 ex.; "CHINA: Anhui, Huang Shan 30km NW Tunxi, 30.10.1997, 3km W Nantang, 350 - 550m leg. M. Wang (CWBS 291)"; NMW • 1 ♀; "CHINA: Anhui, Huang Shan, 45 km NW Tunxi, 1.11.1997, rd. to Tang Kou, 550 m, leg. Schönmann (CWBS 294)"; NMW. – **Fujian Province** • 3 ♂♂, 1 ♀; same collection data as for holotype; CKB, NMW • 3 ♂♂; "CHINA: FUJIAN, Chong'an, Wuyi Shan, 5 km SE Da'an, Lian Dun, 500 m, 20.1.1997, leg. Ji & Wang, (CWBS 251)"; NMW • 4 ♂♂, 6 ♀♀; "CHINA: FUJIAN, Chong'an Wuyi Shan, 3 km NW Wuyi Gong 300m, 17.1.1997 leg. H. Schönmann (CWBS 246)"; CKB, NMW • 1 ♂; "CHINA: FUJIAN, Chong'an, Wuyi Shan, 3 km W Wuyi Gong, 400 m, 18.1.1997, leg. H. Schönmann (CWBS 248)"; NMW • 1 ♀; "CHINA: FUJIAN, Chong'an, Wuyi Shan, 2 km W Da'an, 450 m, 19.1.1997, leg. Ji & Wang (CWBS 249)"; NMW • 1 ♂, 1 ♀; "CHINA: FUJIAN, Yong'an, 5 km SW Xiyang, 550 m, Ziyungdong Shan, 25.1.1997, leg. H. Schönmann (CWBS 256)"; NMW. – **Guangdong Province** • 1 ♀; "CHINA: Guangdong Prov. Chebaling N.R. 24°42′21″N 114°14′17″E 7.11.2001, ca. 340 m Jäch & Komarek (CWBS 476)"; NMW • 1 ♂, 1 ♀; "CHINA: Guangdong Prov., Chebaling rd., 24°41′11″N 114°07′17″E, 7.11.2001, 270 m, Jäch & Komarek (CWBS 480)"; NMW • 3 ♂♂, 2 ♀♀; "CHINA, Guangdong Prov., 25 km SE Shixing, 24°50′23″N 114°14′03″E, 8.11.2001, ca. 150 m, Jäch & Komarek (CWBS 481)"; CKB, NMW. – **Jiangxi Province** • 2 ♀♀; "CHINA: Jiangxi, Jiuling Shan, 18 km NW Shangfu, 12.11.1997, env. Jiu Xian, 650 m, leg. M. Wang (CWBS 303)"; CKB, NMW • 1 ♂; "CHINA, Jiangxi, Jiuling Shan, 8 km NW Shangfu, 13.11.1997, env. Shang Bao, 700 m, leg. M. Wang (CWBS 304)"; NMW • 1 ♂; "CHINA, Jiangxi, Jiuling Shan, 18 km NW Shangfu, 15.11.1997, env. Jiu Xian, 800 m, leg. M. Wang (CWBS 306)"; NMW • 19 ex.; "CHINA: Jiangxi, 23.3.2003 30 km NW Xiushui, Huangmengyuan 114°24′18″E 29°14′30″N ca. 250 m, leg. Schönmann, Komarek & Wang (CWBS 506)"; NMW • 1 ex.; "CHINA: Jiangxi, 26.3.2003 Luang Shi Peng Mt. 113°58′48″E 29°26′58″N ca. 250 m, leg. Schönmann, Komarek & Wang (CWBS 512)"; NMW • 4 ex.; "CHINA: Jiangxi, 28.3.2003 ca. 10 km SW Tongu Town 114°27′39″E 28°31′05″N ca. 450 m, leg. Schönmann, Komarek & Wang (CWBS 515)"; NMW. – **Zhejiang Province** • 1 ex.; "CHINA: Zhejiang Prov. 32 km W Lishui City 300 m, 2.4.2001 leg. M. Wang (CWBS 414)"; NMW.

Type locality

China, Fujian Province, Jianyuan Prefecture, Guangze County (= Shuanxi), 12 km south of Zhima Town and 2 km north of Li Fang Village, small stream flowing from forested mountains (broadleaf trees, bamboo and *Cunninghamia*), ca 1 m wide, partly shaded by bushes, pools and sections with granitic rock and coarse crystalline gravel, 400 m a.s.l. (CWBS 252; Jäch & Ji 1998).

Description

Measurements (mm): TL: ♂♂ 2.69–3.07 (2.89±0.09, n=20), ♀♀ 2.89–3.21 (3.03±0.09, n=22); PL: ♂♂ 0.67–0.78 (0.72±0.03, n=20), ♀♀ 0.68–0.78 (0.73±0.03, n=22); PW: ♂♂ 1.16–1.37 (1.27±0.06, n=20), ♀♀ 1.20–1.40 (1.30±0.05, n=22); EL: ♂♂ 2.00–2.29 (2.17±0.07, n=20), ♀♀ 2.18–2.44 (2.30±0.07, n=22); EW: ♂♂ 1.40–1.63 (1.54±0.06, n=20), ♀♀ 1.48–1.70 (1.58±0.05, n=22); PhL: 0.52–0.64 (0.57±0.03, n=20); PrL: 0.37–0.43 (0.40±0.01, n=20).

Body oblong-ovate, strongly convex dorsally, widest behind elytral midlength (Fig. 14). Colouration dark brown to black, except reddish brown mouthparts, antennae and legs. Dorsal pubescence consisting of short decumbent yellowish setae. Dorsal plastron present on entire cranial surface, on lateral portions of pronotum, and entire elytra. Ventral plastron absent on prosternal process and median part of metaventrite.

Dorsal cranial surface with round setiferous punctures slightly smaller than diameter of an eye facet, separated by 0.5–1.0× puncture diameter. Labrum transverse, anterior margin straight; anterolateral

angles rounded; exposed portion microreticulate, with minute round setiferous punctures; setae slightly extending beyond anterior margin. Anterior margin of clypeus slightly concave. Eyes oval, moderately protruding; interfacetal setae short; ID: ♂♂ 0.36–0.42 mm (0.39±0.02, n=20), ♀♀ 0.39–0.45 mm (0.41±0.02, n=22); APD/ID: ♂♂ 1.95–2.19 (2.08±0.07, n=20), ♀♀ 1.87–2.11 (1.98±0.06, n=22). Antennae 10-segmented.

Pronotum transverse, widest at base, PW/PL: ♂♂ 1.66–1.88 (1.76±0.05, n=20), ♀♀ 1.70–1.90 (1.78±0.06, n=22); plastron narrow, reaching level of fifth elytral row; round setiferous punctures scattered over surface; rim of anterior margin twice as wide as eye facet, interrupted in middle; anterior angles moderately deflexed, protruding, acute; lateral sides convergent, moderately rounded. Hypomeron widest behind middle (lateral aspect), entirely covered with plastron. Prosternum covered with plastron, except on prosternal process. Prosternal process wider than long, widest distally; lateral edges divergent, slightly rounded; posterior edge rounded; lateral margins raised; median keel moderately arcuate. Scutellum longer than wide; surface smooth, with sparse punctures. Metaventrite with plastron, except for posteriorly narrowed median part; metaventral disc flat to slightly convex; lateral margins of metaventral process raised. Elytra ovate, convex, widest close behind midlength, EL/EW: ♂♂ 1.34–1.47 (1.41±0.04, n=20), ♀♀ 1.42–1.50 (1.46±0.02, n=21). Dorsal surface microreticulate, entirely covered with plastron, with small setiferous punctures scattered over entire surface, and with large, deeply impressed punctures arranged in nine longitudinal striae. Tibiae straight; protibia ca. 1.25× as long as protarsus; PrTL/PL: ♂♂ 0.95–1.06 (1.01±0.03, n=20), ♀♀ 0.92–1.03 (0.97±0.03, n=22). Terminal protarsomere slightly shorter than all preceding segments combined.

Ventrites entirely covered with plastron. In males, apex of ventrite 5 emarginate, in females rounded, with minute excision. Aedeagus (Fig. 15): phallobase short in relation to parameres, moderately curved ventrad, expanded proximally, PhL/PrL: 1.29–1.62 (1.43±0.08, n=20); parameres slightly curved ventrad in apical third, apices broadly rounded (lateral aspect); apex of penis rounded; sclerotised fibula short and slender. Bursa copulatrix (Fig. 18B) with one or two large spines on each side near middle, and a large number of minute distal spines; spermatheca tubular.

Secondary sexual dimorphism

Males can be recognised by the apically emarginate ventrite 5. The posterior margin of female ventrite 5 is rounded, with a minute median excision.

Distribution

China (Anhui, Fujian, Guangdong, Jiangxi, Zhejiang) (Fig. 108E).

Elmomorphus horaki Kodada, Selnekovič & Jäch sp. nov.
urn:lsid:zoobank.org:act:0482B698-E016-4BE2-889E-A59114D69998
Figs 16–17, 18C, 108F

Differential diagnosis

Elmomorphus horaki sp. nov. (Fig. 16) is characterised by the presence of plastron on the entire cranial surface, lateral bands of the pronotum, and the entire elytral surface. The same pattern is also found in *E. amamiensis*, *E. auratus* sp. nov., *E. auripilosus* sp. nov., *E. brevicornis*, and *E. parabrevicornis* sp. nov. In contrast to *E. amamiensis* and *E. parabrevicornis*, males of *E. horaki* sp. nov. do not possess any clusters of long setae on the labrum, prosternal process, or metaventrite. In *E. horaki*, the phallobase is relatively short compared to the parameres (Fig. 17) (PhL/PrL: 1.63–1.83 (1.75±0.06, n = 10), while in *E. amamiensis*, *E. auripilosus*, *E. brevicornis*, and *E. parabrevicornis* it is distinctly longer (PhL/PrL at least 1.8). *Elmomorphus horaki* rather closely resembles *E. auratus*, from which it differs in the

Fig. 16. *Elmomorphus horaki* Kodada, Selnekovič & Jäch sp. nov., paratype, male from type locality (CKB), TL: 2.50 mm.

wider pronotal plastron bands (each covering about one-third of the pronotal width), smaller body size, the more parallel-sided elytra (Fig. 16), narrowed and apically rounded parameres (Fig. 17), and the spines of the bursa copulatrix being arranged in an apical cluster and a more or less distinct, lateral row (Fig. 18C).

Etymology

The epithet is a proper noun in the genitive case honouring Jan Horák, a Czech entomologist who kindly provided interesting material from Thailand.

Fig. 17. *Elmomorphus horaki* Kodada, Selnekovič & Jäch sp. nov., aedeagus. **A**. Paratype from type locality (CKB), lateral aspect. **B**. Same, ventral aspect. **C**. Paratype from Umphang, Thailand (CKB), lateral aspect. **D**. Paratype from Umphang, lateral aspect. Scale bar: 0.1 mm.

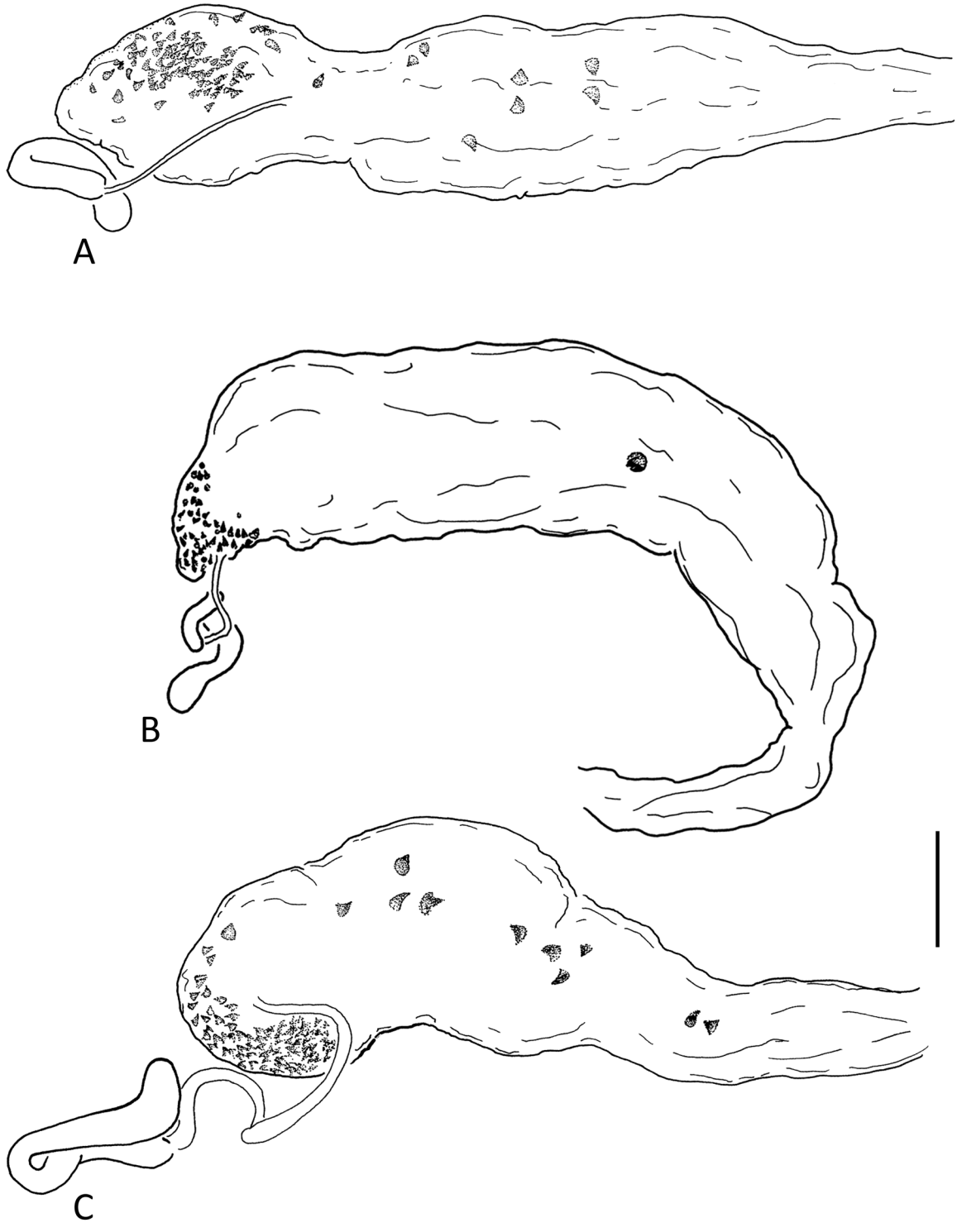

Fig. 18. Bursa copulatrix and vagina. **A**. *Elmomorphus auripilosus* sp. nov., paratype from Cuc Phuong, Vietnam (CKB). **B**. *E. auratus* sp. nov., paratype from China, CWBS 246 (CKB). **C**. *E. horaki* Kodada, Selnekovič & Jäch sp. nov., paratype from type locality (NMW). Scale bar: 0.1 mm.

Type material

Holotype

THAILAND – **Chiang Mai Province** • ♂; "NW Thailand CHON [CHOM] THONG 24-27.IV.1991 J.Horak lgt."; NMW.

Paratypes

CAMBODIA • 24 ex.; "CAMBODIA, PREAH VIHEAR, CHOAM KHSANT, 01.-12.05.2012 LOCAL COLLECTOR"; CKB, NMW.

THAILAND – **Chiang Mai Province** • 9 ♂♂, 15 ♀♀, 30 ex.; same collection data as for holotype; CKB, NMB, NMW • 2 ♂♂; "THAILAND occ. bor. 24.-28.04.1991 Chom Thong Jan Farkač leg."; CKB, NMB • 2 ♂♂, 2 ♀♀; "NE Thailand 23.-27. 4. 1991 Chom Thong S. Bilý leg."; CKB, NMB • 12 ex.; "N-THAILAND: Ch. Mai, Chom Thong, 24.-26.4.1991 leg. Pacholatko"; CKB • 3 ex.; "NW THAILAND, 1991 Chom Thong 24.-27.4. 18.26 N 98.41 E L.Dembický leg."; NMB, NMW • 3 ex.; "N-THAILAND NW Chiang Mai, Pai City, 29.4.1993 Pacholatko & Dembicky"; NMW • 1 ex.; "NW-THAILAND Chiang Mai (Zoo) 23.5.-1.6.1988 leg.Malicky (Licht [at light])"; NMW • 10 ex.; "THAILAND: 10km N Chiang Dao Mae Ping, 28.-29.6.1991 400m, 19°27′N 99°00′E Malicky & Chantaramongkol"; NMW • 9 ex.; "THAILAND, Mae Ping 19.-20.6.1991 leg.Malicky (Licht [at light])"; NMW • 3 ex.; "THAILAND, Mae Ping 16.-20.6.1991 leg.Malicky"; NMW. – **Loei Province** • 2 ex.; "Thailand: Loei, 3 km W Phu Kradung, 8.III.1994, Lam Phong Ko, WDS-A-1029 William D. Shepard leg."; CSS. – **Mae Hong Son Province** • 1 ex.; "NW Thailand 9.-16.V. MAE HONG SON 1991 Ben Huei Po 1600m leg.P.Pacholatko"; NMW • 1 ex.; "THAI 1-8. V.1992 Ban-si Lang Mae Hong Son J.Horak leg."; NMW. – **Songkhla Province** • 17 ex.; "S-THAILAND, 10.6.1993 06°59′N 100°22′E 13km W Hat Yai, 50m Ban Ko Muang, Malicky"; NMW. – **Tak Province** • 18 ♂♂, 9 ♀♀; "Thai 26.IV.-6.V.1991 Umphang 500 m, 16° 04′N 98° 53′E, Vít Kubáň leg. | Thailand 91 Thanon Thong Thai, D. Král, V. Kubáň [labels written in various styles]"; CKB, NMB, NMW. – **Uthai Thani Province** • 1 ex.; "THAILAND Jan.1989 240km nr. Bangkok 110m,leg. Thielen | 25km nw. Lan-Sak Lichtfang [light trap]"; NMW.

VIETNAM • 1 ex.; "S-VIETNAM Nam Cat Tien Nat.Park 1. – 15.5. 1994 Pacholatko & Dembicky"; NMW.

Additional material examined

MYANMAR – **Sagaing Region** • 1 ex.; "Myanmar, (Burma), Ban Mauk Reg., 270km N Sagaing, 200-750m, 05.V.-25. VI. 2012 24°23′50.88″N 95°51′25.49[″]E, leg. local collectors"; CPE.

Type locality

Thailand, Chiang Mai Province, Chom Thong.

Description

Measurements (mm): TL: ♂♂ 2.21–2.67 (2.49±0.13, n=10), ♀♀ 2.21–2.89 (2.61±0.20, n=10); PL: ♂♂ 0.52–0.64 (0.59±0.03, n=10), ♀♀ 0.52–0.66 (0.60±0.05, n=10); PW: ♂♂ 0.94–1.14 (1.06±0.06, n=10), ♀♀ 0.94–1.23 (1.08±0.09, n=10); EL: ♂♂ 1.77–2.08 (1.99±0.10, n=10), ♀♀ 1.74–2.31 (2.10±0.16, n=10); EW: ♂♂ 1.09–1.33 (1.23±0.07, n=10), ♀♀ 1.07–1.35 (1.23±0.10, n=10); PhL: 0.41–0.45 (0.43±0.02, n=10); PrL: 0.23–0.26 (0.25±0.01, n=10).

Body elongate oval, widest behind midlength of elytra, moderately convex dorsally, highest point at anterior third of elytra (Fig. 16). Body black, except for mouthparts, antennae, tarsi and trochanters reddish-brown, remaining parts of legs brown. Pubescence consisting of short thin decumbent yellowish setae arising from round punctures. Plastron present on entire cranial surface, lateral sides of pronotum,

and entire elytral surface. Ventral plastron present on entire surface, except prosternal process and median part of metaventrite.

Cranial surface entirely covered with plastron; round setiferous punctures of about 0.75× of eye facet diameter, separated by 0.5–1.0× puncture diameter. Labrum transverse, anterior margin straight, anterolateral angles rounded, surface on exposed portion microreticulate with setiferous punctures, setae short and decumbent, equal in length in both sexes. Anterior margin of clypeus straight with a row of short thin setae. Eyes oval, moderately protruding, ID: ♂♂ 0.34–0.38 mm (0.36±0.01, n=10), ♀♀ 0.32–0.39 mm (0.36±0.02, n=10); APD/ID: ♂♂ 1.90–2.12 (2.01±0.07, n=10), ♀♀ 1.81–2.10 (1.95±0.09, n=10). Antennae short, 10-segmented.

Pronotum transverse, widest at base, strongly convex, basally flattened; PW/PL: ♂♂ 1.76–1.84 (1.80±0.03, n=10), ♀♀ 1.74–1.88 (1.82±0.05, n=10). Pronotal surface with round setiferous punctures; punctures slightly larger than those on head, separated by ca 0.75–1.00× puncture diameter; pronotal disc smooth. Lateral plastron bands on pronotum of same width on anterior and posterior parts and distinctly narrowed in the middle; in anterior and posterior portions separated by ca one-third of pronotal width. Anterior pronotal angles deflexed, protruding and acute; pronotal sides converging anteriorly, slightly curved along entire length. Prosternal process laterally and posteriorly rounded; lateral margins raised; median keel moderately raised. Scutellum longer than wide, smooth, with several small setiferous punctures. Lateral margins of metaventral process raised; metaventral disc flat, without plastron. Elytra ovate, convex, lateral sides diverging anteriorly and strongly converging posteriorly, widest point behind middle; EL/EW: ♂♂ 1.56–1.72 (1.62±0.05, n=10), ♀♀ 1.63–1.76 (1.71±0.04, n=10). Elytral surface entirely covered with plastron; scattered small setiferous punctures and larger punctures arranged in nine longitudinal rows in weakly impressed striae; strial punctures separated by about half a puncture diameter. Tibiae straight; protibia slightly shorter than protarsus; PTiL/PL: ♂♂ 1.15–1.28 (1.21±0.05, n=10), ♀♀ 1.02–1.33 (1.19±0.08, n=10). Terminal protarsomere slightly longer than all preceding segments combined; foreclaws narrow, strongly curved, similar in both sexes.

Ventrites entirely covered with plastron. Intercoxal process with lateral margins flat; admedian keels inapparent. Ventrite 5 regularly convex in both sexes; apex triangularly emarginate in males, with several erect setae on both sides of emargination; in females with short longitudinal keel at apex. Aedeagus (Fig. 17): phallobase rather short, PhL/PrL: 1.63–1.83 (1.75±0.06, n = 10); parameres curved ventrad, apices rounded (lateral aspect); penis narrowly rounded at apex; sclerotised fibula slender. Bursa copulatrix (Fig. 18C) with numerous minute spines in distal part, and with several larger scattered spines in proximal part.

Secondary sexual dimorphism

Females are on average slightly larger than males. Male ventrite 5 triangularly emarginate apically; female ventrite 5 with a short longitudinal keel at apex.

Distribution

Cambodia, Myanmar, Thailand, Vietnam (Fig. 108F).

Elmomorphus fusiformis sp. nov.
urn:lsid:zoobank.org:act:A6F346BC-BEFE-4F95-A988-F025DCDAFF50
Figs 19–20, 109A

Differential diagnosis

Elmomorphus fusiformis sp. nov. (Fig. 19) is a remarkably large species (TL ♂♂ 3.86–4.13 mm, ♀♀ 3.95–4.29 mm). It can be characterised by the presence of the dorsal plastron on the entire cranial

Fig. 19. *Elmomorphus fusiformis* sp. nov., holotype, male (IAECAS), TL: 4.17 mm.

surface (except for a narrow median area on the vertex), the anterior angles of the pronotum and the lateral sides of the elytra. Large elytral punctures are arranged in nine longitudinal rows on each elytron. *Elmomorphus fusiformis* resembles *E. catenatus* sp. nov., which differs in lacking an elytral plastron and in the strial punctures being well delimited and separated in *E catenatus* versus weakly delimited and confluent in *E. fusiformis*.

Etymology

The epithet is a Latin adjective in the nominative singular meaning spindle-shaped, referring to the oblong-ovate and strongly convex body shape.

Type material

Holotype

CHINA – **Yunnan Province** • ♂; "CHINA: NW-Yunnan 15km N Lijiang 2800m, 6.7.1994 leg. JI (16)"; IAECAS.

Paratypes

CHINA – **Yunnan Province** • 9 ♂♂, 13 ♀♀; same collection data as for holotype, but some specimens "leg. H. Schillhammer"; CKB, NMW • 1 ♀; "China Yunnan, 1800m LIJIANG 23.6.-21.7. 26.53N 100.18E lgt. S.Becvar 1992"; NMW • 20 ex.; "CHINA: Yunnan Province, SHANZHI env., 22.-24. VI.2007, JIZU SHAN Mt., Zhusheng Si Monastery, 25°57.7′N 100°23.6′E, 2180 m, J. Hájek & J. Růžička leg. | individually, under stones, on vegetation, in stream; mixed forest (with dominant *Pinus*, *Quercus*, and *Rhododendron*)"; NMPC.

Type locality

China, Yunnan Province, Lijiang Autonomous Pref., Lijiang County, 15 km north of Lijiang City; small valley near the abandoned airport, small stream, 0.5–1.0 m wide, limestone, 2800 m a.s.l. (CWBS 60; Jäch & Ji 1995).

Description

Measurements (mm): TL: ♂♂ 3.86–4.13 (4.00±0.11, n=7), ♀♀ 3.95–4.29 (4.17±0.14, n=5); PL: ♂♂ 0.94–1.04 (0.99±0.04, n=7), ♀♀ 0.96–1.04 (0.99±0.03, n=5); PW: ♂♂ 1.46–1.67 (1.58±0.09, n=7), ♀♀ 1.62–1.64 (1.63±0.01, n=5); EL: ♂♂ 2.92–3.09 (3.01±0.07, n=7), ♀♀ 2.99–3.25 (3.17±0.11, n=5); EW: ♂♂ 1.82–2.01 (1.93±0.07,=7), ♀♀ 1.92–2.05 (1.99±0.05, n=5); PhL: 0.81–0.88 (0.85±0.03, n=7); PrL: 0.37–0.42 (0.39±0.02, n=7).

Body oblong-ovate, strongly convex dorsally (Fig. 19). Integument black; mouthparts, antennae and tarsi reddish-brown. Pubescence consisting of short decumbent yellowish setae. Dorsal plastron present on cranial surface except for small narrow median area on vertex, on anterior angles of pronotum, and in lateral parts of elytra. Ventral plastron absent on prosternal process, median part of metaventrite, and median part of ventrite 1.

Cranial surface with round setiferous punctures, slightly smaller than an eye facet, separated by 0.5–1.0 puncture diameter. Labrum transverse, anterior margin slightly emarginate; anterolateral angles rounded; exposed portion microreticulate, with minute round setiferous punctures. Anterior margin of clypeus slightly concave. Eyes oval, interfacetal setae short; ID: ♂♂ 0.53–0.60 mm (0.57±0.03, n=7), ♀♀ 0.56–0.63 mm (0.61±0.03, n=5); APD/ID: ♂♂ 1.70–1.75 (1.72±0.02, n=7), ♀♀ 1.66–1.80 (1.72±0.05, n=5). Antennae 11-segmented. Terminal maxillary palpomere fusiform.

Pronotum transverse, widest at base, PW/PL: ♂♂ 1.55–1.64 (1.60±0.03, n=7), ♀♀ 1.56–1.69 (1.63±0.01, n=5); surface smooth, large microgranules and coarse setiferous punctures confluent

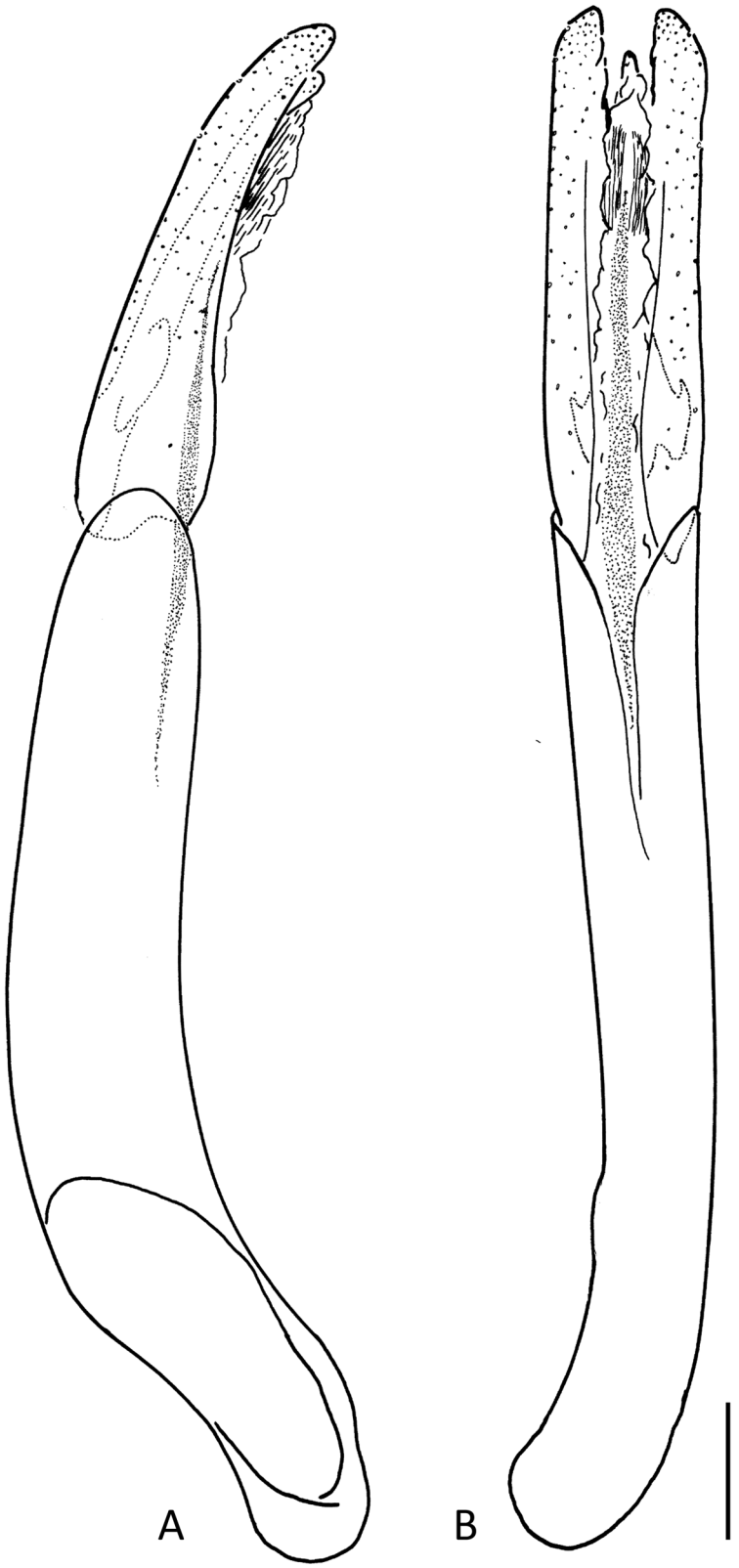

Fig. 20. *Elmomorphus fusiformis* sp. nov., paratype from type locality (CKB), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

medially; plastron confined to anterior angles. Anterior rim twice as wide as eye facet, interrupted in middle; lateral sides convergent, rounded; anterior angles produced, acute. Prosternal process slightly wider than long; lateral and posterior edges rounded; lateral margins raised, without groups of long setae; median keel moderately raised. Scutellum as long as wide, microreticulate distally, with small round punctures. Metaventral disc flat, without groups of long setae; lateral rims of metaventral process flat. Elytra elongate oval, dorsally convex, widest behind middle, EL/EW: ♂♂ 1.53–1.61 (1.56±0.03, n=7), ♀♀ 1.56–1.63 (1.59±0.03, n=5). Surface weakly microreticulate, small punctures scattered over entire surface, large deep punctures forming nine longitudinal striae, strial punctures separated by about half a puncture diameter. Plastron in two lateral bands, each reaching third stria. Tibiae weakly curved; protibia ca 1.22× as long as protarsus; PrTL/PL: ♂♂ 1.01–1.09 (1.06±0.03, n=7), ♀♀ 1.03–1.10 (1.06±0.06, n=5). Terminal protarsomere as long as three preceding segments combined.

Ventrites covered with plastron, except for median portion of ventrite 1. Ventrite 5 in males triangularly emarginate at apex; in females rounded, with small glabrous longitudinal keel. Aedeagus (Fig. 20): phallobase rather long and slender, basal opening large, PhL/PrL: 2.00–2.30 (2.17±0.11, n=7). Parameres moderately curved ventrad, apices rounded in lateral aspect, obliquely truncated in ventral aspect. Penis rounded at apex, sclerotised fibula distinct. Ovipositor: valvifers long, flattened; coxites asymmetrical, right one ca 1.30× as long as left one. Bursa copulatrix without microsclerites.

Secondary sexual dimorphism

Ventrite 5 apically emarginate in males, rounded and with short apical keel in females.

Distribution

China (Yunnan) (Fig. 109A).

Elmomorphus elmoides sp. nov.
urn:lsid:zoobank.org:act:483DEA09-BE29-47FC-8677-7F97D3224D41
Figs 21–22, 28A, 109B

Differential diagnosis

Elmomorphus elmoides sp. nov. (Fig. 21) can be characterised by the elongate and moderately convex body, widest behind the midlength of the elytra. The dorsal plastron is confined to the frontoclypeus, anterolateral portions of the vertex, and the lateral sides of the pronotum and the elytra. Elytra with small punctures scattered over the entire surface, and with large punctures arranged in longitudinal rows, which may sometimes be indistinct. Males with conspicuous long and erect setae or setal clusters on the labrum, prosternal process, and metaventrite. A similar combination of characters is shared with *E. calvus* sp. nov., which is larger, TL: ♂♂ 2.47–2.68 mm (2.55±0.06, n=10), ♀♀ 2.65–2.94 mm (2.81±0.09, n=10) in *E. elmoides* versus TL: ♂♂ 3.17–3.35 mm (3.25±0.06, n=7), ♀♀ 3.15–3.45 mm (3.30±0.11, n=10) in *E. calvus* sp. nov., and has a more convex body (Fig. 23). In *E. calvus*, the pronotal plastron is confined to the anterolateral portions, while in *E. elmoides* it covers the entire lateral sides. The lateral pronotal sides are straight in *E. elmoides* but distinctly rounded in *E. calvus*. The phallobase is only slightly curved in *E. elmoides* (Fig. 22) but strongly curved in *E. calvus* (Fig. 24). The bursa copulatrix has large sclerotised spines (Fig. 28A), lacking in *E. calvus* (Fig. 28B).

Etymology

The epithet is a Latin adjective in the nominative singular referring to the superficial resemblance to various genera of Elmidae.

Fig. 21. *Elmomorphus elmoides* sp. nov., paratype, male from Buon Luoi, Vietnam (CKB), TL: 2.55 mm.

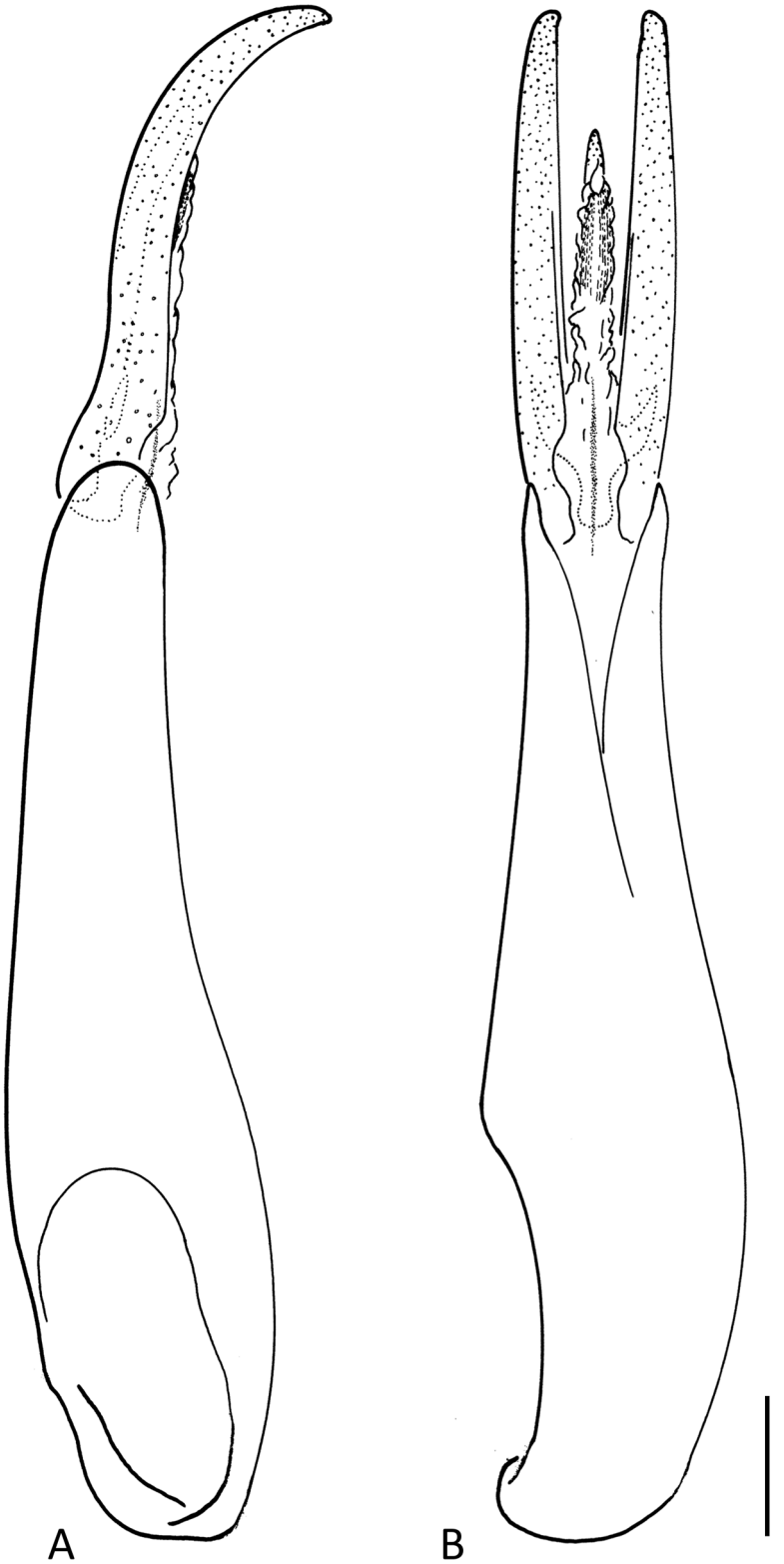

Fig. 22. *Elmomorphus elmoides* sp. nov., paratype from type locality (CKB), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Type material

Holotype

VIETNAM – **Lam Dong Province** • ♂; "S-VIETNAM, 11°27′N 107°43′E, 15 km SW of Bao Loc, 900 m, 22.-24.IV.1995 P. Dembický"; NMW.

Paratypes

VIETNAM – **Lam Dong Province** • 7 ♂♂, 6 ♀♀; same collection data as for holotype (on some labels "Pacholatko & Dembicky" are stated as collectors); CKB, NMW. – **Gia Lai Province** • 8 ♂♂, 6 ♀♀; "S-VIETNAM 40km NW An Khe Buon Luoi, 620-750m | 14°10′N 108°30′E 28.3. – 12.4.1995 Pacholatko & Dembicky"; CKB, NMW.

Type locality

Vietnam, Lam Dong Province, 15 km southwest of Bao Loc, 900 m, 11°27′ N, 107°43′ E.

Description

Measurements (mm): TL: ♂♂ 2.47–2.68 (2.55±0.06, n=10), ♀♀ 2.65–2.94 (2.81±0.09, n=10); PL: ♂♂ 0.60–0.65 (0.63±0.01, n=10), ♀♀ 0.65–0.73 (0.69±0.03, n=10); PW: ♂♂ 0.98–1.06 (1.02±0.03, n=10), ♀♀ 0.99–1.14 (1.08±0.04, n=10); EL: ♂♂ 1.85–2.05 (1.92±0.06, n=10), ♀♀ 1.98–2.24 (2.12±0.09, n=10); EW: ♂♂ 1.17–1.32 (1.24±0.04, n=10), ♀♀ 1.24–1.43 (1.32±0.06, n=10); PhL: 0.92–1.01 (0.96±0.03, n=10); 0.40–0.47 (0.43±0.02, n=10).

Body elongate-ovate (Fig. 21), widest behind midlength of elytra, moderately convex dorsally, highest point at around midlength of elytra. Colouration black, except for reddish mouthparts, antennae, trochanters, and tarsi; remaining parts of legs brown to black. Dorsal vestiture consisting of short decumbent yellowish setae arising from small round punctures. Plastron on cranial surface except for posteromedian semicircular area on vertex, and along lateral sides of pronotum and elytra. Ventral surface covered with thin plastron setae, except on prosternal process, and median parts of metaventrite and ventrites 1–2.

Cranium dorsally covered with plastron, except semicircular area on vertex, and with round setiferous punctures, punctures slightly smaller than an eye facet, separated by 0.5–1.0× puncture diameter. Labrum transverse, anterior margin shallowly emarginate medially; anterolateral angles rounded; surface microreticulate with small setiferous punctures; males with conspicuous long and erect setae, about as long as terminal maxillary palpomere, arranged in transverse row. Anterior margin of clypeus straight, with a row of short setae. Eyes large, oval, protruding, interfacetal setae short; ID: ♂♂ 0.30–0.42 mm (0.40±0.01, n=10), ♀♀ 0.41–0.47 mm (0.43±0.02, n=10); APD/ID: ♂♂ 1.71–1.85 (1.80±0.04, n=10), ♀♀ 1.67–1.80 (1.73±0.05, n=10). Antennae short, 10-segmented, densely covered with plastron.

Pronotum transverse, widest at base, moderately convex, PW/PL: ♂♂ 1.56–1.76 (1.62±0.06, n=10), ♀♀ 1.50–1.64 (1.57±0.04, n=10). Surface smooth, with round setiferous punctures; plastron forming lateral band on each side, anteriorly about as wide as eye, constricted behind midlength. Anterior angles strongly deflexed, protruding and acute; pronotal sides convergent, straight. Hypomeron widest around midlength, covered with plastron. Prosternal process short and wide, lateral edges divergent and rounded; posterior edge rounded; lateral portions abruptly raised, wide, in males with cluster of long setae anteriorly; median portion flat. Scutellum longer than wide, smooth, with round setiferous punctures. Lateral parts of metaventrite covered with plastron; median part flat, smooth, with setiferous punctures, in males with two clusters of long setae posteriorly; metaventral process with lateral margins strongly raised, anterior margin weakly raised; discrimen apparent. Elytra ovate, widest behind middle, moderately convex, highest point around the middle; sides rounded, slightly diverging in anterior half and strongly converging in posterior half, EL/EW: ♂♂ 1.51–1.61 (1.54±0.03, n=10), ♀♀ 1.52–1.82

(1.61±0.08, n=10); small punctures scattered, large punctures arranged in nine longitudinal rows (striae); strial punctures weakly delimited; plastron forming lateral band on each elytron extending from elytral side to fourth elytral stria. Tibiae straight; protibia ca 1.4× as long as protarsus. Terminal protarsomere as long as three previous segments combined. Male foreclaws strongly curved, about half of length of terminal tarsomere, similar to female foreclaws.

Ventrites covered with plastron, except median portion of ventrites 1–2. Intercoxal process wide, subtriangular, with moderately raised margins and small round subapical depression; admedian keels moderately raised. Male ventrite 5 declivous near anterior margin; apex rounded, with several long erect setae medially. Female ventrite 5 evenly convex, with short longitudinal subapical keel, apex rounded. Aedeagus (Fig. 22): phallobase long, moderately expanded proximally, PhL/PrL: 2.00–2.30 (2.21±0.11, n=10); parameres strongly curved ventrad in distal half, apices subacute (lateral aspect); penis apically relatively broad and rounded in lateral aspect, lateral extensions of apophyses strongly produced distad. (In most species of *Elmomorphus*, the apophyses are produced proximad and distad. In *E. elmoides* sp. nov. and *E. calvus* sp. nov., the apophyses are produced only distad. This character can be seen only in ventral view when the aedeagus is cleared in lactic acid and mounted on a slide.). Sclerotised fibula short and slender. Bursa copulatrix (Fig. 28A) with several large sclerotised spines; spermatheca large, tubular. Ovipositor heavily sclerotised; right coxite ca 1.4× as long as left coxite; valvifers ca twice as long as right coxite.

Secondary sexual dimorphism

Males possess clusters of long erect setae on labrum, prosternal process, and metaventrite. Ventrite 5 of female with longitudinal subapical keel.

Distribution

Vietnam (Fig. 109B).

Elmomorphus calvus sp. nov.
urn:lsid:zoobank.org:act:384803E1-F693-4257-94BB-F785C824F6B4
Figs 23–24, 28B, 109C

Differential diagnosis

Elmomorphus calvus sp. nov. (Fig. 23) is characterised by the presence of plastron on the frontoclypeus, the anterolateral portions of the vertex and pronotum, and the lateral sides of the elytra. The elytral punctation consists of small scattered punctures and large punctures arranged in nine well-impressed striae. The pronotum is strongly convex with distinctly rounded lateral sides. Males possess conspicuous long erect setae on the labrum and small clusters of setae on the prosternal process, metaventrite and ventrite 5. The aedeagus is large, the phallobase is robust and strongly curved (Fig. 24). Bursa copulatrix without sclerotised spines (Fig. 28B). A similar combination of characters is also shared by *E. elmoides* sp. nov., which differs in the smaller, TL: ♂♂ 2.47–2.68 mm (2.55±0.06, n=10), ♀♀ 2.65–2.94 mm (2.81±0.09, n=10) in *E. elmoides* versus TL: ♂♂ 3.17–3.35 mm (3.25±0.06, n=7), ♀♀ 3.15–3.45 mm (3.30±0.11, n=10) in *E. calvus*, and less convex body (Fig. 21), the pronotum being less convex with straight lateral sides in *E. elmoides* versus strongly convex with rounded lateral sides in *E. calvus*, the pronotal plastron being present along the entire pronotal sides in *E. elmoides* versus restricted to the anterior half in *E. calvus*, the aedeagus with a slender and almost straight phallobase in *E. elmoides* (Fig. 22) versus an expanded and strongly bent phallobase in *E. calvus*, and the bursa copulatrix possessing large sclerotised spines in *E. elmoides* (Fig. 28A), while in *E. calvus*, the spines are absent. *Elmomorphus calvus* may also resemble *E. depressus* sp. nov. and *E. sulcatus* sp. nov.; however, these species differ in the broader and more convex body shape (Figs 27, 39), the absence of conspicuous clusters of setae in males, and a differently shaped aedeagus.

Fig. 23. *Elmomorphus calvus* sp. nov., holotype, male (NMW), TL: 3.25 mm.

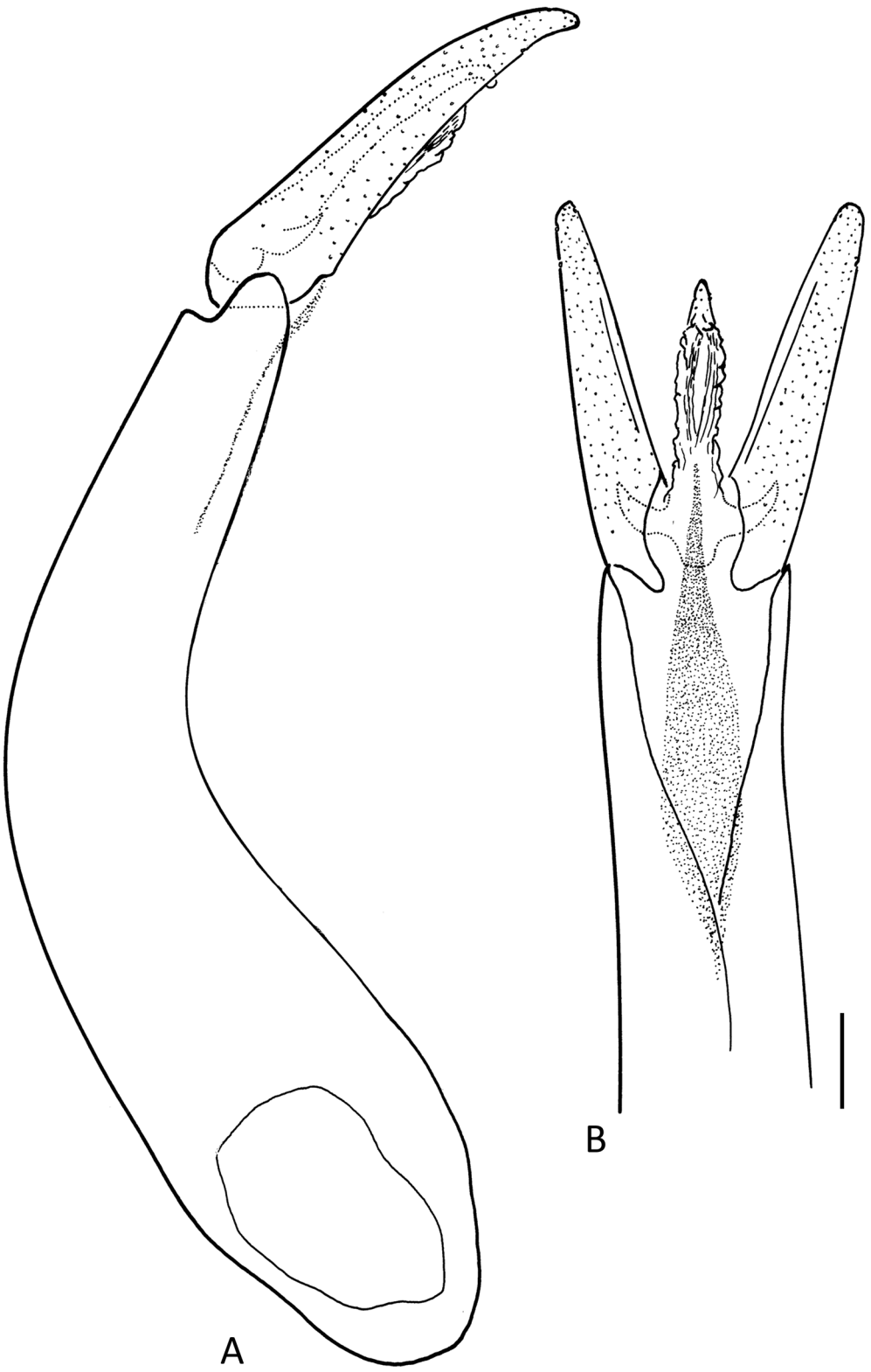

Fig. 24. *Elmomorphus calvus* sp. nov., holotype (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Etymology

The epithet is a Latin adjective in the nominative singular meaning 'hairless', referring to the glabrous dorsal surface.

Type material

Holotype

VIETNAM – **Vinh Phúc Province** • ♂; "N-VIETNAM: Tam Dao (2) 1.-8.6.1996 leg. Dembicky & Pacholatko"; NMW.

Paratypes

CHINA – **Guangxi Province** • 1 ex.; "CHINA, GUANGXI A.R., 5.-9.iv.2013 SHIWANDA SHAN National Forest Park (forested river valley; in river) 21°54.4′N, 107°54.2′E, 290-360 m M.Fikáček, J.Hájek & J.Růžička leg.", NMPC.

VIETNAM – **Vinh Phúc Province** • 8 ♂♂, 18 ♀♀; same collection data as for holotype; CKB, NMW.

Type locality

Vietnam, Vinh Phúc Province, Tam Dao.

Description

Measurements (mm): TL: ♂♂ 3.17–3.35 (3.25±0.06, n=7), ♀♀ 3.15–3.45 (3.30±0.11, n=10); PL: ♂♂ 0.83–0.91 (0.86±0.03, n=7), ♀♀ 0.83–0.91 (0.87±0.03, n=10); PW: ♂♂ 1.27–1.38 (1.33±0.04, n=7), ♀♀ 1.29–1.45 (1.38±0.06, n=10); EL: ♂♂ 2.34–2.47 (2.39±0.04, n=7), ♀♀ 2.31–2.54 (2.43±0.08, n=10); EW: ♂♂ 1.46–1.59 (1.53±0.04, n=7), ♀♀ 1.50–1.66 (1.59±0.06, n=10); PhL: 1.12–1.21 (1.17±0.03, n=7); PrL: 0.40–0.49 (0.45±0.03, n=7).

Body ovate (Fig. 23), widest behind midlength of elytra, strongly convex dorsally, highest point at first quarter of elytral length. Colouration black, except for reddish brown mouthparts, antennae, trochanters, and tarsi, and brown proximal portions of tibiae. Vestiture consisting of short decumbent yellowish setae. Plastron present on cranium (except for semicircular area on vertex), on anterolateral portions of pronotum, and on lateral elytral bands. Ventral surface with thin plastron setae, except on prosternal process, and median parts of metaventrite and ventrites 1–2.

Head surface covered with plastron, except for semicircular area on vertex; with round setiferous punctures slightly smaller than eye facet, separated by 0.5–1.0× facet diameter. Labrum transverse, anterior margin concave; surface microreticulate, with small punctures; males with conspicuous long setae, slightly shorter than terminal maxillary palpomere. Anterior margin of clypeus straight, with row of short dense setae. Eyes large, oval, protruding, interfacetal setae short; ID: ♂♂ 0.48–0.51 mm (0.49±0.01, n=7), ♀♀ 0.52–0.54 mm (0.52±0.01, n=4). Antennae short, 10-segmented, densely covered with setae.

Pronotum strongly convex, wider than long, lateral sides distinctly rounded, PW/PL: ♂♂ 1.46–1.63 (1.55±0.05, n=7), ♀♀ 1.54–1.65 (1.58±0.04, n=10); surface smooth with round punctures slightly wider than those on head, separated by about half a puncture diameter; plastron present anterolaterally. Lateral margins of prosternal process straight and slightly raised, with conspicuous cluster of long erect setae in males; median keel flat; posterior edge rounded. Lateral margins of metaventral process raised; metaventral disc depressed in males, with two clusters of long and erect setae posteriorly, in females flat and without such clusters; glabrous area usually widening posteriorly. Scutellum wider than long, smooth, with several setiferous punctures. Elytra strongly convex, widest behind middle, EL/EW: ♂♂ 1.52–1.61 (1.57±0.03, n=7), ♀♀ 1.47–1.57 (1.52±0.03, n=10); small punctures scattered over entire surface,

large punctures arranged in nine well impressed striae, strial punctures confluent; plastron confined to two lateral bands, each extending from elytral side to fourth elytral stria. Tibiae straight, protibia ca 1.3 × as long as protarsus, PrTL/PL: ♂♂ 0.95–1.08 (1.04±0.05, n=7), ♀♀ 0.95–1.05 (0.99±0.03, n=10). Protarsus with terminal tarsomere nearly as long as all preceding segments combined; foreclaws long and slender, strongly curved.

Ventrites with plastron, except for median portions of ventrites 1–2. Intercoxal process wide, lateral margins raised, admedian keels distinct. Ventrite 5 evenly convex in both sexes, in males with two clusters of long, erect setae before apex, in females with short longitudinal subapical keel. Aedeagus (Fig. 24): phallobase remarkably long and robust, strongly curved, PhL/PrL: 2.34–2.84 (2.62±0.18, n=7); parameres rather short, slightly curved ventrad, apices narrowly rounded (lateral aspect); penis curved ventrad apically; sclerotised fibula long and wide. Bursa copulatrix without sclerotised spines (Fig. 28B).

Secondary sexual dimorphism

Males with conspicuous long erect setae on labrum, prosternal process, median part of metaventrite and on ventrite 5; metaventral disc depressed. In females, metaventral disc flat; ventrite 5 with short longitudinal subapical keel.

Distribution

China (Guangxi), Vietnam (Fig. 109C).

Elmomorphus hongkong sp. nov.
urn:lsid:zoobank.org:act:FBC10F6F-B308-4370-BA0E-77D64EAF03FA
Figs 25–26, 109D

Differential diagnosis

Elmomorphus hongkong sp. nov. (Fig. 25) is characterised by the presence of plastron on the cranial surface (except for the semicircular area on the vertex), on the anterior angles of the pronotum, and on the lateral sides of the elytra. The body is small and broadly oval, and the elytron has nine longitudinal rows of large punctures and small punctures scattered on the interstices. This combination of characters is also shared by *E. sulcatus* sp. nov. and *E. depressus* sp. nov., from which it differs in the shallow elytral striae. In *E. hongkong*, the plastron bands on the anterior elytral two-thirds are narrow, reaching only the eighth elytral row. The plastron bands in *E. sulcatus* and *E. depressus* are wider, reaching the sixth elytral row. The prosternal process has a slightly arched median keel, in contrast to *E. depressus*, which possesses a transverse depression posteriorly. The ventrites are covered with plastron, except for the median portion of the first ventrite, while in *E. sulcatus*, the plastron is missing on the median portions of the first two ventrites. The phallobase in *E. hongkong* is shorter (PhL/PrL: 1.93–2.02 (n=3)) than in *E. sulcatus* (PhL/PrL: 1.40–2.00 (1.80±0.17, n=10)), and the parameres are different as well (see Fig. 26).

Etymology

The epithet is a noun in the nominative singular, standing in apposition to the generic name and refers to the type locality.

Type material

Holotype

CHINA – Hong Kong • ♂; "HONGKONG (5) [CWBS 6] 1992 N.T.-Lam Tsuen Riv. 25.VI. leg. Jäch"; NMW.

Fig. 25. *Elmomorphus hongkong* sp. nov., paratype, male from type locality (NMW), TL: 2.48 mm.

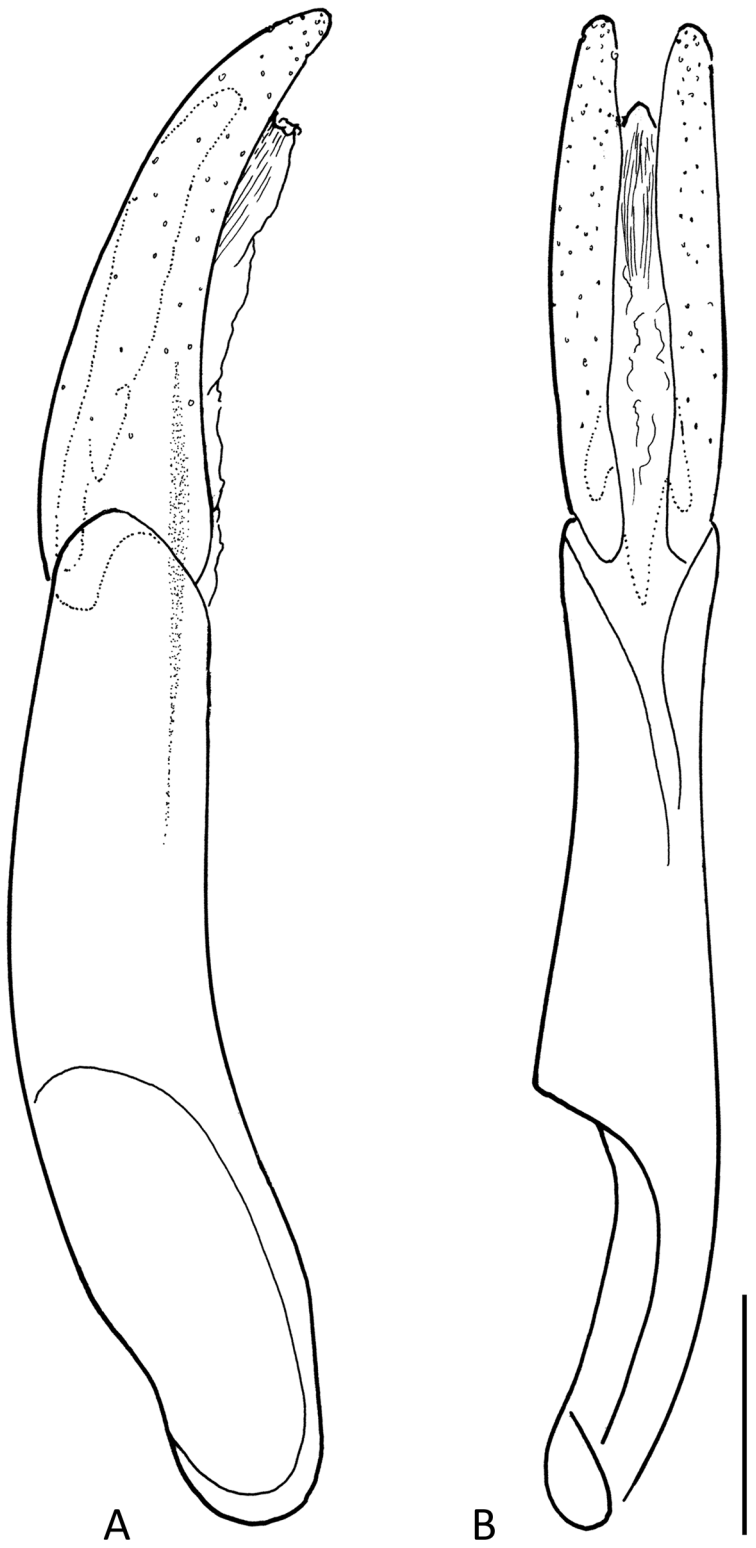

Fig. 26. *Elmomorphus hongkong* sp. nov., holotype (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Paratypes

CHINA – **Hong Kong** • 1 ♂, 1 ♀; same collection data as for holotype; NMW • 1 ♂; "HONGKONG (4) [CWBS 5] 1992 N.T.-Lam Tsuen Riv. 25.VI. leg. Jäch"; NMW • 3 ♀♀; "HONGKONG Tai Po Kau [Nature Reserve] 9.3.1978, leg. Dudgeon (K)"; CKB, NMW.

Type locality

China, Hong Kong Special Administrative Region, New Territories, Tai Mo Shan Country Park, Lam Tsuen River, southwest of Tai Po New Town; ca 150–500 m a.s.l. (CWBS 6; Jäch & Ji 1995: fig. 8).

Description

Measurements (mm): TL: ♂♂ 2.31–2.55 (n=3), ♀♀ 2.53–2.94 (2.71±0.17, n=4); PL: ♂♂ 0.60–0.65 (n=3), ♀♀ 0.63–0.75 (0.69±0.05, n=4); PW: ♂♂ 1.17–1.33 (n=3), ♀♀ 1.25–1.45 (1.35±0.08, n=4); EL: ♂♂ 1.71–1.89 (n=3), ♀♀ 1.89–2.19 (2.03±0.12, n=4); EW: ♂♂ 1.39–1.54 (n=3), ♀♀ 1.48–1.67 (1.56±0.08, n=4); PhL: 0.46–0.51 (n=3); PrL: 0.24–0.25 (n=3).

Body oval, moderately convex dorsally (Fig. 25). Integument black; mouthparts, antennae and legs reddish brown. Pubescence consists of short sparse yellowish setae. Plastron on cranium except for triangular area on vertex, anterior angles of pronotum, narrow lateral portions of elytra, and on ventral surface except prosternal process, and median parts of metaventrite and ventrite 1.

Dorsal head surface with round punctures, each slightly smaller than eye facet, separated by approximately one puncture diameter; plastron on entire surface except for triangular area on vertex. Labrum transverse, anterior margin broadly emarginate, exposed portion microreticulate, with small setiferous punctures; setae equal in length in both sexes. Anterior margin of clypeus straight. Eyes oval, interfacetal setae short; ID: ♂♂ 0.43–0.46 mm (n=3), ♀♀ 0.46–0.50 mm (0.48±0.01, n=4); APD/ID: ♂♂ 1.64–1.73 (n=3), ♀♀ 1.62–1.75 (1.67±0.05, n=4). Antennae 10-segmented, densely setose.

Pronotum transverse, PW/PL: ♂♂ 1.94–2.05 (n=3), ♀♀ 1.93–2.00 (1.97±0.03, n=4), rim of anterior margin as wide as an eye facet, interrupted in the middle; anterior angles deflexed, prominent; lateral pronotal sides convergent, moderately rounded; surface smooth, with round punctures; plastron present anterolaterally. Prosternal process wider than long, without groups of long setae in males; lateral edges divergent, straight; posterior edge rounded; lateral portions moderately raised; median keel rather flat. Scutellum wider than long, smooth, with round punctures, acute at apex. Glabrous area of metaventrite widening posteriorly; groups of long setae absent in both sexes; lateral margin of metaventral process raised and separated by shallow groove. Elytra broadly oval, moderately convex, widest close before middle, EL/EW: ♂♂ 1.22–1.23 (n=3), ♀♀ 1.27–1.32 (1.30±0.03, n=4); surface weakly microreticulate, with small scattered punctures and with large deep punctures arranged in indistinct longitudinal rows, striae shallow; plastron confined to a very narrow lateral band almost reaching elytral base, expanding in apical quarter. Tibiae slightly curved; protibia ca 1.4× as long as protarsus, PrTL/PL: ♂♂ 0.97–1.06 (n=3), ♀♀ 0.94–1.03 (0.98±0.05, n=4). Terminal protarsomere about as long as all preceding segments combined.

Ventrites covered with plastron except middle of ventrite 1. Ventrite 5 in females with minute apical excision. Aedeagus (Fig. 26): phallobase rather robust, PhL/PrL: 1.93–2.02 (n=3); parameres expanded basally, moderately curved ventrad, apices rounded (lateral aspect); penis rounded apically; sclerotised fibula distinct.

Secondary sexual dimorphism

Ventrite 5 in females with minute apical excision.

Distribution

China (Hong Kong) (Fig. 109D).

Elmomorphus depressus sp. nov.
urn:lsid:zoobank.org:act:C5A3782F-D98D-47D6-A54B-2E55AE76E8C9
Figs 27, 28C, 109E

Differential diagnosis

Elmomorphus depressus sp. nov. (Fig. 27) is characterised by the presence of plastron on the cranial surface (except for a semicircular area on the vertex), the anterior angles of the pronotum, and the lateral sides of the elytra. The body is small and broadly oval. Elytron with nine longitudinal rows of large punctures and numerous small punctures scattered between the rows. Similar characters are also present in *E. hongkong* sp. nov. and *E. sulcatus* sp. nov. It can be separated from these species by the presence of a transverse median depression on the prosternal process. The well-impressed elytral striae distinguish this species from *E. hongkong*. The strial punctures are well separated by ca 0.5–2.0 × puncture diameters, while in *E. sulcatus*, these punctures are not distinctly delimited, often confluent. Furthermore, all ventrites, except for the median portion of the first one, are entirely covered with plastron. In *E. sulcatus*, a plastron is missing in the middle of the first two ventrites.

Etymology

The epithet is a Latin adjective in the nominative singular referring to the depression on the prosternal process.

Type material

Holotype

China – **Guangxi Autonomous Region** • ♀; "CHINA: Guangxi 1993 Dist. Lipu 120km S Guilin Berge bei [mountains near] Siuren | 12.11., 350m leg. Schönmann et Schillhammer (19) [CWBS 41]"; IAECAS.

Type locality

China, Guangxi Autonomous Region, Guilin Prefecture, Lipu County, ca 120 km south of Guilin, ca 80 km east of Liuzhou City, Siuren Village; fast flowing stream, ca 1 m wide, unpolluted, partly shaded, gravel and rocks, numerous small waterfalls, volcanic, ca 350 m a.s.l. (CWBS 41; Jäch & Ji 1995).

Description

Measurements (mm): TL: ♀ 3.58 (n = 1); PL: ♀ 0.89 (n = 1); PW: ♀ 1.46 (n = 1); EL: ♀ 2.47 (n = 1); EW: ♀ 1.74 (n = 1).

Body oblong oval, moderately convex dorsally (Fig. 27). Integument black; mouth parts, antennae, trochanters, and tarsi reddish brown. Pubescence consisting of short sparse yellowish setae. Plastron present on head (except for semicircular area on vertex), on anterior angles of pronotum, lateral portions of elytra, and on ventral surface except for prosternal process, and median parts of metaventrite and ventrite 1.

Dorsal surface of head with round punctures smaller than an eye facet, separated by 0.5–1.0 × puncture diameter; plastron present on entire surface, except semicircular area on vertex. Labrum transverse with anterior margin broadly emarginate; exposed portion microreticulate, with small setiferous punctures. Anterior margin of clypeus straight. Eyes oval, interfacetal setae short, ID: ♀ 0.52 mm (n = 1), APD/ID: ♀ 1.71 (n = 1). Antennae 10-segmented, densely setose.

Pronotum transverse, widest at base, PW/PL: ♀ 1.63 (n = 1); rim of anterior margin complete, twice as wide as diameter of eye facets; anterior angles strongly deflexed, prominent; lateral sides convergent, rounded; surface smooth, punctures round; plastron confined to anterolateral portions. Prosternal process

Fig. 27. *Elmomorphus depressus* sp. nov., holotype, female (IAECAS), TL: 3.58 mm.

Fig. 28. Bursa copulatrix and vagina. **A**. *Elmomorphus elmoides* sp. nov., paratype from type locality (NMW). **B**. *E. calvus* sp. nov., paratype from type locality (CKB). **C**. *E. depressus* sp. nov., holotype (IAECAS). Scale bar: 0.1 mm.

wider than long, lateral and apical edges rounded; lateral portions moderately raised; with transverse depression before posterior margin. Scutellum wider than long with small round punctures. Metaventrite with convex median part. Elytra oblong oval, convex, EL/EW: ♀ 1.42 (n = 1), widest around middle; surface distinctly microreticulate, with small, scattered punctures and large deep punctures arranged in nine longitudinal rows, punctures separated by ca 0.5–2.0 diameters; plastron forming two lateral bands, anteriorly almost reaching elytral base, extending from lateral margin to sixth row in proximal half, then slightly extending posteriorly. Tibiae slightly curved; protibia ca 1.4 × as long as protarsus; PrTL/LPL: ♀ 1.02 (n = 1). Terminal protarsomere as long as all preceding tarsomeres combined.

Ventrites covered with plastron, except for median portion of ventrite 1. Ventrite 5 with short longitudinal keel. Bursa copulatrix without microsclerites (Fig. 28C).

Secondary sexual dimorphism

Male unknown.

Distribution

China (Guangxi) (Fig. 109E).

Elmomorphus sulcatus sp. nov.
urn:lsid:zoobank.org:act:968EDB5A-A7FD-47A9-98E0-E02FDB215071
Figs 29–30, 107B–F, 109F

Differential diagnosis

Elmomorphus sulcatus sp. nov. (Fig. 29) is characterised by having a plastron on the cranial surface (except for a semicircular area on the vertex), on the anterior angles of the pronotum, and on the lateral sides of the elytra. The body is small and broadly oval (Fig. 29). The elytron has nine longitudinal rows of large punctures and numerous small punctures scattered between the rows. Similar characters are also present in *E. hongkong* sp. nov. and *E. depressus* sp. nov. The elytral striae are well impressed. The strial punctures are close to each other, not well separated, often confluent, while in *E. depressus*, they are well separated by ca 0.5–2.0 × puncture diameters. Moreover, the first two ventrites lack plastron on the median portions, while in *E. hongkong* and *E. depressus*, the plastron is missing only on the median portions of the first ventrite. The phallobase is longer (PhL/PrL: 1.40–2.00 (1.80 ± 0.17, n = 10)) and the parameres differ from those of *E. hongkong* (PhL/PrL: 1.93–2.02 (n = 3); Fig. 30).

Etymology

The epithet is a Latin adjective in the nominative singular, referring to the presence of nine well-impressed longitudinal striae on each elytron.

Type material

Holotype

CHINA – **Guangxi Autonomous Region** • ♂; "CHINA: SE-Guangxi Distr. Yulin Liuwan Mts. SW Yulin | 16.11.1993 350-400m leg. Schönmann (20)"; IAECAS.

Paratypes

CHINA – **Guangxi Autonomous Region** • 2 ♂♂, 1 ♀; same collection data as for holotype; CKB, NMW • 1 ♀; "CHINA: SE-Guangxi, Distr. Yulin, Liuwan Mts., SW Yulin | 17.11.1993, Kuishan, 300m leg. Schillhammer (22) [CWBS 44]"; NMW • 1 ♀; "CHINA: SE-Guangxi, Distr. Yulin, Liuwan Mts., SW Yulin | 20.11.1993 120 m, (26) [CWBS 49] leg. Schönmann"; NMW. – **Fujian Province** • 1 ♀; "CHINA: Fujian, Longyan 2 km S Dachi, 750m Ceyan Shan, 29.1.1997 leg. Ji & Wang (CWBS 262)"; NMW • 1 ♀; same label data, but "leg. H.Schönmann"; NMW. – **Guangdong Province** • 3 ♂♂, 1 ♀; "CHINA: Guangdong Prov. 37 km E Zengcheng 23°16′33″N 114°03′27″E 10.11.2001, ca. 200 m Komarek & Wang (CWBS 488)"; NMW • 4 ♂♂, 5 ♀♀; "CHINA: Guangdong Prov. 38 km ENE Zengcheng 23°16′37″N 114°03′19″E 11.11.2001, ca. 200 m, Komarek & Wang (CWBS 489)"; CKB, NMW.

Fig. 29. *Elmomorphus sulcatus* sp. nov., paratype, male from type locality (CKB), TL: 2.44 mm.

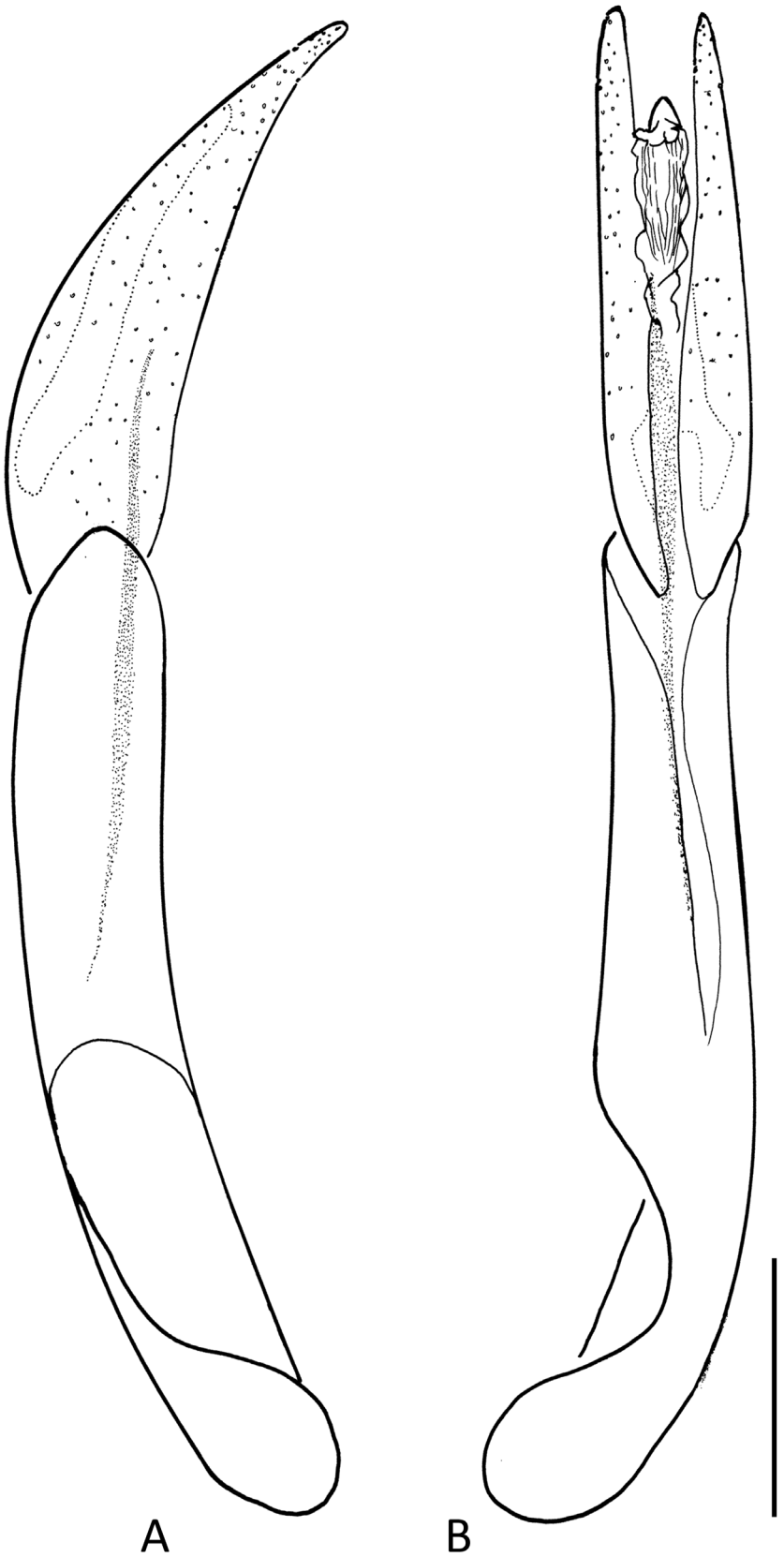

Fig. 30. *Elmomorphus sulcatus* sp. nov., holotype (IAECAS), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Type locality

China, Guangxi Autonomous Region, Yulin Prefecture; Liuwan Da Shan (= Sixty-thousand Mountains), 30 km southwest of Yulin City; several streams in the vicinity of Liuwan Forest Station, 0.5–2.0 m wide, rather sandy, original riparian vegetation, slopes covered with a planted forest of mainly *Cunninghamia lanceolata*, crystalline rock, 350–400 m a.s.l. (CWBS 42; Jäch & Ji 1995).

Description

Measurements (mm): TL: ♂♂ 2.36–2.61 (2.44±0.08, n=10), ♀♀ 2.53–2.76 (2.63±0.07, n=10); PL: ♂♂ 0.61–0.67 (0.64±0.02, n=10), ♀♀ 0.65–0.72 (0.69±0.02, n=10); PW: ♂♂ 1.11–1.22 (1.16±0.03, n=10), ♀♀ 1.16–1.30 (1.23±0.03, n=10); EL: ♂♂ 1.73–1.96 (1.80±0.07, n=10), ♀♀ 1.87–2.04 (1.94±0.05, n=10); EW: ♂♂ 1.31–1.42 (1.36±0.04, n=10), ♀♀ 1.35–1.57 (1.46±0.06, n=10); PhL: 0.36–0.52 (0.48±0.04); PrL: 0.25–0.29 (0.27±0.01).

Body ovate, moderately convex dorsally (Fig. 29). Integument black; mouthparts, antennae, and legs reddish brown. Pubescence consists of very short and sparse yellowish setae. Plastron present on head (except for small semicircular area on vertex), on anterior angles of pronotum, lateral portions of elytra, and ventral surface, except for prosternal process, middle of metaventrite, and middle of ventrites 1–2.

Dorsal surface of head with round punctures slightly smaller than diameter of an eye facet, separated by 0.5–1.0× puncture diameter; surface covered with plastron, except for semicircular area on vertex. Labrum transverse with anterior margin broadly emarginate; exposed portion microreticulate, with minute setiferous punctures; setae equal in length in both sexes. Anterior margin of clypeus straight. Eyes oval, interfacetal setae short; ID: ♂♂ 0.41–0.46 mm (0.44±0.02, n=10), ♀♀ 0.42–0.49 mm (0.47±0.02, n=10); APD/ID: ♂♂ 1.44–1.73 (1.63±0.08, n=10), ♀♀ 1.56–1.66 (1.61±0.04, n=10). Antennae 10-segmented, densely setose.

Pronotum transverse, moderately convex, widest at base, PW/PL: ♂♂ 1.77–1.87 (1.81±0.04, n=10), ♀♀ 1.74–1.83 (1.78±0.03, n=10); anterior angles strongly deflexed, prominent; lateral sides convergent, rounded; surface smooth, with round punctures; plastron confined to anterolateral portions. Prosternal process wider than long, lateral edges divergent, straight, posterior edge rounded; lateral portions moderately raised, without groups of long setae; median keel rather flat. Scutellum wider than long, smooth, with round punctures. Metaventral disc slightly convex, glabrous area without plastron widening posteriorly. Lateral margins of metaventral process moderately raised. Elytra ovate, dorsally convex, widest around middle, EL/EW: ♂♂ 1.29–1.38 (1.32±0.03, n=10), ♀♀ 1.25–1.38 (1.33±0.04, n=10); surface distinctly microreticulate, with small, scattered punctures and large deep punctures arranged in nine longitudinal rows, punctures often confluent; plastron confined to lateral band, anteriorly almost reaching elytral base, extending from elytral lateral margin to sixth elytral row. Tibiae slightly curved; protibia ca 1.3× as long as protarsus; PrTL/PL: ♂♂ 0.99–1.10 (1.03±0.03, n=10), ♀♀ 0.93–1.02 (0.98±0.03, n=10). Terminal protarsomere as long as three preceding tarsomeres combined.

Ventrites covered with plastron, except for middle of ventrites 1–2. Ventrite 5 in females with short longitudinal keel before apex. Aedeagus (Fig. 30): parameres shorter than phallobase, widest at basal third, strongly narrowed to narrow subacute apices, dorsal outline strongly arcuate, ventral one almost straight (all in lateral aspect); phallobase narrow, PhL/PrL: 1.40–2.00 (1.80±0.17, n=10); penis rounded apically; sclerotised fibula distinct.

Secondary sexual dimorphism

Females with short longitudinal keel at the apex of ventrite 5.

Distribution

China (Fujian, Guangdong, Guangxi) (Fig. 109F).

Elmomorphus corpulentus sp. nov.
urn:lsid:zoobank.org:act:0B53A760-310B-460A-89D1-D15B6620888F
Figs 31–32, 110A

Differential diagnosis

Elmomorphus corpulentus sp. nov. (Fig. 31) is characterised by the presence of plastron on the dorsal cranial surface (except for a triangular area on the vertex), on the anterior angles of the pronotum, and the lateral sides of the elytra. Elytral punctures are scattered over the entire surface, striae absent. Such a combination of characters is also found in *E. ellipticus* sp. nov., *E. montanus*, *E. paramontanus* sp. nov. and *E. prosternalis*. From these species, *E. corpulentus* may be distinguished by the narrow lateral plastron bands on the elytra, which are absent in the basal fourth. In the other species mentioned above, the plastron bands almost reach the elytral base and cover at least one-third of the elytron width (measured at elytral midlength). *Elmomorphus corpulentus* has a broadly oval and strongly convex body with the elytra widest around midlength (Fig. 31). In *E. ellipticus*, the elytra are widest before midlength (Fig. 33). The phallobase is shorter and broader proportionally to the parameres (PhL/PrL: 1.42 (n = 1)) than in *E. ellipticus* (PhL/PrL: 1.53 (n = 1)), *E. montanus* (PhL/PrL: 2.30, n = 1)), and *E. paramontanus* PhL/PrL: 1.37–1.81 (1.57 ± 0.11, n = 25) (Fig. 32).

Etymology

The epithet is a Latin adjective in the nominative singular, meaning 'corpulent' or 'stout', referring to the broad and strongly convex body form.

Type material

Holotype

CHINA – **Fujian Province** • ♂; "CHINA: Fujian, Longyan 2 km S Dachi, 750m Ceyan Shan, 29.1.1997 leg. Ji & Wang (CWBS 262)"; IAECAS.

Paratype

CHINA – **Fujian Province** • 1 ♀; "CHINA: FUJIAN, Longyan, Xiaochi (20 km W Longyan) Meihua Shan, 650m, 30.1.1997 leg. Ji & Wang (CWBS 263)"; NMW.

Type locality

China, Fujian Province, Longyan City Region, ca 30 km west of Longyan City, 2 km south of Dachi Village; stream, ca 1–2 m wide, descending from Ceyan Shan (ca 1500 m), rocky steps with waterfalls, pools with crystalline sand, coarse granitic gravel, in the upper section surrounded by broadleaf forest, in the lower section by rice fields, 750 m a.s.l. (CWBS 262; Jäch & Ji 1998).

Description

Measurements (mm): TL: ♂ 3.32 (n = 1), ♀ 3.31 (n = 1); PL: ♂ 0.82 (n = 1), ♀ 0.84 (n = 1); PW: ♂ 1.47 (n = 1), ♀ 1.45 (n = 1); EL: ♂ 2.50 (n = 1), ♀ 2.47 (n = 1); EW: ♂ 1.85 (n = 1), ♀ 1.79 (n = 1); PhL: 0.57 (n = 1); PrL: 0.40 (n = 1).

Body broadly ovate, strongly convex dorsally (Fig. 31). Integument black; mouthparts, antennae and legs dark reddish brown. Pubescence consists of short, sparse yellowish setae. Dorsal plastron present on cranium (except for triangular area on vertex), on anterior angles of pronotum, and in narrow bands on lateral sides of elytra. Ventral plastron absent on prosternal process, wide median portion of metaventrite, and middle of ventrites 1–2.

Dorsal head surface with round setiferous punctures, smaller than eye facet, separated by ca 1–2 × puncture diameters; plastron present on dorsal surface, except for median triangular area on vertex

Fig. 31. *Elmomorphus corpulentus* sp. nov., holotype, male (IAECAS), TL: 3.32 mm.

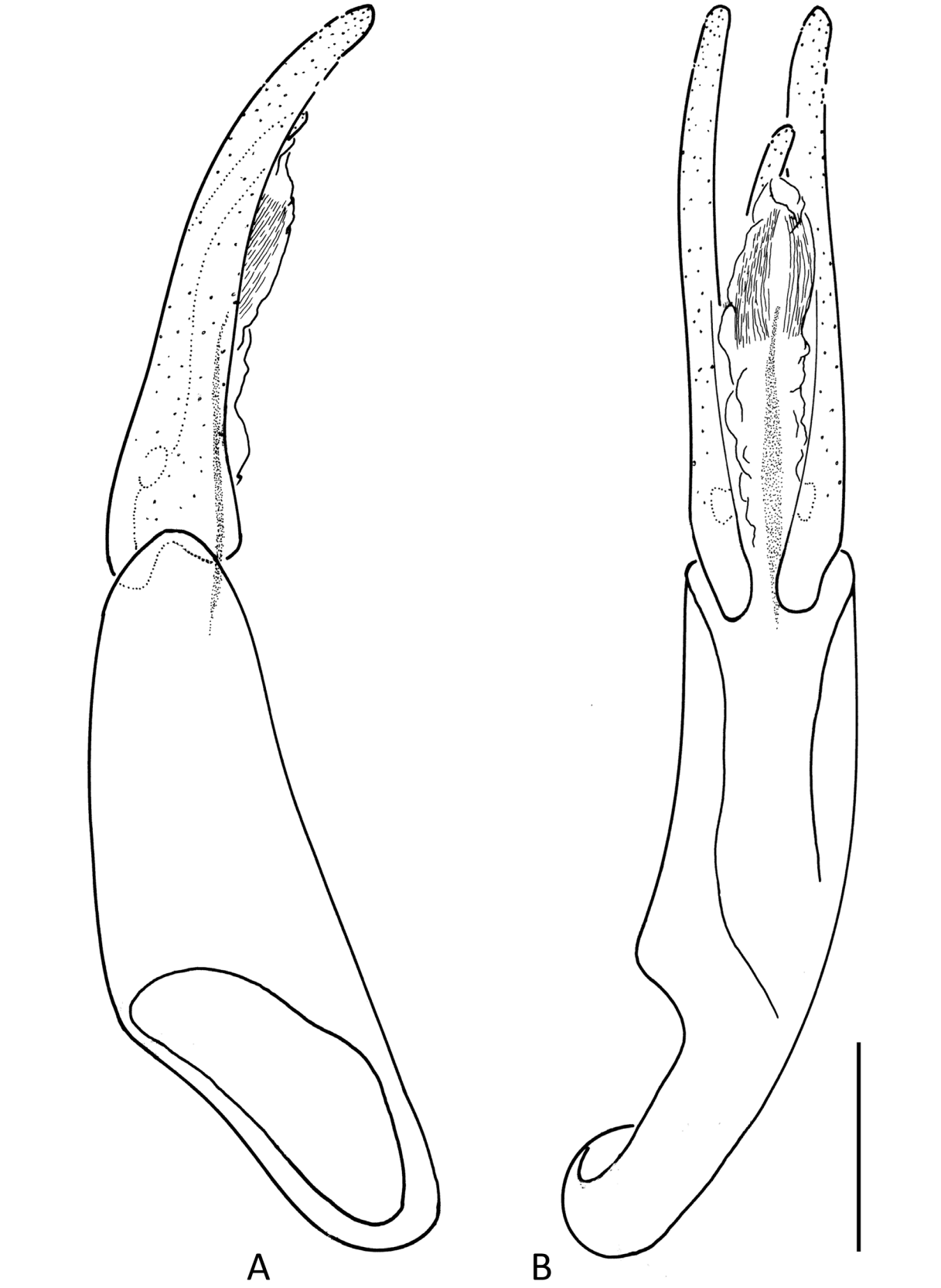

Fig. 32. *Elmomorphus corpulentus* sp. nov., holotype (IAECAS), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

reaching behind middle of eyes. Labrum transverse, anterior margin moderately emarginate; exposed portion microreticulate, with small setiferous punctures; setae moderately extending beyond anterior margin in both sexes. Anterior margin of clypeus straight. Eyes protruding from head outline, interfacetal setae short; ID: ♂ 0.48 mm (n = 1), ♀ 0.47 mm (n = 1); APD/ID: ♂ 1.96 (n = 1), ♀ 1.95 (n = 1). Antennae 10-segmented.

Pronotum transverse, moderately convex dorsally, widest at base, PW/PL: ♂ 1.78 (n = 1), ♀ 1.73 (n = 1); rim of anterior margin as wide as 2–3 eye facets, narrowly interrupted in middle; lateral sides convergent, moderately rounded; anterior angles protruding, acute; dorsal surface smooth, with round setiferous punctures; plastron covering small triangular areas on anterior angles. Prosternal process wider than long; lateral and apical edge rounded; lateral margins raised, without clusters of long setae; median keel rather flat. Scutellum small, apically acute, with round punctures. Metaventrite covered with plastron, except for moderately convex median part; clusters of longer setae absent in both sexes. Elytra broadly oval, strongly convex, widest around middle, EL/EW: ♂ 1.35 (n = 1), ♀ 1.38 (n = 1); dorsal surface finely microreticulate; small round punctures scattered over entire surface. Plastron confined to narrow lateral strip in posterior half. Tibiae slightly curved; protibia ca 1.2× as long as protarsus; PrTL/PL: ♂ 1.03 (n = 1), ♀ 0.96 (n = 1). Terminal protarsomere as long as three preceding tarsomeres combined.

Ventrites covered with plastron, except for middle of ventrites 1–2. Ventrite 5 in females with narrow longitudinal keel before the apex. Aedeagus (Fig. 32): phallobase robust, expanded proximally, PhL/PrL: 1.42 (n = 1); parameres long and slender, curved ventrad, apices narrowly rounded (lateral aspect); apex of penis rounded in lateral aspect.

Secondary sexual dimorphism

Females with narrow longitudinal keel at the apex of ventrite 5.

Distribution

China (Fujian) (Fig. 110A).

Elmomorphus ellipticus sp. nov.
urn:lsid:zoobank.org:act:33A6B2FB-9E56-43BC-9DEB-9028CF572398
Figs 33–34, 37A, 110B

Differential diagnosis

Elmomorphus ellipticus sp. nov. (Fig. 33) belongs to a group of species characterised by the presence of plastron on the dorsal cranial surface (except for a triangular or semicircular area on the vertex), on the anterior and sometimes also posterior angles of the pronotum, and on the lateral sides of the elytra. Elytral punctures are scattered over the entire surface and striae are absent. Within this group of species, *E. ellipticus*, together with *E. corpulentus* sp. nov., *E. montanus*, *E. paramontanus* sp. nov. and *E. prosternalis*, may be recognised by the presence of plastron only on the anterior angles of the pronotum. *Elmomorphus ellipticus* differs from the species mentioned above in the body shape, which is widest before the elytral midlength (Fig. 33) but is broadest around or behind the elytral midlength in the other species (Figs 31, 40).

Moreover, the lateral plastron bands on the elytra are wider in *E. ellipticus* sp. nov., each covering about half of the elytron width (measured at elytral midlength), whereas in the other species it covers at most one-third of the elytron width. *Elmomorphus ellipticus* is smaller (TL: ♂ 2.71 mm (n = 1), ♀♀ 2.79–3.01 mm (n = 2)) than *E. paramontanus* sp. nov. (TL: ♂♂ 2.90–3.33 mm (3.07 ± 0.12, n = 26), ♀♀ 2.88–3.35 mm (3.20 ± 0.14, n = 9)). Further differences between *E. ellipticus* and *E. corpulentus* sp. nov. are listed under the latter species. Aedeagus as in Fig. 34. Bursa copulatrix with large microsclerites, in lateral portions bearing spines (Fig. 37A).

Fig. 33. *Elmomorphus ellipticus* sp. nov., paratype, male from type locality (NMW), TL: 2.71 mm.

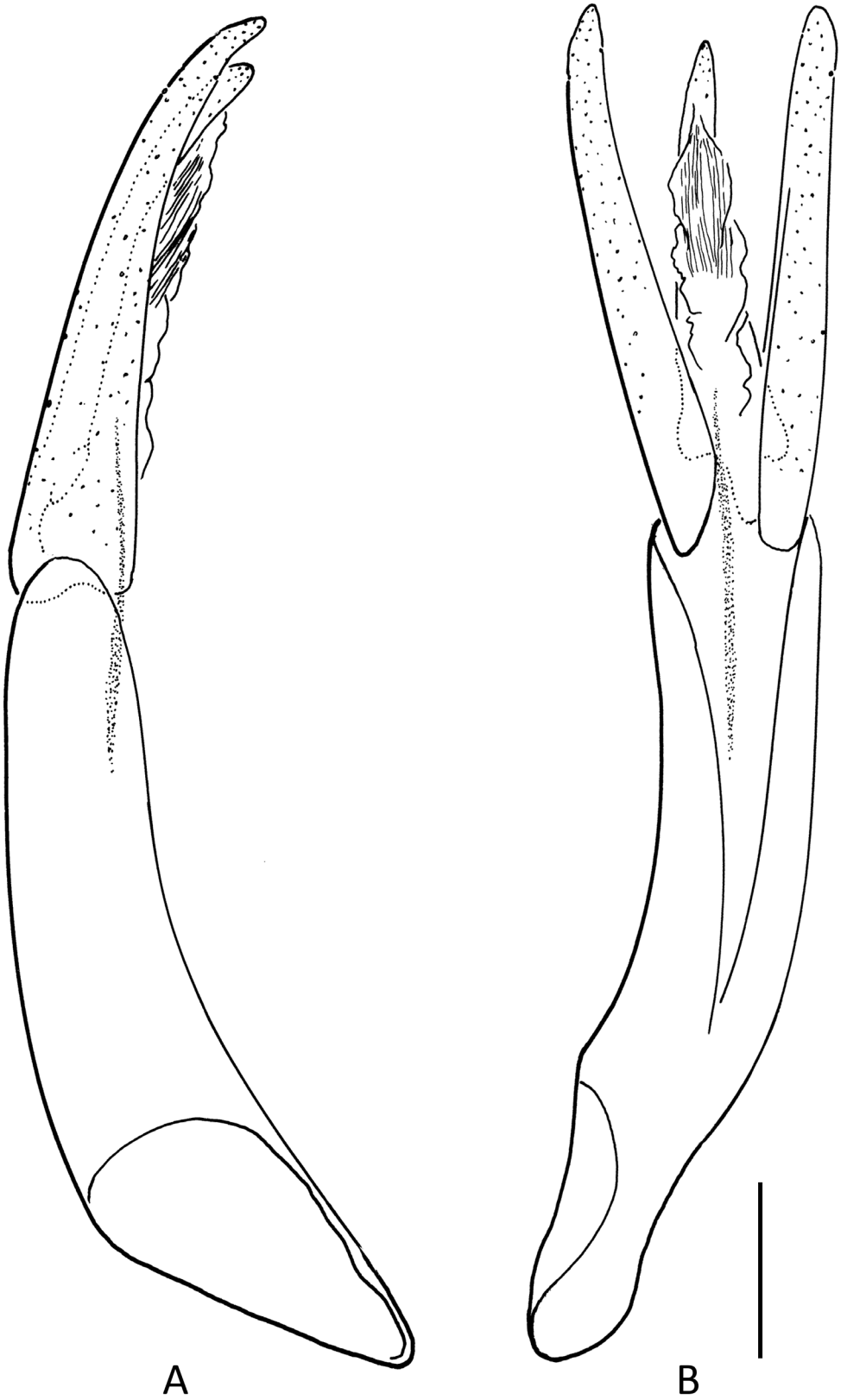

Fig. 34. *Elmomorphus ellipticus* sp. nov., holotype (IAECAS), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Etymology

The epithet is a Latin adjective in the nominative singular meaning elliptical, referring to the oval body shape.

Type material

Holotype

CHINA – **Guangxi Autonomous Region** • ♂; "CHINA: Guangxi 1993 10 km N Liuzhou, 10.11., 200m leg. Schönmann (18)"; IAECAS.

Paratypes

CHINA – **Guangxi Autonomous Region** • 2 ♀♀; same collection data as for holotype; NMW.

Type locality

China, Guangxi Autonomous Region, Liuzhou Prefecture, ca 10 km northeast of Liuzhou City, 3 km northwest of Shanmenjiang Forest Station; small stream, ca 1.5–2.0 m wide, slowly flowing through dense vegetation of small shrubs and some abandoned rice fields, ca 150–200 m a.s.l. (CWBS 40; Jäch & Ji 1995).

Description

Measurements (mm): TL: ♂ 2.71 (n=1), ♀♀ 2.79–3.01 (n=2); PL: ♂ 0.63 (n=1), ♀♀ 0.63–0.70 (n=2); PW: ♂ 1.19 (n=1), ♀♀ 1.22–1.28 (n=2); EL: ♂ 2.08 (n=1), ♀♀ 2.16–2.31 (n=2); EW: ♂ 1.43 (n=1), ♀♀ 1.46–1.53 (n=2); PhL: 0.52 (n=1); PrL: 0.34 (n=1).

Body oval, slender, moderately convex (Fig. 33). Integument black; mouth parts, antennae, trochanters, and tarsi reddish brown, remaining parts of legs dark brown; dorsum with fine, bronze metallic sheen. Pubescence consists of short, sparse decumbent yellowish setae. Dorsal plastron present on head except for triangular area on vertex, on anterior angles of pronotum, and lateral portions of elytra. Ventral plastron absent on prosternal process, median part of metaventrite, and middle of ventrites 1–2.

Dorsal head surface with round setiferous punctures, slightly smaller than eye facet, separated by ca 1–2× puncture diameters; plastron on almost entire surface except for small triangular area on vertex. Labrum transverse, anterior margin feebly emarginate, exposed portion microreticulate, with small setiferous punctures. Anterior margin of clypeus straight. Eyes oval, protruding from head outline, interfacetal setae short; ID: ♂ 0.37 mm (n=1), ♀♀ 0.38–0.39 mm (n=2); APD/ID: ♂ 2.02 (n=1), ♀♀ 2.06–2.07 (n=2). Antennae 10-segmented, densely setose.

Pronotum transverse, weakly convex, widest at base, PW/PL: ♂ 1.87 (n=1), ♀♀ 1.83–1.92 (n=2); rim of anterior margin as wide as two eye facets, interrupted in middle; lateral sides convergent, slightly rounded; anterior angles protruding, acute; surface smooth, with round punctures; plastron present on anterior angles, posteriorly reaching beyond pronotal midlength. Prosternal process wider than long, lateral and posterior edges rounded; lateral margins raised, without clusters of long setae; median keel moderately arcuate. Scutellum as long as wide, with round punctures. Metaventrite covered with plastron, except for moderately convex, posteriorly narrowed median part; clusters of long setae absent; lateral margin of metaventral process raised and delimited by shallow longitudinal groove. Elytra oblong oval, moderately convex, widest at second third, EL/EW: ♂ 1.45 (n=1), ♀♀ 1.48–1.51 (n=2); dorsal surface finely microreticulate, with round setiferous punctures scattered over surface. Plastron in lateral bands almost reaches elytral base, expanded posteriorly, covering about half of elytron width (along elytral midlength). Tibiae straight; protibia ca 1.2× as long as protarsus; PrTL/PL: ♂ 1.19 (n=1), ♀♀ 1.09–1.19 (n=2). Terminal protarsomere longer than all preceding tarsomeres combined.

Ventrites covered with plastron, except for middle of ventrites 1–2; females with short longitudinal keel before apex of ventrite 5. Aedeagus (Fig. 34): phallobase rather long, expanded proximally, PhL/PrL: 1.53 (n=1); parameres slender, curved ventrad in apical half, apices narrowly rounded (lateral aspect); penis rounded apically (lateral aspect). Bursa copulatrix with large microsclerites, in lateral portions bearing spines (Fig. 37A).

Secondary sexual dimorphism

Females are recognisable by the presence of a short longitudinal subapical keel on ventrite 5.

Distribution

China (Guangxi) (Fig. 110B).

Elmomorphus mazzoldii sp. nov.
urn:lsid:zoobank.org:act:50262137-2A82-4389-BBF3-6578FD0B0DA2
Figs 35–36, 37B, 110C

Differential diagnosis

Elmomorphus mazzoldii sp. nov. (Fig. 35) is characterised by having a plastron on the cranial surface (missing only on the semicircular glabrous area of the vertex), in anterior angles of the pronotum and along lateral sides of the elytra. Such a combination of characters is shared with *E. ellipticus* sp. nov., *E. corpulentus* sp. nov., *E. montanus*, *E. paramontanus* sp. nov. and *E. prosternalis*. *Elmomorphus mazzoldii* differs from the mentioned species (except *E. ellipticus*) in the shape of the body, which is widest closely before elytral midlength in *E. mazzoldii* (Fig. 35), but widest behind elytral midlength in the other species. Moreover, the body dimensions are smaller in *E. mazzoldii*, with TL up to 2.8 mm versus at least 2.8 in other mentioned species, except *E. ellipticus*. *Elmomorphus mazzoldii* most closely resembles *E. ellipticus*, from which it differs in the more strongly convex pronotum and elytra (Fig. 35), narrower plastron bands on elytra, each covering less than ⅓ of elytral width (in elytral midlength), and the shape of the aedeagus with shorter and broader phallobase and shorter parameres, PhL/PrL: 1.67 (n=1) in *E. mazzoldii* versus PhL/PrL: 1.53 (n=1) in *E. ellipticus* (Fig. 36). Bursa copulatrix with numerous scattered spines (Fig. 37B).

Etymology

The epithet is a proper noun in the genitive case honouring Paolo Mazzoldi, an Italian entomologist who kindly provided interesting material.

Type material

Holotype

THAILAND – **Loei Province** • ♂; "THAILAND: Loei Prov. Phu Kradung NP 1150 m, 29.12.1999 leg. P. Mazzoldi (17)"; NMW.

Paratypes

THAILAND – **Loei Province** • 1 ♀; same collection data as for holotype; NMW • 1 ♀; "THAILAND: Loei Prov. Phu Kradung NP 1270 m 27.12.1999 leg. P. Mazzoldi (12)"; NMW.

Type locality

Thailand, Loei Province, Phu Kradueng National Park.

Description

Dimensions (mm): TL: ♂ 2.63 (n=1), ♀♀ 2.60–2.83 (n=2); PL: ♂ 0.67 (n=1), ♀♀ 0.61–0.71 (n=2); PW: ♂ 1.23 (n=1), ♀♀ 1.16–1.26 (n=2); EL: ♂ 2.03 (n=1), ♀♀ 1.96–2.21 (n=2); EW: ♂ 1.40 (n=1), ♀♀ 1.33–1.46 (n=2); PhL: 0.48 (n=1); PrL: 0.29 (n=1).

Fig. 35. *Elmomorphus mazzoldii* sp. nov., holotype, male (NMW), TL: 2.63 mm.

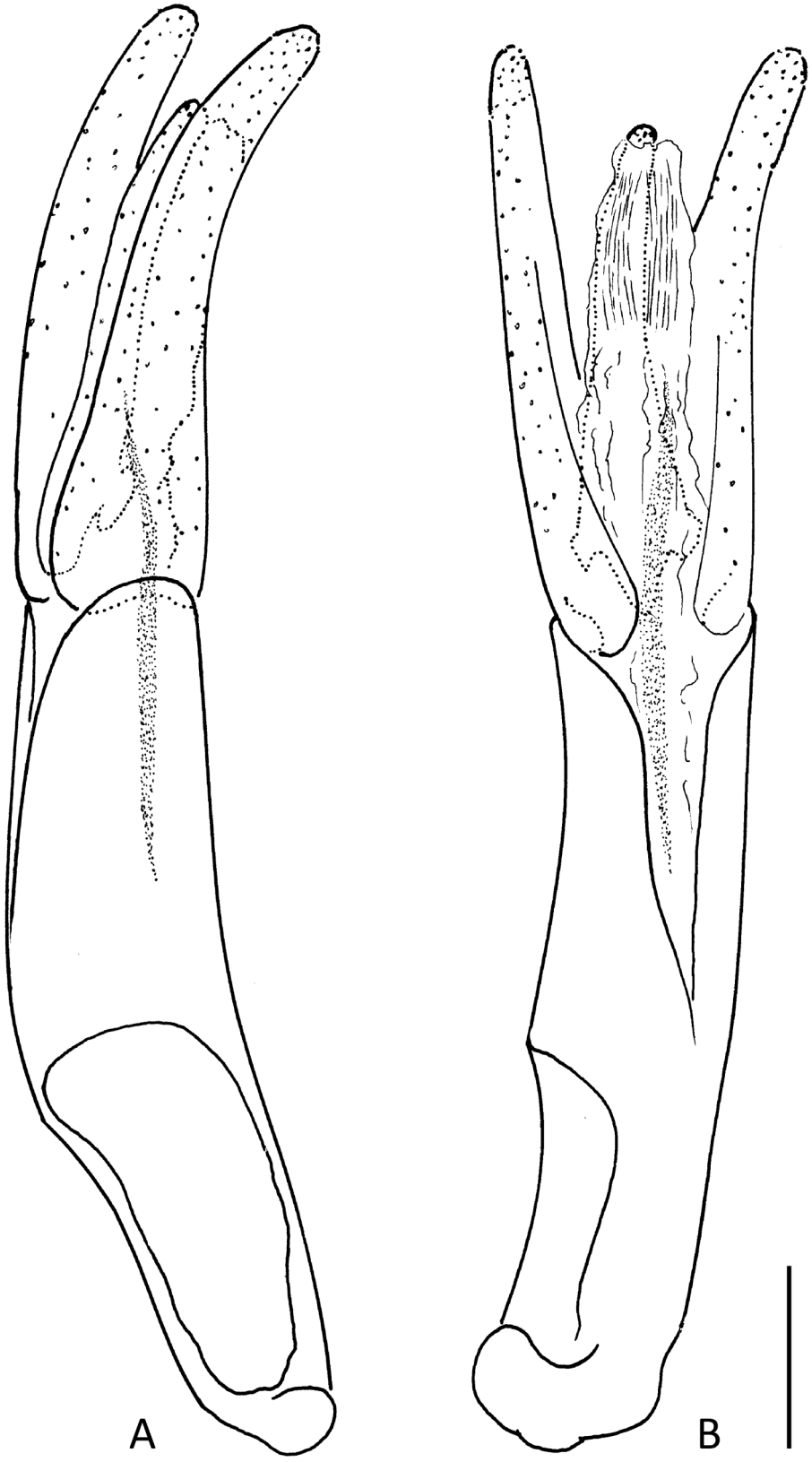

Fig. 36. *Elmomorphus mazzoldii* sp. nov., holotype (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Body oval, strongly convex, widest around middle of elytra (Fig. 35). Integument black; mouthparts, antennae, and legs reddish brown. Pubescence consisting of short, sparse, decumbent yellowish setae. Dorsal plastron present on head (except for semicircular area on vertex), anterior angles of pronotum, and lateral portions of elytra. Ventral plastron absent on prosternal process, median part of metaventrite, median part of abdominal ventrite 1 and antero-median part of ventrite 2.

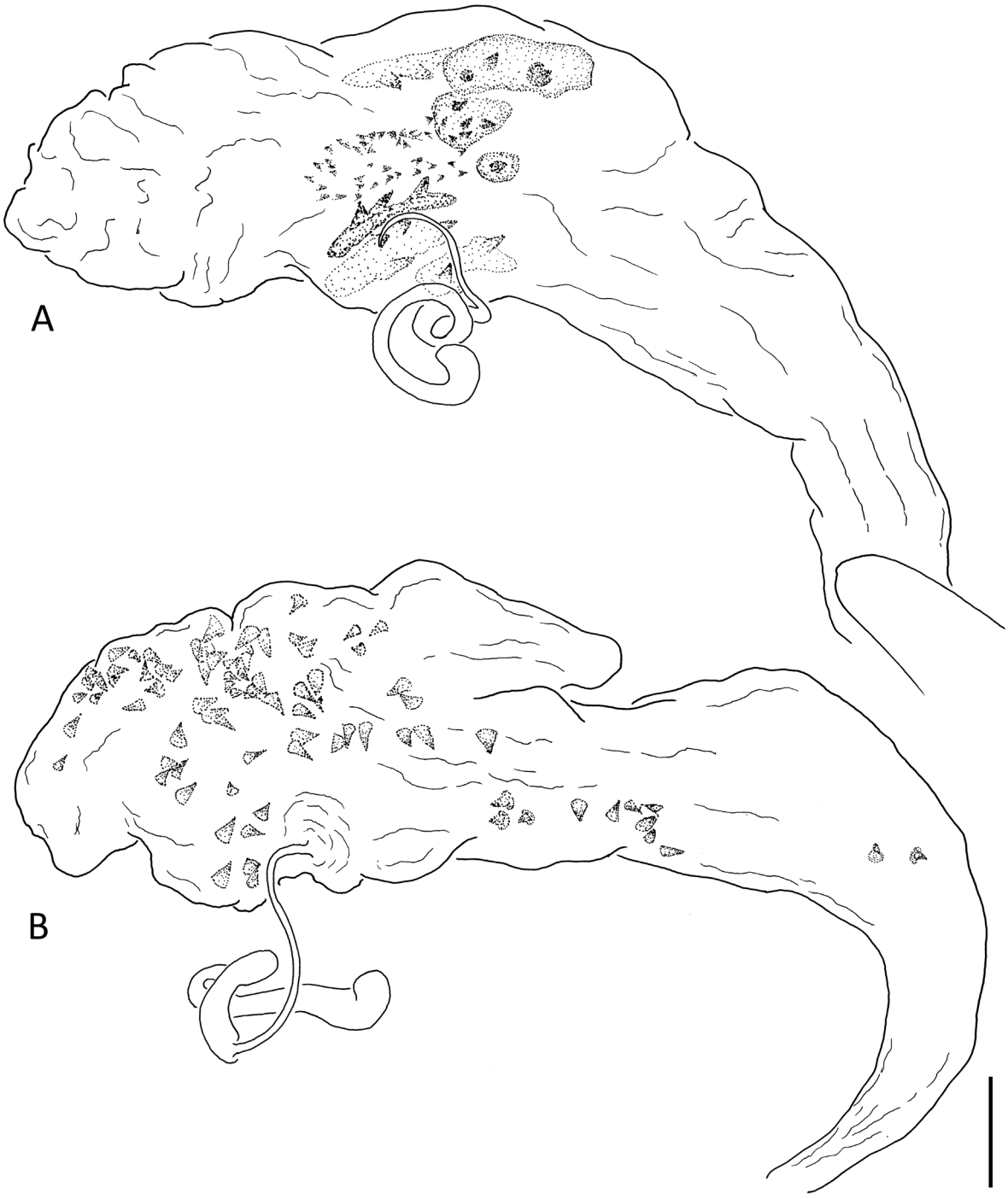

Fig. 37. Bursa copulatrix and vagina. **A**. *Elmomorphus ellipticus* sp. nov., paratype from type locality (NMW). **B**. *Elmomorphus mazzoldii* sp. nov., paratype from type locality (NMW). Scale bar: 0.1 mm.

Dorsal surface of head with round setiferous punctures, each slightly smaller than eye facet, separated by ca 1.0–1.5× puncture diameters. Plastron present on dorsal surface, except on semicircular area on vertex reaching to midlength of eyes. Labrum transverse, anterior margin straight, exposed portion microreticulate with setiferous punctures. Anterior margin of clypeus straight. Eyes oval, protruding, ID: ♂ 0,46 mm (n=1), ♀♀ 0.41–0.47 mm (n=2). Antennae 9-segmented, densely setose.

Pronotum transverse, moderately convex, PW/PL ratio: ♂ 1.82 (n=1), ♀♀ 1.76–1.90 (n=2); lateral pronotal sides convergent, rounded; anterior angles strongly deflexed, protruding; surface smooth with round setiferous punctures ca as wide as those on elytra; plastron on anterior pronotal angles, posteriorly reaching pronotal midlength. Prosternal process without clusters of long setae, with lateral margins straight, posterior margin rounded, lateral portions weakly raised, median keel nearly flat. Scutellum longer than wide, smooth, with several setiferous punctures. Median part of metaventrite slightly convex, without clusters of long setae. Elytra oval, strongly convex, widest closely before midlength, EL/EW: ♂ 1.44 (n=1), ♀♀ 1.48–1.52 (n=2); surface smooth with scattered, round setiferous punctures; plastron confined to lateral portions, anteriorly not reaching humeral callus, weakly expanding posteriad, covering less than ⅓ of elytron width (at elytral midlength). Tibiae straight; protibia as long as protarsus; PrTiL/PL: ♂ 1.04 (n=1), ♀♀ 1.00–1.03 (n=2). Terminal protarsomere as long as all preceding segments combined.

Abdominal ventrites covered with plastron except for middle of ventrite 1 and antero-median portion of ventrite 2. Ventrite 1 with two indistinct admedian keels. Male ventrite 5 narrowly truncate at apex; female ventrite 5 with short apical keel. Aedeagus (Fig. 36): phallobase moderately long, PhL/PrL: 1.67 (n=1); parameres weakly curved ventrad, with rounded apices (lateral aspect); penis narrowly rounded at apex; sclerotised fibula present. Ovipositor with right coxite ca 1.3× as long as left coxite; bursa copulatrix with numerous scattered microsclerites (Fig. 37B).

Secondary sexual dimorphism

Male abdominal ventrite 5 narrowly truncate at apex, female ventrite 5 arcuate at apex with short apical keel.

Distribution

Thailand (Fig. 110C).

Elmomorphus bryanti Hinton, 1935
Figs 38, 110D

Elmomorphus bryanti Hinton, 1935: 171–172 (original description).

Elmomorphus bryanti – Shepard & Sites 2016: 93.

Differential diagnosis

Elmomorphus bryanti resembles *E. montanus*, *E. paramontanus* sp. nov., and *E. prosternalis* but differs in the smaller body size, TL: 2.6–2.8 mm versus TL: 3.20 in *E. prosternalis*, TL 3.35 mm in *E. montanus*, and TL: ♂♂ 2.90–3.33 mm (3.07±0.12, n=26), ♀♀ 2.88–3.35 mm (3.20±0.14, n=9) in *E. paramontanus*. In *E. bryanti*, the elytral plastron bands are wider, occupying approximately two-thirds of the elytral width, while in the other mentioned species, they are narrower (up to one-third of the elytral width, measured at elytral midlength). *Elmomorphus bryanti* further differs in the presence of long setae on the labrum and in two clusters on the male prosternal process, and in the unique shape of the aedeagus (Fig. 38).

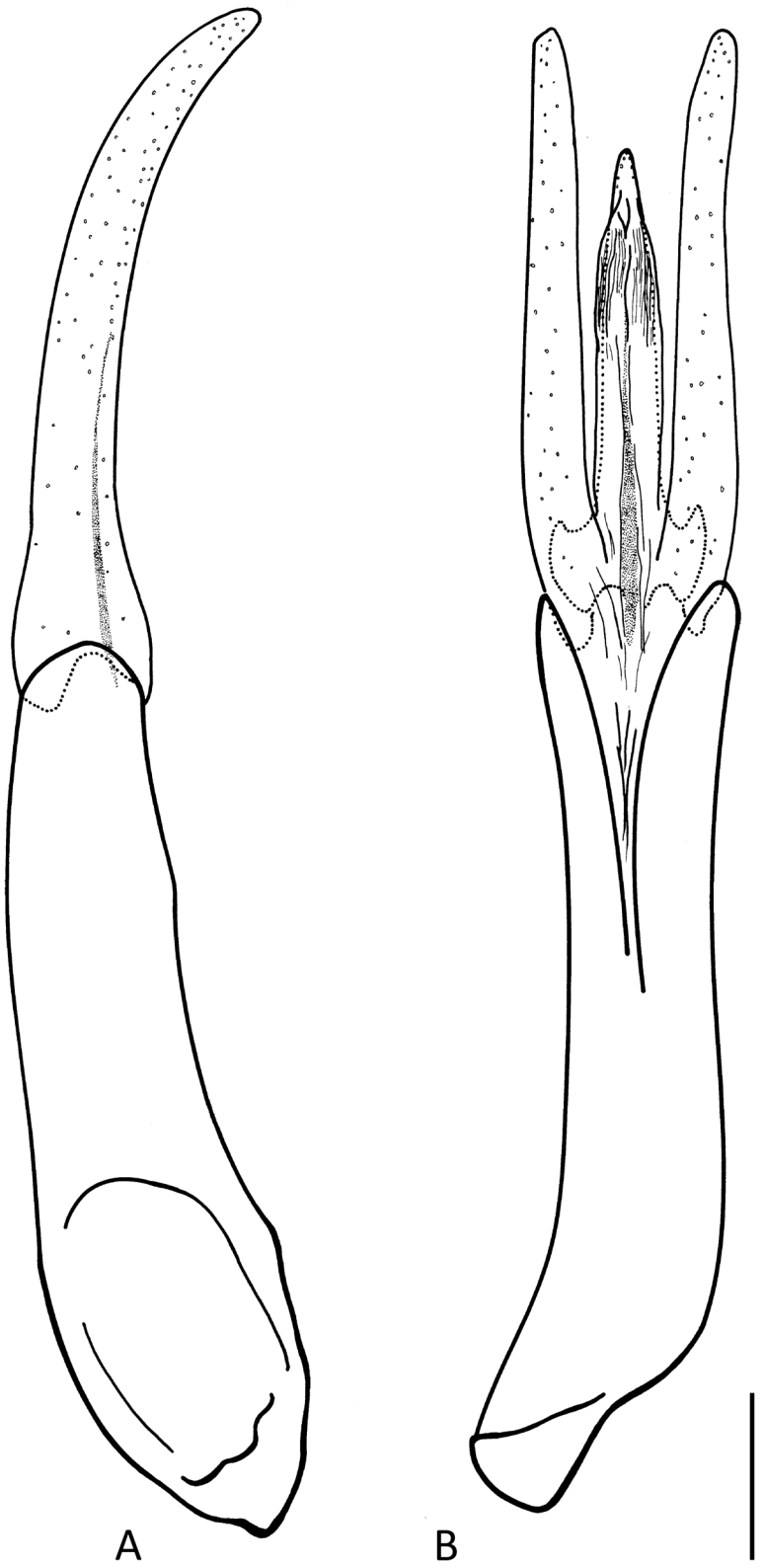

Fig. 38. *Elmomorphus bryanti* Hinton, 1935, male from Gombak River, Malaysia (BMNH), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Type material

Holotype

MALAYSIA – **Selangor State** • ♀; "MALAYA Kuala Lumpur at light April 8th 1932 H.M. Pendlebury"; NHMUK.

Paratypes

According to the original description: "Three with same data as above [holotype], but collected on different dates, as follows: one on 1 Aug., 1929; two in Feb., 1931" (Hinton 1935). There is one female in the Hinton collection in NHMUK, with labels corresponding to the data mentioned above and the date "Feb. 1931". However, this specimen is labelled "Paratype, pusillus, H.E. Hinton". It is quite possible, that this specimen is a paratype of *E. bryanti*. Maybe Hinton had originally planned to name this species "pusillus".

Additional material examined

MALAYSIA – **Selangor State** • 1 ♂; "Gombak R. Malaya 1969 J.E. Bishop"; NHMUK.

Type locality

Malaysia, Kuala Lumpur.

Redescription

Body elongate oval, moderately convex dorsally, TL: 2.6–2.8 mm. Colouration brown; head and pronotum darkened; legs, anterior pronotal margin, antennae, and mouthparts paler.

Cranial surface covered with plastron, except for narrow strip along anterior clypeal margin and wedge-shaped area on vertex and frons reaching to approximately midlength of eyes; round setiferous punctures separated by 1–2 × puncture diameters, each smaller than eye facet. Labrum transverse, anterior margin slightly emarginate, exposed portion with small setiferous punctures; males with long setae extending beyond anterior margin.

Pronotum transverse, weakly convex, disc nearly flat, PW/PL 1.66–1.91; plastron present on triangular areas in antero-lateral angles; punctures approximately as wide as on vertex; lateral sides weakly curved before anterior angles. Prosternal process without plastron; lateral sides rounded; lateral portions slightly raised, each with cluster of long setae in male; median keel flat. Metaventrite flat; narrow lateral sides of metaventral process raised. Elytra widest in middle, moderately convex, EL/EW: 1.64–1.70; punctures scattered; plastron forming posteriorly expanding lateral band on each elytron extending to two-thirds of elytron width in dorsal aspect. Tibiae approximately as long as lateral pronotal side, weakly bent. Each tarsus approximately two-thirds as long as corresponding tibia; terminal tarsomere as long as preceding segments combined; claws strongly bent, not expanded in male.

Ventrites covered with plastron except for middle of ventrites 1–2. Intercoxal process of ventrite 1 very feebly punctate in holotype, without admedian keels. Ventrite 5 rounded at apex and with short longitudinal keel in female, truncate and without keel in male. Aedeagus (Fig. 38): phallobase moderately long and slender, PhL/PrL: 1.36; parameres slightly bent ventrad, apices rounded; sclerotised fibula slender.

Secondary sexual dimorphism

The single male specimen known possesses clusters of long setae on labrum and prosternal process. Ventrite 5 rounded at apex; with short subapical keel in females, truncate and without keel in the male specimen examined.

Distribution

Malaysia (Kuala Lumpur, Selangor), ? Thailand (checklist published by Shepard & Sites 2016, without any further locality details; identification needs confirmation; it cannot be excluded that the specimens recorded from Thailand actually belong to the closely related *E. paramontanus* sp. nov. described herein) (Fig. 110D).

Elmomorphus prosternalis Hinton, 1935
Figs 39A, 110E

Elmomorphus prosternalis Hinton, 1935: 171 (original description).

Elmomorphus prosternalis – Shepard & Sites 2016: 93.

Differential diagnosis

Elmomorphus prosternalis is characterised by the presence of a plastron on the dorsal cranial surface (except for a small area on the vertex), on the anterolateral portions of the pronotum, and the lateral sides of the elytra. Elytral punctures are scattered over the entire surface, striae absent. The species most closely resembles *E. montanus* and *E. paramontanus* sp. nov. but differs in the prominent and strongly arched median keel of the prosternal process and the presence of a short median keel along the posterior part of the metaventrite (Fig. 39A).

Type material

Holotype

THAILAND – **Nakhon Si Thammarat Province** • ♀; "PENINSULAR SIAM [last third of the "M" cut off] NAKON SRI TAMARA [last "A" slightly cut off at the end] [modern spelling: Nakhon Si Thammarat] KHAO RAM [all printed] at light 750 [handwritten, with printed underlining] FT. [printed] March 2 sd [handwritten, with printed underlining] 1922 H . M . PENDLEBURY [printed] | Type [printed on cirular label with red frame] | ~~comp~~.type [printed] *prosternalis* [handwritten] H.E. Hinton [printed] [pink rectangular label] | H. E. Hinton collection. B.M. 1977—566 [printed on white label] | *Elmomorphus prosternalis* HINTON det. Kodada & Jäch [printed on white label]"; NHMUK. Photographs of the holotype and its labels are available at: https://www.flickr.com/photos/nhm_beetle_id/52809944410/in/album-72177720297734809 (holotype, labels); https://www.flickr.com/photos/nhm_beetle_id/52809739549/in/album-72177720297734809/ (holotype, ventral view); https://www.flickr.com/photos/nhm_beetle_id/52809538071/in/album-72177720297734809/ (holotype, dorsal view).

Remarks

The holotype is an immature female of light brown colour; femora, tibiae and tarsi of hind legs missing.

Type locality

South Thailand, Nakhon Si Thammarat Province, ca 230 m a.s.l. According to the label data, the holotype was collected at a place called "Khao Ram", which was spelled "Khao Rom" in the original description (Hinton 1935). It probably refers to Khao Ram Rome [mountain], which lies inside Khao Luang National Park, east of the city of Nakhon Si Thammarat.

Redescription of holotype

Measurements (mm): TL: 3.20; PL: 0.70; PW: 1.20; EL: 2.50; EW: 1.40.

Body elongate oval, moderately convex dorsally, widest close before midlength of elytra; brown, legs slightly paler. Dorsal plastron present on frontoclypeus, anterolateral portions of vertex, anterolateral portions of pronotum and lateral bands on elytra. Ventral plastron absent on prosternal process, median part of metaventrite, and middle of first two ventrites.

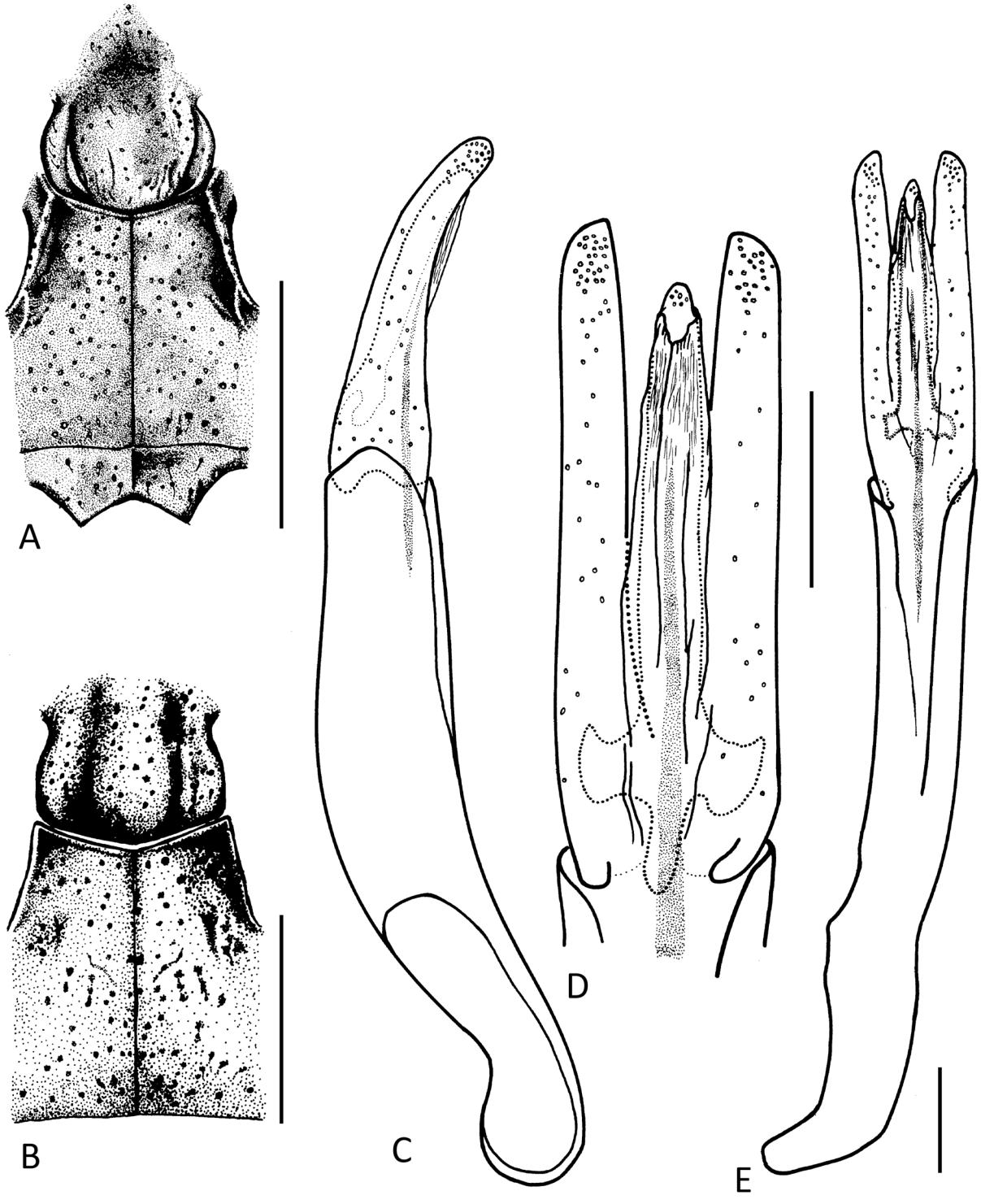

Fig. 39. A. *Elmomorphus prosternalis* Hinton, 1935, holotype (BMNH), prosternal process and median part of metaventrite. **B**. *E. montanus* (Grouvelle, 1913), syntype, male (MNHN), prosternal process and median part of metaventrite. **C**. *E. montanus*, syntype (MNHN), aedeagus, lateral aspect. **D**. Same, ventral aspect, detail of parameres and penis. **E**. Same, ventral aspect. Scale bars: 0.1 mm.

Cranial surface with round setiferous punctures, each about as wide as an eye facet, separated by approximately a puncture diameter. Plastron present on frontoclypeus and anterolateral portions of vertex, posteromedian portion without plastron about as wide as eye (dorsal aspect). Labrum transverse, exposed portion microreticulate, with decumbent setae along anterior margin.

Pronotum moderately convex, widest at base, PW/PL: 1.71; round setiferous punctures slightly larger than those on head; plastron confined to anterolateral angles; anterior margin slightly arcuate; anterolateral angles strongly deflexed, acute. Prosternal process with lateral edges rounded; lateral margins posteriorly expanded and distinctly separated from conspicuously strongly arched median keel (Fig. 39A). Metaventrite convex, median portion without plastron; discrimen distinct, with short keel and adjacent groove posterior of metakatepisternal suture (Fig. 39A). Elytra moderately convex, EL/EW: 1.79; weakly microreticulate; punctures scattered on entire surface; plastron forming two lateral bands, almost reaching elytral base, slightly widening posteriorly and connecting at elytral apices.

Ventrites covered with plastron, except for middle of ventrites 1–2.

Secondary sexual dimorphism

Male unknown.

Distribution

Southern Thailand (Fig. 110E). This species (and the genus *Elmomorphus*) was erroneously recorded as new for Thailand by Shepard & Sites (2016).

Elmomorphus montanus (Grouvelle, 1913)
Figs 39B–E, 110F

Dryopidius montanus Grouvelle, 1913: 116 (original description).

Differential diagnosis

Elmomorphus montanus is characterised by the presence of a plastron on the dorsal cranial surface (except for the triangular area on the vertex), on the anterior pronotal angles and on the lateral sides of the elytra. Elytral punctures are scattered over the entire surface, and longitudinal striae are absent. This combination of characters is also shared by *E. ellipticus* sp. nov., *E. corpulentus* sp. nov. and *E. paramontanus* sp. nov. The lateral plastron bands on the elytra extend from just behind the elytral base and cover about one-third of each elytron width (measured at elytral midlength), while in *E. corpulentus* the plastron bands anteriorly do not reach the basal elytral fourth; in *E. ellipticus*, the plastron bands are distinctly wider and cover about half of the elytron width. *Elmomorphus montanus* resembles *E. paramontanus*, which can be separated by the shorter phallobase and longer parameres: PhL/PrL in *E. montanus* 2.30 (Fig. 39C–E), while is 1.37–1.81 (1.57 ± 0.11, n = 25) in *E. paramontanus* sp. nov.

Type material

Syntype

INDIA – **Arunchal Pradesh State** • 1 ♂; "Yambung 1100 ft. Ind. Mus. Abor Exp. 14.1.[19]12. Kemp, 2608/9, bank of stream, under stones"; MNHN.

Remarks

Right elytron broken in anterior third; four tarsomeres on right foreleg missing; right middle leg missing; four tarsomeres of right hindleg missing. The specimen has been remounted, and the aedeagus has been dissected by the third author. According to the original description, there are two syntypes. We were

unable to locate the second syntype (sex unknown), which might be deposited in the Zoological Survey of India (Calcutta, India), but all our requests remained unanswered.

Type locality

India, Arunachal Pradesh, Yambung.

Redescription of syntype

Dimensions: TL 3.35 mm; PL 0.75 mm; PW 1.50 mm. Body elongate oval, moderately convex; black, mouth parts, antennae, trochanters, and tarsi reddish brown. Plastron present on dorsal cranial surface (except for small triangular part on vertex), anterior pronotal angles, and on lateral portions of the elytra. Plastron on entire ventral surface, except on prosternal process, median part of metaventrite, and middle of first two ventrites.

Cranial surface with round setiferous punctures of the size of an eye facet, separated by ca 1–2 × puncture diameters; plastron covering dorsal surface except for triangular area on vertex. Labrum transverse, exposed portions microreticulate, with setiferous punctures; setae moderately long, decumbent.

Pronotum transverse, widest at base, about twice as wide as long; surface smooth with round setiferous punctures subequal to those on head; plastron present on anterior angles and posteriorly reaching pronotal midlength; anterior angles protruding and deflexed; lateral sides weakly rounded in posterior half and weakly concave in anterior half. Lateral side of prosternal process moderately raised and delimited medially by deep longitudinal groove; median keel weekly arched (Fig. 39B); clusters of erect setae absent. Scutellum longer than wide, smooth, with several setiferous punctures. Metaventrite covered with plastron, except for posteriorly widened median part; disc moderately convex, irregularly punctate (Fig. 39B); clusters of erect setae absent. Elytra widest in the middle, EL/EW: 1.60, round setiferous punctures similar to those on pronotum; plastron forming two lateral bands, almost reaching elytral base, slightly widening posteriad, covering about one-third of elytron width (measured at elytral midlength); area without plastron smooth, not reticulated.

Ventrites covered with plastron, except on middle of ventrites 1–2. Ventrite 5 arcuate at apex. Aedeagus (Fig. 39C–E): phallobase robust, long, PhL/PrL: 2.30; parameres wide and short, weakly curved ventrad, apices broadly rounded (lateral aspect); penis rounded apically; sclerotised fibula long and slender.

Secondary sexual dimorphism

Female unknown.

Distribution

North-eastern India (Arunachal Pradesh) (Fig. 110F).

Elmomorphus paramontanus Kodada, Selnekovič & Jäch sp. nov.
urn:lsid:zoobank.org:act:BCB85417-4F7A-4DA9-A83A-9C0639A59A91
Figs 1B–C, E–G, 2F–J, 3E, 4A, F, I, 40–41, 107C–D, 111A

Differential diagnosis

Elmomorphus paramontanus sp. nov. (Fig. 40) belongs to a group of species characterised by having a plastron on the dorsal cranial surface (except for a triangular area on the vertex), on the anterior angles of the pronotum, and the lateral sides of the elytra. Elytral punctures scattered over the entire surface, striae absent. Within this group, *E. corpulentus* sp. nov., *E. ellipticus* sp. nov., *E. montanus*, *E. paramontanus*, and *E. prosternalis* may be recognised by the pronotal plastron being confined to the anterior angles.

Fig. 40. *Elmomorphus paramontanus* Kodada, Selnekovič & Jäch sp. nov., paratype, male from type locality (NMW), TL: 3.10 mm.

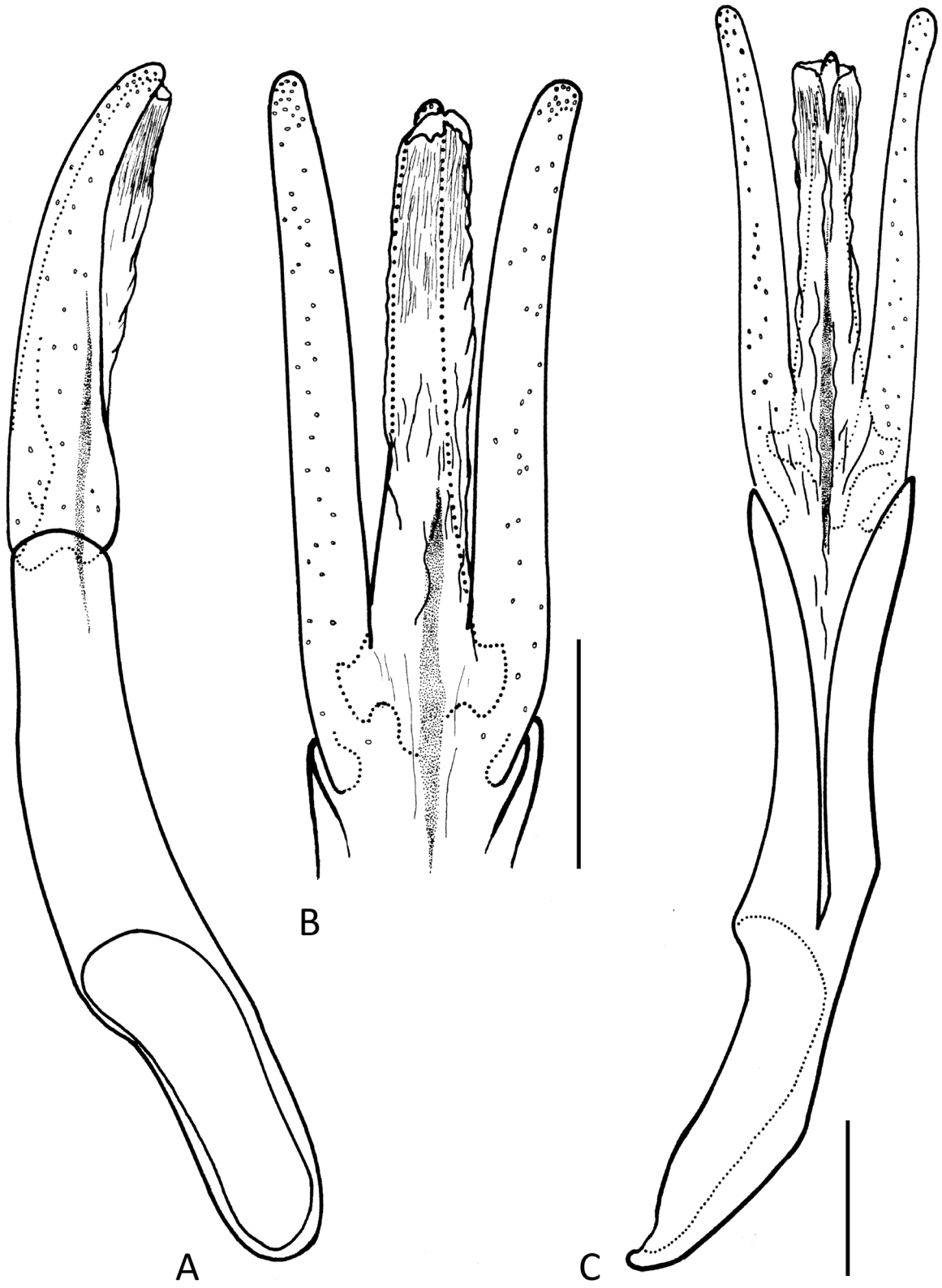

Fig. 41. *Elmomorphus paramontanus*, Kodada, Selnekovič & Jäch sp. nov., paratype from Thailand (CKB), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect, detail of parameres and penis. **C**. Ventral aspect. Scale bars: 0.1 mm.

The differences between *E. paramontanus*, *E. corpulentus*, and *E. ellipticus* are listed under the latter two species. *Elmomorphus montanus* differs from *E. paramontanus* in the parameres being shorter in relation to the phallobase, PhL/PrL: 2.30 in *E. montanus* versus PhL/PrL: 1.37–1.81 (1.57 ± 0.11, n = 25) in *E. paramontanus* (Fig. 41).

Etymology

The epithet is a Latin adjective in the nominative singular referring to the overall similarity with *E. montanus*.

Type material

Holotype

THAILAND – **Mae Hong Son Province** • ♂; "Thai 1-8.V.1992 Ban-si Lang Mae Hong Son J.Horák leg."; NMW.

Paratypes

CHINA – **Hong Kong** • 2 ex.; "HONGKONG University Campus at light, 1996 leg. G. de Rougemont"; NMW. – **Yunnan Province** • 2 ♂♂; "CHINA: Yünnan, Xishuangbanna ca. 15 km W Menglun, 5.11.1999, ca. 700 m leg. Jäch, et al. (CWBS 355)"; NMW • 3 ex.; "CHINA: Yünnan, Xishuangbanna ca 10km NW Menglun 7.11.1999, ca. 700 m leg. Jäch, et al. (CWBS 359)"; NMW • 12 ♂♂, 14 ♀♀, 44 ex.; "CHINA: Yünnan, Xishuangbanna, ca. 50 km SSE Menglun, Mengyuan, 6.11.1999, ca. 700 m, leg. Jäch et al. (CWBS 361)"; NMW • 4 ♀♀, 6 ex.; "CHINA: Yünnan, Xishuangbanna ca. 6km NW Mengla 8.11.1999, ca. 700 m, leg. Jäch et al. (CWBS 364)"; NMW • 1 ex.; "CHINA: Yünnan, Xishuangbanna ca. 50km NW Mengla 9.11.1999, ca. 800 m leg. Wang & Wei (CWBS 370)"; NMW • 7 ex.; "CHINA: Yünnan, Xishuangbanna ca. 7km NE Jinghong 12.11.1999, ca. 600 m leg. Jäch, et al. (CWBS 377)"; NMW • 12 ex.; "CHINA: S-YUNNAN (Xishuangbanna) 23 km NW Jinghong Na Ban Village (NNNR [Nabanhe National Nature Reserve]) | N22°10.04 E100°39.52 680m 05.VI.2008 LF [light trap] leg. A. Weigel station"; CWW • 7 ex.; same data as for preceding, but labels written in different style; CWW • 1 ex.; "CHINA: S-YUNNAN (Xishuangbanna), 20km NW Jinghong, Man Dan (NNNR [Nabanhe National Nature Reserve]), N 22°07″80′, E 100°40″05′ [minutes and seconds interchanged], 720m, 23.V. 2008, leg.A.Weigel, LF [light trap]"; CWW. – **Guangdong Province** • 1 ex.; "CHINA: Guangdong Prov., 35 km NE Huaiji 24°00′25″N 112°26′09″E 3.11.2001, ca. 130 m Jäch & Komarek (CWBS 463)"; NMW • 1 ex.; "CHINA: Guangdong Prov. 40 km ENE Zengcheng 23°17′12″N 114°03′42″E 11.11.2001, ca. 140 m Komarek & Wang (CWBS 492)"; NMW.

LAOS – **Houa Phan Province** • 1 ex.; "LAOS-NE, Houa Phan prov., 20°13′09-19″N 103°59′54″-104°00′03″E, 1480-1510m, PHOU PANE Mt., 22.iv.-14.v.2008, Vít Kubáň leg."; NMW. – **Luang Namtha Province** • 4 ex.; "N-LAOS: Prov. Lg. Nam Tha ca 20km NE Muang Sing 10.6.1996, 700m leg. Schillhammer (20)"; NMW • 58 ex.; "N-LAOS: Prov. Lg. Nam Tha ca. 5 km Muang Sing 650 m Huay Giulom riv., 10.6.1996 leg. Schillhammer (21)"; NMW • 4 ex.; "N-Laos: Prov. Lg. Nam Tha, 5-10 km SW Muang Sing, 11.6.1996, 600m, leg. Schillhammer (23)"; NMW • 2 ex.; "N-LAOS: Prov. Lg. Nam Tha ca. 20km SE Muang Sing 12./13.6.1996, 950m leg. Schillhammer (25)"; NMW • 40 ex.; "N-Laos, Prov. Lg. Nam Tha, ca. 30 km NW Lg. Nam Tha, 16./18.6.1996, 800 m, leg. Schillhammer (28, 30)"; NMW • 20 ex.; "LAOS north, 24.–30.V 1997 20 km NW Louang Namtha N 21°09.2, E 101°18.7, alt. 900 ± 100 m E. Jendek & O. Šauša leg."; CKB. – **Luang Prabang Province** • 3 ex.; "IX. 1992, 250 m, 10 km N Luang Prabang Mekong-Ufer [banks], Licht [at light], leg. Insomsay Somsy"; NMW. – **Vientiane Province** • 13 ex.; "Ban Pahom 24km N of Vang Vieng Vientiane Prov., LAOS 9. V. 2002 H. Yoshitomi leg."; NMW.

MALAYSIA – **Perak State** • 5 ex.; "MALAYSIA 3.II.1992 PERAK: ca. 10 km NÖ [NE] Gerik leg. Jäch (24)"; NMW • 2 ex.; "MALAYSIA 4.II.1992 PERAK: Lawin, S Gerik leg. Jäch (25)"; NMW • 1 ex.; "MALAYSIA 4.II.1992 PERAK: Ö [E] Padang Gerus leg. Jäch (26)"; NMW.

MYANMAR • 3 ex.; "MYANMAR N (Burma) 21 km E Putao, H-550m Nan Sa Bon vill 01.-05.05.1998 leg. S. Murzin & V. Siniaev"; NMW • 21 ex.; "MYANMAR: Kachin State 3.8km SW Putao, 30.5./1.6.1999 Ma Kyaw Wa riv., ca. 480m 27°18.90′N 97°22.93′E leg. Schillhammer & Schuh (59)"; NMW • 5 ex.; "MYANMAR: Kachin State 12km S Putao, 31.5.1999 W Mularshidi vill., 500 - 550m 27°15.13′N 97°24.95′E leg. Schillhammer & Schuh (60)"; NMW • 2 ex.; "MYANMAR: Kachin State ca. 12km S Putao, 2.6.1999 W Mularshidi vill., 50 - 550m 27°14.98′N 97°24.40′E leg. Schillhammer & Schuh (61)"; NMW.

THAILAND – **Mae Hong Son Province** • 5 ♂♂, 9 ♀♀, 10 ex.; same collection data as for holotype; CKB, NMW • 17 ex.; "NW THAI 23.-31.V. MAE HONG SON 1200m Ban Si Lang 1991 J. Horák leg."; CKB • 12 ex.; "THAILAND: 13.11.1995 3 km SE Mae Hong Son leg. Zettel (14b)"; NMW • 6 ♂♂, 9 ♀♀, 11 ex.; "NW-Thai 23.-31. V. 1991, Ban Si Lang, Mae Hong Son 1200m, J. Horák leg."; CKB, NMW • 1 ♂, 2 ♀♀, 3 ex.; "NW Thailand, 19.19N,97.59E Mae Hong Son, 1991 Ban Si Lang,1200m 23.-31.5.,L.Dembický leg."; NMW • 6 ex.; "NW THAI. 23.-31.V. MAE HONG SON 1200m BAN SI LANG, 1991 | COLL. BOUKAL"; CBB • 3 ♂♂, 2 ♀♀; "NW-Thailand, 1.-7. V. 1992, Mae Hong Son, Ban Si Lang, 1000 m, S. Bílý leg."; NMW • 18 ex.; "N-THAILAND, V.1992 Mae Hong Son Huai Sua Tao leg. Dembicky"; NMW • 1 ex.; "NW THAILAND Mae Hong Son Suan Pu, 5.5.1992 Pacholatko & Dembicky"; NMW • 3 ex.; "THAILAND: 11.11.1995 17km N Mae Hong Son Mok Cham Pae leg. Zettel (12a)"; NMW. – **Chiang Mai Province** • 24 ex.; "THAILAND 1989 Chiang Mai Malicky 10.-17.IV."; NMW • 2 ♂♂, 1 ♀; "NW Thailand CHON [CHOM] THONG 24-27.IV.1991 J.Horak lgt."; NMW • 1 ex.; "NW THAI 24.-27.IV. CHON THONG 1991 J. Horák leg."; CKB • 1 ♀; "NW-Thailand, 1991, Chon [Chom] Thong, 24. - 27.4., 18°26′N 98°41′E, L. Dembický leg."; NMW • 1 ex.; "N-THAILAND: Ch. Mai Chom Thong 24.-26.4.1991 leg. Pacholatko"; NMW • 2 ♂♂, 3 ♀♀; "N THAI, 15.-21.1. CHANG-MAI [Chiang Mai] env. 1992 Meo-Sa waterfalls M. Holecová leg."; CKB • 28 ex.; "Thailand: Chiang Mai Suanrim, 25.III.1994, Nam Mae Si,WDS-A-1046 William D. Shepard, leg. | Collection W.D. Shepard"; CSS • 2 ♀♀; "Thailand 91 "Thanon Thong Chai", D. Král & V. Kubáň, Thai, 10. - 16. V. 1991, Chiang Dao 600 m, 19°24′N 98°55′E, Vít Kubáň leg."; NMW • 5 ♂♂, 8 ♀♀; "Thailand 91 "Thanon Thong Chai", D. Král & V. Kubáň, Thai, 26. - 28. V. 1991, Palong 750 m, 19°55′N 99°06′E, Vít Kubáň leg."; NMW • 2 ♂♂, 1 ex.; "Thailand 91 "Thanon Thong Chai", D. Král & V. Kubáň, Thai, 9. - 14. V. 1991, Chiang Dao 350 m, 19°22′N 98°57′E, Vít Kubáň leg."; NMW • 1 ♂; "THAILAND 31.12. Huay Mae Sai Wf [waterfall] leg. Madl 1987"; NMW • 4 ♂♂, 3 ♀♀, 44 ex.; "North Thai, Maeo Khun Klang, 1350 m, Doi Inthanon, 16. X. 1983, M Sakai"; NMW • 3 ♂♂, 21 ex.; "Thailand, Maeo Khun Klang, 1300 m, Doi Inthanon, 17. X. 1983, M. Tomokuni, at light"; NMW • 10 ex.; "N-THAILAND: Chiang Mai 12 km W Chom Thong Mae Klang riv. 27.12.1998, 550 m, leg. P. Mazzoldi (7)"; NMW • 2 ex.; "Thailand: Doi Inthanon Mae Klang, 11.4.1996, 18°32′N 98°36′E, 540 m, WRC 17, leg. Malicky"; NMW • 4 ex.; "NW THAIL. 15.-23.5. Chiang Mai Doi Inthanon 1989 leg. Malicky"; NMW • 4 ♂♂, 14 ex.; "Fang Thailand Nov., 22. 1968, M. Sato leg."; NMW • 24 ex.; "THAILAND 1989 Chiang Mai Malicky 10.-17.IV."; NMW • 1 ex.; "NW-Thail.: Chiang Mai, 38°57′E 18°49′N, Zoo, 24.-31.10.1988 Malicky & Chantaramon[g]kol LF [light trap]"; NMW • 18 ex.; "N-THAILAND, 10.-17.4. 18°49′N 98°57′E Chiang Mai, Zoo (Licht) [light] leg. Chantaramongkol & Malicky 1989"; NMW • 1 ex.; "THAILAND Phuphing Palace, 1400m, Doi Suthep-Pui, C. Chiang Mai, 8 Sep 1987 T. Yamasaki"; NMW • 86 ex.; "N-THAILAND NW Chiang Mai Pai City, 29.4.1993 Pacholatko & Dembicky"; NMW • 1 ex.; "N-THAILAND, Chiang M. Soppong - Pai 1.-8.5.1993, 1800m Pacholatko & Dembicky"; NMW • 6 ex.; "THAILAND: 30./31.11. Chiang Mai Prov. 1995 W Mae Rim, Mae Sa NP leg. Zettel (2)"; NMW • 45 ex.; "THAILAND: 8.11.1995 Chiang Mai Prov. Chiang Dao, 500m leg. Zettel (10)"; NMW • 4 ex.; "N-THAILAND Ban Sanpakia, 19°19′N 96°50′E 1000 m a.s.l.,

3.V.1996, V. Kubáň leg."; CKB. – **Kanchanaburi Province** • 3 ex.; "THAILAND: 5.4.1989, Tham Than Lod NP [= Chaloem Rattanakosin National Park], 500m 99°20′E 14°46′N, Malicky & Wanleelag"; NMW. – **Nan Province** • 1 ex.; "N-THAILAND: Nan, 2.1.1999 Doi Phu Ka NP, 1400 m 1 km after Park HQ leg. P. Mazzoldi (24)"; NMW. – **Nakhon Si Thammarat Province** • 1 ex.; "P. THAILAND Khao Luang N.P.-H.Q. 450m Nop Pi Tam, C. Nakhon Si Thammarat, 6 Aug 1987, T. Yamasaki"; NMW. – **Phetchabun Province** • 1 ex.; "N-THAILAND, Nan Lom Sak - Dan Sai 17.-19.6.1993 Pacholatko & Dembicky"; NMW. – **Phrae Province** • 2 ex.; "THAILAND: 17./18.11.1995 Phrae Prov.Huai Kaet 50km NE Phrae leg. Zettel (17b)"; NMW. – **Songkhla Province** • 11 ex.; "S-Thailand 600m ob [above] Ton Nga Chang WF [waterfall] 6°58′N, 100°12′E lg. Malicky, 4.-5.5.[19]93"; NMW. – **Tak Province** • 7 ♂♂, 8 ♀♀, 7 ex.; "Thailand 91 "Thanon Thong Chai", D. Král & V. Kubáň, Thai, 26. IV. - 6. V. 1991, Umphang 550 m, 16°04′N 98°53′E, Vít Kubáň leg."; CKB, NMW. – **Yala Province** • 121 ♂♂, 38 ♀♀, 169 ex.; "S-THAILAND 25.3.-22.4. BETONG YALA distr. 1993 leg.J.Horák & J.Strnad"; CKB, NMW.

VIETNAM – **Bac Kan Province** • 2 ex.; "N-VIETNAM Bac Kan Prov., Ba Bè NP, (entry), 16.-20.V.2014 22°25′07″, E105°38′09″E 180-220m, leg. A. Skale"; NMW. – **Cao Bang Province** • 1 ex.; "N-VIETNAM Cao Bang Prov., vic. Tinh Tuc, Son Dong, Nui Pia Oac Nature Reserve, 9.-15.V.2014 22°37′55″N 105°52′98″E 860-1300m leg. A. Skale"; NMW • 2 ex.; "N- VIETNAM, Cao Bang Pr. vic. Tinh Tuc, Son Dong Nui Pia Oac Nature Res. 22°37′5″N, 105°53′20″ 11.V.2014, 1000m leg. A. Weigel, by light"; CWW. – **Lam Dong Province** • 1 ♂, 1 ♀; "S-Vietnam: 17.-21.4., 12 km N Dalat, 1995, Lang Bian | 12°03′N 108°27′E, 1580-1750 m, Pacholatko & Dembicky"; NMW • 56 ex.; "S-VIETNAM: 22.-24.4. 15km SW Bao Loc 1995 900m, 11°27′N 107°43′E Pacholatko & Dembicky"; NMW. – **Son La Province** • 11 ex.; "N-Vietnam: Son La Prov., 36 km S Mac Chau [Moc Chau], ca. 1092 m, 20°44′34″N 104°55′44″E, 25.-26.6.1997, lg. C.L. [Chun-lin] LI"; NMW • 1 ex.; "N-Vietnam: Son La Prov., 36 km S Mac Chau [Moc Chau], ca. 1090 m, 20°45′34″N 104°55′44″E, 1.7.1997, leg. C.F. [Chi-feng] Lee [it is not entirely clear, whether this specimen was collected in Son La Prov., because the coordinates lie in the Thanh Hóa Prov., very close to the boarder to Son La Prov., the label data (incl. the coordinates) are remarkably similar to the label data of the 11 specimens listed above, the elevation data seem to be incorrect in both cases]"; NMW. – **Thanh Hóa Province** • 36 ex.; "VIETNAM, Thanh Hóa Prov., Bá Thước Distr., Thành Sơn, Kho Mường, 20°28′51.3″N, 105°07′51.6″E, 390 m a.s.l., 11.11.2022, Kodada & Selnekovič leg. (3)"; CKB.

Type locality

Thailand, Mae Hong Son Province, Ban Si Lang.

Description

Measurements (mm): TL: ♂♂ 2.90–3.33 (3.07±0.12, n=26), ♀♀ 2.88–3.35 (3.20±0.14, n=9); PL: ♂♂ 0.72–0.83 (0.75±0.03, n=26), ♀♀ 0.67–0.81 (0.76±0.04, n=9); PW: ♂♂ 1.19–1.32 (1.25±0.04, n=26), ♀♀ 1.16–1.35 (1.29±0.06, n=9); EL: ♂♂ 2.16–2.55 (2.32±0.10, n=26), ♀♀ 2.21–2.55 (2.44±0.11, n=9); EW: ♂♂ 1.48–1.64 (1.56±0.04, n=26), ♀♀ 1.48–1.69 (1.61±0.06, n=9); PhL: 0.46–0.55 (0.50±0.02, n=26); PrL: 0.28–0.35 (0.32±0.31, n=26).

Body oblong-ovate, and dorsally convex (Fig. 40). Integument black; mouthparts, antennae, trochanters, basal parts of femora, and tarsi reddish-brown; dorsum with fine bronze metallic lustre. Pubescence consisting of short yellowish setae. Dorsal plastron present on cranial surface (except for median part of vertex), anterior angles of pronotum, and on lateral sides of elytra. Ventral plastron absent on prosternal process, median part of metaventrite, and middle of ventrites 1–2.

Dorsal surface of head with round setiferous punctures of diameters slightly smaller than an eye facet, separated by ca 0.5–2.0× puncture diameters. Plastron present on entire dorsal surface, except for oval area on vertex. Labrum transverse (Fig. 1C), anterior margin slightly emarginate in middle, exposed portion microreticulate, with small setiferous punctures; setae equal in length in both sexes. Anterior margin of clypeus straight. Eyes oval, moderately protruding from head outline, interfacetal setae

short; ID: ♂♂ 0.39–0.46 mm (0.43±0.01, n=26), ♀♀ 0.42–0.47 mm (0.44±0.01, n=9). Antennae 10-segmented, densely setose.

Pronotum (Fig. 3E) wider than long, widest at base, PW/PL: ♂♂ 1.59–1.76 (1.66±0.03, n=26), ♀♀ 1.64–1.78 (1.70±0.04, n=9); disc moderately convex; anterior angles protruding, acute; lateral sides convergent, slightly rounded in dorsal aspect; surface smooth, with round setiferous punctures; plastron confined to anterior angles. Prosternal process wider than long, lateral and distal edges rounded; lateral margins moderately raised, without clusters of long setae in males; median keel moderately arcuate. Metaventrite covered with plastron, except for slightly convex, posteriorly expanded median part; metaventral process with lateral margins raised, delimited by longitudinal grooves. Scutellum longer than wide, punctate. Elytra elongate oval, widest behind middle, EL/EW: ♂♂ 1.43–1.56 (1.49±0.03, n=26), ♀♀ 1.47–1.56 (1.51±0.03, n=9); dorsal surface finely microreticulate; round setiferous punctures scattered on entire surface; plastron present on lateral portions forming a distally expanded band, anteriorly almost reaching elytral base, covering about one-third of elytron width (along elytral midlength). Tibiae slightly curved; protibia ca 1.2× as long as protarsus; PrTL/PL: ♂♂ 1.08–1.22 (1.16±0.06, n=26), ♀♀ 1.10–1.25 (1.16±0.05, n=9). Terminal protarsomere longer than the preceding segments combined.

Abdomen covered with plastron, except on middle of first two ventrites. Apex of ventrite 5 rounded; females with small longitudinal keel before apex (Fig. 4I). Aedeagus (Fig. 41): phallobase moderately long, slightly expanded proximally, PhL/PrL: 1.37–1.81 (1.57±0.11, n=25); parameres weakly curved ventrad, apices narrowly rounded (lateral aspect); penis rounded apically; sclerotised fibula rather short and slender. Bursa copulatrix without microsclerites.

Secondary sexual dimorphism

Females possess a small longitudinal subapical keel on ventrite 5.

Distribution

China (Guangdong, Hong Kong, Yunnan), Laos, Malaysia (Perak), Myanmar, Thailand, Vietnam (Fig. 111A).

Elmomorphus cuneatus sp. nov.
urn:lsid:zoobank.org:act:EB7E144C-5B83-4A32-9F33-EBB366976930
Figs 42–43, 111B

Differential diagnosis

Elmomorphus cuneatus sp. nov. (Fig. 42) is characterised by the presence of a plastron on the dorsal cranial surface and the lateral sides of the pronotum and elytra. Elytral punctures are scattered over the entire surface, and longitudinal striae are absent. These characters are shared by *E. sausai* sp. nov., *E. umphangicus* sp. nov., and *E. yunnanensis* sp. nov. From *E. sausai*, it can easily be distinguished by the cranial surface being entirely covered with plastron, while in the two other species, the plastron is lacking on a small triangular area on the vertex. All ventrites are covered with plastron in *E. cuneatus*, whereas the middle of the first two ventrites lack a plastron in the other species. *Elmomorphus cuneatus* is characterised by its small body dimensions and by the extensive plastron bands on the elytra, each covering more than two-thirds of the elytron width (measured at the elytral midlength). The species most closely resembles *E. ellipticus* sp. nov. but can easily be recognised by the plastron distributed on the entire cranial surface and along the entire lateral sides of the pronotum.

Fig. 42. *Elmomorphus cuneatus* sp. nov., holotype, male (NMW), TL: 2.69 mm.

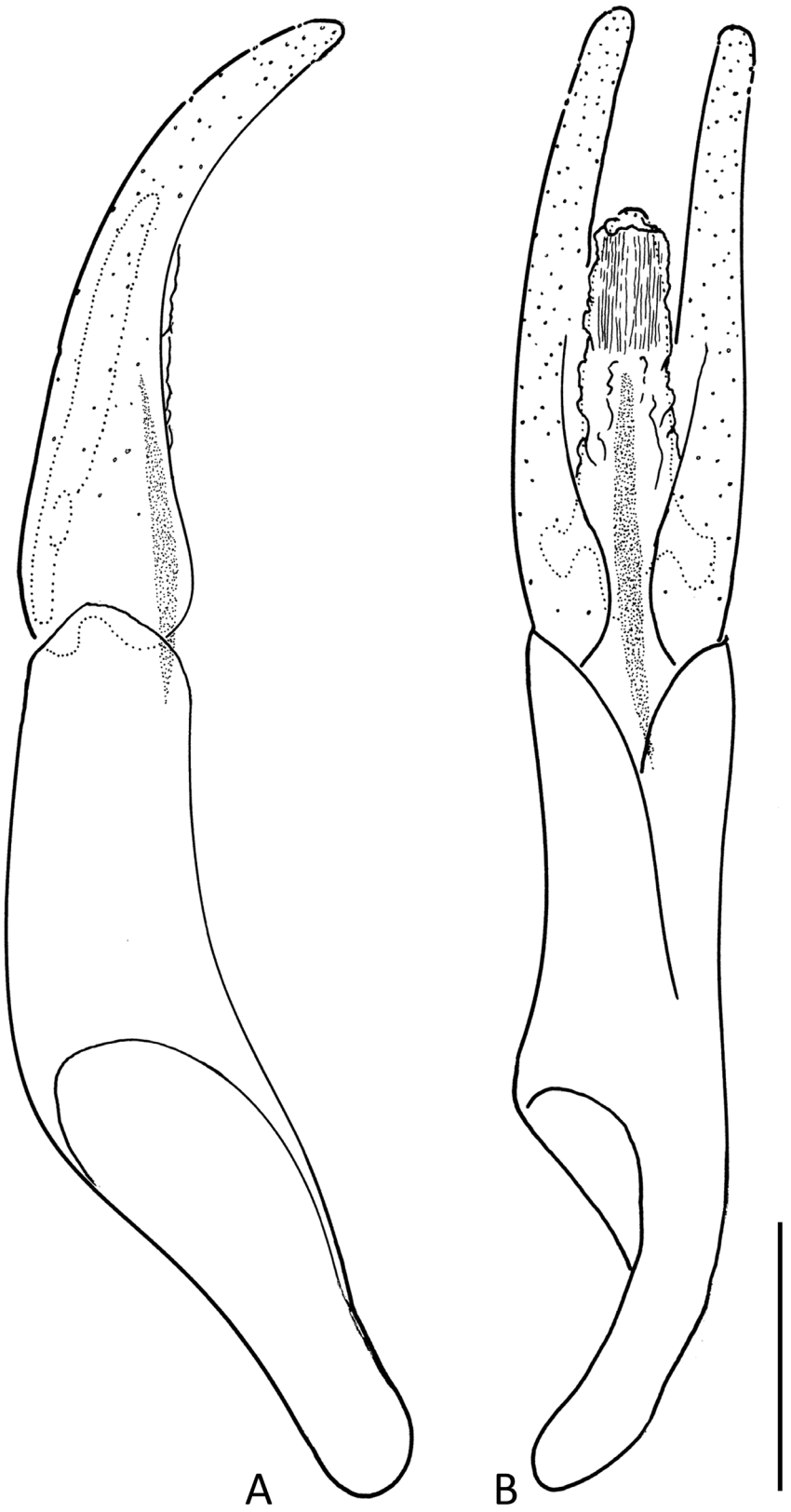

Fig. 43. *Elmomorphus cuneatus* sp. nov., holotype (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Etymology

The epithet is a Latin adjective in the nominative singular meaning 'wedge-shaped', referring to the narrow wedge-shaped glabrous area on the elytra.

Type material

Holotype

THAILAND – **Phang Nga Province** • ♂; "THAILAND 2003 PROVINZ PHANGNA, KHAO LAK surr.[oundings] 10.1. leg.: Horst FORSTER"; NMW.

Paratypes

THAILAND – **Phang Nga Province** • 2 ♀♀: same collection data as for holotype; NMW • 1 ex.; "Thailand: Phang-Nga Prov. Takua Pa distr., stream nr. Pak Wip Waterf., 29.11. 2006, leg. H. Zettel (47)"; NMW • 2 ex.; "Thailand: Khuraburi distr. Baan Tumnang, W of Si Phang Nga NP, 29.11. 2006, leg. H. Zettel (48)"; NMW. – **Chumphon Province** • 1 ex. [ex coll. A. Skale]; "THAILAND, Chumphon Pr. Pha To env. 9°48′, 98°47′ 27.III. - 14.iv.1996 leg. P. Prüdek [= ? Pavel Průdek]"; NMW. – **Kanchanaburi Province** • 2 ♀♀; "Thailand: 26. 12. 1996, Sankhlaburi, road to Karen vill., Ban Sane Pang, leg. Mazzoldi"; NMW. – **Ranong Province** • 9 ex. [ex coll. A. Skale]; "THAILAND, Ranong Pr. Ban Na env. 9°34′N, 98°42′E leg. P. Prüdek [= ? Pavel Průdek]"; CKB, NMW. – **Rayong Province** • 7 ex.; "THAILAND 1990 (14) Prov. Rayong Khao Chamao NP, leg. Jäch 12.12."; CKB, NMW. – **Satun Province** • 1 ex.; "THAILAND: Thale Ban NP leg. Madl 1993"; NMW. – **Trat Province** • 1 ex.; "O – THAILAND 1990 Ko Chang (11) am Licht [at light] leg.Jäch 8.-12.12."; NMW.

Type locality

Thailand, Phang Nga Province, Khao Lak.

Description

Dimensions (mm): TL: ♂♂ 2.69 (n=1), ♀♀ 2.66–2.74 (2.71±0.04, n=4); PL: ♂♂ 0.61 (n=1), ♀♀ 058–0.64 (0.61±0.03, n=4); PW: ♂♂ 1.13 (n=1), ♀♀ 1.10–1.21 (1.15±0.05, n=4); EL: ♂♂ 2.08 (n=1), ♀♀ 2.08–2.11 (2.09±0.02, n=4); EW: ♂♂ 1.27 (n=1), ♀♀ 1.20–1.35 (1.26±0.07, n=4); PhL: 0.35 (n=1); PrL: 0.27 (n=1).

Body elongate oval, moderately convex, widest around elytral midlength (Fig. 42). Colouration black, mouthparts, antennae, trochanters, and tarsi reddish brown, remaining parts of legs brown. Dorsal pubescence consists of short thin decumbent setae arising from small round punctures. Dorsal plastron present on entire cranial surface, along lateral sides of pronotum and elytra. Ventral plastron present on entire ventral surface, except on prosternal process and median part of metaventrite.

Cranium with small round punctures, smaller than an eye facet, separated from each other by ca 0.5–1.0 × puncture diameter; plastron covering entire surface. Labrum transverse, anterior margin straight, exposed portion microreticulate with small setiferous punctures; setae concentrated along anterior margin, equal in length in both sexes. Anterior margin of clypeus straight. Eyes large, oval, moderately protruding, ID: ♂♂ 0.38 mm (n=1), ♀♀ 0.37–0.43 mm (0.40±0.03, n=4). Antennae short, 10-segmented, densely setose.

Pronotum transverse, moderately convex, widest at base, PW/PL: ♂♂ 1.85 (n=1), ♀♀ 1.84–1.90 (1.87±0.03, n=4); plastron forming posteriorly narrowed band along lateral sides; pronotal disc smooth, with round setiferous punctures larger than those on head and elytra, punctures separated from each other by about half a puncture diameter; anterior angles protruding and deflexed; lateral pronotal sides convergent and rounded. Prosternal process with lateral and posterior edges rounded, lateral margins slightly raised, without clusters of erect setae, median keel arched. Scutellum longer than wide, smooth,

with several setiferous punctures. Metaventral process with lateral margins slightly raised; metaventral disc flat, area without plastron widened posteriorly. Elytra oval, widest around middle, EL/EW: ♂♂ 1.63 (n=1), ♀♀ 1.56–1.74 (1.66±0.08, n=4); plastron forming broad, posteriorly widened lateral bands, each band covering more than two-thirds of elytron width (measured at elytral midlength); median area without plastron V-shaped, weakly microreticulate. Tibiae straight, protibia ca 1.3 × as long as protarsus, PrTL/PL: ♂♂ 1.15 (n=1), ♀♀ 1.02–1.20 (1.12±0.07, n=4). Terminal protarsal segment somewhat longer than all preceding segments combined; male foreclaws long, narrow, strongly curved, similar to female ones.

Ventrites completely covered with plastron; intercoxal process short and wide, without admedian keels; ventrite 5 in both sexes evenly convex, apex slightly emarginate in males, and arcuate with small longitudinal keel in females. Aedeagus (Fig. 43): phallobase short, PhL/PrL: 1.31 (n=1); parameres long and slender, narrowly rounded apically (lateral aspect); penis remarkably short, broadly rounded apically; sclerotised fibula rather long.

Secondary sexual dimorphism

Apex of ventrite 5 slightly emarginate in males, arcuate and with short longitudinal keel in females.

Distribution

Thailand (Fig. 111B).

Elmomorphus umphangicus Kodada, Selnekovič & Jäch sp. nov.
urn:lsid:zoobank.org:act:309D3D42-6B56-4D27-B75A-7B8F80FD8B03
Figs 44–45, 111C

Differential diagnosis

Elmomorphus umphangicus sp. nov. (Fig. 44) is characterised by having a plastron on the cranial surface (except for a small triangular area on the vertex) and on the lateral sides of the pronotum and elytra. Elytral punctures are scattered over the entire surface and longitudinal striae are absent. Such a combination of characters is also present in *E. bispinosus* sp. nov., *E. longitarsis* sp. nov., *E. parvulus* sp. nov., *E. sausai* sp. nov., and *E. yunnanensis* sp. nov. The elytral plastron bands are slenderer than in *E. sausai*. Elytra are widest behind the middle in *E. umphangicus*, while in the rest of the species, they are widest around the middle. *Elmomorphus umphangicus* is smaller (TL: ♂♂ 2.64–2.90 mm (2.76±0.10, n=5), ♀♀ 2.46–3.12 mm (2.83±0.30, n=6)) than *E. bispinosus* (TL: ♀♀ 3.38–3.54 mm (n=3)), *E. longitarsis* sp. nov. (TL: ♂♂ 2.93–3.09 mm (n=3)), *E. sausai* (TL: ♂♂ 3.07–3.15 mm (3.10±0.03, n=4)), or *E. yunnanensis* (TL: ♂♂ 3.29–3.67 mm (3.37±0.15, n=4)) and slightly larger than *E. parvulus* (TL: ♂♂ 2.41–2.62 mm (2.54±0.07, n=6), ♀♀ 2.60–2.81 mm (2.71±0.07, n=6)). Pronotal and elytral surface with distinct bronze lustre (Fig. 44), not present in *E. yunnanensis* (Fig. 50). Aedeagus as in Fig. 45.

Etymology

The epithet is a Latin adjective in the nominative singular referring to the type locality of the species.

Type material

Holotype

THAILAND – **Tak Province** • ♂; "THAI, 26.IV.-6.V.1991 UMPHANG 500 m 16°04′N 98°53′E Vít Kubáň leg."; NMW.

Paratypes

THAILAND – **Tak Province** • 2 ♂♂, 6 ♀♀; same collection data as for holotype; CKB, NMW • 3 ♀♀; with similar labels, but "David Král lgt."; NMW.

Fig. 44. *Elmomorphus umphangicus* Kodada, Selnekovič & Jäch sp. nov., paratype, male from type locality (CKB), TL: 2.80 mm.

Fig. 45. *Elmomorphus umphangicus* Kodada, Selnekovič & Jäch sp. nov., aedeagus. **A**. Holotype (NMW), lateral aspect. **B**. Holotype (NMW), ventral aspect. **C**. Paratype from type locality (CKB), lateral aspect. Scale bar: 0.1 mm.

Remarks

A series of 67 specimens (NMW) labelled "Thailand 2003 Prov. Suratthani [Surat Thani] Khao Sok N.P. 15.1. leg.: Horst Forster", closely resembles the type specimens of *E. umphangicus* sp. nov., but they differ in the slightly more convex elytra and the slightly narrower elytral plastron bands. Although we could not detect any apparent differences in the male genitalia, we are not including these specimens from Khao Sok N.P. (Surat Thani Province) in the type series or as "additional material examined" of *E. umphangicus*; molecular data will be necessary to reveal the identity of these specimens.

Type locality

Thailand, Tak Province, Umphang, 16°4′ N, 98°53′ E.

Description

Measurements (mm): TL: ♂♂ 2.64–2.90 (2.76±0.10, n=5), ♀♀ 2.46–3.12 (2.83±0.30, n=6); PL: ♂♂ 0.61–0.66 (0.63±0.02, n=5), ♀♀ 0.53–0.71 (0.63±0.08, n=6); PW: ♂♂ 1.06–1.17 (1.11±0.04, n=5), ♀♀ 0.96–1.26 (1.11±0.13, n=6); EL: ♂♂ 2.03–2.24 (2.13±0.07, n=5), ♀♀ 1.92–2.42 (2.20±0.22, n=6); EW: ♂♂ 1.30–1.43 (1.35±0.05, n=5), ♀♀ 1.17–1.51 (1.36±0.14, n=6); PhL: 0.53–0.64 (0.60±0.05, n=5); PrL: 0.31–0.34 (0.32±0.01, n=5).

Body elongate oval, widest behind midlength of elytra, moderately convex dorsally (Fig. 44). Colouration black; mouthparts, antennae, trochanters, and tarsi reddish brown, remaining parts of legs dark brown. Dorsal pubescence consists of thin short decumbent setae arising from small round punctures. Dorsal plastron on cranium except for triangular area on vertex, on lateral portions of pronotum and elytra. Plastron present on ventral surface, except for prosternal process, median part of metaventrite, and middle of ventrites 1–2.

Cranium with round setiferous punctures smaller than eye facet and separated by 0.5–1.0× puncture diameter. Plastron on dorsal cranial surface, except for triangular area on vertex. Labrum transverse with straight anterior margin; exposed portion microreticulate with small setiferous punctures; setae concentrated mainly along anterior margin. Anterior margin of clypeus straight. Eyes large, oval, moderately protruding, ID: ♂♂ 0.37–0.42 mm (0.40±0.02, n=5), ♀♀ 0.34–0.45 mm (0.41±0.04, n=6). Antennae 10-segmented, densely setose.

Pronotum transverse, weakly convex, widest at base, PW/PL: ♂♂ 1.74–1.77 (1.76±0.01, n=5), ♀♀ 1.71–1.83 (1.77±0.05, n=6). Plastron forming medially constricted band along lateral pronotal side. Remaining pronotal surface smooth, with round setiferous punctures slightly larger than those on head and subequal elytral punctures. Anterior pronotal angles protruding and deflexed; lateral pronotal sides convergent, straight, or weakly rounded. Prosternal process with lateral and posterior edges rounded; lateral portions weakly raised, without clusters of long setae; median keel flat. Scutellum longer than wide, smooth, with several setiferous punctures. Metaventral process with lateral margins slightly raised; metaventral disc flat, without clusters of long setae; posteriorly widened median portion smooth, without plastron. Elytra ovate, moderately convex, widest behind midlength, EL/EW: ♂♂ 1.56–1.63 (1.58±0.03, n=5), ♀♀ 1.58–1.64 (1.62±0.02, n=6). Plastron in two posteriorly expanded lateral bands, each covering about half of elytron width (along elytral midlength); remaining elytral surface weakly microreticulate, with round setiferous punctures. Tibiae straight; protibia as long as protarsus; PrTL/PL: ♂♂ 1.17–1.28 (1.21±0.05, n=5), ♀♀ 1.17–1.34 (1.25±0.07, n=6). Terminal protarsomere as long as all preceding segments combined. Male foreclaws narrow, strongly curved, similar to those of female.

Ventrites covered with plastron, except for middle of ventrites 1–2. Admedian keels on ventrite 1 inapparent. Ventrite 5 evenly convex in both sexes; apex in males slightly excised, in females rounded with short longitudinal keel. Aedeagus (Fig. 45): phallobase rather short, PhL/PrL: 1.69–2.00 (1.85–0.14, n=5); parameres narrowed and rounded apically (lateral view), weakly curved; penis narrowly rounded at apex; sclerotised fibula slender.

Secondary sexual dimorphism

Apex of male ventrite 5 shallowly excised, in female rounded, with short longitudinal keel.

Distribution

Thailand (Fig. 111C).

Elmomorphus parvulus sp. nov.
urn:lsid:zoobank.org:act:0D12F727-1172-4B6E-9446-BE1D550A82D2
Figs 46–47, 55A, 111D

Differential diagnosis

Elmomorphus parvulus sp. nov. (Fig. 46) is characterised by the presence of plastron on the dorsal cranial surface (except for large semicircular area on vertex), and on the entire lateral portions of pronotum and elytra, and the ventral surface, except for the prosternal process, median part of metaventrite, and median part of ventrite 1. Elytral punctures are scattered over the surface, and striae are absent. The same characters are also present in *E. bispinosus* sp. nov., *E. longitarsis* sp. nov., *E. sausai* sp. nov., *E. umphangicus* sp. nov., and *E. yunnanensis* sp. nov. It can be separated from the mentioned species by the small body dimensions, TL: ♂♂ 2.41–2.62 mm (2.54±0.07, n=6), ♀♀ 2.60–2.81 mm (2.71±0.07, n=6) versus TL: ♀♀ 3.38–3.54 mm (n=3) in *E. bispinosus*, TL: ♂♂ 2.93–3.09 mm (n=3) in *E. longitarsis*, TL: ♂♂ 3.07–3.15 mm (3.10±0.03, n=4) in *E. sausai*, TL: ♂♂ 2.64–2.90 mm (2.76±0.10, n=5), ♀♀ 2.46–3.12 mm (2.83±0.30, n=6) in *E. umphangicus*, and TL: ♂♂ 3.29–3.67 mm (3.37±0.15, n=4) in *E. yunnanensis*, strongly convex pronotal disc, the unique shape of the aedeagus (Fig. 47), and the presence of microsclerites arranged in a dorsal row on the bursa copulatrix (Fig. 55A). Body dimensions are most similar to those of *E. umphangicus*, which can be differentiated by the elytra being widest behind the middle, the wider plastron bands on the elytra, the longer tarsi, the distinct bronze lustre on the elytra, and the small triangular area without plastron on the vertex. The most closely resembling species is *E. cuneatus* sp. nov., but it differs in the dorsal cranial surface being entirely covered with plastron, while in *E. parvulus* sp. nov., a triangular area without plastron is present on the vertex. Moreover, all abdominal ventrites are entirely covered with plastron in *E. cuneatus* sp. nov., while in *E. parvulus* sp. nov., the plastron is absent on the medial portion of ventrite 1.

Etymology

The epithet ‘parvulus’ (very small) is a Latin adjective in the nominative singular, referring to the very small size of the species compared to the most similar congeners.

Type material

Holotype

THAILAND – **Chiang Mai Province** • ♂; “N-THAILAND, 14.2.1992 18°48′N 98°56′E Huai Koo Kao, 600m leg. Malicky (MS1)”; NMW.

Paratypes

THAILAND – **Chiang Mai Province** • 6 ♂♂, 6 ♀♀, 5 ex.; same collection data as for holotype; NMW • 1 ex.; “THAILAND, 11.3.1992 18°48′N 98°55′E Doi Suthep, 1200m leg Malicky (SS16)”; NMW • 1 ♀; “Thailand: Chiang Mai Suanrim, 25.III.1994, Nam Mae Si [? Mae Sa Waterfall], WDS-A-1046 William D. Shepard, leg.”; NMW.

Type locality

Thailand, Chiang Mai Province, Doi Suthep, Huai Koo Kao, 18°48′ N, 98°56′ E.

Fig. 46. *Elmomorphus parvulus* sp. nov., holotype, male (NMW), TL: 2.54 mm.

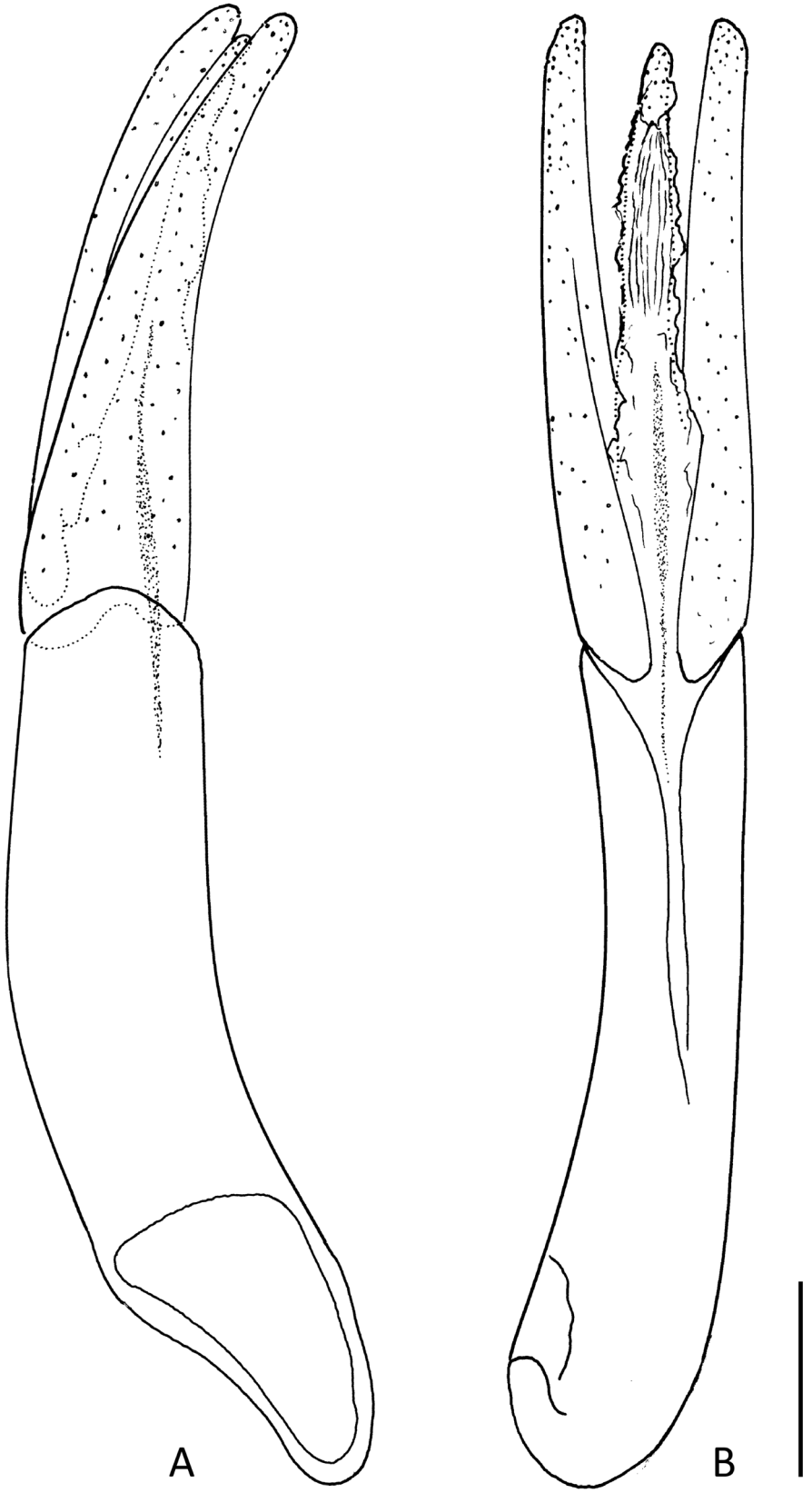

Fig. 47. *Elmomorphus parvulus* sp. nov., holotype (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Description

Measurements (mm): TL: ♂♂ 2.41–2.62 (2.54±0.07, n=6), ♀♀ 2.60–2.81 (2.71±0.07, n=6); PL: ♂♂ 0.61–0.70 (0.67±0.03, n=6), ♀♀ 0.66–0.73 (0.70±0.02, n=6); PW: ♂♂ 1.05–1.12 (1.10±0.02, n=6), ♀♀ 1.12–1.21 (1.18±0.03, n=6); EL: ♂♂ 1.77–2.00 (1.93±0.08, n=6), ♀♀ 2.00–2.18 (2.09±0.07, n=6); EW: ♂♂ 1.22–1.34 (1.30±0.04, n=6), ♀♀ 1.31–1.46 (1.39±0.05, n=6); PhL: 0.45–0.57 (0.50±0.04, n=6); PrL: 0.31–0.35 (0.34±0.01, n=5).

Body elongate oval, moderately convex, widest around elytral midlength (Fig. 46). Integument black, mouthparts, antennae, trochanters, and tarsi reddish brown, remaining parts of legs dark brown. Dorsal pubescence consists of short thin decumbent setae. Dorsal plastron present on cranial surface except large semicircular area on vertex, on lateral sides of pronotum and elytra, and on ventral surface except prosternal process, median part of metaventrite and median portion of ventrite 1.

Dorsal cranial surface with small round setiferous punctures separated by 0.5–1.0× puncture diameter, each puncture smaller than eye facet. Plastron covering most of surface except for large semicircular area on vertex reaching midlength of eyes. Labrum transverse, anterior margin straight, exposed portion microreticulate with small setiferous punctures, setae concentrated along anterior margin, equal in length in both sexes. Anterior margin of clypeus straight. Eyes oval, moderately protruding, ID: ♂♂ 0.41–0.44 mm (0.42±0.01, n=6), ♀♀ 0.43–0.48 mm (0.45±0.02, n=6).

Pronotum transverse, strongly convex, widest at base, PW/PL: ♂♂ 1.57–1.72 (1.64±0.05, n=6), ♀♀ 1.61–1.75 (1.69±0.04, n=6); plastron covering posteriorly narrowed areas along entire lateral pronotal sides; pronotal disc smooth, with round setiferous punctures; anterior angles protruding and deflexed; lateral sides convergent and weakly rounded. Prosternal process with lateral and posterior edges rounded, lateral portions weakly raised, without clusters of long setae, median keel weakly arcuate. Metaventral disc weakly convex, without clusters of long setae. Elytra oval, moderately convex, widest around middle, EL/EW: ♂♂ 1.45–1.51 (1.49±0.02, n=6), ♀♀ 1.47–1.55 (1.51±0.03, n=6); plastron covering posterior expanded lateral portions, each ca one-third of elytron width (around midlength); elytral surface without plastron weakly microreticulate. Tibiae straight, protibia ca 1.3× as long as protarsus; PrTL/PL: ♂♂ 0.98–1.06 (1.03±0.03, n=6), ♀♀ 0.95–1.04 (1.01±0.03, n=6). Terminal protarsomere approximately as long as all preceding segments combined.

Ventrites covered with plastron, except on middle of ventrite 1; ventrite 5 in males weakly emarginate at apex, in females with short longitudinal keel. Aedeagus (Fig. 47): phallobase rather long, PhL/PrL: 0.61–0.78 (0.67±0.06, n=5); parameres long, weakly curved ventrad, apices rounded (lateral aspect); penis narrowly rounded at apex; sclerotised fibula slender. Bursa copulatrix with numerous small microsclerites arranged in dorsal rows, and small clusters of lateral microsclerites (Fig. 55A).

Secondary sexual dimorphism

Ventrite 5 in males weakly emarginate at apex, in females with a short longitudinal apical keel.

Distribution

Thailand (Fig. 111D).

Elmomorphus sausai Kodada, Selnekovič & Jäch sp. nov.
urn:lsid:zoobank.org:act:2E012F42-870B-44CA-9A59-CF591E6D6517
Figs 48–49, 111E

Differential diagnosis

Elmomorphus sausai sp. nov. (Fig. 48) is characterised by the presence of a plastron on the dorsal cranial surface (except for a small triangular area on the vertex) and on the lateral sides of the pronotum and

Fig. 48. *Elmomorphus sausai* Kodada, Selnekovič & Jäch sp. nov., holotype, male (NMW), TL: 3.10 mm.

Fig. 49. *Elmomorphus sausai* Kodada, Selnekovič & Jäch sp. nov., holotype (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect, detail of parameres and penis. **C**. Ventral aspect. Scale bars: 0.1 mm.

elytra. Elytral punctures are scattered over the entire surface, and longitudinal striae are absent. These characters are shared by *E. bispinosus* sp. nov., *E. longitarsis* sp. nov., *E. umphangicus* sp. nov., and *E. yunnanensis* sp. nov. The elytral plastron band covers about two-thirds of the elytron width (measured at the elytral midlength), in contrast to the species mentioned above, which possess plastron bands covering only half of the elytron width or less. The body outline is broadest around the elytral midlength, whereas in *E. umphangicus* sp. nov., it is the widest behind the elytral midlength. Pronotum and elytra are black with a light bronze metallic lustre. Aedeagus as in Fig. 49.

Etymology

This species is named in honour of Ondrej Šauša, a Slovak entomologist who collected the holotype.

Type locality

Vietnam, Yên Bái Province, Yên Bái.

Type material

Holotype

VIETNAM – **Yên Bái Province** • ♂; "Vietnam North YEN BAI 6.-25.5.1990 O. Sausa lgt."; NMW.

Paratypes

VIETNAM – **Yên Bái Province** • 2 ♂♂, 4 ♀♀; same collection data as for holotype; CKB • 1 ♂, 1 ♀; "Vietnam bor. Pr. Hoang lien son YEN BAI V. 1990 J. Picka lgt."; NMW • 1 ex.; "N VIET NAM (Tonkin) Pr. Hoang Lien Son YEN BAI 10.V.1990 Vít. Kubáň leg."; NMW.

Description

Dimensions (mm): TL: ♂♂ 3.07–3.15 (3.10 ± 0.03, n = 4), ♀♀ 3.15–3.28 (3.21 ± 0.05, n = 5); PL: ♂♂ 0.68–0.74 (0.70 ± 0.03, n = 4), ♀♀ 0.71–0.74 (0.72 ± 0.01, n = 5); PW: ♂♂ 1.26–1.31 (1.28 ± 0.02, n = 5), ♀♀ 1.30–1.38 (1.33 ± 0.03, n = 4); EL: ♂♂ 2.37–2.41 (2.40 ± 0.02, n = 4), ♀♀ 2.44–2.57 (2.49 ± 0.05, n = 5); EW: ♂♂ 1.50–1.53 (1.50 ± 0.02, n = 4), ♀♀ 1.53–1.63 (1.57 ± 0.04, n = 5); PhL: 0.56–0.66 (0.63 ± 0.05, n = 4); PrL: 0.29–0.33 (0.31 ± 0.02, n = 4).

Body ovate, widest around midlength of elytra, moderately convex dorsally (Fig. 48). Colouration black, mouthparts, antennae, trochanters, proximal portions of femora, and tarsi reddish brown. Pubescence consists of thin short decumbent setae arising from round punctures. Dorsal plastron present on cranial surface (except for triangular area on vertex), and on the lateral sides of pronotum and elytra. Ventral plastron lacking on prosternal process, median part of metaventrite, and middle of ventrites 1–2.

Cranial surface with round setiferous punctures separated by ca 0.5–1.0 × diameter, punctures smaller than eye facets. Plastron on entire cranial surface, except triangular area on vertex. Labrum transverse, anterior margin straight, exposed portion microreticulate with small setiferous punctures; setae concentrated along anterior margin, equal in length in both sexes. Anterior margin of clypeus straight. Eyes large, oval, moderately protruding; ID: ♂♂ 0.41–0.45 mm (0.43 ± 0.02, n = 4), ♀♀ 0.43–0.47 mm (0.45 ± 0.01, n = 5). Antennae 10-segmented, densely setose.

Pronotum transverse, moderately convex, widest at base, PW/PL: ♂♂ 1.70–1.87 (1.82 ± 0.08, n = 4), ♀♀ 1.77–1.93 (1.85 ± 0.06, n = 5); plastron forming two medially constricted, lateral bands; pronotal disc smooth, with large round setiferous punctures. Anterior pronotal angles strongly deflexed, protruding and acute; lateral sides convergent, weakly rounded. Prosternal process with lateral and posterior edges rounded; lateral portions weakly raised; median keel nearly flat; clusters of long setae absent. Scutellum longer than wide, smooth, with several setiferous punctures. Metaventral process with lateral margins flat; metaventral disc flat; posteriorly expanded median portion smooth, lacking plastron. Elytra ovate,

moderately convex, widest around middle, EL/EW: ♂♂ 1.57–1.61 (1.59±0.52, n=4), ♀♀ 1.53–1.60 (1.58±0.03, n=5). Lateral plastron bands wide, posteriorly expanded, each covering about two-thirds of elytron width (measured at elytral midlength); area without plastron smooth, with scattered setiferous punctures. Tibiae straight, PrTL/PL: ♂♂ 1.16–1.23 (1.20±0.03, n=4), ♀♀ 1.14–1.22 (1.19±0.03, n=5). Terminal protarsomere slightly longer than all preceding segments combined. Male and female foreclaws similar, long and strongly curved.

Ventrites covered with plastron, except middle of ventrites 1–2. Intercoxal process with lateral margins slightly raised; admedian keels inapparent. Ventrite 5 in both sexes evenly convex, apex narrowly truncate or emarginate in males and rounded with small longitudinal keel in females. Aedeagus (Fig. 49): phallobase rather long, PhL/PrL: 1.94–2.11 (2.01–0.07, n=4); parameres narrowed and rounded apically, weakly curved (lateral aspect); penis narrowly rounded apically; sclerotised fibula relatively wide.

Secondary sexual dimorphism

Male ventrite 5 narrowly truncate or emarginate in males; rounded and with short longitudinal keel in females.

Distribution

Vietnam (Fig. 111E).

Elmomorphus yunnanensis Kodada, Selnekovič & Jäch sp. nov.
urn:lsid:zoobank.org:act:B604EC65-D889-461B-94D1-351D5091D483
Figs 50–51, 55B

Differential diagnosis

Elmomorphus yunnanensis sp. nov. (Fig. 50) is characterised by the presence of plastron on the dorsal cranial surface (except for a small triangular area on the vertex) and on the lateral sides of the pronotum and elytra. Elytral punctures are scattered over the entire surface, and distinct longitudinal striae are absent. Such a combination of characters is also present in *E. bispinosus* sp. nov., *E. longitarsis* sp. nov., *E. sausai* sp. nov. and *E. umphangicus* sp. nov. In *E. sausai* sp. nov., the elytral plastron bands cover approximately two-thirds of elytral width (in midlength), while in *E. yunnanensis* sp. nov., they cover approximately one-third; the body is slenderer (*E. sausai* sp. nov. EW: ♂♂ 1.50–1.53 mm (1.50±0.02, n=4), ♀♀ 1.53–1.63 mm (1.57±0.04, n=5), *E. yunnanensis* sp. nov. EW: ♂♂ 1.66–1.80 mm (1.73±0.06, n=4), ♀♀ 1.77 mm (n=1)) and shorter (*E. sausai* sp. nov. TL: ♂♂ 3.07–3.15 mm (3.10±0.03, n=4), ♀♀ 3.15–3.28 mm (3.21±0.05, n=5), *E. yunnanensis* sp. nov. TL: ♂♂ 3.29–3.67 mm (3.37±0.15, n=4), ♀♀ 3.51 mm (n=1). In *E. umphangicus* sp. nov., the elytra are widest behind the middle, compared to *E. yunnanensis* sp. nov. with the elytra widest at the middle. The pronotal and elytral surfaces are without metallic lustre in *E. yunnanensis* sp. nov., whereas in *E. sausai* sp. nov. and *E. umphangicus* sp. nov. they are with more or less distinct bronze lustre. Tarsi are shorter than in *E. longitarsis* sp. nov. and *E. bispinosus* sp. nov.; the terminal protarsomere is as long as the preceding segments combined, while in the former two species it is longer. The bursa copulatrix has several microsclerites in proximal and lateral portions (Fig. 55B), compared to *E. longitarsis* sp. nov. with four larger microsclerites on each side and *E. bispinosus*, with one large microsclerite on each side.

Etymology

The epithet is a Latin adjective in the nominative singular referring to the province of Yunnan, the type locality of the species.

Fig. 50. *Elmomorphus yunnanensis* Kodada, Selnekovič & Jäch sp. nov., paratype, male from type locality (CKB), TL: 3.37 mm.

Type locality

China, Yunnan Province.

Type material

Holotype

CHINA – **Yunnan Province** • ♂; "YUNNAN mission" [printed modern label], without further details; NMW.

Paratypes

CHINA – **Yunnan Province** • 21 ♂♂, 25 ♀♀; same collection data as for holotype; CKB, MNHN, NMW.

Description

Measurements (mm): TL: ♂♂ 3.29–3.67 (3.37 ± 0.15, n = 4), ♀ 3.51 (n = 1); PL: ♂♂ 0.73–0.81 (0.78 ± 0.03, n = 4), ♀ 0.83 (n = 1); PW: ♂♂ 1.37–1.48 (1.41 ± 0.05, n = 4), ♀ 1.48 (n = 1); EL: ♂♂ 2.42–2.73 (2.58 ± 0.13, n = 4), ♀ 2.68 (n = 1); EW: ♂♂ 1.66–1.80 (1.73 ± 0.06, n = 4), ♀ 1.77 (n = 1); PhL: 0.62 (n = 1); PrL: 0.41 (n = 1).

Body oblong oval, strongly convex dorsally (Fig. 50). Integument black; mouth parts, antennae, and tarsi reddish-brown. Pubescence consists of very short yellowish setae. Plastron present on dorsal surface of cranium (except triangular area on vertex), on lateral sides of pronotum and elytra, and on ventral surface except prosternal process, median part of metaventrite, and middle of first two ventrites.

Dorsal head surface with round punctures smaller than eye facets, puncture spacing approximately equal to puncture diameter. Plastron on dorsal cranial surface, except triangular area on vertex. Labrum transverse, anterior margin moderately emarginate, exposed portion microreticulate, with setiferous punctures; setae equal in length in both sexes. Anterior margin of clypeus straight. Interfacetal setae short; ID: ♂♂ 0.46–0.51 mm (0.47 ± 0.02, n = 4), ♀ 0.50 mm (n = 1). Antennae 10-segmented, densely setose.

Pronotum transverse, widest at base, moderately convex, PW/PL: ♂♂ 1.75–1.89 (1.80 ± 0.06, n = 4), ♀ 1.78 (n = 1); width of rim of anterior margin equals about width of 2–3 eye facets; anterior angles protruding, acute; lateral pronotal sides convergent, slightly rounded; dorsal surface smooth, with round setiferous punctures; plastron bands covering entire lateral sides. Lateral and posterior edges of prosternal process rounded; lateral portions raised, without clusters of long setae; median keel arcuate. Scutellum longer than wide, acute at apex. Metaventrite with median part moderately convex, widened posteriorly; lateral margin of metaventral process raised, separated medially by shallow longitudinal groove. Elytra elongate oval, moderately convex, widest around middle, EL/EW: ♂♂ 1.45–1.51 (1.49 ± 0.03, n = 4), ♀ 1.51 (n = 1); surface finely microreticulate; punctures scattered; plastron forming wide lateral bands anteriorly almost reaching elytral base, expanding posteriorly, each covering about one-third of elytron width (along elytral midlength). Tibiae straight; protibia ca 1.2× as long as protarsus; PrTL/PL: ♂♂ 1.01–1.10 (1.09 ± 0.03, n = 4), ♀ 1.02 (n = 1). Terminal protarsomere as long as all preceding tarsomeres combined.

Ventrites covered with plastron, except for middle of first two ventrites. Ventrite 5 in males emarginate at apex; in females rounded, with short longitudinal keel. Aedeagus (Fig. 51): phallobase rather slender, PhL/PrL: 1.52 (n = 1); parameres moderately curved ventrad, apices rounded (lateral aspect); penis rounded apically; sclerotised fibula distinct. Bursa copulatrix with several microsclerites in proximal and lateral portions (Fig. 55B).

Fig. 51. *Elmomorphus yunnanensis* Kodada, Selnekovič & Jäch sp. nov., paratypes (NMW) from type locality (NMW), aedeagus. **A**. Lateral aspect. **B**. Lateral aspect. **C**. Ventral aspect, detail of parameres and penis. Scale bars: 0.1 mm.

Secondary sexual dimorphism

Ventrite 5 in males emarginate at apex; in females rounded, with short longitudinal keel.

Distribution

China (Yunnan).

Elmomorphus longitarsis sp. nov.
urn:lsid:zoobank.org:act:6F6843C0-4D46-4CF6-BD01-81D340EF2901
Figs 52–53, 55C, 111F

Differential diagnosis

Elmomorphus longitarsis sp. nov. (Fig. 52) is characterised by having a plastron on the dorsal cranial surface (except for the anteriorly narrowed area on the vertex) and the lateral sides of the pronotum and elytra. Elytral punctures are scattered, and striae are absent. Similar characters are also present in *E. sausai* sp. nov., *E. umphangicus* sp. nov., *E. yunnanensis* sp. nov., and *E. bispinosus* sp. nov. *Elmomorphus sausai* sp. nov. differs in the distinctly wider elytral plastron bands, each band occupying approximately two thirds of elytron width (in midlength), while in *E. longitarsis* sp. nov., it is approximately one-third. *Elmomorphus umphangicus* sp. nov. differs in smaller body dimensions (TL in *E. longitarsis* sp. nov.: ♂♂ 2.93–3.09 mm (n=3), ♀♀ 3.15–3.32 (n=2), while in *E. umphangicus*: ♂♂ 2.64–2.90 mm (2.76±0.10, n=5), ♀♀ 2.46–3.12 mm (2.83±0.30, n=6)), elytra being widest behind midlength and shorter, and in the wider parameres. *Elmomorphus longitarsis* differs from *E. yunnanensis* in the less convex body, longer tarsi with terminal protarsomere approximately 1.3 × as long as preceding segments combined (versus as long as preceding segments in *E. yunnanensis*), shorter and stouter phallobase (Fig. 53 for *E. longitarsis*, Fig. 51 for *E. yunnanensis*), and the different positions of the microsclerites of the bursa copulatrix (Fig. 55C). From *E. bispinosus* it differs in the slenderer body and the microsclerites of the bursa copulatrix (for *E. bispinosus* see Figs 54, 55D, for *E. longitarsis* see Figs 52, 55C).

Etymology

The epithet is a Latin adjective referring to the long tarsi.

Type material

Holotype

THAILAND – **Mae Hong Son Province** • ♂; "NW-Thailand, Mae Hong Son distr., Ban Suan Pu, V. 1992, J. Strnad leg."; NMW.

Paratypes

THAILAND – **Mae Hong Son Province** • 2 ♂♂, 2 ♀♀; same collection data as for holotype; CKB, NMW.

Type locality

Thailand, Mae Hong Son Province, Ban Suan Pu.

Description

Measurements (mm): TL: ♂♂ 2.93–3.09 (n=3), ♀♀ 3.15–3.32 (n=2); PL: ♂♂ 0.64–0.71 (n=3), ♀♀ 0.71–0.78 (n=2); PW: ♂♂ 1.23–1.31 (n=3), ♀♀ 1.27–1.32 (n=2); EL: ♂♂ 2.39–2.50 (n=3), ♀♀ 2.47–2.63 (n=2); EW: ♂♂ 1.48–1.60 (n=3), ♀♀ 1.53–1.61 (n=2); PhL: 0.52–0.64 (n=2); PrL: 0.37–0.41 (n=2).

Fig. 52. *Elmomorphus longitarsis* sp. nov., holotype, male (NMW), TL: 2.93 mm.

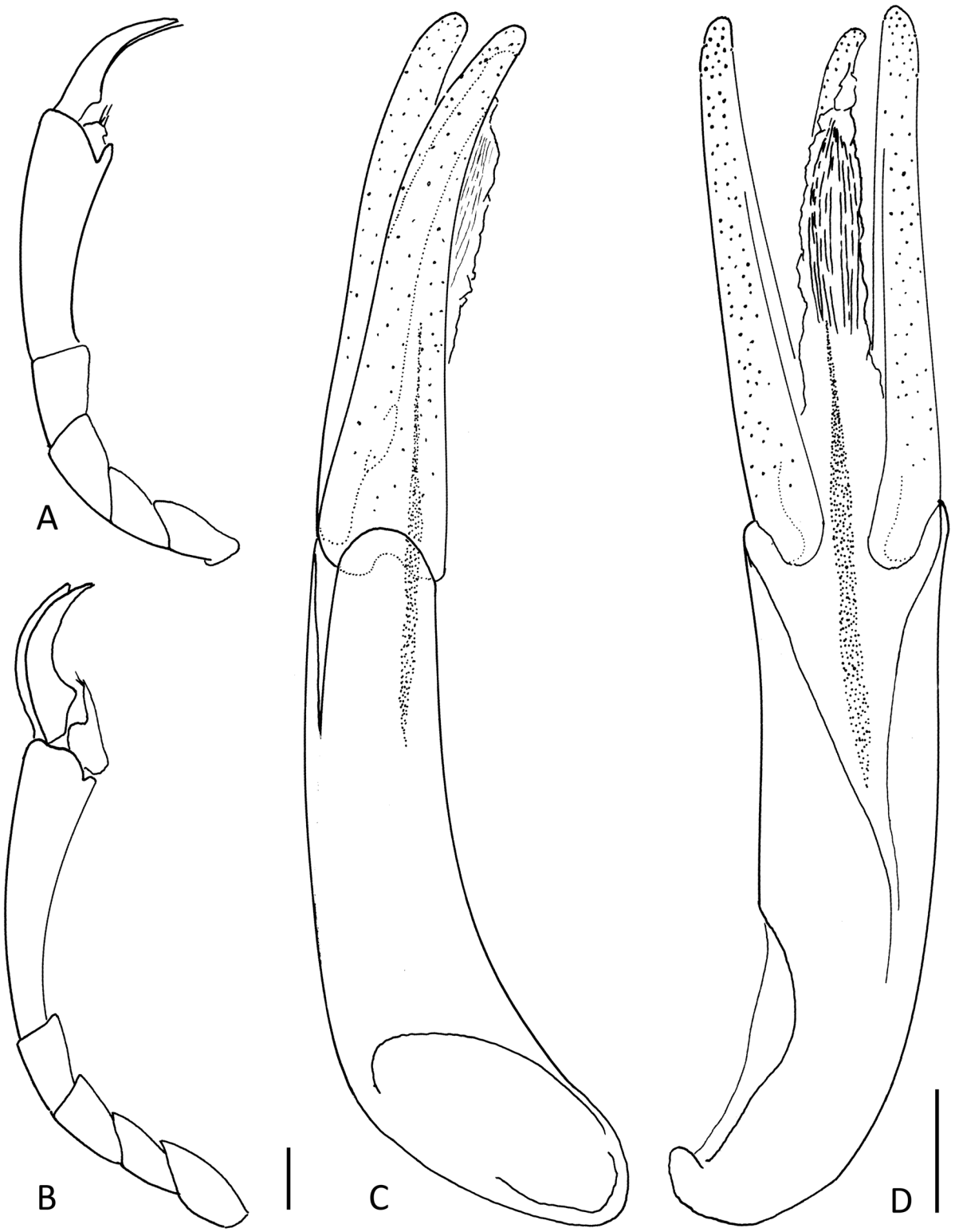

Fig. 53. Details of tarsi and aedeagus. **A**. *Elmomorphus yunnanensis* Kodada, Selnekovič & Jäch sp. nov., paratype from type locality (NMW), protarsus. **B**. *E. longitarsis* sp. nov., paratype fom type locality (NMW), protarsus. **C**. *E. longitarsis*, holotype (NMW), aedeagus, lateral aspect. **D**. Same, ventral aspect. Scale bars: 0.1 mm.

Body oblong oval, moderately convex dorsally (Fig. 52). Integument black; mouthparts, antennae, and tarsi reddish-brown. Pubescence consists of very short yellowish setae. Plastron present on dorsal surface of head except anteriorly narrowed area on vertex, on lateral sides of pronotum and elytra, and on ventral surface except for prosternal process, median part of metaventrite, median part of ventrite 1 and anteromedian portion of ventrite 2.

Head with small round punctures separated by 0.5–1.0 × puncture diameter. Labrum transverse, anterior margin straight, exposed portion microreticulate, setae concentrated along anterior margin and equal in length in both sexes. Eyes oval, moderately protruding; ID: ♂♂ 0.40–0.49 mm (n = 3), ♀♀ 0.41–0.46 mm (n = 2). Antennae 10-segmented, densely setose.

Pronotum transverse, widest at base, moderately convex, PW/PL: ♂♂ 1.84–1.94 (n = 3), ♀♀ 1.701–1.78 (n = 2); anterior angles protruding, acute; lateral pronotal sides convergent, weakly rounded; dorsal surface smooth, with round setiferous punctures; plastron bands covering entire lateral pronotal sides. Lateral and posterior edges of prosternal process rounded, lateral portions raised, without clusters of long setae, median keel arcuate. Scutellum longer than wide, acute at apex. Metaventrite with median part weakly convex, without clusters of long setae. Elytra oval, moderately convex, widest around midlength, EL/EW: ♂♂ 1.56–1.61 (n = 3), ♀♀ 1.61–1.63 (n = 2); surface almost inapparently microreticulate, with weak bronze lustre, setiferous punctures scattered; plastron forming wide, posteriorly expanding lateral bands, each covering about half of elytron width at midlength. Tibiae straight, protibia ca 1.15 × as long as protarsus; PrTL/PL: ♂♂ 1.27–1.37 (n = 3), ♀♀ 1.18–1.20 (n = 2). Terminal protarsomere approximately 1.3 × as long as all preceding segments combined.

Ventrites covered with plastron except for entire median portion of ventrite 1 and anteromedian portion of ventrite 2. Aedeagus (Fig. 53): phallobase rather short and wide, PhL/PrL: 1.42–1.58 (n = 2); parameres moderately curved ventrad, apices rounded (lateral aspect); penis rounded at apex; sclerotised fibula present. Bursa copulatrix with four rather large spines laterally on each side (Fig. 55C).

Secondary sexual dimorphism

Females slightly larger than males.

Distribution

Thailand (Fig. 111F).

Elmomorphus bispinosus sp. nov.
urn:lsid:zoobank.org:act:B9F8E28F-FD2D-4D67-99E4-580CD3200EBA
Figs 54, 55D, 112A

Differential diagnosis

Elmomorphus bispinosus sp. nov. (Fig. 54) is characterised by the presence of a plastron on the dorsal cranial surface (except on the anteriorly narrowed area on the vertex) and on the lateral sides of the pronotum and elytra. Elytral punctures are scattered, and striae are absent. Similar characters are also present in *E. sausai* sp. nov., *E. umphangicus* sp. nov., *E. yunnanensis* sp. nov., and *E. longitarsis* sp. nov. *Elmomorphus sausai* differs in the distinctly wider elytral plastron bands, each band occupying ca two thirds of elytron width, while in *E. bispinosus* it is ca one-third. *Elmomorphus umphangicus* differs in smaller body dimensions (TL in *E. umphangicus*: ♂♂ 2.64–2.90 mm (2.76 ± 0.10, n = 5), ♀♀ 2.46–3.12 mm (2.83 ± 0.30, n = 6), in *E. bispinosus*: ♀♀ 3.38–3.54 mm (n = 3)) and the elytra being widest behind midlength. *Elmomorphus bispinosus* differs from *E. yunnanensis* in its less convex body and in the presence of two microsclerites on the bursa copulatrix versus several microsclerites in *E. yunnanensis*

Fig. 54. *Elmomorphus bispinosus* sp. nov., holotype, female (IAECAS), TL: 3.54 mm.

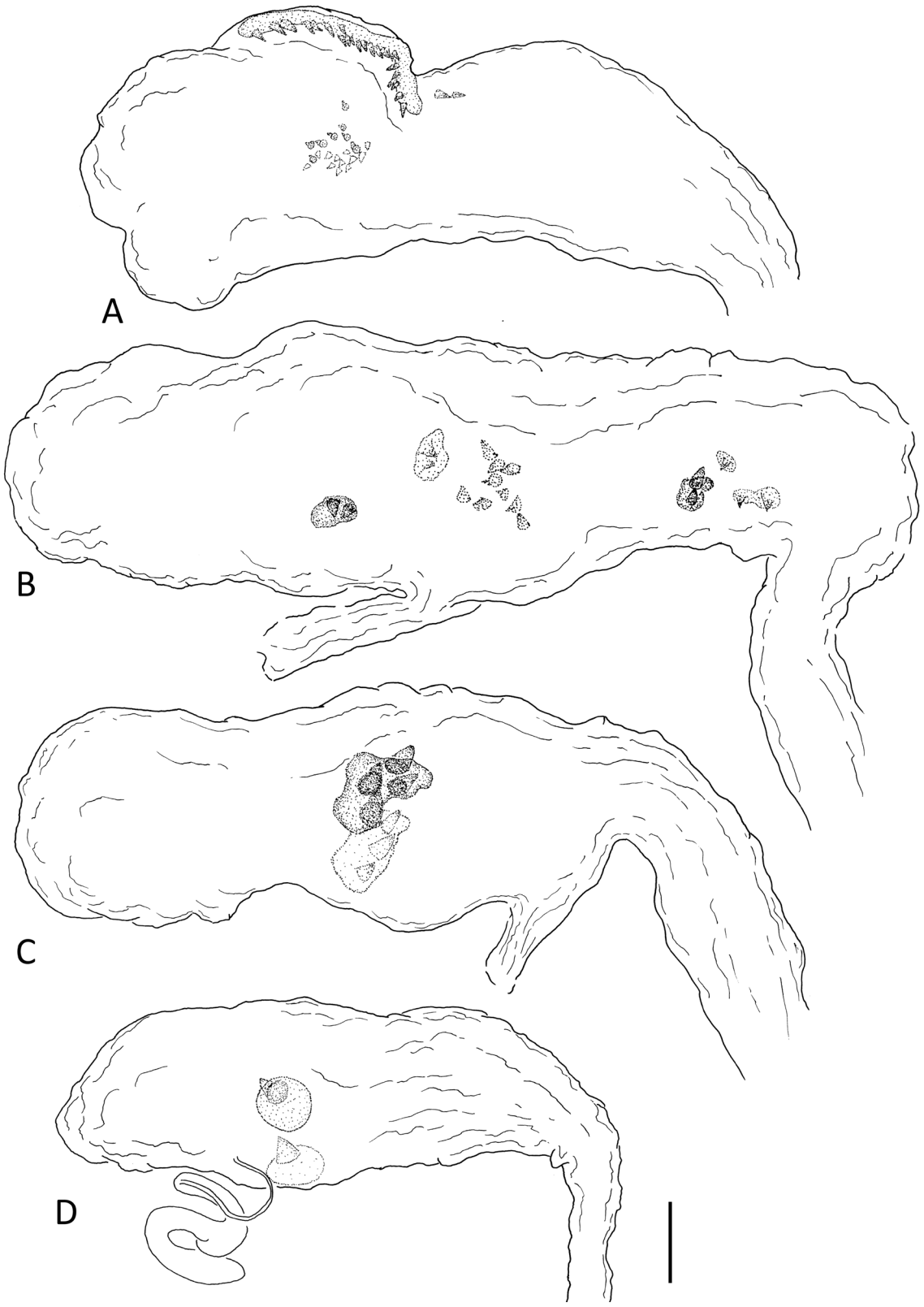

Fig. 55. Bursa copulatrix and vagina. **A**. *Elmomorphus parvulus* sp. nov., paratype from type locality (CKB). **B**. *E. yunnanensis* Kodada, Selnekovič & Jäch sp. nov., paratype from type locality (CKB). **C**. *E. longitarsis* sp. nov., paratype from type locality (NMW). **D**. *E. bispinosus* sp. nov., holotype (IAECAS). Scale bar: 0.1 mm.

(Fig. 55D). From *E. longitarsis* it differs in the larger (TL in *E. bispinosus*: ♀♀ 3.38–3.54 mm (n=3), in *E. longitarsis*: ♂♂ 2.93–3.09 mm (n=3), ♀♀ 3.15–3.32 mm (n=2)), broader, and less convex body and the presence of two spiny microsclerites on the bursa copulatrix.

Etymology

The epithet is a Latin adjective in the nominative singular, referring to the presence of two spiny microsclerites on the bursa copulatrix.

Type material

Holotype

CHINA – **Hunan Province** • ♀; "CHINA: SW Hunan 1993 SW Huitong, 7. 11. Umg. Guangping, 400m leg. Schönmann (14) [CWBS 35]"; IAECAS.

Paratypes

CHINA – **Hunan Province** • 2 ♀♀; same collection data as for holotype, but one specimen "leg. L. JI"; NMW.

Type locality

China, Hunan Province, Huaihua Prefecture, Huitong county, Guangping Township, near Moshao village, small stream, 0.5–1.0 m wide, partly canalised, partly vanishing beneath the gravel, ca 400 m a.s.l. (CWBS 35; Jäch & Ji 1995).

Description

Measurements (mm): TL: ♀♀ 3.38–3.54 (n=3); PL: ♀♀ 0.75 (n=3); PW: ♀♀ 1.44–1.48 (n=3); EL: ♀♀ 2.67–2.86 (n=3); EW: ♀♀ 1.72–1.82 (n=3).

Body oval, moderately convex dorsally (Fig. 54). Integument black; mouthparts, antennae, and tarsi reddish brown. Pubescence consisting of short yellowish setae. Plastron present on cranial surface except anteriorly narrowed area on vertex, on lateral sides of pronotum and elytra, and on ventral surface except for prosternal process, median part of metaventrite and median part of ventrites 1 and 2.

Head with round punctures separated by 0.5–1.0× puncture diameter. Plastron present on entire cranial surface except on anteriorly narrowed area on vertex. Labrum transverse, anterior edge straight, exposed portion microreticulate; setae concentrated along anterior margin. Anterior margin of clypeus straight. Eyes oval, moderately protruding, ID: ♀♀ 0.48–0.50 mm (n=3). Antennae 10-segmented, densely setose.

Pronotum transverse, widest at base, moderately convex, PW/PL: ♀♀ 1.92–1.97 (n=3); anterior angles protruding, acute; lateral sides convergent, rounded; surface smooth, with round setiferous punctures; plastron bands present along entire lateral sides. Lateral and posterior edges of prosternal process rounded; lateral portions raised; median keel arcuate. Lateral sides of metaventral process weakly raised. Disc of metaventrite weakly convex, without clusters of long setae. Elytra oval, moderately convex, widest around midlength, EL/EW: ♀♀ 1.55–1.61 (n=3); surface weakly microreticulate with irregular meshes, with weak bronze lustre; round setiferous punctures scattered; lateral plastron bands widened posteriorly, covering about one-third of elytron width at elytral midlength. Tibiae straight, protibia ca 1.2× as long as protarsus, PrTL/PL: ♀♀ 1.16–1.26 (n=3). Terminal protarsomere longer than all preceding segments combined.

Ventrites covered with plastron, except on middle of ventrites 1 and 2. Ventrite 5 with short longitudinal apical keel. Bursa copulatrix on each side with a rather large microsclerite bearing one prominent spine (Fig. 55D).

Secondary sexual dimorphism

Male unknown.

Distribution

China (Hunan) (Fig. 112A).

Elmomorphus nepalensis Satô, 1981
Figs 56–57, 60A, 112B

Elmomorphus nepalensis Satô, 1981: 52 (original description).

Elmomorphus nepalensis – Jäch & Sharma 1998: 599. — Kodada & Jäch 2006b: 442; 2016: 606.

Differential diagnosis

Elmomorphus nepalensis (Fig. 56) belongs to a group of species characterised by the presence of a dorsal plastron on the anterior portions of the head and on the posterolateral portions of the elytra. Elytral punctures are scattered over the entire surface, striae absent. Within this group, *E. nepalensis* and *E. punctulatus* sp. nov. may be recognised by the absence of long and erect setae on the labrum and by the absence of setal clusters on the prosternal process and the median part of the metaventrite. The median part of the metaventrite is weakly convex in males, whereas in other species of the group, it is depressed. The tibiae are simple in both sexes, not expanded and without teeth.

Elmomorphus nepalensis differs from *E. punctulatus* sp. nov. in the pronotum being less convex with straight lateral sides (Fig. 56) versus strongly convex with rounded lateral sides in *E. punctulatus*; furthermore, in the sparser punctation of the dorsal surface, and the parameres compared to phallobase being distinctly shorter and less narrowed apically (PhL/PrL in *E. nepalensis*: 1.70–2.19 (1.92 ± 0.15, n = 8), in *E. punctulatus*: 1.35–1.48 (n = 3)) with broad, rounded apex (Fig. 57, lateral aspect). The bursa copulatrix (Fig. 60A) possesses sizeable sclerites with spines.

Material examined

BHUTAN • 9 ex.; Punakha Prov., 6 km NNW of Punakha Lakhu (18), 27°37′31″ N, 89°49′31″ E; alt. ca 1300 m; 24 Nov. 2005; M.A. Jäch leg.; CKB, NMW • 3 ex.; Punakha Prov., 11 km NW of Punakha N Lakhu (19); 27°38′44″ N, 89°46′32″ E; alt. ca 1360 m; 24 Nov. 2005; M.A. Jäch leg.; CKB, NMW • 7 ♂♂, 1 ♀; Wangdi Phodrang Prov., 40 km SSE of Wangdi Phodrang Puna Tsang Valley (21); 27°12′38″ N, 90°3′5″ E; 25 Nov. 2005; alt. ca 790 m; M.A. Jäch leg.; NMW • 1 ex.; Wangdi Phodrang Prov., 48 km SSE of Wangdi Phodrang Neychey Chhu (N23); 27°8′26″ N, 90°4′14″ E; alt. ca 550 m; 25 Nov. 2005; M.A. Jäch leg.; NMW.

NEPAL • 2 ♂♂; Lamosangu (N5); 5 Feb. 1980; M.A. Jäch leg; CKB, NMW • 5 ♂♂, 10 ♀♀; Bagmati Zone, Tatopani near Kodari, at Tibetan border (N30); alt. ca 1600 m; 28 Feb.–1 Mar. 1981; M.A. Jäch leg; CKB, NMW • 1 ex.; Bagmati Zone, Indrawati River basin, Talla Gau, left trib. of Nuhar Stream, water mill (NU02); 27°51′11″ N, 85°31′43″ E; alt. 1280 m; 19 Nov. 2009; R.D. Tachamo leg.; NMW • 1 ex.; Bagmati Zone, Indrawati River basin, Gamde Stream (GA01); 27°42′19″ N, 85°33′12″ E; alt. 1410 m; 18 Nov. 2009; R.D. Tachamo leg.; NMW • 7 ex.; Bagmati Zone, Indrawati River basin, Jakeshwori Stream, Mahadevsthan (JA01); 27°49′27″ N, 85°33′32″ E; alt. 1340 m; 15 Nov. 2009; R.D. Tachamo leg.; NMW • 2 ex.; Bagmati Zone, Indrawati River basin, right trib. of Gyalthun Stream (GY01); 27°52′53″ N, 85°30′24″ E; alt. 1286 m; 16 Nov. 2009; R.D. Tachamo leg.; NMW • 3 ex.; Bagmati Zone, Indrawati River basin, right trib. of Nuhar Stream (NU01); 27°51′1″ N, 85°31′45″ E;

Fig. 56. *Elmomorphus nepalensis* Satô, 1981, male from Nepal (NMW), TL: 2.60 mm.

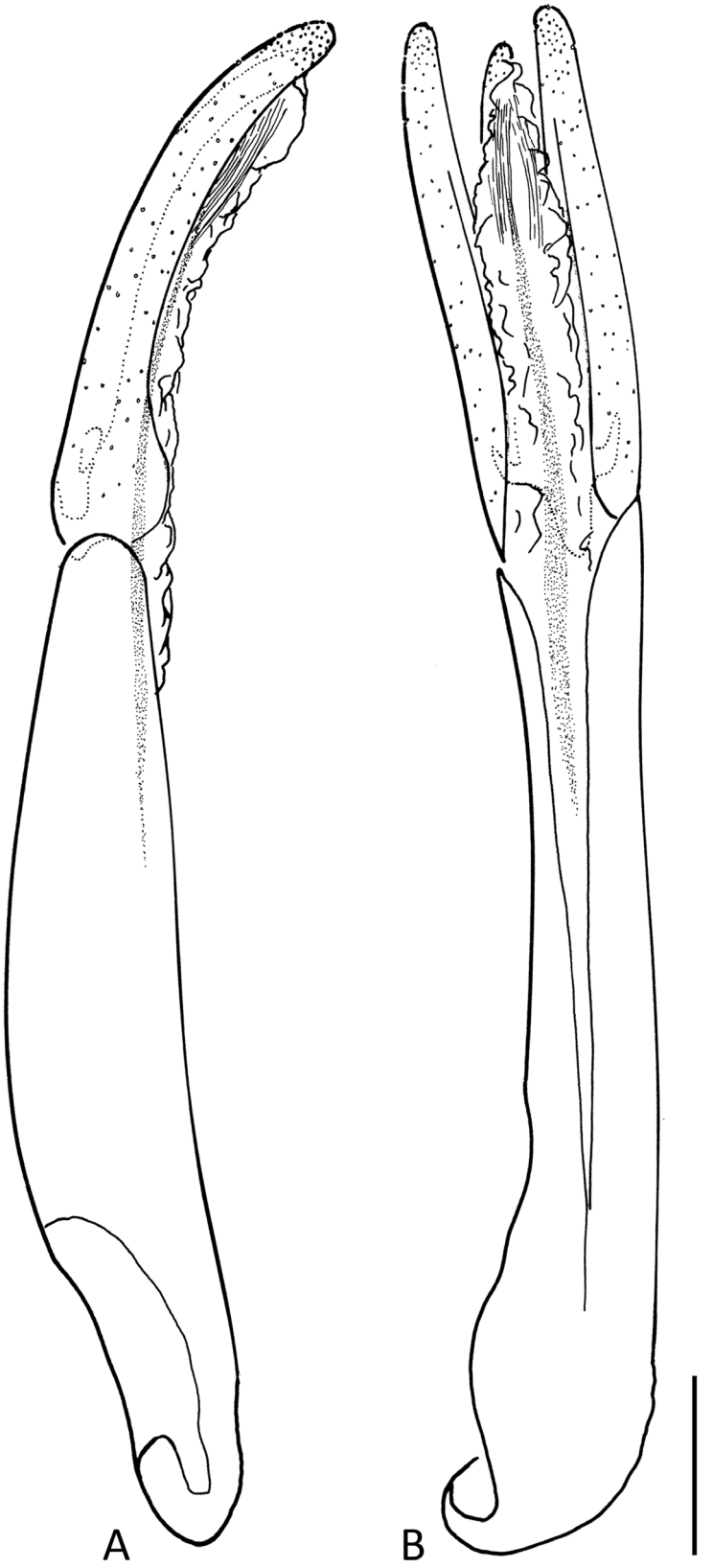

Fig. 57. *Elmomorphus nepalensis* Satô, 1981, male from Nepal (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

alt. 1250 m; 19 Nov. 2009; R.D. Tachamo leg.; NMW • 2 ex.; Bagmati Zone, Indrawati River basin, Majhi Stream (MJ01); 27°42′43″ N, 85°39′3″ E; alt. 860 m; 26 Nov. 2009; R.D. Tachamo leg.; NMW • 4 ex.; Bagmati Zone, Indrawati River basin, Sano Khahare Stream (SA01); 27°41′55″ N, 85°41′16″ E; alt. 780 m; 25 Nov. 2009; R.D. Tachamo leg.; NMW • 1 ex.; "NEPAL P:Bagmati, D:Chitwan, Sauraha, Hotel Sweet Home, 27°35′10″N, 84°29′29″E, 190mNN, 05.-07.VII.2022, leg. A. Kopetz LFF #22-29"; NMW • 2 ♂♂, 1 ♀; Bagmati Zone, Bhaise, N of Hetauda, small tributary of Rapti River (N23); alt. ca 600 m; 19 Feb. 1981; M.A. Jäch leg.; NMW.

Type locality

Nepal, Kathmandu Valley, Godawari.

Redescription

Measurements (mm): TL: ♂♂ 2.41–2.70 (2.59±0.10, n=8), ♀♀ 2.65–3.06 (2.86±0.12, n=11); PL: ♂♂ 0.59–0.65 (0.62±0.02, n=8), ♀♀ 0.60–0.72 (0.67±0.03, n=11); PW: ♂♂ 1.06–1.15 (1.11±0.03, n=8), ♀♀ 1.12–1.29 (1.22±0.05, n=11); EL: ♂♂ 1.82–2.06 (1.97±0.08, n=8), ♀♀ 2.01–2.34 (2.18±0.08, n=11); EW: ♂♂ 1.23–1.40 (1.34±0.05, n=8), ♀♀ 1.36–1.56 (1.46±0.06, n=11); PhL: 0.52–0.59 (0.56±0.02, n=8); PrL: 0.27–0.31 (0.29±0.01, n=8).

Body (Fig. 56) oblong oval, convex. Integument dark brown to black; trochanters, tarsi, antennae, and mouthparts reddish brown. Pubescence consists of sparse short yellowish setae. Dorsal plastron covering anterior portions of head and apicolateral parts of elytra. Ventral plastron absent on prosternal process, median part of metaventrite, and middle of ventrites 1–2.

Head surface smooth, round setiferous punctures slightly smaller than eye facets, punctures separated by 1–2× puncture diameters. Plastron present on frontoclypeus and anterolateral portions of vertex. Labrum transverse, microreticulate, with small setiferous punctures; setae equal in length in both sexes. Anterior margin of clypeus straight. Antennae 9-segmented. Eyes oval, interfacetal setae short, ID: ♂♂ 0.38–0.43 mm (0.41±0.02, n=8), ♀♀ 0.42–0.49 mm (0.44±0.02, n=11); APD/ID: ♂♂ 1.65–1.77 (1.72±0.03, n=8), ♀♀ 1.60–1.81 (1.70±0.07, n=11).

Pronotum wider than long, widest at base, disc moderately convex, PW/PL: ♂♂ 1.69–1.89 (1.80±0.05, n=8), ♀♀ 1.77–1.88 (1.82±0.03, n=11); surface smooth, with round setiferous punctures; plastron absent; rim of anterior margin as wide as two eye facets, interrupted in middle; anterior angles deflexed, acute; lateral pronotal sides convergent, straight. Prosternal process with lateral edges divergent, straight; apical edge broadly V-shaped; lateral portions raised, without clusters of long setae; median keel slightly arcuate. Scutellum slightly longer than wide, smooth, with small round punctures. Metaventrite with moderately convex, posteriorly widened median part; clusters of long setae absent; lateral margins of metaventral process raised, medially with ridges. Elytra elongate oval, widest before middle, EL/EW: ♂♂ 1.44–1.50 (1.47±0.02, n=8), ♀♀ 1.45–1.52 (1.49±0.02, n=11); surface finely microreticulate, with scattered round setiferous punctures; plastron covering apicolateral portions. Tibiae slightly curved, not expanded, without teeth; PrTL/PL: ♂♂ 1.00–1.08 (1.03±0.03, n=8), ♀♀ 0.96–1.13 (1.01±0.05, n=11). Terminal protarsomere almost as long as all preceding tarsomeres combined.

Ventrites covered with plastron, except middle of ventrites 1–2. Ventrite 5 with short longitudinal keel at apex; apical margin in females with small triangular excision. Aedeagus (Fig. 57): phallobase rather long and slender, slightly expanded proximally, PhL/PrL: 1.70–2.19 (1.92±0.15, n=8); parameres evenly narrowed to apices, moderately curved ventrad, slightly asymmetrical basally; apices narrowly rounded; penis narrowly rounded apically (lateral aspect); sclerotised fibula rather slender. Ovipositor: valvifers long and flattened; coxites asymmetrical, right one longer than left one. Bursa copulatrix with one dorsal and two lateral sclerites bearing small spines (Fig. 60A); spermatheca tubular.

Secondary sexual dimorphism

Females are generally larger than males; ventrite 5 in females with small triangular excision at the apex.

Distribution

Bhutan (first record), Nepal (Fig. 112B).

Elmomorphus punctulatus sp. nov.

urn:lsid:zoobank.org:act:D8306DD8-ED3F-47D2-82BD-9B9FB26A9D76

Figs 58–59, 60B, 112C

Differential diagnosis

Elmomorphus punctulatus sp. nov. (Fig. 58) belongs to a group of species characterised by having the dorsal plastron distributed on the anterior portions of the head and the posterolateral portions of the elytra. Elytral punctures are scattered over the entire surface, and striae are absent. Within this group, *E. nepalensis* and *E. punctulatus* may be recognised by the absence of long and erect setae or setal clusters on the labrum, prosternal process, or metaventrite of males. The median part of the metaventrite is weakly convex in males, whereas in other species it is depressed. The tibiae are simple in both sexes, not expanded, and without teeth. The species is further characterised by the strongly convex body (Fig. 58), distinctly rounded lateral sides of the pronotum, the shape of the aedeagus (Fig. 59), and the presence of large separate spines on the bursa copulatrix (Fig. 60B). Differences between *E. punctulatus* and *E. nepalensis* are listed under the latter species.

Etymology

The epithet is a Latin adjective in the nominative singular meaning ‘punctulate’, referring to the relatively dense punctation on pronotum and elytra.

Type material

Holotype

CHINA – **Yunnan Province** • ♂; “CHINA: Yünnan, Xishuangbanna ca. 6km NW Mengla 8.11.1999, ca. 700 m leg. Jäch, et al. (CWBS 365)”; IAECAS.

Paratypes

CHINA – **Yunnan Province** • 1 ♂, 1 ♀; “CHINA: Yünnan, Xishuangbanna ca. 6 km NW Mengla 9.11.1999, ca. 700 m leg. Jäch, et al. (CWBS 367)”; CKB, NMW • 1 ♂, 1 ♀; “CHINA: Yünnan, Xishuangbanna ca. 20km W Jinghong 11.11.1999, ca. 1000 m leg. Jäch, et al. (374)”; NMW.

Type locality

China, Yunnan Province, Xishuangbanna Dai Autonomous Prefecture, Mengla County, ca 6 km northwest of Mengla, ca 700 m a.s.l.; small stream, ca 0.5 m wide, flowing through primary forest (CWBS 365; Jäch & Ji 2003).

Description

Measurements (mm): TL: ♂♂ 2.55–2.68 (n=3), ♀♀ 2.65–2.95 (n=2); PL: ♂♂ 0.63–0.73 (n=3), ♀♀ 0.70–0.74 (n=2); PW: ♂♂ 1.20–1.24 (n=3), ♀♀ 1.32–1.35 (n=2); EL: ♂♂ 1.92–1.95 (n=3), ♀♀ 1.95–2.21 (n=2); EW: ♂♂ 1.35–1.43 (n=3), ♀♀ 1.46–1.53 (n=2); PhL: 0.51–0.52 (n=2); PrL: 0.34–0.35 (n=2).

Fig. 58. *Elmomorphus punctulatus* sp. nov., paratype, male from China, locality CWBS 367 (CKB), TL: 2.63 mm.

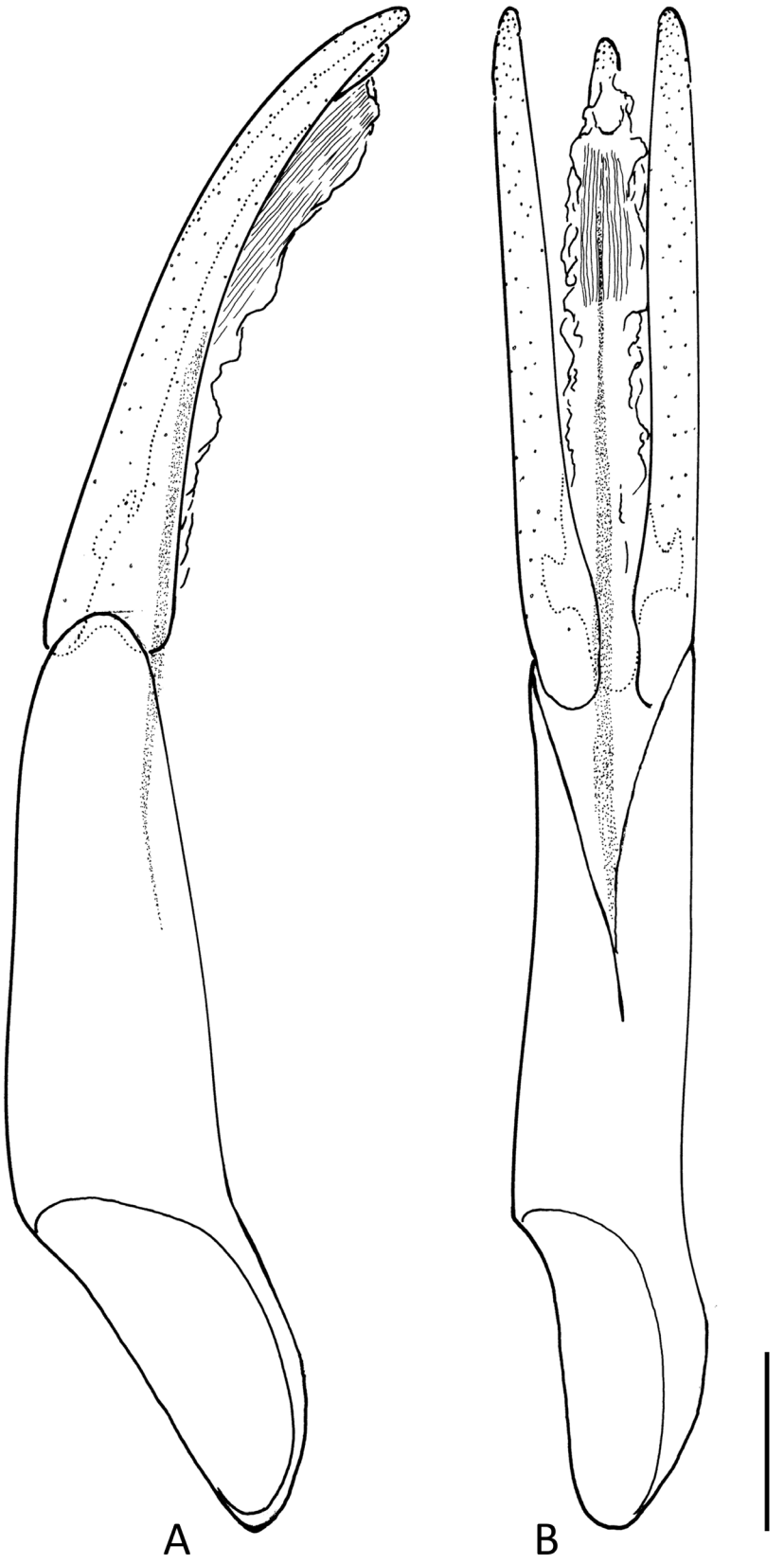

Fig. 59. *Elmomorphus punctulatus* sp. nov., holotype (IAECAS), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Body (Fig. 58) oval, strongly convex dorsally. Integument brown to black; trochanters, tarsi, antennae, and mouthparts paler. Pubescence consisting of very short yellowish setae. Plastron present on anterior portions of head, apicolateral portions of elytra, and on ventral surface except for prosternal process, median part of metaventrite, and middle of ventrites 1–2.

Head with round setiferous punctures slightly smaller than an eye facet, separated by 0.5–1.0 × puncture diameter; surface between punctures smooth; plastron on frontoclypeus and anterolateral portions of vertex. Labrum microreticulate, with small setiferous punctures; length of setae equal in both sexes. Anterior margin of clypeus straight. Antennae 9-segmented. Eyes oval, interfacetal setae short, ID: ♂♂ 0.46–0.49 mm (n = 3), ♀♀ 0.48–0.52 mm (n = 2), APD/ID: ♂♂ 1.49–1.58 (n = 3), ♀♀ 1.56 (n = 2).

Pronotum wider than long, widest at base, strongly convex, PW/PL: ♂♂ 1.69–1.90 (n = 3), ♀♀ 1.82–1.88 (n = 2); surface smooth, with round setiferous punctures; plastron absent; rim of anterior margin as wide

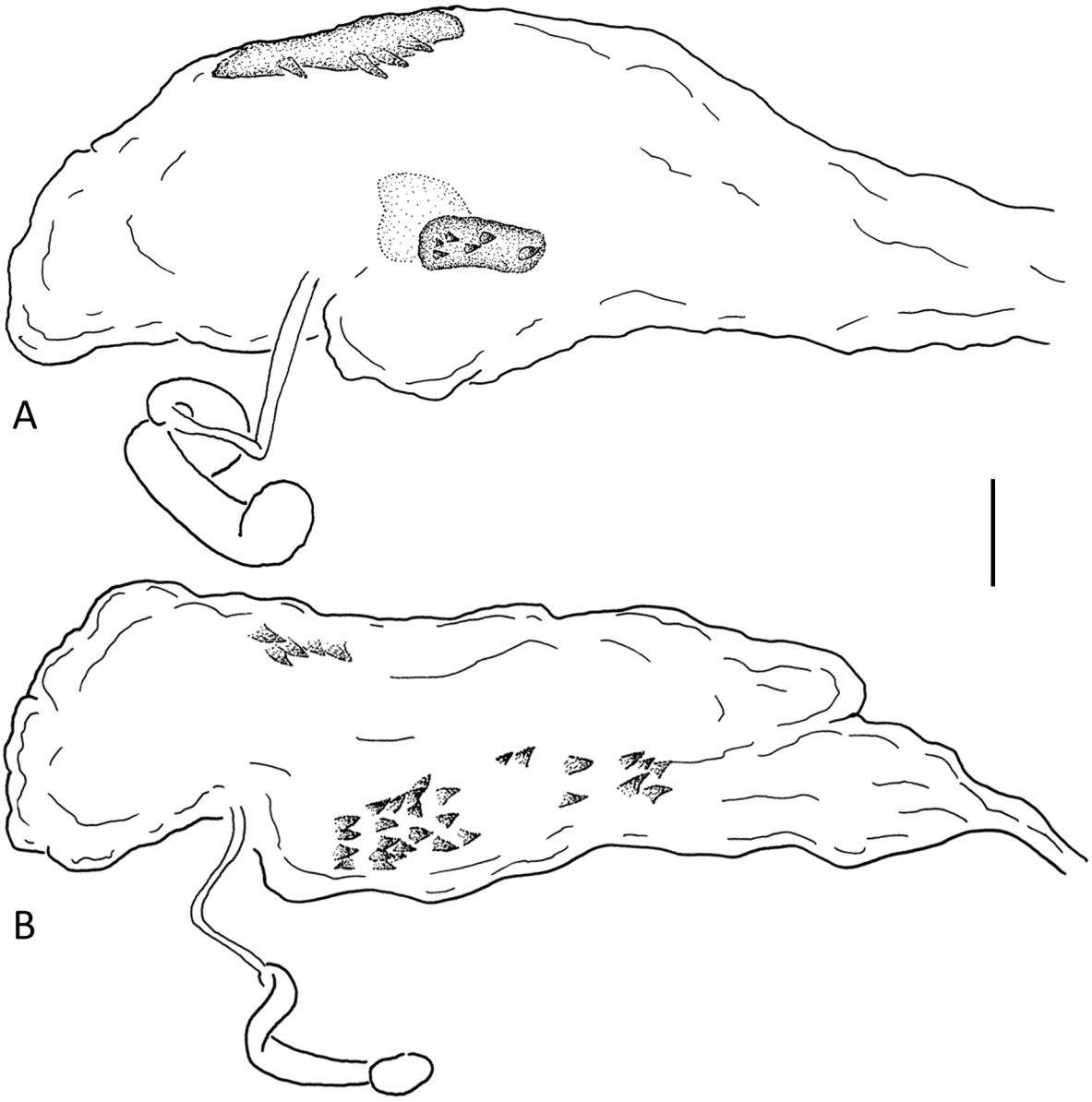

Fig. 60. Bursa copulatrix and vagina. **A**. *Elmomorphus nepalensis* Satô, 1981, female from Nepal (NMW). **B**. *E. punctulatus* sp. nov., paratype from China, locality CWBS 367 (NMW). Scale bar: 0.1 mm.

as three eye facets, interrupted in middle; lateral pronotal sides convergent, distinctly rounded in anterior half. Prosternal process with lateral edges divergent, straight, posterior edge broadly V-shaped; lateral portions raised, long setae absent in both sexes; median keel slightly arcuate. Scutellum approximately as long as wide, smooth, with round punctures. Metaventrite slightly convex in median part; groups of long setae missing in both sexes. Elytra oval, widest around middle; EL/EW: ♂♂ 1.36–1.42 (n=3), ♀♀ 1.33–1.45 (n=2); surface with fine microreticulation and dense setiferous punctures; plastron covering apicolateral portions. Tibiae slightly curved, not expanded, teeth absent; PrTL/PL: ♂♂ 0.83–0.96 (n=3), ♀♀ 0.87–0.91 (n=2). Terminal protarsomere as long as three preceding tarsomeres combined.

Ventrites covered with plastron, except in middle of ventrites 1–2. Ventrite 5 with very short, rather indistinct longitudinal keel at apex; in females with small triangular excision. Aedeagus (Fig. 59): phallobase rather long and slender, slightly expanded proximally, PhL/PrL: 1.47–1.48 (n=2), basal opening rather large; parameres regularly narrowed to apices, slightly curved ventrad, apices narrowly rounded (lateral aspect); penis narrowly rounded apically. Ovipositor: valvifers long; coxites asymmetrical, right one ca 1.30× as long as left one. Bursa copulatrix with moderately large, separated spines in dorsal and lateral portions (Fig. 60B); spermatheca tubular.

Secondary sexual dimorphism

Ventrite 5 in females with small triangular apical excision.

Distribution

China (Yunnan) (Fig. 112C).

Elmomorphus simplipes sp. nov.
urn:lsid:zoobank.org:act:85D2B8A7-D3C1-4D2C-8765-A3D3181E5489
Figs 61–62, 67A, 112D

Differential diagnosis

Elmomorphus simplipes sp. nov. (Fig. 61) belongs to a group of species characterised by having a dorsal plastron distributed on the anterior portions of the head and the posterolateral portions of the elytra. Elytral punctures are scattered over the entire surface and striae are absent. Males bear conspicuous, long, erect setae or setal clusters on the labrum, prosternal process, and metaventrite. The metaventrite is strongly depressed in males. With *E. paradonatus* sp. nov. and *E. donatus* sp. nov., it shares the simple metatibiae without teeth. However, *E. simplipes* can be distinguished from the latter two species by the smaller and less convex body (TL in *E. simplipes*: ♂♂ 2.59–2.97 mm (2.81±0.09, n=25), ♀♀ 2.91–3.19 mm (3.01±0.08, n=20), in *E. donatus*: ♂♂ 3.09–3.50 mm (3.30±0.10, n=20), ♀♀ 3.35–3.66 mm (3.51±0.09, n=19), in *E. paradonatus* ♂♂ 2.97–3.58 mm (3.24±0.14, n=20), ♀♀ 3.14–3.79 mm (3.34±0.14, n=20) (Fig. 61) and by the arrangement of the spines of the bursa copulatrix (Fig. 67A). *Elmomorphus curvipes* sp. nov., *E. dentipes* sp. nov., and *E. similis* sp. nov. differ in the presence of metatibial teeth in males (Figs 68, 70, 72) and the arrangement of the spines of the bursa copulatrix (Fig. 74).

Etymology

The epithet, a Latin adjective in the nominative singular, refers to the tibiae lacking teeth, swellings, or apical expansions.

Type material

Holotype

VIETNAM – **Vinh Phúc Province** • ♂; "N-VIETNAM: Tam Dao (2) 1.-8.6.1996 leg. Dembicky & Pacholatko"; NMW.

Fig. 61. *Elmomorphus simplipes* sp. nov., paratype, male from type locality (CKB), TL: 2.81 mm.

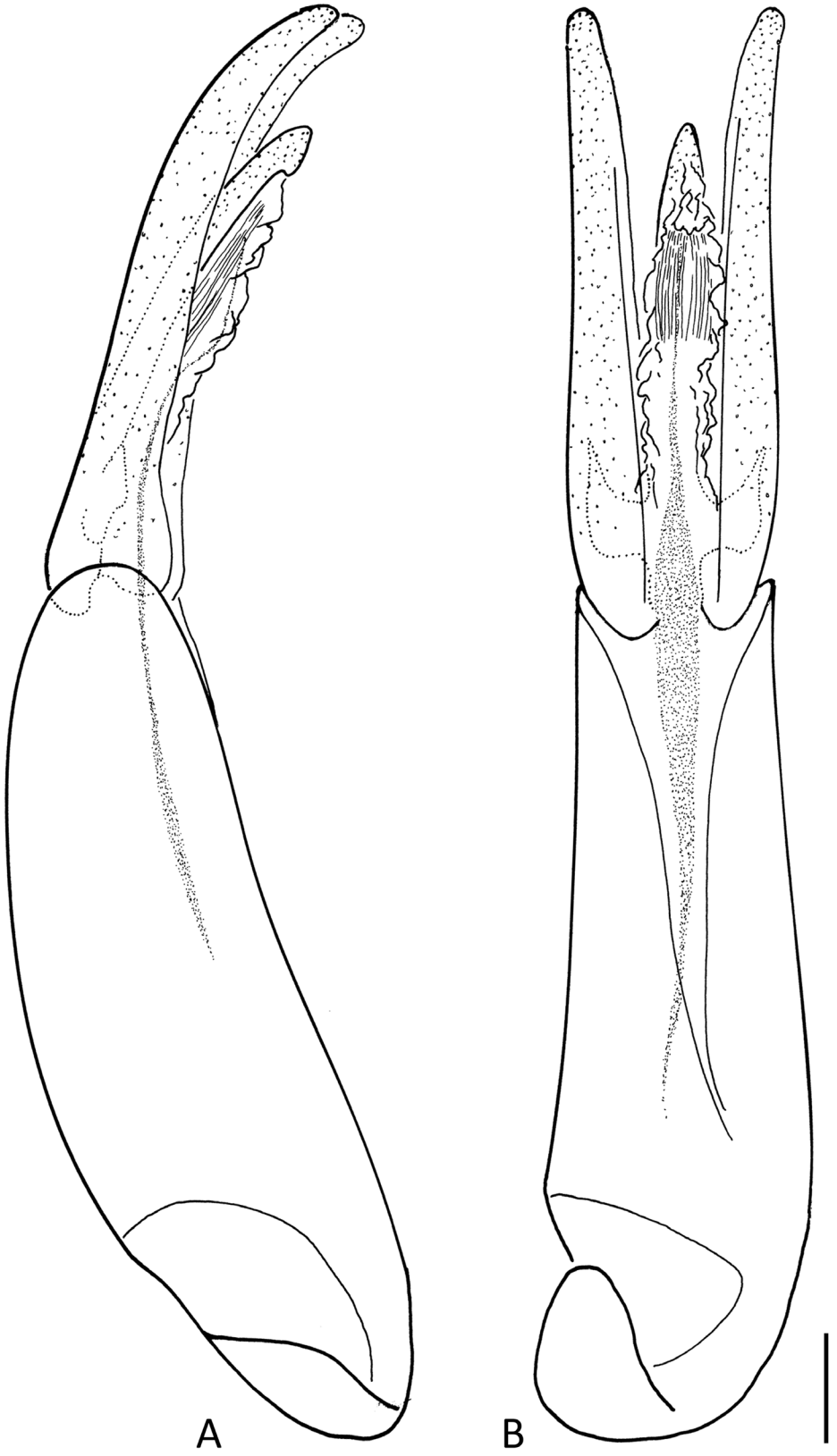

Fig. 62. *Elmomorphus simplipes* sp. nov., holotype (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Paratypes

VIETNAM – **Vinh Phúc Province** • 80 ♂♂, 111 ♀♀; same collection data as for holotype; CKB, NMW.

Type locality

Vietnam, Vinh Phúc Province, Tam Dao.

Description

Measurements (mm): TL: ♂♂ 2.59–2.97 (2.81 ± 0.09, n = 25), ♀♀ 2.91–3.19 (3.01 ± 0.08, n = 20), PL: 0.58–0.68 (0.64 ± 0.03, n = 25), ♀♀ 0.63–0.70 (0.66 ± 0.02, n = 20); PW: ♂♂ 1.15–1.33 (1.26 ± 0.04, n = 25), ♀♀ 1.25–1.43 (1.35 ± 0.04, n = 20); EL: ♂♂ 2.01–2.31 (2.17 ± 0.06, n = 25), ♀♀ 2.24–2.50 (2.35 ± 0.06, n = 20), EW: ♂♂ 1.36–1.56 (1.49 ± 0.04, n = 25), ♀♀ 1.53–1.69 (1.60 ± 0.05, n = 20); PhL: 0.88–1.00 (0.95 ± 0.02, n = 25); PrL: 0.58–0.64 (0.61 ± 0.02, n = 25).

Body narrowly oval, convex dorsally, widest before midlength of elytra (Fig. 61). Integument dark brown to black; mouthparts, antennae, trochanters, and tarsi reddish brown. Pubescence consists of very short sparse yellowish setae. Plastron present on anterior portions of head, apicolateral portions of elytra, and on ventral surface, except prosternal process, middle of metaventrite, and middle of ventrites 1–2.

Head with small round setiferous punctures, slightly smaller than eye facets, separated by about one puncture diameter; microreticulation absent; plastron covering anterior portions. Labrum transverse, anterior margin slightly rounded, surface microreticulate, males with conspicuous setae about twice as long as exposed portion of labrum. Anterior margin of clypeus straight. Antennae 9-segmented. Eyes oval, interfacetal setae short; ID: ♂♂ 0.40–0.45 mm (0.43 mm ± 0.01, n = 25), ♀♀ 0.41–0.49 mm (0.46 mm ± 0.02, n = 20); APD/ID: ♂♂ 1.58–1.78 (1.70 ± 0.04, n = 25), ♀♀ 1.62–1.82 (1.71 ± 0.05, n = 20).

Pronotum wider than long, widest at base; PW/PL: ♂♂ 1.85–2.17 (1.99 ± 0.08, n = 20), ♀♀ 1.92–2.10 (2.04 ± 0.04, n = 20); surface with round setiferous punctures; microreticulation absent; plastron absent; rim of anterior margin as wide as three eye facets; anterior angles moderately deflexed, prominent; lateral pronotal sides convergent, slightly rounded before anterior angles. Lateral margins of prosternal process divergent and straight; posterior edge broadly V-shaped; lateral portions slightly raised, with clusters of long setae in males; median keel slightly arcuate. Scutellum longer than wide, with sparse round punctures, microreticulation absent. Disc of metaventrite in males slightly depressed, with two groups of long setae; lateral margins of metaventral process raised, separated by shallow ridge. Elytra oval, widest before middle, EL/EW: ♂♂ 1.41–1.51 (1.45 ± 0.02, n = 25), ♀♀ 1.43–1.52 (1.47 ± 0.02, n = 20); dorsal surface with round setiferous punctures; microreticulation very fine; plastron confined to apicolateral portions and to epipleura. Tibiae slightly curved; protibia ca 1.3 × as long as protarsus; metatibia simple, without tooth; PrTL/PL: ♂♂ 1.09–1.56 (1.19 ± 0.09, n = 25), ♀♀ 1.04–1.15 (1.09 ± 0.03, n = 20). Terminal protarsomere as long as three preceding tarsomeres combined.

Ventrites covered with plastron, except for middle of ventrites 1–2. Apical margin of ventrite 5 rounded in males, with small median triangular excision in females; in both sexes with short longitudinal keel before apex. Aedeagus (Fig. 62): phallobase slightly expanded proximally, PhL/PrL: 1.47–1.70 (1.55 ± 0.05, n = 25); parameres evenly narrowed to apices, curved ventrad, apices narrowly rounded (lateral aspect); penis narrowly rounded apically in dorsal aspect, expanded and curved ventrad in lateral aspect; sclerotised fibula rather slender. Ovipositor: valvifers ca 1.90 × as long as coxites; right coxite ca 1.30 × as long as left one. Bursa copulatrix (Fig. 67A) with microsclerites scattered over dorsal portions, sometimes forming a regular row; spermatheca tubular with accessory gland.

Secondary sexual dimorphism

Labrum, lateral rims of prosternal process, and median part of metaventrite in males with groups of long setae. Terminal ventrite in females with small apical excision.

Distribution

Vietnam (Fig. 112D).

Elmomorphus donatus Kodada, Selnekovič & Jäch sp. nov.
urn:lsid:zoobank.org:act:0591BA28-358C-4A1F-8D90-705A6EBAA20C
Figs 63–64, 67B–C, 112E

Differential diagnosis

Elmomorphus donatus sp. nov. (Fig. 63) belongs to a group of species characterised by having the dorsal plastron on the anterior portion of the head and on the posterolateral portions of the elytra. Elytral punctures are scattered over the entire surface, striae are absent. Males have conspicuous long erect setae or setal clusters on the labrum, prosternal process, and metaventrite. The disc of the metaventrite is strongly depressed in males. Together with *E. paradonatus* sp. nov. and *E. simplipes* sp. nov., it can be distinguished from *E. curvipes* sp. nov., *E. dentipes* sp. nov., and *E. similis* sp. nov. by the absence of male metatibial teeth and by the different arrangement of spines on the bursa copulatrix (Fig. 67B–C). From *E. simplipes* it can be separated by the larger body size (TL in *E. simplipes*: ♂♂ 2.59–2.97 mm (2.81±0.09, n=25), ♀♀ 2.91–3.19 mm (3.01±0.08, n=20), in *E. donatus*: ♂♂ 3.09–3.50 mm (3.30±0.10, n=20), ♀♀ 3.35–3.66 mm (3.51±0.09, n=19)) and differences in the bursa copulatrix (Fig. 67B–C). From *E. paradonatus* it can be distinguished only by the presence of the large internal sclerite and the ventral sclerotised arch of the bursa (Fig. 67B–C).

Etymology

The epithet is a Latin adjective meaning ‘donated’, commemorating the first Chinese specimens which were donated to J. Kodada by O. Šauša and E. Jendek in 1993.

Type material

Holotype

VIETNAM – **Vinh Phúc Province** • ♂; “N-VIETNAM: Tam Dao (2) 1.-8.6.1996 leg. Dembicky & Pacholatko”; NMW.

Paratypes

CHINA – **Yunnan Province** • 5 ex.; “CHINA: Yunnan province, SHANZHI env., 22.-24.VI.2007, JIZU SHAN Mt., Zhusheng Si monastery, 25°57.7′N 100°23.6′E, 2180 m, J. Hájek & J. Růžička leg. | individually, under stones, on vegetation, in stream; mixed forest (with dominant Pinus, Quercus and Rhododendron)”; NMPC • 3 ♂♂, 13 ♀♀; “CH, Yunnan 14.-21.6.[19]93 100km W of Baoshan GAOLIGONGSHAN nat. res. E.Jendek, O.Šauša leg.”; CKB, NMW • 1 ♀; “CHINA: YUNNAN PROV: Lushui Co., Gaoligong Mts., Luisahe vill., Hájek, Hrůzová, Král, Růžička & Sommer lgt. 10.vii.2019 | river valley, mixed forest on vegetation; in dead wood and fungi; 25°58.3–7′N, 98°44.4–45.3′E, 2135-2450 m”; NMPC. – **Jiangxi Province** • 1 ♂, 2 ♀♀; “CHINA, JIANGXI Prov., 24.iv.2011 Jianggang Shan Mts. XIPING (stream valley, cow dungs) 26°33.7′N, 114°12.22′E, 915 m M. Fikáček & J. Hájek leg.”; NMPC.

VIETNAM – **Vinh Phúc Province** • 133 ♂♂, 155 ♀♀; same collection data as for holotype; CKB, NMW.

Type locality

Vietnam, Vinh Phúc Province, Tam Dao.

Fig. 63. *Elmomorphus donatus* Kodada, Selnekovič & Jäch sp. nov., paratype, male from type locality (CKB), TL: 3.30 mm.

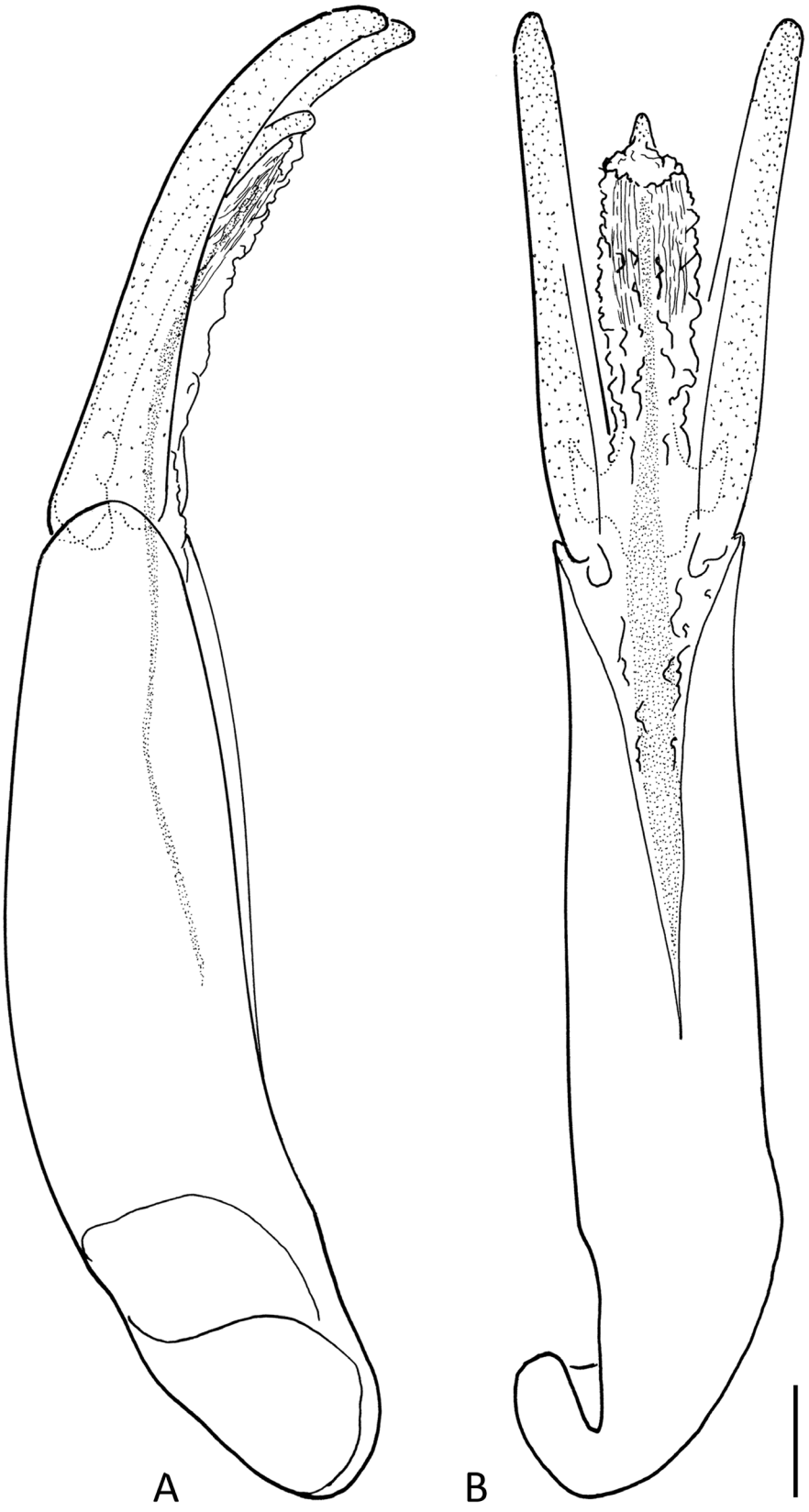

Fig. 64. *Elmomorphus donatus* Kodada, Selnekovič & Jäch sp. nov., paratype from type locality (CKB), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Description

Measurements (mm): TL: ♂♂ 3.09–3.50 (3.30±0.10, n=20), ♀♀ 3.35–3.66 (3.51±0.09, n=19); PL: ♂♂ 0.72–0.81 (0.75±0.03, n=20), ♀♀ 0.75–0.85 (0.79±0.03, n=20); PW: ♂♂ 1.46–1.61 (1.51±0.04, n=20), ♀♀ 1.50–1.72 (1.59±0.06, n=19); EL: ♂♂ 2.37–2.73 (2.54±0.08, n=20), ♀♀ 2.58–2.83 (2.72±0.07, n=19); EW: ♂♂ 1.74–1.92 (1.81±0.05, n=20), ♀♀ 1.75–2.01 (1.91±0.06, n=19); PhL: 0.96–1.11 (1.04±0.04, n=19); PrL: 0.56–0.70 (0.61±0.03, n=19).

Body (Fig. 63) oval, widest close before middle of elytra, strongly convex dorsally. Integument dark brown to black; mouthparts, antennae, trochanters, and tarsi reddish-brown. Pubescence consists of very short, sparse yellowish setae. Plastron covering anterior portions of head, apicolateral portions of elytra, and ventral surface except for prosternal process, metaventral disc and middle of ventrites 1–2.

Head with round setiferous punctures, smaller than an eye facet, separated by 1–2× puncture diameters; surface between punctures smooth; plastron present on frontoclypeus. Labrum transverse, anterior margin slightly rounded, exposed portion microreticulate, with small dense setiferous punctures; males with conspicuous long and erect setae. Anterior margin of clypeus straight. Antennae 9-segmented. Eyes oval, interfacetal setae short; ID: ♂♂ 0.46–0.55 mm (0.51 mm±0.02, n=20), ♀♀ 0.50–0.57 mm (0.53 mm±0.02, n=19); APD/ID: ♂♂ 1.60–1.78 (1.68±0.05, n=20), ♀♀ 1.62–1.76 (1.70±0.04, n=19).

Pronotum wider than long, widest at base; PW/PL: ♂♂ 1.89–2.14 (2.01±0.05, n=20), ♀♀ 1.88–2.13 (2.01±0.05, n=19); surface smooth, with round setiferous punctures; plastron absent; rim of anterior margin as wide as three eye facets; anterior angles strongly deflexed, prominent; lateral pronotal sides convergent, slightly rounded posteriorly, sometimes slightly concave before anterior angles. Prosternal process with lateral edges divergent, straight, apical edge broadly V-shaped; lateral portions raised, in males with conspicuous clusters of long setae anteriorly; median keel flat. Scutellum longer than wide, smooth, with round punctures. Disc of metaventrite depressed in males, with two clusters of long setae; in females flat to convex, without longer setae; lateral margins of metaventral process raised, distinctly separated by ridge. Elytra broadly oval, widest close before middle, EL/EW: 1.34–1.46 (1.40±0.03, n=20), ♀♀ 1.37–1.54 (1.43±0.04, n=19); surface with scattered round punctures; microreticulation fine, formed by polygonal meshes; plastron present on epipleura and on apicolateral portions. Tibiae slender, slightly curved; protibia ca 1.4× as long as protarsus, PrTL/PL: ♂♂ 1.07–1.26 (1.20±0.05, n=20), ♀♀ 1.00–1.14 (1.07±0.04, n=19). Terminal protarsomere as long as three preceding tarsomeres combined.

Ventrites covered with plastron, except middle of ventrites 1–2. Apical margin of ventrite 5 in males truncate or shallowly triangularly excised; in females rounded, with very small, triangular excision in middle; both sexes with short glabrous longitudinal subapical keel. Aedeagus (Fig. 64): phallobase slightly expanded proximally, PhL/PrL: 1.47–1.87 (1.72±0.10, n=19); parameres evenly narrowed to apices, curved ventrad, apices narrowly rounded (lateral aspect); penis narrowly rounded apically in dorsal aspect, slightly expanded and rounded in lateral aspect; sclerotised fibula relatively wide. Ovipositor: valvifers long and flattened; coxites asymmetrical, right one ca 1.30× as long as left one. Proximal part of bursa copulatrix (Fig. 67B–C) with large internal sclerite, sclerotised spines arranged in distinct dorsal row and scattered in two small ventro-lateral groups; distal part of bursa copulatrix ventrally with semicircular strip formed by minute microsclerites; spermatheca tubular with large accessory gland.

Secondary sexual dimorphism

Males with long setae on labrum, lateral portions of prosternal process, and median part of metaventrite. Median part of metaventrite depressed in males, flat to convex in females. Apex of ventrite 5 in females with minimal excision.

Distribution

China (Jiangxi, Yunnan), Vietnam (Fig. 112E).

Elmomorphus paradonatus Kodada, Selnekovič & Jäch sp. nov.
urn:lsid:zoobank.org:act:7A156AFC-F278-41A9-B972-F978A8243DB2
Figs 65–66, 67D, 112F

Differential diagnosis

Elmomorphus paradonatus sp. nov. (Fig. 65) belongs to the group of species with the dorsal plastron on anterior portions of the head and posterolateral portions of the elytra. Elytral punctures are scattered over the entire surface, striae absent. Males have conspicuous long and erect setae or setal clusters on the labrum, prosternal process and metaventrite. The disc of the metaventriteis strongly depressed in males.

Together with *E. donatus* sp. nov. and *E. simplipes* sp. nov., it can be recognised from *E. curvipes* sp. nov., *E. dentipes* sp. nov., and *E. similis* sp. nov. by the absence of male metatibial teeth and by the different arrangement of spines on the bursa copulatrix (Fig. 67D). It differs from *E. simplipes* in the larger body size. It can be distinguished from *E. donatus* only by the absence of the large internal sclerite and the ventral sclerotised arch on the bursa copulatrix (Fig. 67D).

Etymology

The epithet refers to the morphological similarity of the species with *E. donatus* sp. nov.

Type material

Holotype

CHINA – **Yunnan Province** • ♀; "CHINA: Yünnan, Gejiu Pref. 15km S Gejiu, Tou Dao Shui 23.11.1999, ca. 1700m Schönmann & Wang (CWBS 399)"; IAECAS.

Paratypes

CHINA – **Yunnan Province** • 30 ♂♂, 22 ♀♀; same collection data as for holotype; CKB, NMW • 1 ♀; "CHINA: Yünnan, Simao Pref. 25km SW Simao, Zhu Shan 17.11.1999, ca. 1000 m Schönmann & Wang (CWBS 392)"; NMW • 27 ♂♂, 23 ♀♀; "CHINA: Yünnan, Gejiu Pref. 15km S Gejiu, Tou Dao Shui 24.11.1999, ca. 1700 m Schönmann & Wang (CWBS 404)"; CKB, NMW • 1 ♀; "CHINA: Yünnan, Chuxiong Pref. 15 km W Lufang 27.11.1999, ca. 1500 m Schönmann & Wang (CWBS 408)"; NMW • 29 ♂♂, 28 ♀♀; "CHINA: Yünnan, Chuxiong Pref. Da Shui Go riv. nr. Ban Jiu 10km N Yipinglang 27.11.1999, ca. 1700m Schönmann & Wang (CWBS 409)"; CKB, NMW • 1 ♂; "CHINA: Guizhou, Leishan Co. SE Kaili, 15km E Lishan Leigong Shan, S - slope 26°22.40′N 108°08.83′E | 12.6.2001, ca. 1000m leg. Schillhammer & Wang (CWBS 431)"; NMW. – **Guizhou Province** • 1 ♀; "CHINA: Guizhou, Leishan Co. SE Kaili, NE Leishan Leigong Shan, E - slope 26°26.11′N 108°16.08′E | Wunang river 13.6.2001 ca. 900m leg. Schillhammer &Wang (CWBS 432)"; NMW • 1 ♀; "CHINA: Guizhou, Jiangkou Co. ca. 50 km SW Jiangkou Shidu vill. 27°32.71′N 108°36.30′E | right trib[utary] of Guanhe river 1./ 4.7.2001, 650 - 680 m leg. Schillhammer & Wang (CWBS 445)"; NMW.

Fig. 65. *Elmomorphus paradonatus* sp. nov., paratype, male from China, locality CWBS 404 (CKB), TL: 3.24 mm.

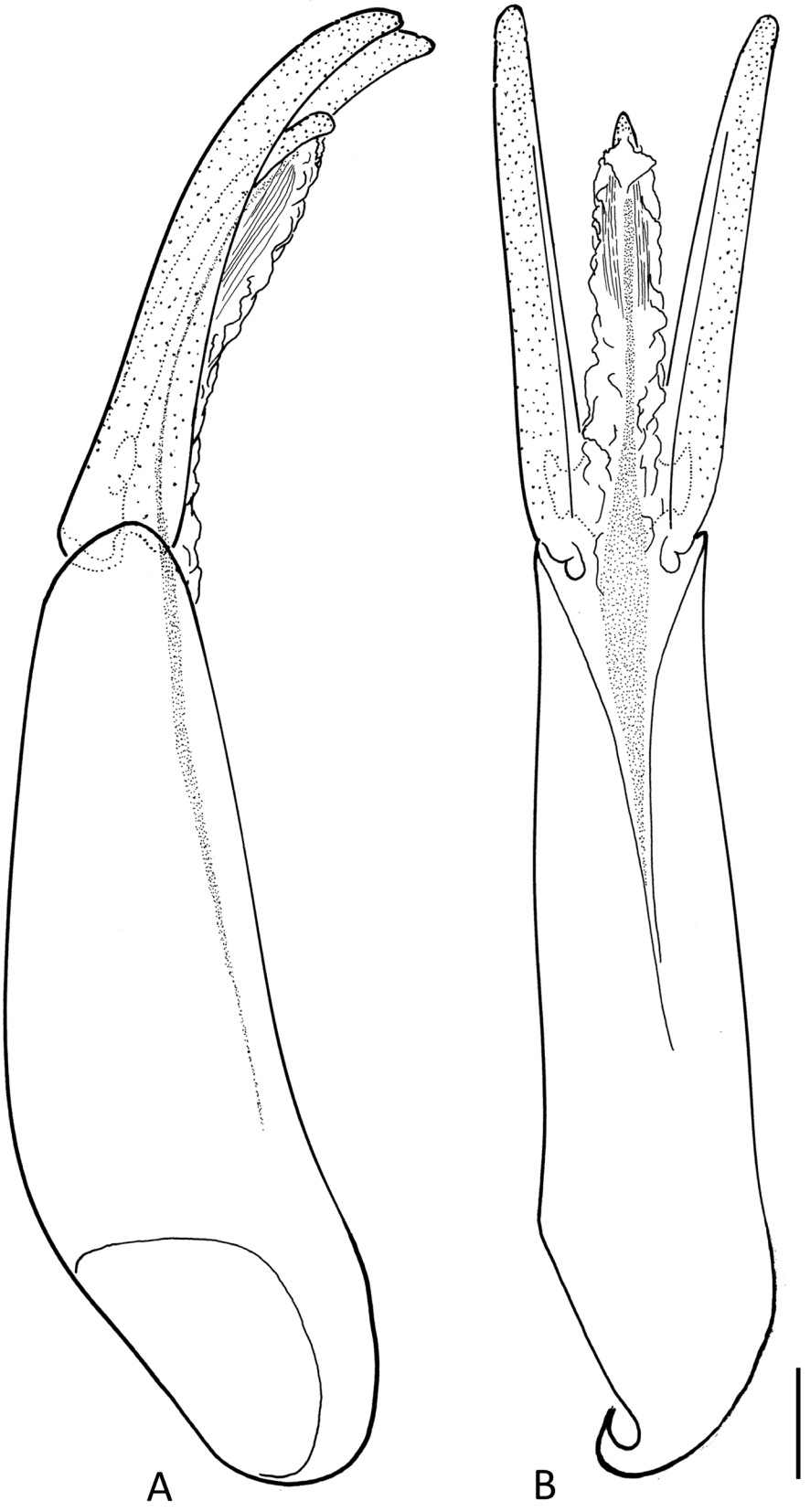

Fig. 66. *Elmomorphus paradonatus* sp. nov., paratype from China, locality CWBS 404 (CKB), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

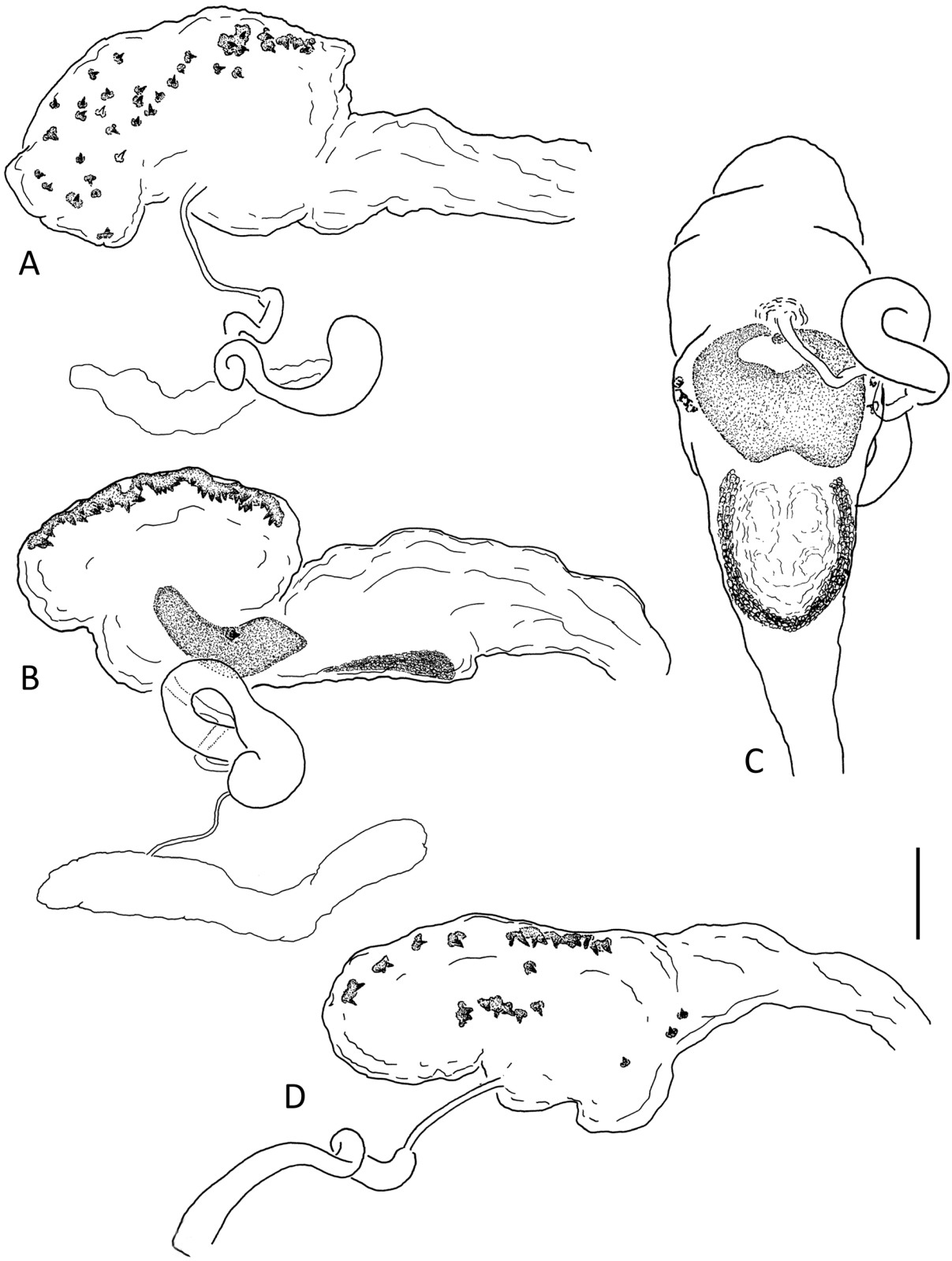

Fig. 67. Bursa copulatrix and vagina. **A**. *Elmomorphus simplipes* sp. nov., paratype from type locality (CKB). **B**. *E. donatus* Kodada, Selnekovič & Jäch sp. nov., holotype (NMW), lateral aspect. **C**. *E. donatus*, holotype (NMW), ventral aspect. **D**. *E. paradonatus* sp. nov., holotype (IAECAS). Scale bar: 0.1 mm.

Type locality

China, Yunnan Province, Gejiu Prefecture, Gejiu City, 15 km south of Gejiu, ca 1700 m a.s.l.; Tou Dao Shui (= Number One Water) stream, 50–100 cm wide, canalised, flowing through crop fields, pastures and pine forest, riparian vegetation dense, floating rootlets (CWBS 399; Jäch & Ji 2003).

Description

Measurements (mm): TL: ♂♂ 2.97–3.58 (3.24±0.14, n=20), ♀♀ 3.14–3.79 (3.34±0.14, n=20); PL: ♂♂ 0.69–0.81 (0.75±0.03, n=20), ♀♀ 0.70–0.86 (0.76±0.03, n=20); PW: ♂♂ 1.37–1.53 (1.47±0.05, n=20), ♀♀ 1.42–1.64 (1.50±0.05, n=20); EL: ♂♂ 2.27–2.76 (2.50±0.10, n=20); ♀♀ 2.44–2.92 (2.58±0.11, n=20); EW: ♂♂ 1.62–1.87 (1.78±0.06, n=20), ♀♀ 1.72–1.98 (1.83±0.06, n=20); PhL: 0.90–1.08 (1.00±0.05, n=20); PrL: 0.54–0.67 (0.60±0.03, n=20).

Body (Fig. 65) ovate, strongly convex dorsally. Integument dark brown to black; mouthparts, antennae, trochanters, and tarsi reddish-brown. Pubescence consists of very short sparse yellowish setae. Plastron distributed on anterior portions of head, apicolateral portions of elytra, and on ventral surface except prosternal process, median part of metaventrite, and middle of ventrites 1–2.

Head with round setiferous punctures, each about as wide as one eye facet, separated by ca 0.5–1.0× puncture diameter; surface between punctures smooth; plastron present on frontoclypeus. Labrum transverse, anterior margin slightly rounded, surface microreticulate, with densely arranged, setiferous punctures; males with conspicuous long and erect setae. Anterior margin of clypeus straight. Antennae 9-segmented. Eyes oval, interfacetal setae short; ID: ♂♂ 0.43–0.53 mm (0.47 mm±0.02, n=20), ♀♀ 0.45–0.54 mm (0.49 mm±0.02, n=20); APD/ID: ♂♂ 1.68–1.87 (1.78±0.06, n=20), ♀♀ 1.64–2.04 (1.75±0.08, n=20).

Pronotum wider than long, widest at base, PW/PL: ♂♂ 1.84–2.09 (1.97±0.06, n=20), ♀♀ 1.89–2.08 (1.98±0.05, n=20); surface smooth, with round setiferous punctures; plastron absent; rim of anterior margin as wide as three eye facets; anterior angles strongly deflexed, prominent; lateral sides convergent, slightly rounded, sometimes very slightly concave near anterior angles. Prosternal process with lateral edge divergent, straight; posterior edge broadly V-shaped; lateral portions raised; males with clusters of long setae anteriorly; median keel slightly arcuate. Scutellum about as long as wide, smooth, with small round punctures. Metaventrite with median area without plastron posteriorly widened; in males depressed, with two groups of long setae; in females slightly convex, without long setae; lateral margins of metaventral process raised. Elytra broadly oval, widest close before middle, EL/EW: ♂♂ 1.31–1.49 (1.40±0.04, n=20), ♀♀ 1.36–1.47 (1.41±0.03, n=20); surface with fine microreticulation in form of polygonal meshes; round punctures scattered, striae absent; plastron present on apicolateral portions. Tibiae slender, slightly curved; protibia ca 1.3× as long as protarsus, PrTL/PL: ♂♂ 1.13–1.25 (1.19±0.03, n=20), ♀♀ 1.00–1.19 (1.10±0.04, n=20). Terminal protarsomere as long as three preceding tarsomeres combined.

Abdomen covered with plastron except middle of ventrites 1–2. Ventrite 5 with short glabrous longitudinal keel before apex, and long setae alongside keel; apical margin in females with small triangular excision. Aedeagus (Fig. 66): phallobase robust, expanded proximally, PhL/PrL: 1.47–1.94 (1.66±0.09, n=20); parameres evenly narrowed to apices, curved ventrad, apices narrowly rounded (lateral aspect); penis expanded and rounded apically. Ovipositor: valvifers long and flattened; coxites asymmetrical, right one ca 1.30× as long as left one. Proximal part of bursa copulatrix with sclerotised spines arranged in a distinct dorsal row, scattered over lateral portions (Fig. 67D); proximal part of bursa copulatrix with several sclerotised spines in ventral portions; spermatheca tubular; accessory gland large.

Secondary sexual dimorphism

Labrum, prosternal process, and metaventrite with groups of long setae in males. Median part of metaventrite depressed in males, convex in females. Apical margin of ventrite 5 with small excision in females.

Distribution

China (Guizhou, Yunnan) (Fig. 112F).

Elmomorphus similis sp. nov.
urn:lsid:zoobank.org:act:2C1B7920-0981-4669-973E-7403DE0FBC78
Figs 68–69, 74A, 107B–D, 113A

Differential diagnosis

Elmomorphus similis sp. nov. (Fig. 68) belongs to a group of species characterised by having the dorsal plastron on the anterior parts of the head and the posterolateral portions of the elytra. Elytral punctures are scattered over the entire surface and striae are absent. Males possess conspicuous long erect setae or setal clusters on the labrum, prosternal process, and metaventrite. The disc of the metaventrite is strongly depressed in males. The male metatibia has a conspicuous tooth on the apical third. This species most closely resembles *E. dentipes* sp. nov. and *E. curvipes* sp. nov. but can be distinguished by the subtruncate parameral apices (lateral aspect) (Fig. 69). The spines on the bursa copulatrix are scattered over the lateral and dorsal portions, not forming a dorsal row (Fig. 74A). Meso- and metatibiae (Fig. 68) are more strongly curved than in *E. dentipes* (Fig. 70) but less so than in *E. curvipes* (Fig. 72).

Etymology

The epithet is a Latin adjective in the nominative singular referring to the overall similarity of this species with *E. dentipes* sp. nov. and *E. curvipes* sp. nov.

Type material

Holotype

LAOS – **Luang Namtha Province** • ♂; "N-LAOS: Prov. Lg. Nam Tha ca. 30km NW Lg. Nam Tha 16./18.6.1996, 800m leg. Schillhammer (28, 30)"; NMW.

Paratypes

LAOS – **Champasak Province** • 1 ♀; "S-LAOS: Prov. Champasak W Muang Paksong, 900m Ban Itou Wf. [waterfall] 28.5.1996 leg. Schillhammer (10)"; NMW. – **Luang Namtha Province** • 1 ♂; same collection data as for holotype; NMW • 3 ♀♀; "N-LAOS: Prov. Lg. Nam Tha, ca. 20 km NE Muang Sing 10.6.1996, 700m leg. Schillhammer (20)"; NMW • 1 ♂; "N-LAOS: Prov. Lg. Nam Tha ca. 20km SE Muang Sing 12./13.6.1996 950m leg. Schillhammer (25)"; NMW • 1 ♂; "N-LAOS: Prov. Lg. Nam Tha ca. 25km SE Muang Sing 14./15./20.-22.6.1996, 900m, leg. Schillhammer (27, 34)"; NMW.

Additional material examined

CHINA – **Yunnan Province** • 37 ♂♂, 7 ♀♀; "CHINA: Yünnan, Xishuangbanna ca. 15km W Menglun 5. 11. 1999, ca. 700 - 800m leg. Jäch, et al. (CWBS 354)"; CKB, NMW • 8 ♂♂, 4 ♀♀; "CHINA: Yünnan, Xishuangbanna, ca. 3km S Menglun, 6. 11. 1999, ca. 500m leg. Jäch, et al. (CWBS 357)"; CKB, NMW • 3 ♂♂, 7 ♀♀; "CHINA: Yünnan, Xishuangbanna, Menglun, Trop. Bot. Garden, 6.11.1999, ca. 500m, leg. Jäch et al. (CWBS 358)"; CKB, NMW • 4 ♂♂, 3 ♀♀; "CHINA: Yünnan, Xishuangbanna, ca. 10km NW Menglun, 7.11.1999, ca. 700m leg. Jäch, et al. (CWBS 359)"; CKB, NMW • 15 ♂♂, 14 ♀♀; "CHINA: Yünnan, Xishuangbanna ca. 10km NW Menglun 7.11.1999, ca. 700 – 800 m leg. Jäch, et al.

Fig. 68. *Elmomorphus similis* sp. nov., male from China, locality CWBS 354 (CKB), TL: 3.13 mm.

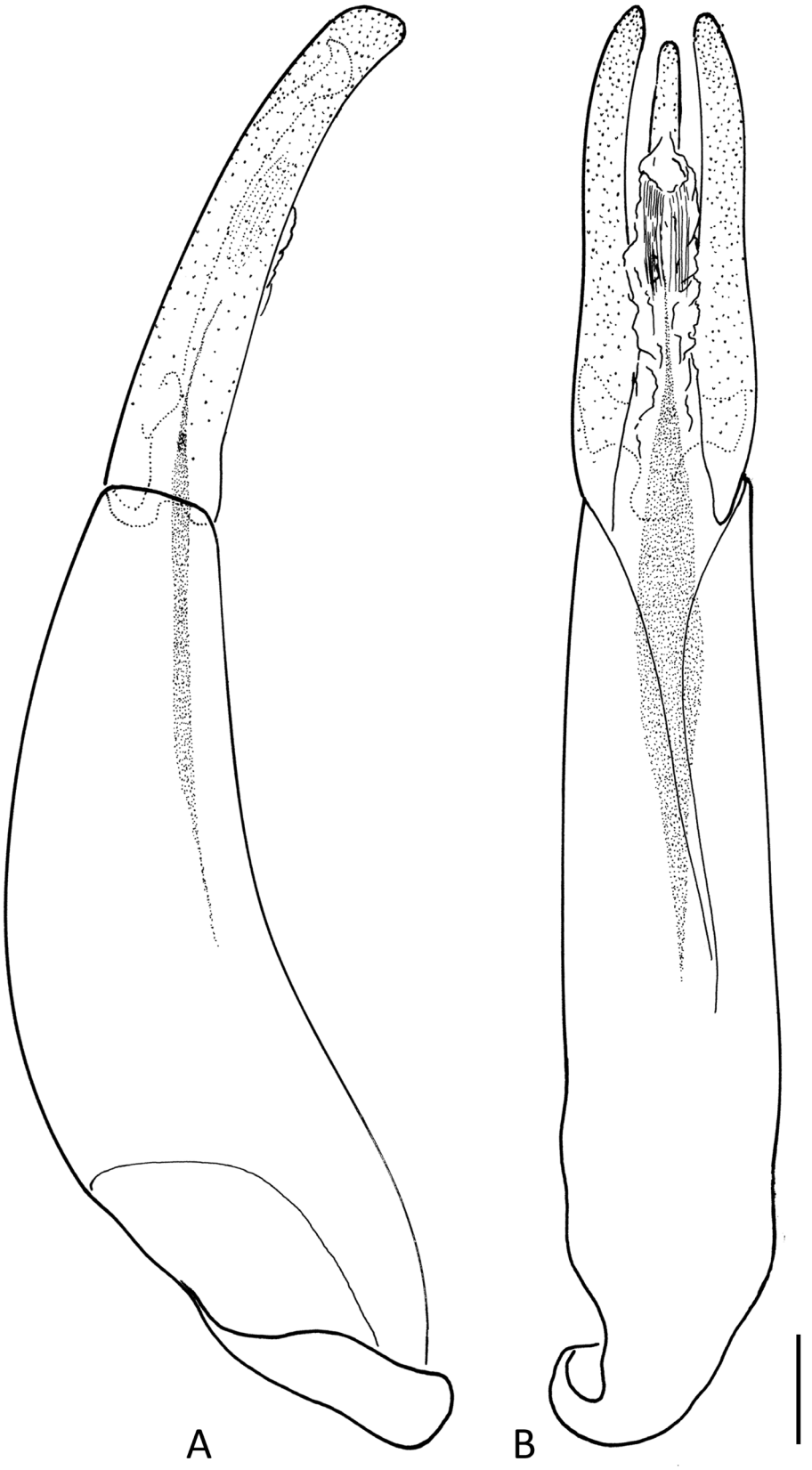

Fig. 69. *Elmomorphus similis* sp. nov., specimen from China, locality CWBS 354 (CKB), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

(CWBS 360)"; CKB, NMW • 1 ♂; "CHINA: Yünnan, Xishuangbanna, ca. 6km NW Mengla 8.11.1999, ca. 700m, leg. Jäch, et al. (CWBS 365)"; NMW • 1 ♂; "CHINA: Yünnan, Xishuangbanna, ca. 50km NW Mengla, 9.11.1999, ca. 800m, leg. Wang & Wei (CWBS 370)"; NMW • 3 ♂♂, 5 ♀♀; "CHINA: Yünnan, Xishuangbanna ca. 20km W Jinghong 11. 11. 1999, ca. 1000m leg. Jäch, et al. (CWBS 374)"; NMW • 21 ♂♂, 18 ♀♀; "CHINA: Yünnan, Xishuangbanna ca. 11km N Mengyang 12.11.1999, ca. 700 m leg. Jäch, et al. (CWBS 378)"; NMW • 7 ♂♂, 7 ♀♀; "CHINA: Yünnan, Xishuangbanna, pass betw. Jinghong – Mengyang, 12.11.1999, ca. 1100m leg. Jäch, et al. (CWBS 379)"; CKB, NMW. – **Guangdong Province** • 5 ♀♀; "CHINA, GUANGDONG prov. Danxia Shan NP, 23.-26.iv.2013 Wo Long Gang Forest Walkway 25°01.3′N, 113°44.5′E, 100 m J. Hájek & J. Růžička leg."; NMPC.

VIETNAM – **Ha Noi Province** • 1 ♂; "Ao Vua, Ha Tay Prov., N Vietnam 27-IV-1995 M. Satô leg."; CKB. – **Thanh Hóa Province** • 1 ♂, 1 ♀; "Thanh Hóa Prov, Bá Thước Distr., Thành Sơn, Kho Mường, 20°28′51.3″N, 105°07′51.6″E, 390 m a.s.l., 11.11.2022, Kodada & Selnekovič leg. (3)"; CKB • 19 ex.; "VIETNAM, Thanh Hóa Prov., Bá Thước Distr., Thành Sơn, 20°30′01.4″N, 105°06′19.3″E, 467 m a.s.l., 15.11.2022, Kodada & Selnekovič leg. (10)"; CKB.

Type locality

Laos, Luang Namtha Province, 30 km northwest of Luang Namtha.

Description

Measurements (mm): TL: ♂♂ 2.94–3.33 (3.13±0.08, n=29), ♀♀ 2.81–3.32 (3.11±0.12, n=22); PL: ♂♂ 0.67–0.78 (0.72±0.03, n=29), ♀♀ 0.63–0.75 (0.70±0.03, n=22); PW: ♂♂ 1.25–1.35 (1.31±0.03, n=29), ♀♀ 1.16–1.42 (1.31±0.06, n=22); EL: ♂♂ 2.24–2.60 (2.42±0.07, n=29), ♀♀ 2.18–2.57 (2.41±0.10, n=22); EW: ♂♂ 1.49–1.66 (1.57±0.04, n=29), ♀♀ 1.40–1.84 (1.59±0.09, n=22); PhL: 0.83–1.08 (0.97±0.06, n=28); PrL: 0.52–0.60 (0.56±0.02, n=28).

Body (Fig. 68) oblong oval, moderately convex dorsally. Integument dark brown to black; mouthparts and antennae light reddish brown, legs dark reddish-brown. Pubescence consists of short sparse yellowish setae. Plastron covering anterior parts of head, apicolateral portions of elytra, and entire ventral body surface, except prosternal process, median part of metaventrite, and median portions of ventrites 1–2.

Head with round setiferous punctures, each slightly smaller than an eye facet, separated by 1–2 × puncture diameters; plastron present on frontoclypeus. Labrum wider than long, anterior margin slightly rounded, dorsal surface microreticulate with densely arranged setiferous punctures; males with conspicuous long setae. Anterior margin of clypeus straight. Antennae 9-segmented. Eyes oval, interfacetal setae short; ID: ♂♂ 0.40–0.46 mm (0.44 mm±0.01, n=29), ♀♀ 0.40–0.49 mm (0.45 mm±0.02, n=22); APD/ID: ♂♂ 1.65–1.85 (1.75±0.05, n=28), ♀♀ 1.63–1.85 (1.73±0.04, n=22).

Pronotum wider than long, widest at base, PW/PL: ♂♂ 1.67–1.95 (1.82±0.06, n=29), ♀♀ 1.75–1.98 (1.86±0.06, n=22); surface with round setiferous punctures; microreticulation absent; plastron absent; rim of anterior margin as wide as three eye facets; lateral pronotal sides convergent, straight. Prosternal process with lateral edges divergent, straight; posterior edge broadly V-shaped; lateral portions raised, flat, anteriorly with groups of long setae in males; median keel moderately arcuate. Scutellum longer than wide, with setiferous punctures, microreticulation absent. Median part of metaventrite widened posteriorly, in males depressed, with two groups of long setae. Elytra oval, moderately convex, widest close before middle, EL/EW: ♂♂ 1.44–1.60 (1.53±0.04, n=29), ♀♀ 1.31–1.56 (1.52±0.05, n=22); surface with round setiferous punctures; microreticulation very fine; plastron present on epipleura and apicolateral portions. Tibiae slightly curved; mesotibia in male slightly expanded behind middle; male metatibia with conspicuous tooth on apical third; PrTL/PL: ♂♂ 1.01–1.19 (1.11±0.04, n=29), ♀♀ 0.97–1.13 (1.05±0.04, n=22). Protarsus slightly shorter than protibia; terminal protarsomere as long as all preceding tarsomeres combined.

Ventrites covered with plastron, except on middle of ventrites 1–2. Ventrite 5 with short glabrous apical keel; apical margin in females with small median triangular excision. Aedeagus (Fig. 69): phallobase robust, moderately curved ventrad, expanded proximally, PhL/PrL: 1.48–1.93 (1.75±0.13, n=28); parameres constricted in middle, apices broadly subtruncate (lateral aspect); penis narrowly rounded apically in dorsal aspect, expanded and produced dorsally in lateral aspect. Ovipositor: valvifers long, flattened, 1.60–1.90× as long as right coxite; coxites asymmetrical, right one ca 1.30× as long as left one. Bursa copulatrix (Fig. 74A) with microsclerites scattered over lateral and dorsal portions, dorsal row absent; spermatheca tubular, with accessory gland.

Secondary sexual dimorphism

Males with groups of long setae on labrum, prosternal process, and median part of metaventrite; mesotibia weakly expanded in distal half; metatibia with a tooth; median part of metaventrite depressed, with groups of long setae. In females, median part of metaventrite slightly convex; apical margin of ventrite 5 with small apical triangular excision.

Distribution

China (Guangdong, Yunnan), Laos, Vietnam (Fig. 113A).

Elmomorphus dentipes sp. nov.
urn:lsid:zoobank.org:act:DEBDB95A-9133-42F0-B76C-87DD5B625F93
Figs 70–71, 74B, 107B, 113B

Differential diagnosis

Elmomorphus dentipes sp. nov. (Fig. 70) belongs to the group of species characterised by having the dorsal plastron on anterior portions of the head and the posterolateral portions of the elytra. Elytral punctures are scattered over the entire surface, striae are absent. Males bear conspicuous long erect setae or setal clusters on the labrum, prosternal process, and metaventrite; the disc of their metaventrite is depressed, and the mesal face of the metatibia has a conspicuous tooth near the middle. *Elmomorphus dentipes* most closely resembles *E. curvipes* sp. nov. and *E. similis* sp. nov., from which it can be distinguished by the metatibia being nearly straight in both sexes and by the male mesotibia not expanded in the distal half (Fig. 70). The parameres are evenly narrowed, with apices very narrowly rounded (Fig.71) in *E. dentipes*, but distinctly sinuate with broadly rounded apices in *E. similis* (Fig. 69). The bursa copulatrix has a distinct dorsal row of spines and with several spines scattered over the lateral portions in *E. dentipes* (Fig. 74B). In *E. similis* the spines are scattered over the dorsal and lateral portions, and not arranged in a distinct dorsal row (Fig. 74A). In *E. curvipes*, the spines are arranged in a distinct dorsal row but absent in lateral portions (Fig. 74C). *Elmomorphus dentipes* also closely resembles *E. simplipes* sp. nov., from which it can be distinguished by the metatibial tooth. The spines on the bursa copulatrix in *E. dentipes* are always arranged in a distinct dorsal row (Fig. 74B), while in *E. simplipes*, the spines are scattered over the dorsal parts and only sometimes form an indistinct dorsal row (Fig. 67A).

Etymology

The epithet, an adjective (nominative singular), is a combination of the Latin words ‘dens’ (‘tooth’) and ‘pes’ (‘foot, leg’). It refers to the tooth on the male metatibia.

Type material

Holotype

VIETNAM – **Lam Dong Province** • ♂; “S-VIETNAM: 17.-21.4. 12km N Dalat 1995 Lang Bian | 12°03′N 108°27′E 1580 - 1750 m Pacholatko & Dembicky”; NMW.

Fig. 70. *Elmomorphus dentipes* sp. nov., paratype, male from type locality (NMW), TL: 2.90 mm.

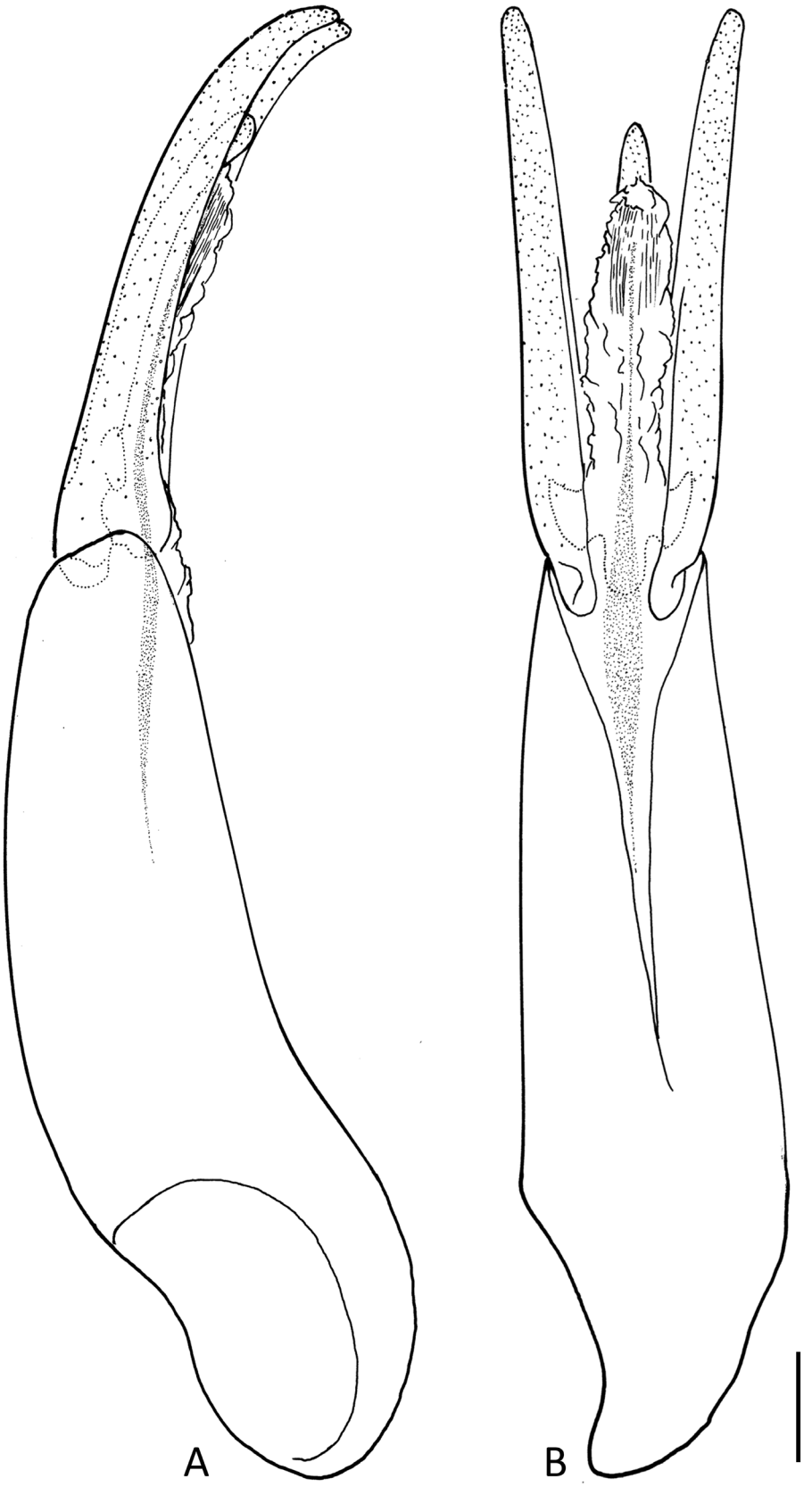

Fig. 71. *Elmomorphus dentipes* sp. nov., paratype from type locality (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Paratypes

VIETNAM – **Lam Dong Province** • 64 ♂♂, 76 ♀♀; same collection data as for holotype; CKB, NMW. – **Thanh Hóa Province** • 4 ♂♂; "VIETNAM, Thanh Hóa Prov., Bá Thước Distr., Thành Sơn, 20°30′01.4″N, 105°06′19.3″E, 467 m a.s.l., 15.11.2022, Kodada & Selnekovič leg. (10)"; CKB.

Additional material examined

CHINA – **Yunnan Province** • 53 ♂♂, 4 ♀♀; "CHINA: Yünnan, Xishuangbanna, ca. 15km W Menglun 5.11.1999, ca. 700 - 800m leg. Jäch, et al. (CWBS 354)"; NMW • 1 ♂; "CHINA: Yünnan, Xishuangbanna ca. 3km S Menglun, 6.11.1999, ca. 500m, leg. Jäch et al. (CWBS 357)"; NMW • 9 ♂♂, 5 ♀♀; "CHINA: Yünnan, Xishuangbanna ca. 10km NW Menglun 7.11.1999, ca. 700m leg. Jäch, et al. (CWBS 359)"; NMW • 11 ♂♂, 5 ♀♀; "CHINA: Yünnan, Xishuangbanna ca. 10km NW Menglun 7.11.1999, ca. 700 - 800 m leg. Jäch, et al. (CWBS 360)"; NMW • 1 ♀; "CHINA: Yünnan, Xishuangbanna ca. 50km SSE Menglun, Mengyüan 8.11.1999, ca. 700m leg. Jäch et al. (CWBS 361)"; NMW • 1 ♀; "CHINA: Yünnan, Xishuangbanna ca. 50km SSE Menglun, Mengyüan 8.11.1999, ca. 700m, leg. Jäch et al. (CWBS 362)"; NMW • 3 ♂♂; "CHINA: Yünnan, Xishuangbanna ca. 6km NW Mengla 8.11.1999, ca. 700m leg. Jäch, et al. (CWBS 364)"; NMW • 15 ♂♂; "CHINA: Yünnan, Xishuangbanna ca. 6km NW Mengla 8.11.1999, ca. 700m leg. Jäch, et al. (CWBS 365)"; NMW • 44 ♂♂, 20 ♀♀; "CHINA: Yünnan, Xishuangbanna ca. 6km NW Mengla 9.11.1999, ca. 700m leg. Jäch, et al. (CWBS 367)"; NMW • 27 ♂♂, 23 ♀♀; "CHINA: Yünnan, Xishuangbanna ca. 20km NW Mengla 9.11.1999, ca. 1000 m leg. Jäch, et al. (CWBS 368)"; NMW • 5 ♂♂; "CHINA: Yünnan, Xishuangbanna, ca. 50km NW Mengla, 9.11.1999, ca. 800m leg. Wang & Wei (CWBS 370)"; NMW • 12 ♂♂, 11 ♀♀; "CHINA: Yünnan, Xishuangbanna ca. 35km NW Menglun 10.11.1999 ca. 1100m leg. Jäch, et al. (CWBS 371)"; NMW • 2 ♂♂; "CHINA: Yünnan, Xishuangbanna ca. 7km NE Jinghong 12.11.1999, ca. 600m leg. Jäch, et al. (CWBS 377)"; NMW • 18 ♂♂, 13 ♀♀; "CHINA: Yünnan, Xishuangbanna, pass betw. Jinghong – Mengyang 12.11.1999, ca. 1100m leg. Jäch, et al. (CWBS 379)"; NMW • 3 ♂♂; "CHINA: Yünnan, Simao Pref. 36km SW Simao, Jian Shan Riv. 15.11.1999, ca. 1000m Schönmann & Wang (CWBS 388)"; NMW • 4 ♂♂, 2 ♀♀; "CHINA: Yünnan, Simao Pref. 35km S Simao, Zhu Shan, 16.11.1999, Caiyang Riv. NR ca. 1100m Schönmann & Wang (CWBS 390)"; NMW • 42 ♂♂, 32 ♀♀; "CHINA: Yünnan, Simao Pref. 25km SW Simao, Zhu Shan, 17.11.1999, ca. 1000m Schönmann & Wang (CWBS 392)"; NMW • 10 ♂♂, 10 ♀♀; "CHINA: Yünnan, Simao Pref. 25km SW Simao, Zhu Shan, 17.11.1999, ca. 1000m Schönmann & Wang (CWBS 393)"; NMW • 1 ♂, 3 ♀♀; "CHINA: Yünnan, Simao Pref. 35km SW Mojiang 19.11.1999, ca. 1000m Schönmann & Wang (CWBS 394)"; NMW • 14 ♂♂, 20 ♀♀; "CHINA: Yünnan, Simao Pref. 35km SW Mojiang, 19.11.1999 ca. 1000m Schönmann & Wang (CWBS 395)"; NMW • 10 ♂♂, 2 ♀♀; "CHINA: Yünnan, Gejiu Pref. 30km S Gejiu, Tian Ba Shi env. 23.11.1999, ca. 1300m Schönmann & Wang (CWBS 400)"; NMW • 1 ♂; "CHINA: Yünnan, Gejiu Pref. 30km S Gejiu, Tia Ba Shi env. 23.11.1999, ca. 1300m, Schönmann & Wang (CWBS 401)"; NMW • 2 ♂♂, 5 ♀♀; "CHINA: Yünnan, Chuxiong Pref. Da Shui Go riv. nr. Ban Jiu, 10km N Yipinglang 27.11.1999, ca. 1700m, Schönmann & Wang (CWBS 409)"; NMW.

LAOS – **Champasak Province** • 1 ♂; "S-LAOS: Prov. Champasak W Muang Paksong, 900m Ban Itou Wf. [waterfall] 28.5.1996 leg. Schillhammer (10)"; NMW. – **Luang Namtha Province** • 1 ♀; "N-LAOS: Prov. Lg. Nam Tha, ca. 20 km NE Muang Sing 10.6.1996, 700 m leg. Schillhammer (20)"; NMW • 1 ♀; "N-LAOS: Prov. Lg. Nam Tha, ca. 5 km S Muang Sing 650 m Huay Giulom riv., 10.6.1996 leg. Schillhammer (21)"; NMW • 17 ♂♂, 19 ♀♀; "N-LAOS: Prov. Lg. Nam Tha ca. 20km SE Muang Sing 12./13.6.1996 950m leg. Schillhammer (25)"; NMW • 1 ♂; "N-LAOS: Prov. Lg. Nam Tha ca. 30km NW Lg. Nam Tha 16./18.6.1996 800 m leg. Schillhammer (28, 30)"; NMW.

MYANMAR • 14 ex.; "MYANMAR: Shan State ca. 300 m below Ye Ayegan reservoir leg. H. Shillhammer, U Myint Hlaing, U Aung Moe, 9.6.[20]02 (MBS 84) | small right tributary to main stream

20°36.274′N 96°32.055′E"; NMW • 9 ex.; "MYANMAR: Shan State ca. 40 km N Aungban above Ale Chaung village leg. H. Schillhammer, U Myint Hlaing, U Aung Moe, 10.6.[20]02 (MBS 85) | Waboe stream, furcating stretch, ca. 1540 m 20°59.80′N 96°34.69′E"; NMW • 2 ex.; "MYANMAR: Shan State Main Thouk Forest Monastery, 4.6.[20]04 leg. H. Schillhammer, H. Shaverdo, U Myint Hlaing (MBS 136/136a) | stream in primary forest pools along stream & downstream in dried out stream bed"; NMW • 7 ex.; "MYANMAR: Shan State ca. 5 km SW Kalaw Ye Aygan, 9.6. [20]04 leg. H. Schillhammer, H. Shaverdo, U Myint Hlaing (MBS 143c) | small stream, trib. of main str., ca. 1340 m 20°36.274′N 96°32.055′E"; NMW.

THAILAND – **Chiang Mai Province** • 1 ♂; "THAILAND: 30./31.11. Chiang Mai Prov. 1995 W Mae Rim, Mae Sa NP [National Park] leg. Zettel (2)"; NMW • 1 ♂; "THAILAND: 1.11.1995 Chiang Mai Prov. Doi Suthep, 900m leg. Zettel (3)"; NMW • 7 ♂♂, 8 ♀♀; "THAILAND: 2.11.1995 Chiang Mai Prov. Doi Suthep, 750-800m leg. Zettel (4)"; NMW • 3 ♂♂, 3 ♀♀; "THAILAND: 5.11.1995 Chiang Mai Prov. 900-1100m Doi Suthep NP leg. Zettel (7)"; NMW • 2 ♂♂, 10 ♀♀; "Thailand: Chang Mai, Doi Sutep Nat. Park, 24.III.1994 Monthatarh [Monthatan] Falls, A-1043, W.D.S. Shepard leg."; CSS • 1 ♂, 5 ♀♀; "Thailand: Chiang Mai, Doi Sutep Nat. Park, 24.III.1994 Monthatarh [Monthatan] Falls, A-1044, W.D.S. Shepard leg."; CSS • 1 ♂; "Thailand: Chiang Mai, Doi Sutep Nat. Park, 24.III.1994 Monthatarh [Monthatan] Falls, A-1045, W.D.S. Shepard leg."; CSS • 8 ♂♂, 5 ♀♀; "THAILAND, 11.3.1992 18°48′N 98°55′E Doi Suthep, 1200m leg. Malicky (SS 16)"; CKB, NMW • 1 ♂, 1 ♀; "Thailand: Chiang Mai Prov., Doi Inthanon Huai Pha Tang stream, 1300 m, 16.1.2009 leg. H. Zettel & S. Silalom (62)"; NMW • 4 ex.; "N-THAILAND Ban Sanpakia 19° 19′ N 98° 50′ E, 1000 m a.s.l., 3.V.1998, V. Kubáň leg."; CKB. – **Mae Hong Son Province** • 1 ex.; "THAILAND: 12.11.1995 12 km S Mae Hong Son, Pha Bong leg. Zettel (13a)"; NMW. – **Nan Province** • 1 ♂, 1 ♀; "N- THAILAND: Nan, 3.1.1999 Doi Phu Ka NP, 1400 m nr. Huai Nam Dan vill. leg. P. Mazzoldi (26)"; NMW.

Type locality

Vietnam, Lam Dong Province, 12 km north of Da Lat, Lang Bian.

Description

Measurements (mm): TL: ♂♂ 2.67–3.32 (2.89±0.14, n=64), ♀♀ 2.71–3.37 (3.03±0.15, n=38); PL: ♂♂ 0.60–0.76 (0.67±0.04, n=64), ♀♀ 0.62–0.76 (0.69±0.04, n=38); PW: ♂♂ 1.15–1.43 (1.24±0.07, n=64), ♀♀ 1.18–1.50 (1.30±0.08, n=38); EL: ♂♂ 2.00–2.57 (2.22±0.10, n=64), ♀♀ 2.08–2.60 (2.34±0.11, n=38); EW: ♂♂ 1.35–1.69 (1.50±0.08, n=64), ♀♀ 1.43–1.75 (1.56±0.08, n=38); PhL: 0.83–1.01 (0.90±0.04, n=64); PrL: 0.48–0.60 (0.54±0.02, n=64).

Body ovate, moderately convex dorsally (Fig. 70). Integument dark brown to black; mouthparts, antennae, and legs dark reddish brown. Pubescence consisting of very short sparse yellowish setae. Plastron present on anterior portions of head, apicolateral portions of elytra, and on the ventral surface except prosternal process, median part of metaventrite, and middle of ventrites 1–2.

Head with round setiferous punctures, slightly smaller than an eye facet, separated by 1.0–1.5 × puncture diameter; plastron present on frontoclypeus. Labrum wider than long, anterior margin slightly rounded; dorsal surface microreticulate, with minute round setiferous punctures; males with conspicuous long setae. Anterior margin of clypeus straight. Antennae 9-segmented. Eyes oval, interfacetal setae short; ID: ♂♂ 0.32–0.56 mm (0.42 mm±0.03, n=64), ♀♀ 0.41–0.51 mm (0.46 mm±0.02, n=38); APD/ID: ♂♂ 1.33–2.52 (1.75±0.12, n=64), ♀♀ 1.60–1.80 (1.69±0.04, n=38).

Pronotum wider than long, widest at base, PW/PL: ♂♂ 1.73–2.05 (1.85±0.07, n=64), ♀♀ 1.74–2.07 (1.90±0.08, n=38); surface with round setiferous punctures; microreticulation absent; plastron absent;

rim of anterior margin as wide as three eye facets, interrupted in middle; lateral sides convergent, straight. Prosternal process with lateral margins straight, divergent, posterior margin broadly V-shaped; lateral portions raised, in males with long setae anteriorly; median keel rather flat. Scutellum longer than wide, smooth, with small punctures. Metaventrite with median area without plastron posteriorly widened, in males slightly depressed, with one pair of setal clusters; lateral margins of metaventral process raised, discrimen rather indistinct. Elytra ovate, strongly convex, widest close behind middle, EL/EW: ♂♂ 1.34–1.59 (1.48±0.05, n=64); ♀♀ 1.42–1.57 (1.50±0.03, n=38); surface with very fine microreticulation formed by irregular polygonal meshes; plastron present on epipleura and on apicolateral portions. Pro- and mesotibia straight, not abruptly expanded in distal half; metatibia slightly curved, in males with small tooth on apical third; PrTL/PL: ♂♂ 1.05–1.25 (1.15±0.04, n=64), ♀♀ 0.97–1.15 (1.06±0.05, n=38). Protarsus ca 0.70× as long as protibia; terminal protarsomere as long as three preceding tarsomeres combined.

Abdominal plastron lacking on middle of ventrites 1–2. Ventrite 5 with short longitudinal keel before apex; apical margin in females triangularly excised in middle. Aedeagus (Fig. 71): phallobase rather robust, expanded proximally, PhL/PrL: 1.37–1.84 (1.68±0.09, n=64); parameres evenly narrowed to apices, moderately curved ventrad, apices narrowly rounded in lateral aspect; penis narrowly rounded apically in dorsal aspect, very slightly expanded and rounded in lateral aspect. Ovipositor: valvifers long and flattened, 1.50–1.90× as long as right coxite; coxites asymmetrical, right one ca 1.30× as long as left one. Bursa copulatrix (Fig. 74B) with sclerotised spines forming a distinct dorsal row, and with a group of several scattered lateral spines; spermatheca tubular with accessory gland.

Secondary sexual dimorphism

Males with long setae on labrum, on lateral portions of prosternal process, and on disc of metaventrite; metatibia toothed. Apical margin of ventrite 5 in females with small median triangular excision.

Distribution

China (Yunnan), Laos, Myanmar, Thailand, Vietnam (Fig. 113B).

Elmomorphus curvipes sp. nov.
urn:lsid:zoobank.org:act:5DAC947D-A025-42D7-84F7-9792FD880D7E
Figs 72–73, 74C, 113C

Differential diagnosis

Elmomorphus curvipes sp. nov. (Fig. 72) belongs to the group of species characterised by having the dorsal plastron distributed on the anterior portions of the head and the posterolateral portions of the elytra. Elytral punctures are scattered over the entire surface and striae are absent. Males bear conspicuous long erect setae or setal clusters on the labrum, prosternal process, and metaventrite. Males have the disc of the metaventrite strongly depressed, and their metatibia possesses a conspicuous tooth near the middle. *Elmomorphus curvipes* most closely resembles *E. dentipes* sp. nov. and *E. similis* sp. nov.; from both it can be distinguished by the strongly curved male metatibia and by the mesotibia being enlarged in the posterior half (Fig. 72). Furthermore, from *E. similis* it can be separated by the acute parameral apices (Fig. 73). Females can be distinguished from those of *E. dentipes*, *E. similis*, and *E. simplipes* sp. nov. by the spines of the bursa copulatrix being arranged in a distinct dorsal row (spines absent laterally) (Fig. 74C). The body is more convex than in *E. similis* and *E. dentipes*.

Etymology

The epithet, an adjective (nominative singular), is a combination of the Latin words ‘curvus’ (‘curved’) and ‘pes’ (‘foot, leg’). It refers to the strongly curved male meso- and metatibiae.

Fig. 72. *Elmomorphus curvipes* sp. nov., paratype, male from type locality (NMW), TL: 3.20 mm.

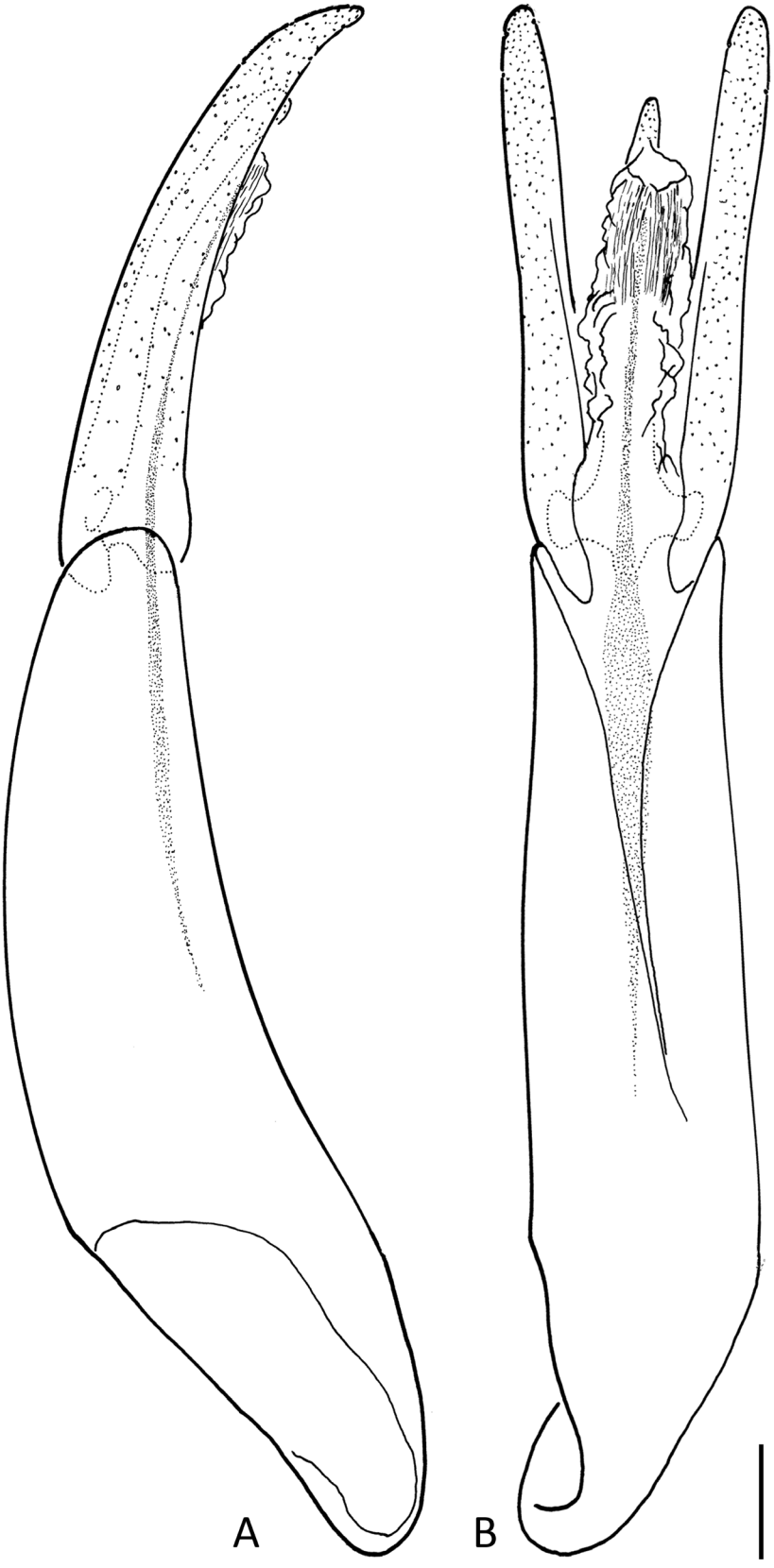

Fig. 73. *Elmomorphus curvipes* sp. nov., paratype from type locality (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

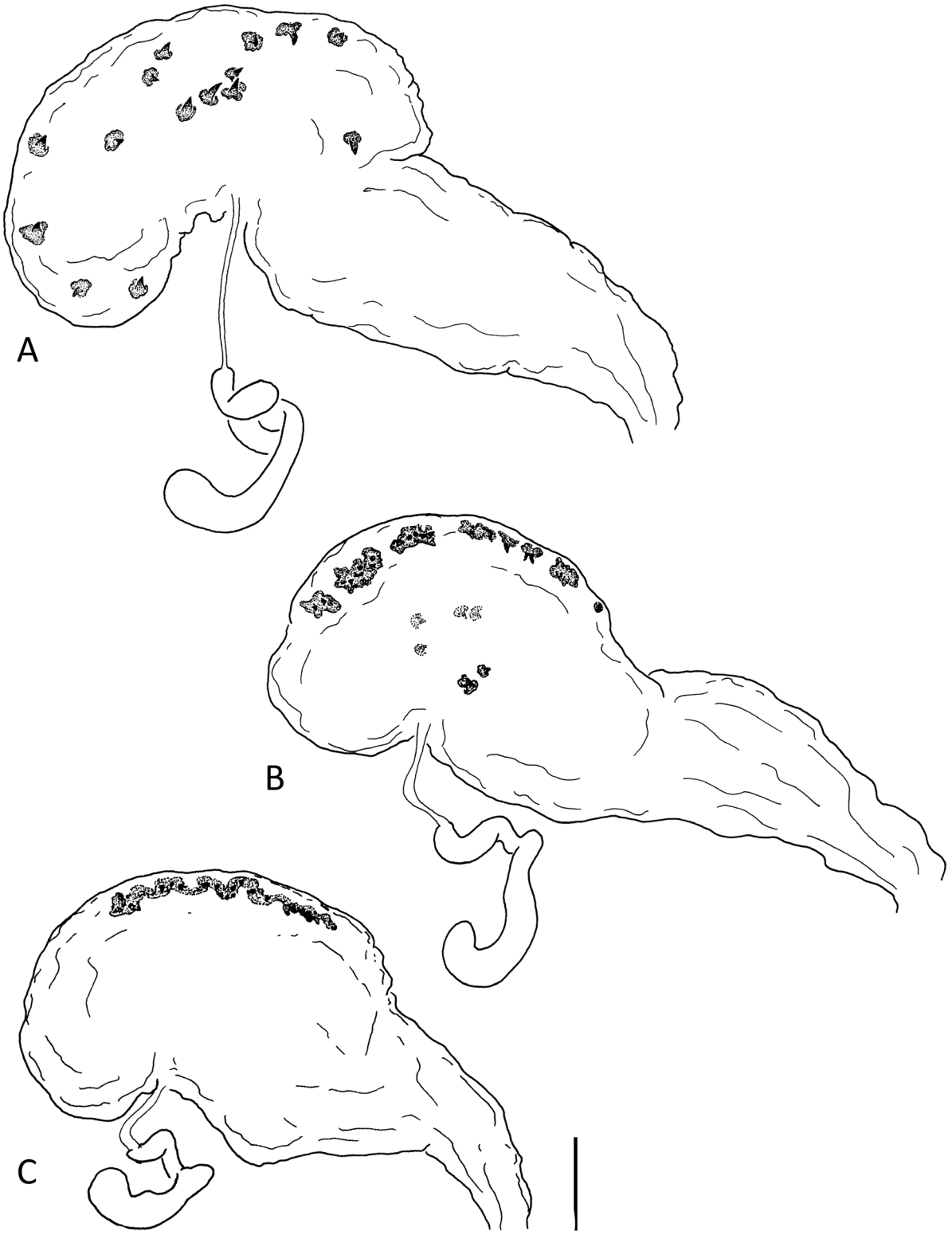

Fig. 74. Bursa copulatrix and vagina. **A**. *Elmomorphus similis* sp. nov., specimen from China, locality CWBS 378 (NMW). **B**. *E. dentipes* sp. nov., specimen from China, locality CWBS 354 (NMW). **C**. *E. curvipes* sp. nov., specimen from China, locality CWBS 260 (NMW). Scale bar: 0.1 mm.

Type material

Holotype

VIETNAM – **Vinh Phúc Province** • ♂; "N-VIETNAM: Tam Dao (2) 1.-8.6.1996 leg. Dembicky & Pacholatko"; NMW.

Paratypes

VIETNAM – **Vinh Phúc Province** • 122 ♂♂, 67 ♀♀; same collection data as for holotype; CKB, NMW.

Additional material examined

CHINA – **Anhui Province** • 1 ♂; "CHINA: Anhui, Huang Shan 30km W Tunxi, 24.10.1997 Qi Yun Shan, 500m, leg. M. Wang (CWBS 284)"; NMW • 12 ♂♂; "CHINA: Anhui, Huang Shan 30km W Tunxi, 24.10.1997 Qi Yun Shan, 250m leg. Schönmann (CWBS 285)"; NMW • 3 ♂♂, 2 ♀♀; "CHINA: Anhui, Huang Shan 40km NW Tunxi, 26.10.1997, rd. to Tank Kou, 350-400m, leg. Schönmann (CWBS 287)"; NMW • 2 ♂♂; "CHINA: Anhui, Huang Shan 30km NW Tunxi, 28.10.1997, 5km E Nantang, 350-400m leg. M. Wang (CWBS 288)"; NMW • 47 ♂♂, 61 ♀♀; "CHINA: Anhui, Huang Shan 30km NW Tunxi, 30.10.1997, 3km W Nantang, 350-550m leg. Schönmann (CWBS 291)"; NMW • 2 ♂♂; "CHINA: Anhui, Huang Shan 45km NW Tunxi, 1.11.1997, rd. to Tang Kou, 550m, leg. Schönmann (CWBS 293)"; NMW. – **Fujian Province** • 1 ♀; "CHINA: FUJIAN, Chong'an, Wuyi Shan, 1 km W Wuyi Gong, 250m 15./18.1.1997 leg. Ji & Wang (CWBS 240)"; NMW • 6 ♂♂, 7 ♀♀; "CHINA: FUJIAN, Chong'an Wuyi Shan, 2km W Da'an 450m, 19.1.1997 leg. H. Schönmann (CWBS 249)"; NMW • 2 ♂♂, 1 ♀; "CHINA: FUJIAN, Chng'an Wuyi Shan, 3km W Da'an, 500m, 19.1.1997, leg. H. Schönmann (CWBS 250)"; NMW • 44 ♂♂, 52 ♀♀; "CHINA: FUJIAN, Chong'an Wuyi Shan, 5km SE Da'an Lian Dun, 500m, 20.1.1997 leg. H. Schönmann (CWBS 251)"; CKB, NMW • 3 ♂♂, 11 ♀♀; "CHINA: FUJIAN, Guangze Wuyi Shan, 12km S Zhima Li Fang, 400m, 22.1.1997 leg. Ji & Wang (CWBS 252)"; NMW • 4 ♂♂, 3 ♀♀; "CHINA: FUJIAN, Yong'an 3km SW Xiyang, 450m, Ziyungdong Shan, 24.1.1997 leg. Ji & Wang (CWBS 253)"; NMW • 5 ♂♂, 10 ♀♀; "CHINA: FUJIAN, Yong'an 5km SW Xiyang, 550m, Ziyungdong Shan, 25.1.1997 leg. Ji & Wang (CWBS 256)"; NMW • 17 ♂♂, 13 ♀♀; "CHINA: FUJIAN, Yong'an 5km N Xiyang, 400m 26.1.1997 leg. Ji & Wang (CWBS 258)"; NMW • 33 ♂♂, 1 ♀; "CHINA: FUJIAN, Longyan Jiangshan (20km N Longyan) Keshan monastery, 900m, Meihua Shan, 28.1.1997, leg. Ji & Wang (CWBS 260)"; NMW • 8 ♂♂, 12 ♀♀; "CHINA: FUJIAN, Longyan 2km S Dachi, 750m, Ceyan Shan, 29.1.1997 leg. Ji & Wang (CWBS 262)"; NMW • 23 ♂♂, 26 ♀♀; "CHINA: FUJIAN, Longyan Xiaochi (20km W Longyan) Meihua Shan, 650m, 30.1.1997, leg. H. Schönmann (CWBS 263)"; NMW • 28 ♂♂, 23 ♀♀; "CHINA: FUJIAN, Longyan Shizong, Shangfang Shan, 850m, 31.1.1997 leg. Ji & Wang (CWBS 264)"; NMW • 2 ♀♀; "CHINA: FUJIAN Prov. Wuyishan Mts. NNR, Sangang vill. env., 23.v.–3.vi.2018 27°45.1′N, 117°40.9′E, 760 m forest stream; flood debris J. Hájek, D. Král, J. Růžička & L. Sekerka lgt."; NMPC. – **Guangdong Province** • 1 ex.; "CHINA: Guangdong Prov. 60 km E Fengkai 23°26′36″N 111°58′10″E 1.11.2001, ca. 230 m Jäch & Komarek (CWBS 458)"; NMW • 3 ♂♂, 3 ♀♀; "CHINA: Guangdong Prov. Huaiji – Jangshan rd., 3.11.2001, ca. 530m, leg. Jäch, Komarek & Wang (CWBS 464)"; NMW • 1 ♂; "CHINA: Guangdong Prov. Chengjia – Ruyan rd. ca. 40km E Chengjia, 5.11.2001, Jäch & Komarek (CWBS 471)"; NMW • 2 ex.; "CHINA: Guangdong Prov. Chebaling N.R. 24°42′21″N 114°14′17″E 7.11.2001, ca. 340 m Jäch & Komarek (CWBS 476)"; NMW • 10 ♂♂, 6 ♀♀; "CHINA: Guangdong Prov. Chebaling N. R. 24°41′47″N 114°11′57″E 7.11.2001, ca. 450m Jäch & Komarek (CWBS 477)"; CKB, NMW • 2 ♂♂, 1 ♀; "CHINA: Guangdong Prov. Chebaling N. R. 55km SE Shixing 8.11.2001, ca. 340m, Jäch & Komarek (CWBS 483)"; NMW • 1 ♂; "CHINA: Guangdong Prov. Huashi Shan 24°40′28″N 113°56′33″E, 8.11.2001, ca. 480m, Jäch & Komarek (CWBS 484)"; NMW • 2 ♂♂, 3 ♀♀; "CHINA: Guangdong Prov. 37km E Zengcheng 23°16′33″N 114°03′27″E, 10.11.2001, ca. 200m, Komarek & Wang (CWBS 488)"; NMW • 1 ♂, 2 ♀♀; "CHINA: Guangdong Prov. 38km ENE Zengchang 23°16′37″N 114°03′19″E, 11.11.2001, ca. 200m, Komarek & Wang (CWBS 489)"; NMW • 11 ex.; "CHINA: Guangdong Prov. 45km N

Zengchang 23°37′28″N 114°50′10″E, 13.11.2001, ca. 500m, leg. M. Wang (CWBS 495)"; NMW • 2 ♂♂, 1 ♀; "CHINA, Guangdong prov. Danxia Shan NP, 23.–26.iv.2013 Wo Long Gang Forest Walkway 25°01.3′N, 113°44.5′E, 100 m J. Hájek ý J. Růžička leg."; NMPC. – **Guangxi Autonomous Region** • 1 ♂, 6 ♀♀; "CHINA, Guangxi 1993 10km N Liuzhou 11. 11., 150–200m leg. Schönmann (18) [CWBS 40]" [3 ex. "leg. L. Ji"]; NMW • 1 ♀; "CHINA, Guangxi 1993 Dist. Lipu 120km S Guilin Berge bei [mountains near] Siuren | 12.11. 350m leg. Schönmann & Schillhammer (19) [CWBS 41]"; NMW • 8 ♀♀; "CHINA, SE-Guangxi Distr. Yulin Liuvan Mts. SW Yulin | 17.11.1993 Kuishan, 600-700m leg. Schönmann (21) [CWBS 43]" [2 ex. "leg. L. Ji", 3 ex. "leg. Schillhammer"]; NMW • 10 ♀♀; "CHINA: SE-Guangxi Distr. Yulin Liuwan Mts. SW Yulin | 20.11.1993 120m, (26) [CWBS 49] leg. Schönmann" [5 ex. "leg. Schillhammer"]; NMW. – **Hong Kong** • 1 ♀; "HONGKONG (4) [CWBS 5] 1992 N.T.-Lam Tsuen Riv. 25.VI. leg. Jäch"; NMW • 1 ♂, 6 ♀♀; "HONGKONG (5) [CWBS 6] 1992 N.T.-Lam Tsuen Riv. 25.VI. leg. Jäch"; NMW; 1 ex.: "HONGKONG University Campus at light, 1996 leg. G. de Rougemont"; NMW. – **Hunan Province** • 1 ♂, 2 ♀♀; "CHINA, NW-Hunan 1993 Wulingyuan, N Dayong Suoxiyu, 31.10., 450m leg. Schillhammer (6) [CWBS 25]" [1 ex. "leg. Schönmann"]; NMW • 1 ♂, 39 ♀♀; "CHINA, SW-Hunan 1993 SW Huitong, 350-450 m Umg. Guangping, 3.11.leg. L. Ji (9) [CWBS 29]" [16 ex. "leg. Schillhammer"]; NMW • 2 ♀♀; "CHINA, SW-Hunan 1993 SW Huitong, 4.11. Umg. Guangping, 360m leg. L. Ji (10) [CWBS 30]"; NMW • 28 ♀♀; "CHINA, SW-Hunan 1993 NE Huitong, 5.11. Jinlong Shan, 600-650m leg. L. Ji (11) [CWBS 32]" [11 ex. "leg. Schillhammer", 12 ex. "leg. Schönmann"]; NMW • 5 ♀♀; "CHINA, SW Hunan 1993 SW Huitong, 7. 11. Umg. Guangping, 400m leg. Schönmann (14) [CWBS 35]" [1 ex. "leg. L. Ji", 1 ex. "leg. Schillhammer"]; NMW • 10 ex.; "CHINA: Hunan, 19.3.2003 ca. 25 km N Pingjiang City 113°37′26″E 28°50′52″N ca. 200 m, leg. Schönmann, Komarek & Wang (CWBS 498)"; NMW • 1 ex.; "CHINA: Hunan, 20.3.2003 ca. 25 km N Pingjiang City 113°38′05″E 28°50′10″N ca. 200 m, leg. Schönmann, Komarek & Wang (CWBS 499)"; NMW • 2 ex.; "CHINA: Hunan, 20.3.2003 ca. 25 km N Pingjiang City 113°38′05″E 28°50′10″N ca. 200 m, leg. Schönmann, Komarek & Wang (CWBS 500)"; NMW • 13 ex.; "CHINA: Hunan, 21.3.2003 NE Nanjiangqiao, Mufu Shan 113°48′03″E 28°57′17″N ca. 600 m, leg. Schönmann, Komarek & Wang (CWBS 503)"; NMW • 22 ex.; same collection data as for preceding , but "CWBS 504"; NMW • 50 ex.; "CHINA: Hunan, 31.3.2003 ca. 5 km W Dahu town 113°53′25″E 28°26′21″N ca. 400 m, leg. Schönmann, Komarek & Wang (CWBS 521)"; NMW. – **Jiangxi Province** • 33 ♂♂, 21 ♀♀; "CHINA: Jiangxi, Jiuling Shan 8km NW Shangfu, 13.1.1997, env. Shang Bao, 700m, leg. M. Wang (CWBS 304)"; NMW • 46 ♂♂, 62 ♀♀; "CHINA: Jiangxi, Jiuling Shan 18km NW Shangfu, 12.11.1997, env. Jiu Xian, 700-800m, leg. Schönmann (CWBS 302)"; NMW • 12 ♂♂, 16 ♀♀; "CHINA: Jiangxi, Jiuling Shan 18km NW Shangfu, 12.1.1997 env. JiuXian, 650m, leg. M. Wang (CWBS 303)"; NMW • 11 ♂♂, 6 ♀♀; "CHINA: Jiangxi, Jiuling Shan 35km W Shangfu, 14.1.1997, env. Dong Xi Ling, 800m, leg. Schönmann (CWBS 305)"; NMW • 53 ♂♂, 59 ♀♀; "CHINA: Jiangxi, Jiuling Shan 18 km NW Shangfu,15.11.1997, env. Jiu Xian, 800m, leg. M. Wang (CWBS 306)"; NMW • 21 ex.; "CHINA: Jiangxi, 22.3.2003 30 km ESE Xiushui, Maozhu Shan 114°51′20″E 28°50′33″N ca. 400 m, leg. Schönmann, Komarek & Wang (CWBS 505)"; NMW • 36 ex.; "CHINA: Jiangxi, 23.3.2003 30 km NW Xiushui, Huangmengyuan 114°24′18″E 29°14′30″N ca. 250 m, leg. Schönmann, Komarek & Wang (CWBS 506)"; NMW • 3 ex.; "CHINA: Jiangxi, 23.3.2003 30 km NW Xiushui, Huangmengyuan 114°24′30″E 29°15′12″N ca. 250 m, leg. Schönmann, Komarek & Wang (CWBS 507)"; NMW • 11 ex.; "CHINA: Jiangxi, 26.3.2003 Luang Shi Peng Mt. 115°58′48″E 29°26′58″N ca. 250 m, leg. Schönmann, Komarek & Wang (CWBS 512)"; NMW • 38 ex.; "CHINA: Jiangxi, 27.3.2003 ca. 50 km NE Jing′an Town 115°10′13″E 28°57′51″N ca. 350 m, leg. Schönmann, Komarek & Wang (CWBS 513)"; NMW • 9 ex.; "CHINA: Jiangxi, 27.3.2003 ca. 70 km NE Jing′an Town 115°11′17″E 29°03′17″N ca. 550 m, leg. Schönmann, Komarek & Wang (CWBS 514)"; NMW • 25 ex.; "CHINA: Jiangxi, 28.3.2003 ca. 10 km SW Tongu Town 114°27′39″E 28°31′05″N ca. 450 m, leg. Schönmann, Komarek & Wang (CWBS 515)"; NMW • 22 ex.; "CHINA: Jiangxi, 29.3.2003 ca. 5 km N Daduan Town 114°34′53″E 28°36′30″N ca. 450 m, leg. Schönmann, Komarek & Wang (CWBS 516)"; NMW • 40 ex.; "CHINA: Jiangxi, 29.3.2003 ca. 5 km N Daduan Town 114°34′53″E 28°36′30″N ca. 450 m, leg. Schönmann, Komarek & Wang (CWBS 517)"; NMW •

1 ex.; "CHINA, Jangxi [Jiangxi] W. Jinggang Shan (Ciping), 2.-14.VI. 1994"; NMW • 6 ♂♂, 3 ♀♀; "CHINA: Jiangxi prov. [MF15] Jinggangshan Mts., Wankeng (stream valley), 28.iv.2011 26°31.8′N, 114°11.8′E, 525 m Fikáček, Hájek, Jia & Song | flood debris accumulated in the stream (partly sifted, partly sampled by a sieve)"; NMPC • 6 ♂♂, 2 ♀♀; "CHINA, JIANGXI prov., 24.iv.211 Jinggang Shan Mts. XIPING (stream valley; cow dungs) 26°33.7′N, 114°12.2′E, 915 m, M. Fikáček & J. Hájek leg."; NMPC. – **Yunnan Province** • 43 ex.; "CHINA: Yünnan, Xishuangbanna ca. 15km W Menglun 5.11.1999, ca. 700 - 800 m leg. Jäch, et al. (CWBS 354)"; NMW • 1 ex.; "CHINA: Yünnan, Xishuangbanna ca. 15 km W Menglun 5.11.1999, ca. 700 m leg. Jäch, et al. (CWBS 355)"; NMW • 2 ex.; "CHINA: Yünnan, Xishuangbanna ca. 3km S Menglun 6.11.1999, ca. 500 m leg. Jäch, et al. (CWBS 357)"; NMW • 11 ex.; "CHINA: Yünnan, Xishuangbanna ca. 10km NW Menglun 7.11.1999, ca. 700 m leg. Jäch, et al. (CWBS 359)"; NMW • 3 ex.; "CHINA: Yünnan, Xishuangbanna ca. 10km NW Menglun 7.11.1999, ca. 700 - 800 m leg. Jäch, et al. (CWBS 360)"; NMW • 3 ex.; "CHINA: Yünnan, Xishuangbanna ca. 6km NW Mengla 8.11.1999, ca. 700 m, leg. Jäch et al. (CWBS 364)"; NMW • 9 ex.; "CHINA: Yünnan, Xishuangbanna ca. 6km NW Mengla 8.11.1999, ca. 700 m leg. Jäch, et al. (CWBS 365)"; NMW • 2 ex.; CHINA: Yünnan, Xishuangbanna ca. 50km NW Mengla 9.11.1999, ca. 800 m leg. Wang & Wei (CWBS 370)"; NMW • 4 ex.; "CHINA: Yünnan, Xishuangbanna ca. 13km N Mengyang 10.11.1999, ca. 700 m leg. Jäch, et al. (CWBS 373)"; NMW • 3 ex.; "CHINA: Yünnan, Xishuangbanna ca. 7km NE Jinghong 12.11.1999, ca. 600 m leg. Jäch, et al. (CWBS 377)"; NMW • 3 ex.; "CHINA: Yünnan, Xishuangbanna pass betw. Jinghong – Mengyang 12.11.1999, ca. 1100 m leg. Jäch, et al. (CWBS 379)"; NMW • 7 ex.; "CHINA: Yünnan, Gejiu Pref. 10km N Gejiu 22.11.1999, ca. 1300 m Schönmann & Wang (CWBS 398)"; NMW • 7 ex.; "CHINA: Yünnan, Gejiu Pref. 30km S Gejiu, Tia Ba Shi env. 23.11.1999, ca. 1300m Schönmann & Wang (CWBS 400)"; NMW • 3 ex.; "CHINA: Yünnan, Chuxiong Pref. 15km W Lufang 27.11.1999, ca. 1500 m Schönmann & Wang (CWBS 408)"; NMW • 1 ex.; "CHINA: Yünnan, Chuxiong Pref. Da Shui Go riv. nr. Ban Jiu 10km N Yipinglang 27.11.1999, ca. 1700 m Schönmann & Wang (CWBS 409)"; NMW • 3 ♂♂; "CHINA: Yunnan Prov. 6.5–5.2 km W Tongbiguan 24°36.6–8′N, 97°35.5–36.4′E, 1290–1325 m J. Hájek & J. Růžička leg."; NMPC. – **Zhejiang Province** • 1 ex.; "CHINA: Zhejiang Prov. Lishui City Reg., 5.4.2001 2 km E Yunfeng vill., 950 m leg. M. Wang (CWBS 418)"; NMW • 9 ex.; "CHINA: Zhejiang Prov. Lishui City Reg., 9.4.2001 30 km NW Longquan, 800 m leg. M. Wang (CWBS 424)"; NMW • 2 ex.; "CHINA: Zhejiang Prov. Lishui City Reg., 9.4.2001 20 km NW Longquan, 500 m leg. M. Wang (CWBS 426)"; NMW • 1 ex.; "CHINA: Zhejiang Prov. Lishui City Reg., 10.4.2001 40 km S Longquan, 900 m leg. M. Wang (CWBS 427)"; NMW • 9 ex.; "CHINA: Zhejiang Prov. Lishui City Reg., 11.4.2001 26 km S Longquan, 500 m leg. M. Wang (CWBS 430)"; NMW • 1 ♀; "CHINA: ZHEJIANG Prov., 26.vi. – 1.vii.2017 West Tianmu Shan (Mts) reserve hygropetric habitat at "Three Li pavilion" 30°20′2.7″N, 119°26′10.56″E, 670 m J. Hájek & J Růžička leg."; NMPC.

Type locality

Vietnam, Vinh Phúc Province, Tam Dao.

Description

Measurements (mm): TL: ♂♂ 2.78–3.48 (3.22 ± 0.11, n = 66), ♀♀ 2.83–3.45 (3.24 ± 0.14, n = 27), PL: ♂♂ 0.63–0.83 (0.74 ± 0.03, n = 66), ♀♀ 0.65–0.78 (0.72 ± 0.03, n = 27); PW: ♂♂ 1.24–1.59 (1.43 ± 0.06, n = 66), ♀♀ 1.32–1.55 (1.45 ± 0.06, n = 27); EL: ♂♂ 2.14–2.65 (2.47 ± 0.08, n = 66), ♀♀ 2.18–2.66 (2.51 ± 0.11, n = 27); EW: ♂♂ 1.46–1.82 (1.70 ± 0.06, n = 66), ♀♀ 1.56–1.82 (1.72 ± 0.07, n = 27); PhL: 0.83–0.99 (0.92 ± 0.03, n = 66); PrL: 0.47–0.61 (0.53 ± 0.02, n = 66).

Body ovate, strongly convex dorsally (Fig. 72). Integument dark brown to black; mouthparts, antennae, trochanters, and tarsi light reddish brown. Pubescence consisting of short sparse yellowish setae. Plastron covering anterior portion of head, apicolateral portions of elytra, and ventral surface, except prosternal process, median part of metaventrite, and middle of ventrites 1–2.

Head with round setiferous punctures, each slightly smaller than eye facet, separated by 1–2 × puncture diameters; plastron on frontoclypeus. Labrum wider than long, anterior margin slightly rounded, dorsal surface microreticulate, with densely arranged setiferous punctures; males with conspicuous long setae. Anterior margin of clypeus straight. Antennae 9-segmented. Eyes oval, interfacetal setae short; ID: ♂♂ 0.41–0.50 mm (0.47 mm ± 0.02, n = 66), ♀♀ 0.44–0.52 mm (0.48 mm ± 0.02, n = 27); APD/ID: ♂♂ 1.62–1.84 (1.72 ± 0.05, n = 66), ♀♀ 1.60–1.82 (1.70 ± 0.05, n = 27).

Pronotum wider than long, widest at base; PW/PL: ♂♂ 1.78–2.17 (1.93 ± 0.07, n = 66), ♀♀ 1.84–2.11 (2.01 ± 0.07, n = 27); surface with round setiferous punctures; microreticulation and plastron absent; rim of anterior margin as wide as three eye facets, interrupted in middle; lateral sides convergent, slightly rounded in basal half. Prosternal process with lateral edges divergent, straight; posterior edge broadly V-shaped; lateral portions raised, flat or slightly arcuate, in males with groups of long setae anteriorly; median keel slightly arcuate. Scutellum longer than wide, smooth, with small setiferous punctures. Metaventrite with area lacking plastron posteriorly widened, in males slightly depressed and with two groups of long setae; discrimen rather indistinct; lateral margins of metaventral process raised. Elytra oval, convex, widest close before middle; EL/EW: ♂♂ 1.33–1.56 (1.46 ± 0.04, n = 66); ♀♀ 1.39–1.53 (1.46 ± 0.03, n = 27); surface with very fine microreticulation formed by polygonal meshes; punctures scattered; plastron present on epipleura and on apicolateral portions. Protibia slightly curved; mesotibia in males rather strongly curved and distinctly expanded in distal half, in females slightly curved and slightly expanded; metatibia in males distinctly curved with small tooth behind middle, in females slightly curved, teeth absent; PrTL/PL: ♂♂ 0.90–1.18 (1.07 ± 0.05, n = 66), ♀♀ 0.69–1.09 (1.00 ± 0.08, n = 27). Protarsus 0.75 × as long as protibia; terminal protarsomeres as long as three preceding tarsomeres combined.

Ventrites covered with plastron, except middle of ventrites 1–2. Ventrite 5 in males with apex broadly truncate, slightly emarginate or slightly rounded; in females rounded, with small triangular excision; short longitudinal keel present before apex in both sexes. Aedeagus (Fig. 73): phallobase robust, moderately bent ventrad, expanded proximally, PhL/PrL: 1.49–1.89 (1.71 ± 0.07, n = 66); parameres regularly narrowed apically, moderately curved ventrad, apices acute in lateral aspect; penis narrowly rounded apically in dorsal aspect, slightly expanded and rounded in lateral aspect. Ovipositor: valvifers long, flattened, 1.70–2.20 × as long as right coxite; coxites asymmetrical, right one ca. 1.35 × as long as left one. Bursa copulatrix (Fig. 74C) with sclerotised spines arranged in a distinct dorsal row; spines on lateral portions absent.

Secondary sexual dimorphism

Males: meso- and metatibiae strongly curved, metatibia with a tooth; labrum, lateral portions of prosternal process, and median part of metaventrite with groups of long setae; median part of metaventrite depressed. Females: median part of metaventrite slightly convex; ventrite 5 with small triangular apical excision.

Distribution

China (Anhui, Fujian, Guangdong, Guangxi, Hong Kong, Hunan, Jiangxi, Yunnan, Zhejiang), Vietnam (Fig. 113C).

Elmomorphus catenatus sp. nov.
urn:lsid:zoobank.org:act:81296B2B-27E1-4FD8-AC10-321345E70210
Figs 75–76, 113D

Differential diagnosis

Elmomorphus catenatus sp. nov. (Fig. 75) is characterised by having the dorsal plastron confined to the cranial surface and the anterolateral portions of the pronotum. The elytra have small punctures scattered

Fig. 75. *Elmomorphus catenatus* sp. nov., holotype, male (NMW), TL: 4.14 mm.

on the entire surface and large punctures arranged in nine longitudinal rows. Such a combination of characters is also shared by *E. jendeki* sp. nov., which differs in the absence of plastron on a large area of the vertex, and on the pronotum it is hardly discernible and confined to several scales in the extremities of the anterior angles. The pronotal and elytral punctures are smaller and less deeply impressed in *E. jendeki* (Fig. 77), and the parameres are apically narrowly rounded in *E. jendeki* (Fig. 78), while broadly rounded in *E. catenatus* (Fig. 76). *Elmomorphus catenatus* strongly resembles *E. fusiformis* sp. nov., which can be distinguished by the presence of an elytral plastron (Fig. 19).

Etymology

The epithet is a Latin participle in the nominative singular meaning 'chained', referring to the chain-like rows of coarse large elytral punctures.

Type material

Holotype

CHINA – **Shaanxi Province** • ♂; "China: Shaanxi, Qin Ling Shan 110.06E, 34.27N Hua Shan Mt. N Valley, 1200-1400 m 180 km E Xian, ~~sifted~~ [crossed out]18./20.08. 1995,leg.A.Pütz"; NMW.

Paratypes

CHINA – **Shaanxi Province** • 2 ♂♂, 1 ♀, 1 ex.; same collection data as for holotype; CKB, CPE, NMW.

Type locality

China, Shaanxi Province, Qin Ling Shan, Hua Shan, 34.27° N, 110.06° E.

Description

Measurements (mm): TL: ♂♂ 4.06–4.34 (n = 3), ♀ 4.46 (n = 1); PL: ♂♂ 1.04–1.16 (n = 3), ♀ 1.21 (n = 1); PW: ♂♂ 1.67–1.83 (n = 3), ♀ 1.75 (n = 1); EL: ♂ 3.02–3.18 (n = 3), ♀ 3.25 (n = 1); EW: ♂♂ 2.01–2.18 (n = 3), ♀ 2.27 (n = 1); PhL: 0.71–0.75 (n = 3); PrL: 0.42–0.49 (n = 3).

Body oblong-ovate, moderately convex dorsally (Fig. 75). Integument black; mouthparts, antennae, and tarsi reddish brown. Pubescence consisting of sparse short yellowish setae. Dorsal plastron present on head except for small wedge-shaped area on vertex, and anterior angles of pronotum. Ventral plastron absent on prosternal process, median part of metaventrite, and intercoxal process of ventrite 1.

Dorsal surface of head with round setiferous punctures slightly smaller than diameter of an eye facet, separated by 0.5–1.0 × puncture diameter. Labrum transverse, anterior margin shallowly emarginate; exposed portion microreticulate, with small setiferous punctures; setae equal in length in both sexes. Anterior margin of clypeus straight. Eyes oval, interfacetal setae short; ID: ♂♂ 0.57–0.66 mm (n = 3), ♀ 0.64 mm (n = 1); APD/ID: ♂♂ 1.72–1.85 (n = 3), ♀ 1.77 (n = 1). Antennae 10-segmented, densely setose.

Pronotum transverse, disc strongly convex, PW/PL: ♂♂ 1.50–1.60 (n = 3), ♀ 1.45 (n = 1); anterior angles produced, acute; lateral pronotal sides convergent, rounded; dorsal surface smooth, with microgranules in lateral portions, and with large deep round setiferous punctures; plastron present on anterior angles. Prosternal process slightly longer than wide, lateral and posterior edges rounded; lateral portions strongly raised, without groups of long setae; median keel moderately arcuate. Scutellum slightly longer than wide, with small round punctures, apically acute. Metaventrite covered with plastron, except for flat disc; groups of long setae absent; lateral margins of metaventral process raised, medially separated by distinct shallow ridges. Elytra ovate, moderately convex, widest behind middle, EL/EW: ♂♂ 1.46–1.50 (n = 3), ♀ 1.45 (n = 1); surface distinctly microreticulate, with small punctures scattered and large deep punctures arranged in nine longitudinal rows. Tibiae nearly straight; protibia ca. 1.3 × as long as

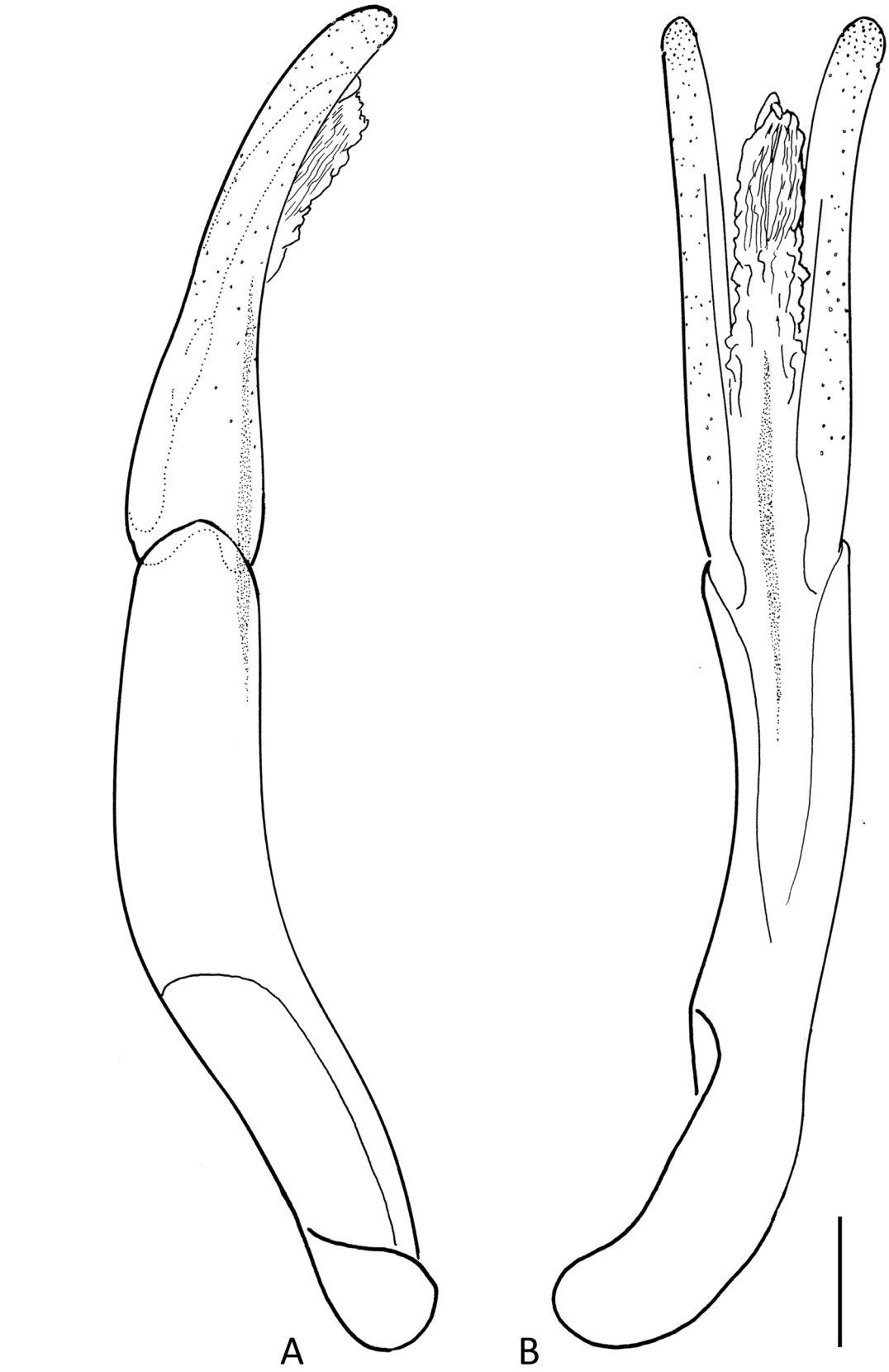

Fig. 76. *Elmomorphus catenatus* sp. nov., holotype (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

protarsus; PrTL/PL: ♂♂ 1.09–1.19 (n = 3), ♀ 0.89 (n = 1). Terminal protarsomere slightly shorter than all preceding tarsomeres combined.

Ventrites covered with plastron, except for middle of ventrite 1 between two longitudinal keels. Aedeagus (Fig. 76): phallobase rather long, slender, PhL/PrL: 1.53–1.68 (n = 3); parameres curved ventrad, apices rounded (lateral aspect); penis rounded at apex; sclerotised fibula distinct.

Secondary sexual dimorphism

Females with short longitudinal subapical keel on ventrite 5.

Distribution

China (Shaanxi) (Fig. 113D).

Elmomorphus jendeki Kodada, Selnekovič & Jäch sp. nov.
urn:lsid:zoobank.org:act:8423EF32-907B-4214-8F13-1A4C8D3DE441
Figs 77–78, 113E

Differential diagnosis

In *Elmomorphus jendeki* sp. nov. (Fig. 77), the dorsal plastron is confined to the frontoclypeus, the anterolateral portions of the vertex, and small, hardly discernible areas in the extremities of the anterior pronotal angles. Elytra with small, scattered punctures on the entire surface and large punctures arranged in nine longitudinal rows. A similar combination of characters is also found in *E. catenatus* sp. nov., but this species differs in the larger plastron areas on the cranial surface and pronotum. Furthermore, the pronotal and elytral punctures of *E. catenatus* are larger and more deeply impressed (Fig. 75). The parameres are narrowly rounded at the apex (Fig. 78). *Elmomorphus jendeki* resembles *E. ovalis* sp. nov. in general appearance but differs in not having the plastron covering the cranial surface and the anterior pronotal angles.

Etymology

The epithet is a proper noun in the genitive case. The species is named in honour of Eduard Jendek, a Slovak entomologist who kindly provided a large number of *Elmomorphus* specimens for this study.

Type material

Holotype

VIETNAM – **Lao Cai Province** • ♂; "N-VIETNAM 1991 Sapa (Lao Cai) leg. E. Jendek | 25.5. - 10.6. 22°20′N 103°50′E"; NMW.

Paratypes

VIETNAM – **Lao Cai Province** • 8 ♂♂, 13 ♀♀; same collection data as for holotype; NMW, CKB • 1 ♂; "Vietnam N 1990 SaPa 11.-19. VI. 1500 m Hoang Lien Son prov. Strnad Jan Lgt."; NMW • 1 ♂, 3 ♀♀; "Vietnam SaPa 1530 m 25. V.-9. VI. Strnad Jan lgt.", CKB, NMW • 1 ♂; "11.-16. 5. 1990 SAPA Hoang Lien Son Distr. N. Vietnam, 1600 m Jan Horák leg."; NMW • 2 ex.; VIETNAM (Tonkin) pr. Hoang Lien Son Sa Pa 11. - 15. V. 1990 P. Pacholátko leg."; NMW; 1 ex.: "Sapa 11.-10.6. N. Vietnam A. Olexa1990"; NMW. – **Ninh Binh Province** • 1 ♂; "Vietnam Cuc Phuong 2.-11. V. 1991 Strnad Jan lgt."; NMW. – **Vinh Phúc Province** • 1 ♀; "N VIETNAM (Tonkin) pr. Vinh Phu[c] 1990 Tam Dao 6. 9. V. L. Dembický leg."; NMW.

Type locality

Vietnam, Lao Cai Province, Sa Pa.

Fig. 77. *Elmomorphus jendeki* Kodada, Selnekovič & Jäch sp. nov., paratype, male from type locality (NMW), TL: 3.60 mm.

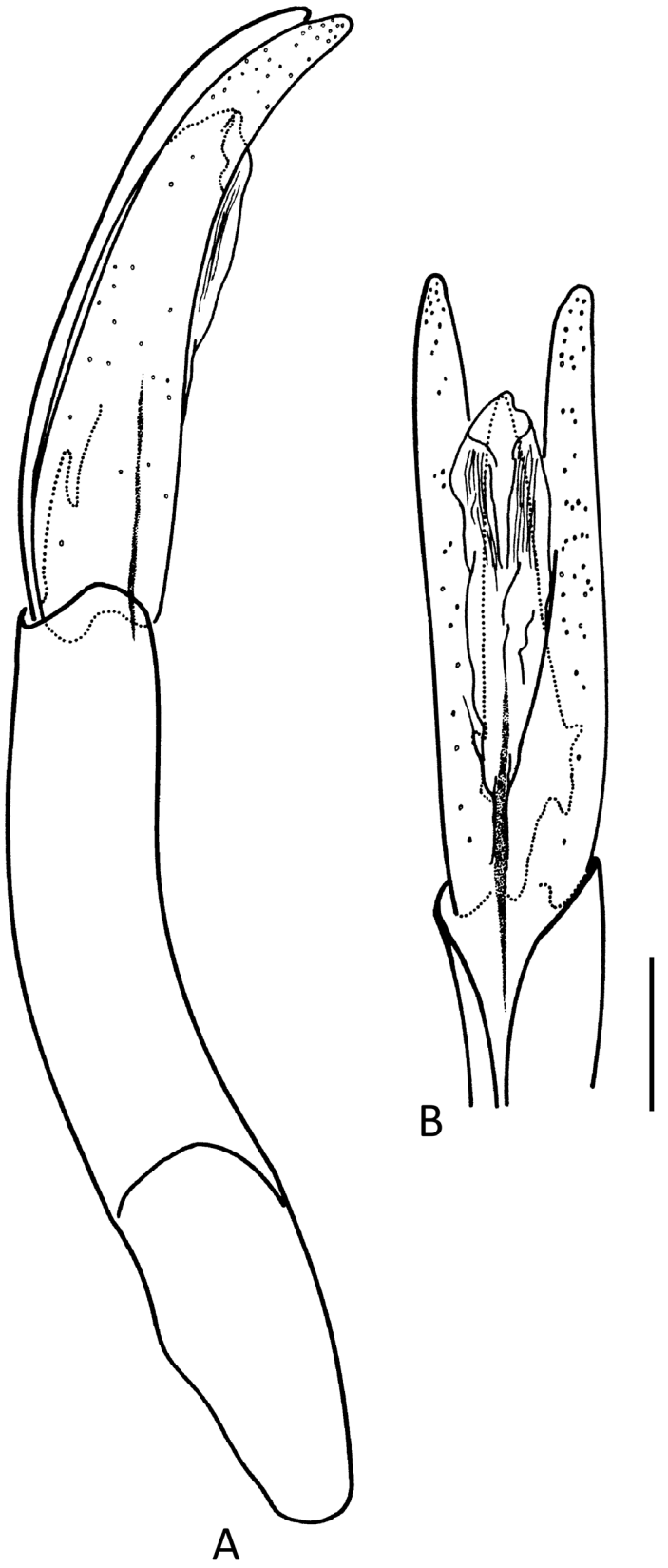

Fig. 78. *Elmomorphus jendeki* Kodada, Selnekovič & Jäch sp. nov., paratype from type locality (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect, detail of parameres and penis. Scale bar: 0.1 mm.

Description

Dimensions (mm): TL: ♂♂ 3.47–3.85 (3.60±0.14, n=7), ♀♀ 3.64–4.16 (3.87±0.17, n=10); PL: ♂♂ 0.81–0.96 (0.87±0.05, n=7), ♀♀ 0.87–1.00 (0.94±0.04, n=10); PW: ♂♂ 1.46–1.67 (1.54±0.07, n=7), ♀♀ 1.54–1.73 (1.65±0.06, n=10); EL: ♂♂ 2.63–2.89 (2.73±0.10, n=7), ♀♀ 2.76–3.19 (2.93±0.14, n=10); EW: ♂♂ 1.76–1.95 (1.83±0.07, n=7), ♀♀ 1.85–2.05 (1.96±0.07, n=10); PhL: 0.64–0.70 (0.67±0.02, n=6); PrL: 0.38–0.41 (0.39±0.01, n=6).

Body broadly oval, strongly convex, widest around midlength of elytra (Fig. 77). Colouration black, mouthparts, antennae, trochanters, and tarsi reddish brown. Pubescence consisting of short thin decumbent setae arising from round punctures. Dorsal plastron covering frontoclypeus and anterolateral portions of vertex; pronotum usually with several plastron scales in extremity of anterior angles. Ventral plastron absent only on prosternal process, and median parts of metaventrite and first ventrite.

Cranial surface with round setiferous punctures separated by 0.5–1.0× puncture diameter, punctures slightly smaller than an eye facet. Labrum transverse, anterior margin straight, exposed portion microreticulate with small setiferous punctures; setae equal in length in both sexes. Anterior margin of clypeus straight. Eyes large, oval, moderately protruding, ID: ♂♂ 0.45–0.52 mm (0.49±0.02, n=7), ♀♀ 0.51–0.57 mm (0.54±0.02, n=10). Antennae 10-segmented, densely setose.

Pronotum transverse, widest at base, strongly convex, PW/PL: ♂♂ 1.74–1.83 (1.78±0.03, n=7), ♀♀ 1.71–1.82 (1.76±0.04, n=10); lateral sides strongly convex in anterior half and slightly concave in posterior half; anterior angles strongly deflexed, acute; pronotal surface smooth, with round setiferous punctures, puncture diameter slightly larger than on head, punctures separated by 0.5–1.0× puncture diameter; large microgranules present along pronotal base on lateral portion; plastron scales confined to extremities of anterior angles. Prosternal process with lateral and posterior edges rounded; lateral margins raised; median keel strongly arched; clusters of erect setae absent. Scutellum longer than wide, smooth, with round setiferous punctures. Metaventral process with lateral margins strongly raised, lateral portions slightly depressed; metaventral disc weakly convex, median area without plastron widened posteriorly; clusters of erect setae absent. Elytra broadly oval, strongly convex, widest around midlength, EL/EW: ♂♂ 1.45–1.52 (1.49±0.02, n=7), ♀♀ 1.44–1.56 (1.49±0.04, n=10); surface with distinct microreticulation consisting of irregular polygonal meshes; small punctures scattered over entire surface; large coarse, irregularly spaced punctures (confluent or separated by up to 1.5× puncture diameter) arranged in nine longitudinal rows; plastron absent. Tibiae weakly curved; protibia ca 1.3× as long as protarsus, PrTL/PL: ♂♂ 1.10–1.22 (1.17±0.04, n=7), ♀♀ 1.00–1.16 (1.08±0.05, n=10). Terminal segment of protarsus slightly shorter than all preceding segments combined; male foreclaws long, slender, strongly curved, subequal to female claws.

Ventrites covered with plastron, except for middle of first ventrite. Intercoxal process with lateral margins raised; admedian keels strongly arched. Ventrite 5 evenly convex in both sexes; posterior margin arcuate, or weakly emarginate in males; arcuate with short median keel in females. Aedeagus (Fig. 78): phallobase long, basal opening large, PhL/PrL: 1.64–1.79 (1.73±0.05, n=6); parameres evenly narrowed apically, apices rounded (lateral aspect); penis rather short, apex rounded; sclerotised fibula slender.

Secondary sexual dimorphism

Female ventrite 5 with short subapical longitudinal keel.

Distribution

Vietnam (Fig. 113E).

Elmomorphus schillhammeri sp. nov.
urn:lsid:zoobank.org:act:225814A4-A0A7-469E-B2C2-95320BAEFB61
Figs 79–80, 113F

Differential diagnosis

Elmomorphus schillhammeri sp. nov. (Fig. 79) can be characterised by having the dorsal plastron confined only to small areas around the antennal insertions; the elytral and pronotal plastron is missing. Elytra have nine striae of large, deeply impressed punctures. The pronotal surface is distinctly microreticulate in the form of minute, round dimples. This combination of characters is also shared by *E. globosus* sp. nov., which can be separated by its greatest body width before the elytral midlength, while in *E. schillhammeri* it is behind the midlength. The body size is distinctly larger in *E. schillhammeri* (TL: ♂♂ 4.15–4.36 mm (4.27±0.07, n=8), ♀♀ 4.03–4.38 mm (4.24±0.13, n=5)) than in *E. globosus* (TL: ♂♂ 3.42–3.56 mm (n=2), ♀♀ 3.42–3.70 mm (3.55±0.09, n=10)). Moreover, *E. schillhammeri* is characterised by the presence of small microgranules on the entire surface of the pronotum and elytra, while in *E. globosus*, these microgranules are present only in the posterolateral portions of the pronotum. The long erect setae on the male labrum, prosternal process and the median part of the metaventrite are also present in *E. ovalis* sp. nov. and *E. minutus* sp. nov., but the absence of the pronotal microreticulation can distinguish these species.

Etymology

The epithet is a proper noun in the genitive case honouring Dr. Harald Schillhammer, an Austrian entomologist (NMW) who collected 14 new species of *Elmomorphus* in China, Myanmar, and Laos.

Type material

Holotype

CHINA – **Guizhou Province** • ♂; "CHINA: Guizhou, Leishan Co. SE Kaili, NE Leishan, Leigong Shan, E - slope 26°23.05′N 108°13.03′E | 0.9 km E of pass, 15.6.2001, ca. 1700 m leg. Schillhammer & Wang (CWBS 435)"; IAECAS.

Paratypes

CHINA – Guizhou Province • 17 ex.; same collection data as for holotype; CKB, NMW • 2 ex.; "CHINA: Guizhou, Leishan Co. SE Kaili, NE Leishan Leigong Shan, E - slope 26°22.56′N 108°13.40′E | ca. 300 m S of pass 14.6.2001, ca. 1700 m leg. Schillhammer & Wang (CWBS 433)"; NMW • 1 ex.; "CHINA: Guizhou, Leishan Co. SE Kaili, NE Leishan Leigong Shan, E - slope 26°23.07′N 108°13.03′E | ca. 1 Km E of pass 14.6.2001, ca. 1700 m leg. Schillhammer & Wang (CWBS 434)"; NMW • 1 ex.; "CHINA: Guizhou, Leishan Co. SE Kaili, NE Leishan Leigong Shan, E - slope 26°22.70′N 108°12.01′E | ca. 2 km W of pass 17.6.2001, ca. 1700 m leg. Schillhammer & Wang (CWBS 438)"; NMW.

Type locality

China, Guizhou Province, Qiandongnan Miao Dong Autonomous Prefecture, Leishan County, southeast of Kaili, northeast of Leishan, eastern slope of Leigong Shan, 1 km east of pass between Leishan and Fangxiang Village, ca 1700 m a.s.l., 26°23′03″ N, 108°13′02″ E; small waterfall, debris of dead wood and leaves (CWBS 435; Jäch & Ji 2003).

Description

Measurements (mm): TL: ♂♂ 4.15–4.36 (4.27±0.07, n=8), ♀♀ 4.03–4.38 (4.24±0.13, n=5); PL: ♂♂ 1.08–1.17 (1.12±0.03, n=8), ♀♀ 1.04–1.20 (1.11±0.07, n=5); PW: ♂♂ 1.90–2.05 (1.97±0.04, n=8), ♀♀ 1.92–2.03 (1.99±0.05, n=5); EL: ♂♂ 3.02–3.22 (3.14±0.07, n=8), ♀♀ 2.99–3.18 (3.13±0.08, n=5); EW: ♂♂ 2.34–2.50 (2.43±0.06, n=8), ♀♀ 2.39–2.50 (2.45±0.05, n=5); PhL: 1.27–1.37 (1.31±0.04, n=8); PrL: 0.54–0.62 (0.58±0.02, n=8).

Fig. 79. *Elmomorphus schillhammeri* sp. nov., paratype, male from type locality (CKB), TL: 4.26 mm.

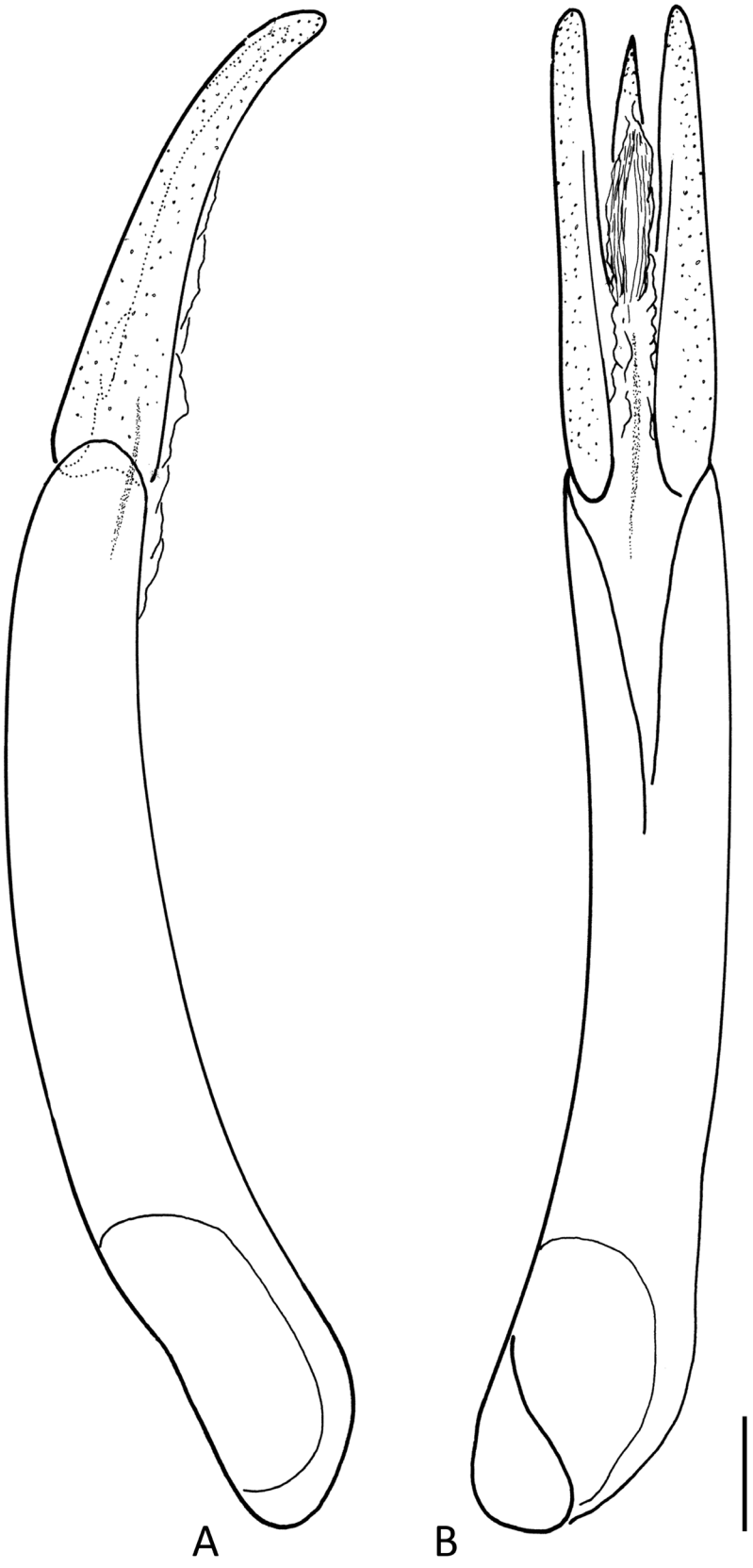

Fig. 80. *Elmomorphus schillhammeri* sp. nov., paratype from type locality (CKB), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Body ovate, strongly convex dorsally (Fig. 79). Integument black; mouthparts, antennae, and legs reddish brown. Pubescence consisting of very short and thin, almost inapparent yellowish setae. Plastron covering small areas of frontoclypeus around antennal insertions and on ventral surface, except on prosternal process, and median parts of metaventrite and ventrite 1.

Head on dorsal surface microreticulate, with deep, confluent setiferous punctures. Labrum transverse, anterior margin moderately emarginate, dorsal surface microreticulate, with minute setiferous punctures; setae slightly longer in males than in females. Anterior margin of clypeus straight. Eyes oval, interfacetal setae short, ID: ♂♂ 0.75–0.85 mm (0.79±0.03, n=8), ♀♀ 0.76–0.86 mm (0.81±0.04, n=5); APD/ID: ♂♂ 1.40–1.55 (1.46±0.05, n=8), ♀♀ 1.43–1.47 (1.45±0.01, n=5). Antennae 11-segmented, densely setose. Terminal maxillary palpomere with lateral sensory area located in middle.

Pronotum transverse, moderately convex, PW/PL: ♂♂ 1.68–1.81 (1.75±0.05, n=8), ♀♀ 1.69–1.90 (1.79±0.08, n=5); rim of anterior margin twice as wide as an eye facet, interrupted in middle; anterolateral angles prominent, acute; lateral sides convergent, evenly rounded; surface with microreticulation consisting of minute, densely arranged dimples, with round setiferous punctures; microgranules present on entire surface. Prosternal process wider than long, in males with two groups of long setae anterolaterally; lateral edges divergent, straight; posterior edge rounded; lateral portions wide, strongly raised; median keel moderately arcuate. Scutellum wider than long, with round punctures. Disc of metaventrite slightly convex, median area without plastron posteriorly widened; in males with two groups of long setae; lateral margin of metaventral process raised, separated medially by longitudinal groove. Elytra oval, strongly convex, widest behind middle, EL/EW: ♂♂ 1.24–1.36 (1.29±0.04, n=8), ♀♀ 1.25–1.31 (1.28±0.03, n=5); dorsal surface distinctly reticulate, with microgranules and small scattered punctures; large, deep punctures arranged in nine longitudinal rows and separated by 1–3 × puncture diameters. Tibiae slightly curved; protibia ca 1.6 × as long as protarsus, PrTL/PL: ♂♂ 1.02–1.09 (1.05±0.02, n=8), ♀♀ 0.95–1.02 (0.99±0.03, n=5). Terminal protarsomeres as long as three preceding tarsomeres combined.

Ventrites covered with plastron, except median portion of ventrite 1. Ventrite 5 in males with minute excision at apex. Aedeagus (Fig. 80): phallobase very long, slender, PhL/PrL: 2.16–2.36 (2.25±0.07, n=8); parameres rather long and slender, moderately curved ventrad, apices rounded (lateral aspect), penis rather slender apically; sclerotised fibula very short.

Secondary sexual dimorphism

Males with long setae on labrum, lateral rims of prosternal process, and median part of metaventrite; and with minute excision at the apex of ventrite 5.

Distribution

China (Guizhou) (Fig. 113F).

Elmomorphus globosus sp. nov.
urn:lsid:zoobank.org:act:9D067B2D-1CE1-47F2-AA40-9A5494F3751C
Figs 81–82, 114A

Differential diagnosis

Elmomorphus globosus sp. nov. (Fig. 81) is characterised by having the dorsal plastron confined to small areas around the antennal insertions. The elytron has nine narrow, distinct striae; the strial punctures are deeply impressed, about as coarse as the eye facet, becoming shallower and smaller apically. The pronotum is distinctly microreticulate/micropunctate on most of the surface except for a narrow posterior portion; posterior angles bear round microgranules. Males have conspicuous long setae along

Fig. 81. *Elmomorphus globosus* sp. nov., paratype, male from China, locality CWBS 546 (CKB), TL: 3.64 mm.

the anterior clypeal margin and one pair of clusters of long setae on each prosternal process and the median part of the metaventrite. These characters are shared by *E. schillhammeri* sp. nov., which can be separated by the larger size (TL in *E. schillhammeri*: ♂♂ 4.15–4.36 mm (4.27±0.07, n=8), ♀♀ 4.03–4.38 mm (4.24±0.13, n=5), in *E. globosus*: ♂♂ 3.42–3.56 mm (n=2), ♀♀ 3.42–3.70 mm (3.55±0.09, n=10)) and by having the greatest body width behind the elytral midlength. In *E. schillhammeri*, the small microgranules cover the entire pronotal and elytral surface, and the lateral pronotal sides are distinctly rounded but almost straight in *E. globosus*.

Etymology

The Latin adjective 'globosus' (= 'round, spherical') refers to the broadly oval and strongly convex body shape.

Type material

Holotype

CHINA – **Guizhou Province** • ♀; "CHINA-Guizhou 21-26.V. 60 km N Kali [= Kaili], 1995 Shibing Yuntai Shan Jendek & Šauša leg. [yellow label]"; NMW.

Paratypes

CHINA – **Hubei Province** • 1 ♂, 2 ♀♀; "CHINA: Hubei, 22.10.2004 Xingdoushan Nat. Res. 100 km SW Enshi 700 - 750 m, leg. Wang & Schönmann (CWBS 546)"; CKB, NMW • 1 ♀; "CHINA: Hubei, 16.10.2004 Shennongjia Forest Distr. 30 km E Muyu, Jiu Chong 850 m, leg. Schönmann & Wang (CWBS 537)"; NMW • 3 ♀♀; "CHINA: Hubei, 16.10.2004 Shennongjia Forest Distr. 35 km SE Muyu 700 m, leg. Schönmann & Wang (CWBS 538)"; NMW • 1 ♂, 3 ♀♀; "CHINA: Hubei, 23.10.2004 Tongpenshui Forest Park 30 km NW Enshi 1200 m, leg. Schönmann & Wang (CWBS 547)"; CKB, NMW. – **Hunan Province** • 2 ♀♀; "CHINA: NW-Hunan, 1993, Wulingyuan, N Dayong, Suoxiyu, 31.10., 450 m leg. Schillhammer (6) [CWBS 25]"; NMW.

Type locality

China, Guizhou Province, north of Shibing, Yuntai Shan.

Description

Measurements (mm): TL: ♂♂ 3.42–3.56 (n=2), ♀♀ 3.42–3.70 (3.55±0.09, n=10); PL: ♂♂ 0.92–1.12 (n=2), ♀♀ 0.85–0.94 (0.91±0.03, n=10); PW: ♂♂ 1.73–1.75 (n=2), ♀♀ 1.60–1.79 (1.71±0.05, n=10); EL: ♂♂ 2.60–2.76 (n=2), ♀♀ 2.58–2.93 (2.72±0.09, n=10); EW: ♂♂ 2.06–2.13 (n=2), ♀♀ 1.95–2.15 (2.09±0.06, n=10); PhL: 1.27; PrL: 1.52.

Body broadly oval, strongly convex dorsally (Fig. 81). Integument black; mouthparts, antennae, and trochanters reddish-brown, remaining parts of legs dark brown. Pubescence consisting of very short and thin, almost inapparent yellowish setae. Plastron covering small areas around antennal insertions and the ventral surface, except for prosternal process, median parts of metaventrite, and ventrite 1.

Head densely micropunctate/microreticulate, rough, with few microgranules and round punctures with diameter subequal to facet diameter; punctures hardly discernible on rough surface. Labrum transverse, anterior margin broadly emarginate; microreticulate on exposed portion, with small round setiferous punctures; setae distinctly longer in males than in females. Anterior margin of clypeus straight. Eyes round, interfacetal setae short, ID: ♂♂ 0.66–0.70 mm (n=2), ♀♀ 0.60–0.68 mm (0.65±0.02, n=10). Antennae 9-segmented, densely setose.

Pronotum transverse, moderately convex, widest at base; PW/PL: ♂♂ 1.55–1.89 (n=2), ♀♀ 1.80–2.00 (1.89±0.06, n=10); surface with shallow very dense micropunctures appears microreticulated,

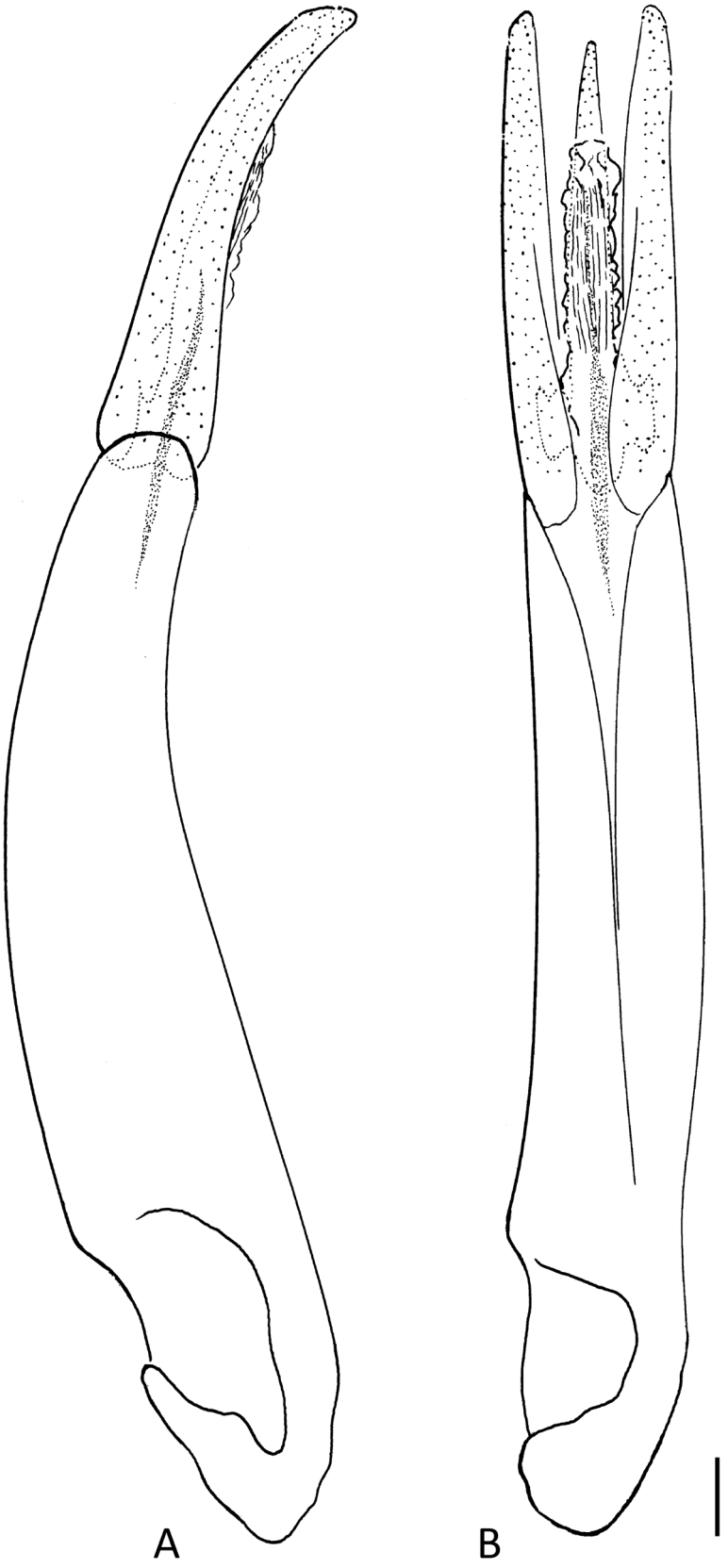

Fig. 82. *Elmomorphus globosus* sp. nov., paratype from China, locality CWBS 546 (CKB), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

intermixed with larger punctures (subequal facet diameter); microgranules present in posterolateral portions; rim of anterior margin as wide as 2–3 eye facets, broadly interrupted medially; anterolateral angles prominent, acute; lateral sides convergent, very slightly rounded. Prosternal process rather short, wider than long, lateral edges divergent, straight, apical edge rounded; lateral portions rather wide, moderately raised, with two clusters of setae anteriorly in males; median keel slightly arcuate. Scutellum wider than long, punctate. Metaventrite with median part slightly convex, posteriorly widened, with two clusters of setae in males; lateral margins of metaventral process raised, distinctly separated medially. Elytra rather short, wide, strongly convex, widest before middle; EL/EW: ♂♂ 1.29–1.30 (n=2), ♀♀ 1.22–1.38 (1.30±0.04, n=10); surface distinctly microreticulate, with small, scattered punctures and with large deeply impressed punctures arranged in nine regular rows, punctures distinctly separated by 2–3 puncture diameters. Tibiae slightly curved; protibia 1.5× as long as protarsus; PrTL/PL: ♂♂ 0.97–1.10 (n=2), ♀♀ 0.97–1.13 (1.06±0.04, n=10). Terminal protarsomeres as long as three preceding tarsomeres combined.

Ventrites covered with plastron, except on middle of ventrite 1 delimited laterally by indistinct longitudinal keel on each side. Ventrite 5 rounded at apex. Aedeagus (Fig. 82): phallobase long and slender, PhL/PrL: 2.45 (n=1); parameres weakly curved ventrad, apices rounded (lateral aspect); penis narrowly rounded at apex; sclerotised fibula rather short and slender.

Secondary sexual dimorphism

Male with conspicuous long setae concentrated along anterior clypeal margin and in two clusters of setae in lateral portions of prosternal process and median part of metaventrite.

Distribution

China (Guizhou, Hubei, Hunan) (Fig. 114A).

Elmomorphus ovalis Kodada, Jäch & Selnekovič sp. nov.
urn:lsid:zoobank.org:act:E10C08BB-8844-4228-BC6A-85FA31AB7873
Figs 83–84, 114B

Differential diagnosis

Elmomorphus ovalis sp. nov. (Fig. 83) is characterised by having the dorsal plastron confined to small areas around the antennal insertions. The large elytral punctures are deeply impressed and arranged in nine longitudinal rows. The head, pronotum, and elytra bear microgranules. The male ventrite 5 is rounded at the apex, without any excision; the phallobase is long and slender (Fig. 84), PhL/PrL: 2.85 (n=1). This species is similar to *E. schillhammeri* sp. nov. but differs in the smooth intertices of the pronotal punctation. Males of *E. ovalis* possess long erect setae on the labrum and setal clusters on the prosternal process and the median part of the metaventrite. Such setae are also present in *E. minutus* sp. nov., which can be distinguished by the absence of microgranules on the head and the smaller body size (TL in *E. ovalis*: ♂♂ 3.80–3.84 mm (n=2), ♀♀ 3.87–4.13 mm (n=3), in *E. minutus*: ♂♂ 2.92–3.27 mm (3.10±0.15, n=4), ♀ 3.58 mm (n=1)).

Etymology

The epithet ‘ovalis’ is a Latin adjective in the nominative singular referring to the oval body shape.

Type material

Holotype

CHINA – **Yunnan Province** • 1 ♂; “CH, Yunnan 14.-21.6.[19]93 100km W of Baoshan GAOLIGONGSHAN nat. res. E.Jendek, O.Šauša leg.”; NMW.

Fig. 83. *Elmomorphus ovalis* Kodada, Selnekovič & Jäch sp. nov., paratype, female from type locality (CKB), TL: 3.80 mm.

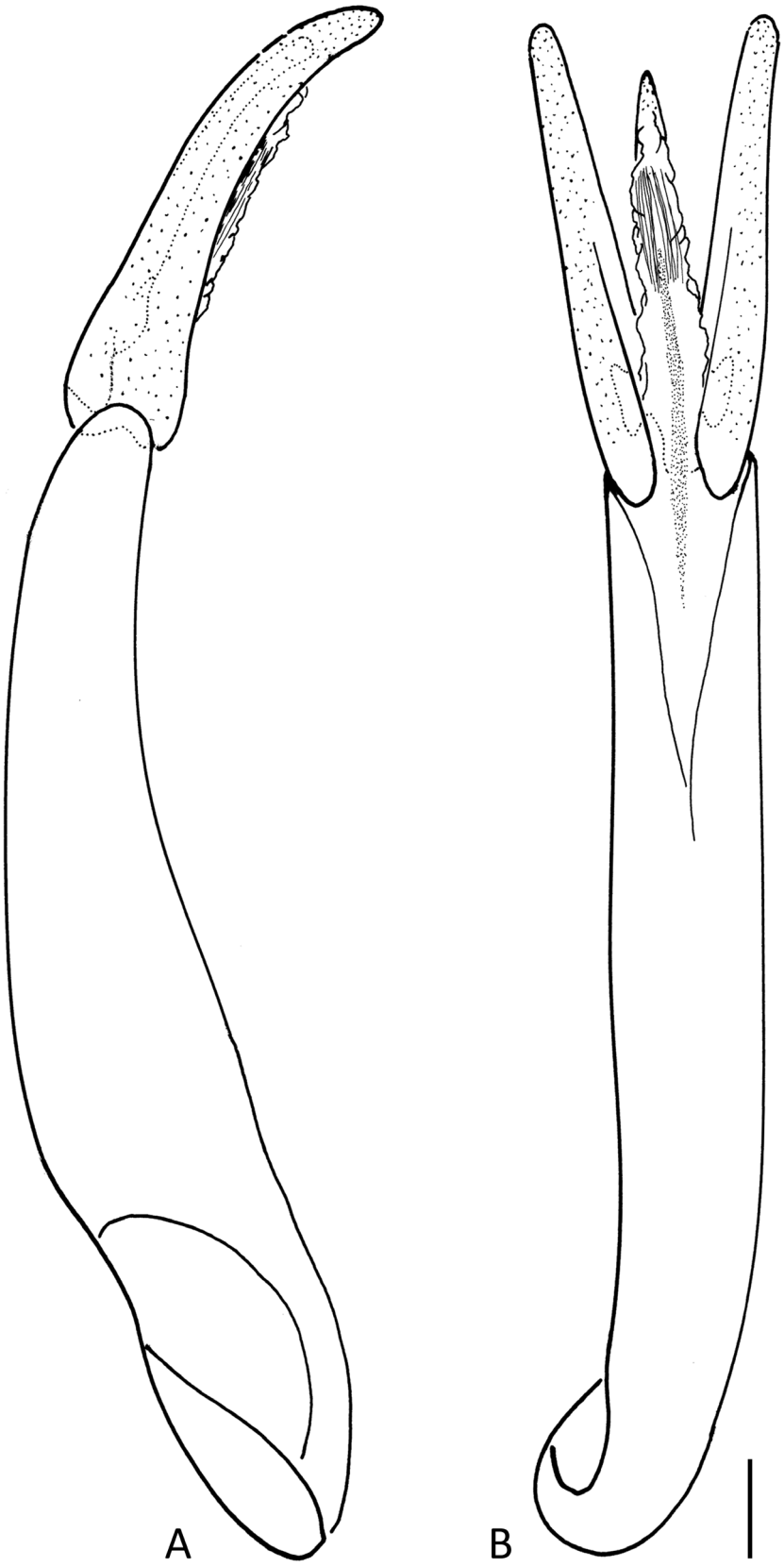

Fig. 84. *Elmomorphus ovalis* Kodada, Selnekovič & Jäch sp. nov., paratype from type locality (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Paratypes

CHINA – **Yunnan Province** • 1 ♂, 4 ♀♀; same collection data as for holotype; CKB, NMW • 1 ♂, 4 ♀♀; "CHINA: YUNNAN PROV: Lushui Co., Gaoligong Mts., Luisahe vill., Hájek, Hrůzová, Král, Růžička & Sommer lgt. 10.vii.2019 | river valley, mixed forest on vegetation; in dead wood and fungi; 25°58.3–7′N, 98°44.4–45.3′E, 2135-2450 m"; NMPC.

Type locality

China, Yunnan Province, Gaoligongshan National Nature Reserve.

Description

Measurements (mm): TL: ♂♂ 3.80–3.84 (n=2), ♀♀ 3.87–4.13 (n=3); PL: ♂♂ 1.04 (n=2), ♀♀ 1.04–1.10 (n=3); PW: ♂♂ 1.77–1.79 (n=2), ♀♀ 1.79–1.85 (n=3); EL: ♂♂ 2.76–2.79 (n=2), ♀♀ 2.83–3.02 (n=3); EW: ♂♂ 2.15–2.21 (n=2), ♀♀ 2.18–2.28 (n=3).

Body oval, strongly convex dorsally (Fig. 83). Integument black; mouth parts, antennae, trochanters, and tarsi reddish brown, remaining parts of legs dark brown. Pubescence consisting of very short and thin, almost inapparent yellowish setae. Plastron covering small areas of frontoclypeus (around antennal insertions) and ventral surface, except prosternal process, median parts of metaventrite and ventrite 1.

Head with microgranules and punctures; punctures distinctly smaller than eye facets and confluent in anterolateral portions. Labrum transverse, anterior margin broadly emarginate in middle; exposed portion microreticulate with minute setiferous punctures; males with groups of long setae in lateral portions, distinctly extending beyond anterior margin. Anterior margin of clypeus straight. Eyes rather small, oval, interfacetal setae short, ID: ♂♂ 0.67–0.70 mm (n=2), ♀♀ 0.67–0.71 mm (n=3); APD/ID: ♂♂ 1.49–1.60 (n=2), ♀♀ 1.55–1.58 (n=3). Antennae 11-segmented, densely setose.

Pronotum strongly convex, transverse, PW/PL: ♂♂ 1.70–1.72 (n=2), ♀♀ 1.68–1.74 (n=3); rim of anterior margin 2–3 × as wide eye facet, broadly interrupted in middle; anterior angles strongly deflexed, prominent; lateral sides convergent, moderately rounded. Surface with small round punctures associated with microgranules, punctures distinctly smaller than facet, separated by distance 1.0–1.5 × facet diameter, less dense on disc; interstices shiny, smooth. Prosternal process wider than long, lateral edges straight, posterior edge rounded; lateral portions rather wide, moderately raised, in males with groups of long setae anteriorly; median keel moderately arcuate. Scutellum longer than wide, acute at apex, surface with minute round punctures. Metaventrite with median part flat to slightly concave, expanded posteriorly, in males with two groups of long setae; lateral margins of metaventral process raised. Elytra broadly oval, strongly convex, widest behind middle, EL/EW: ♂♂ 1.25–1.30 (n=2), ♀♀ 1.30–1.33 (n=3); surface finely microreticulate, entire surface covered with microgranules; small punctures scattered; large, coarse punctures arranged in nine longitudinal rows; plastron absent. Tibiae slightly curved; protibia ca 1.5 × as long as protarsus, PrTL/PL: ♂♂ 1.02–1.06 (n=2), ♀♀ 0.94–1.01 (n=3). Terminal protarsomeres as long as three preceding tarsomeres combined.

Ventrites covered with plastron, except for median portion of ventrite 1, admedian keels present. Ventrite 5 in females with short longitudinal keel before apex. Aedeagus (Fig. 84): phallobase long, slender, slightly expanded proximally, PhL/PrL: 2.85 (n=1); parameres short in relation to phallobase, moderately curved ventrad, apices rounded (lateral aspect); penis narrowly rounded apically in ventral aspect, expanded and rounded in lateral aspect.

Secondary sexual dimorphism

Labrum, prosternal process, and median part of metaventrite with groups of long setae in males. Females with short longitudinal keel at apex of ventrite 5.

Distribution

China (Yunnan) (Fig. 114B).

Elmomorphus minutus sp. nov.
urn:lsid:zoobank.org:act:45ECC443-5495-42DF-80A0-F0CF2F1E79FA
Figs 85–86, 114C

Differential diagnosis

Elmomorphus minutus sp. nov. (Fig. 85) is characterised by having the dorsal plastron confined to small areas around the antennal insertions. Elytral striae are distinct. The pronotal surface is not microreticulate, unlike in *E. schillhammeri* sp. nov. and *E. globosus* sp. nov. The cranial surface is smooth, without microgranules, which separates *E. minutus* from *E. ovalis* sp. nov., along with the smaller body size (TL in *E. ovalis*: ♂♂ 3.80–3.84 mm (n=2), ♀♀ 3.87–4.13 mm (n=3), in *E. minutus*: ♂♂ 2.92–3.27 mm (3.10±0.15, n=4), ♀ 3.58 mm (n=1)). Males bear long erect setae or setal clusters on the labrum, prosternal process, and metaventrite, which distinguish this species from *E. schoenmanni* sp. nov., *E. jii* sp. nov., and *E. vietnamensis* sp. nov. Moreover, the elytral microreticulation is formed by irregular polygonal meshes, while in *E. schoenmanni*, it is formed by coarse transverse lines. The phallobase and parameres are rather long and slender (Fig. 86), PhL/PrL: 2.05–2.40 (2.14±0.17, n=4).

Etymology

The epithet ‘minutus’ is a Latin adjective in the nominative singular meaning ‘small, little’. The name refers to the small body size.

Type material

Holotype

CHINA – **Yunnan Province** • ♂; “CHINA: Yünnan, Xishuangbanna ca. 10km NW Menglun 7.11.1999, ca. 700 - 800 m leg. Jäch, et al. (CWBS 360)”; IAECAS.

Paratypes

CHINA – **Yunnan Province** • 1 ♂; same collection data as for holotype; NMW • 1 ♂; “CHINA: Yünnan, Xishuangbanna, ca. 10 km NW Menglun 7.11.1999, ca. 700 m leg. Jäch, et al. (CWBS 359)”; CKB • 1 ♀; “CHINA: Yünnan, Xishuangbanna, ca. 20 km W Jinghong 11.11.1999, ca. 1000 m leg. Jäch, et al. (CWBS 374)”; NMW • 1 ♂; “CHINA: Yünnan, Simao Pref., 35 km SW Mojiang, 19.11.1999, ca. 1000 m Schönmann & Wang (CWBS 395)”; NMW.

Remarks

A single male from Zhejiang (CWBS 420) is very similar to that of *E. minutus* sp. nov. Examination of more specimens and molecular data may provide evidence that this specimen respresents an undescribed species.

Type locality

China, Yunnan Province, Xishuangbanna Dai Autonomous Prefecture, Mengla County, Menglun Town, ca 10 km NW of Menglun, along the road from Menglun to Mengyang, ca 700 m a.s.l.; Wushiwu He (= River Fifty-five), ca 3–5 m wide, flowing through primary forest in steep valley (CWBS 360; Jäch & Ji 2003).

Fig. 85. *Elmomorphus minutus* sp. nov., paratype, male from China, locality CWBS 395 (CKB), TL: 3.10 mm.

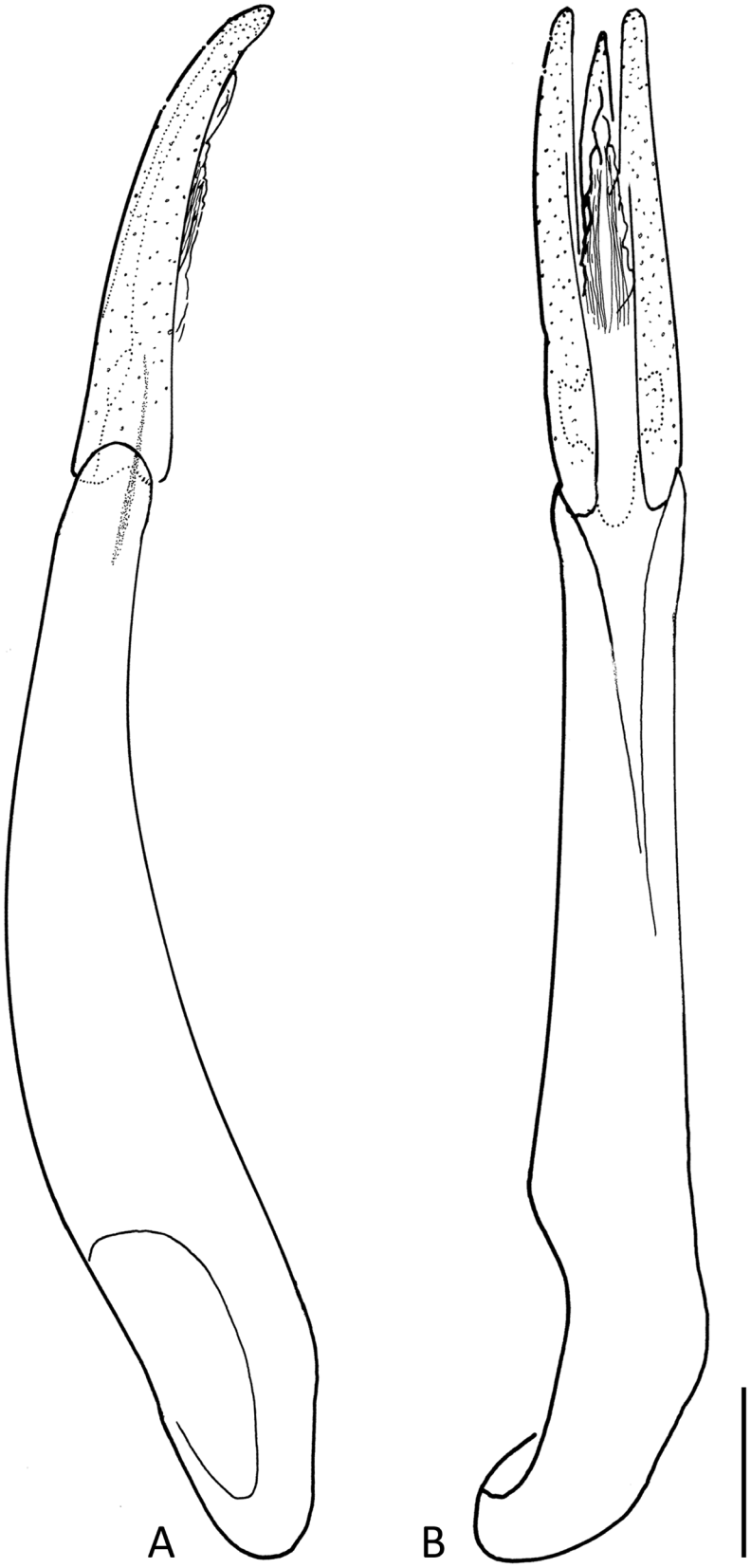

Fig. 86. *Elmomorphus minutus* sp. nov., paratype from China, locality CWBS 395 (CKB), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Description

Measurements (mm): TL: ♂♂ 2.92–3.27 (3.10±0.15, n=4), ♀ 3.58 (n=1); PL: ♂♂ 0.81–0.86 (0.85±0.02, n=4), ♀ 0.91 (n=1); PW: ♂♂ 1.45–1.64 (1.53±0.09, n=4), ♀ 1.69 (n=1); EL: ♂♂ 2.11–2.40 (2.25±0.13), ♀ 2.65 (n=1); EW: ♂♂ 1.69–1.98 (1.81±0.12, n=4), ♀ 1.98 (n=1); PhL: 0.82–0.92 (0.87±0.04, n=4); PrL: 0.38–0.43 (0.41±0.02, n=4).

Body oval, moderately convex (Fig. 85). Integument black; mouthparts, antennae, and tarsi reddish brown, remaining parts of legs brown. Pubescence consisting of short and sparse yellowish setae. Plastron covering small anterolateral portions on frontoclypeus and ventral surface, except prosternal process, and middle of metaventrite and ventrite 1.

Dorsal surface of head with round punctures, finely microreticulate, without microgranules; diameter of punctures smaller than an eye facet, punctures separated by ca 1.0–1.5× puncture diameter. Labrum transverse, anterior margin broadly emarginate, exposed portion microreticulate, with small setiferous punctures; setae in males distinctly longer than in females. Anterior margin of clypeus straight. Eyes oval, with short interfacetal setae, ID: ♂♂ 0.51–0.55 mm (0.52±0.02, n=4), ♀ 0.63 mm (n=1), APD/ID: ♂♂ 1.63–1.69 (1.66±0.03, n=4), ♀ 1.54 (n=1). Antennae 9-segmented, densely setose.

Pronotum moderately convex, PW/PL: ♂♂ 1.71–1.90 (1.81±0.08, n=4), ♀ 1.86 (n=1); rim of anterior margin as wide as two eye facets, interrupted in middle; anterior angles prominent, acute; lateral sides convergent, slightly rounded; surface smooth, lacking microgranules, punctures round. Prosternal process wider than long, lateral edges divergent, straight; posterior edge rounded; lateral portions wide, rather flat, in males with long setae anteriorly; median keel moderately arcuate. Scutellum wider than long, with round punctures. Metaventrite with median part flat, posteriorly widened, in males with two groups of long setae. Elytra oval, widest before middle, EL/EW: ♂♂ 1.21–1.31 (1.24±0.04, n=4), ♀ 1.34 (n=1). Dorsal surface microreticulate; small punctures scattered; large, deep punctures arranged in nine longitudinal rows, distance between punctures ca 1–2× puncture diameters. Tibiae slightly curved; protibia ca 1.5× as long as protarsus; PrTL/PL: ♂♂ 0.95–1.04 (1.00±0.04, n=4), ♀ 0.95 (n=1). Terminal protarsomeres as long as three preceding tarsomeres combined.

Ventrites covered with plastron, except for median part of ventrite 1. Ventrite 5 apically rounded. Aedeagus (Fig. 86): phallobase long, slightly expanded proximally, PhL/PrL: 2.05–2.40 (2.14±0.17, n=4); parameres slender, short in relation to phallobase, slightly curved ventrad, apices very narrowly rounded (lateral aspect); penis apically narrowly rounded; sclerotised fibula very short.

Secondary sexual dimorphism

Males with groups of long setae on labrum, lateral rims of prosternal process, and median part of metaventrite.

Distribution

China (Yunnan) (Fig. 114C).

Elmomorphus jii sp. nov.
urn:lsid:zoobank.org:act:D5449363-B9DB-4DAB-B91D-672C7A5E207B
Figs 87–88, 114D

Differential diagnosis

Elmomorphus jii sp. nov. (Fig. 87) is characterised by having the dorsal plastron confined to small areas around the antennal insertions. Large and deeply impressed punctures on the elytra are arranged

in distinct longitudinal rows. The surface of the pronotum is smooth, without microreticulation, which separates this species from *E. schillhammeri* sp. nov. and *E. globosus* sp. nov. Males lack long erect setae on the labrum, prosternal process, and metaventrite which distinguishes *E. jii* from *E. schillhammeri*, *E. ovalis* sp. nov., and *E. minutus* sp. nov. The surface of the vertex is distinctly microreticulate, while in *E. schoenmanni* sp. nov. and *E. vietnamensis* sp. nov. it is smooth. The microreticulation of the elytra is formed by irregular polygonal meshes, while in *E. schoenmanni*, it is formed by transverse lines. The phallobase is, in relation to the parameres, distinctly shorter than in all other species mentioned (PhL/PrL: 1.32 (n=1), (Fig. 88)).

Etymology

The epithet is a proper noun in the genitive case honouring Prof. Lanzhu Ji, a Chinese entomologist (IAECAS) who collected the holotype.

Type material

Holotype

CHINA – **Hunan Province** • ♂; "CHINA, NW-Hunan 1993, Wulingyuan, N Dayong Zangjiajie [Zhangjiajie], 29.10., 650m, leg. L. JI (1) [CWBS 20]"; IAECAS.

Paratypes

CHINA – **Hunan Province** • 1 ♀; same collection data as for holotype; NMW • 2 ♀♀; "CHINA, NW-Hunan 1993 Wulingyuan, N Dayong Zangjiajie [Zhangjiajie], 29.10. | 650m, leg. Schönmann et Schillhammer (2) [CWBS 21]"; NMW.

Type locality

China, Hunan Province, Xiangxi Prefecture, Dayong County, Zhangjiajie Forest National Park, Suoxiyu Nature Reserve, Wulingyuan section (ca 30 km north of Dayong City); Pipa Xi (= "Chinese Lute" River), ca 2–3 m wide, shaded, very shallow, ca 650 m a.s.l. (CWBS 20; Jäch & Ji 1995).

Description

Measurements (mm): TL: ♂ 3.72 (n=1), ♀♀ 4.05–4.13 (n=2); PL: ♂ 0.96 (n=1), ♀♀ 0.96–0.98 (n=2); PW: ♂ 1.90 (n=1), ♀♀ 1.96–1.98 (n=2); EL: ♂ 2.76 (n=1), ♀♀ 3.09–3.15 (n=2); EW: ♂ 2.19 (n=1), ♀♀ 2.28–2.31 (n=2); PhL: 0.58 (n=1); PrL: 0.44 (n=1).

Body oval, moderately convex dorsally (Fig. 87). Integument black; mouthparts, antennae, and legs reddish brown. Pubescence consisting of short yellowish setae. Plastron covering small anterolateral portions of frontoclypeus and entire ventral surface, except prosternal process and median part of metaventrite.

Head distinctly microreticulate on dorsal surface, without microgranules, with round punctures smaller than an eye facet, distance subequal to puncture diameter. Labrum transverse, anterior margin broadly emarginate, exposed portion microreticulate, with small round setiferous punctures; setae equal in length in both sexes. Anterior margin of clypeus straight. Eyes oval, interfacetal setae short, ID: ♂ 0.66 mm (n=1), ♀♀ 0.67 mm (n=2), APD/ID: ♂ 1.62 (n=1), ♀♀ 1.57–1.66 (n=2). Antennae 11-segmented, densely setose.

Pronotum convex, PW/PL: ♂ 1.98 (n=1), ♀♀ 2.02–2.04 (n=2); rim of anterior margin as wide as two eye facets, interrupted in middle; anterior angles prominent, acute; lateral pronotal sides convergent, rounded; surface smooth, with round punctures, microgranules present in posterolateral portions. Prosternal process wider than long, lateral edges divergent, straight, posterior edge rounded; lateral portions narrow, moderately raised, long setae absent in both sexes; median keel rather flat. Scutellum

Fig. 87. *Elmomorphus jii* sp. nov., holotype (IAECAS), TL: 3.72 mm.

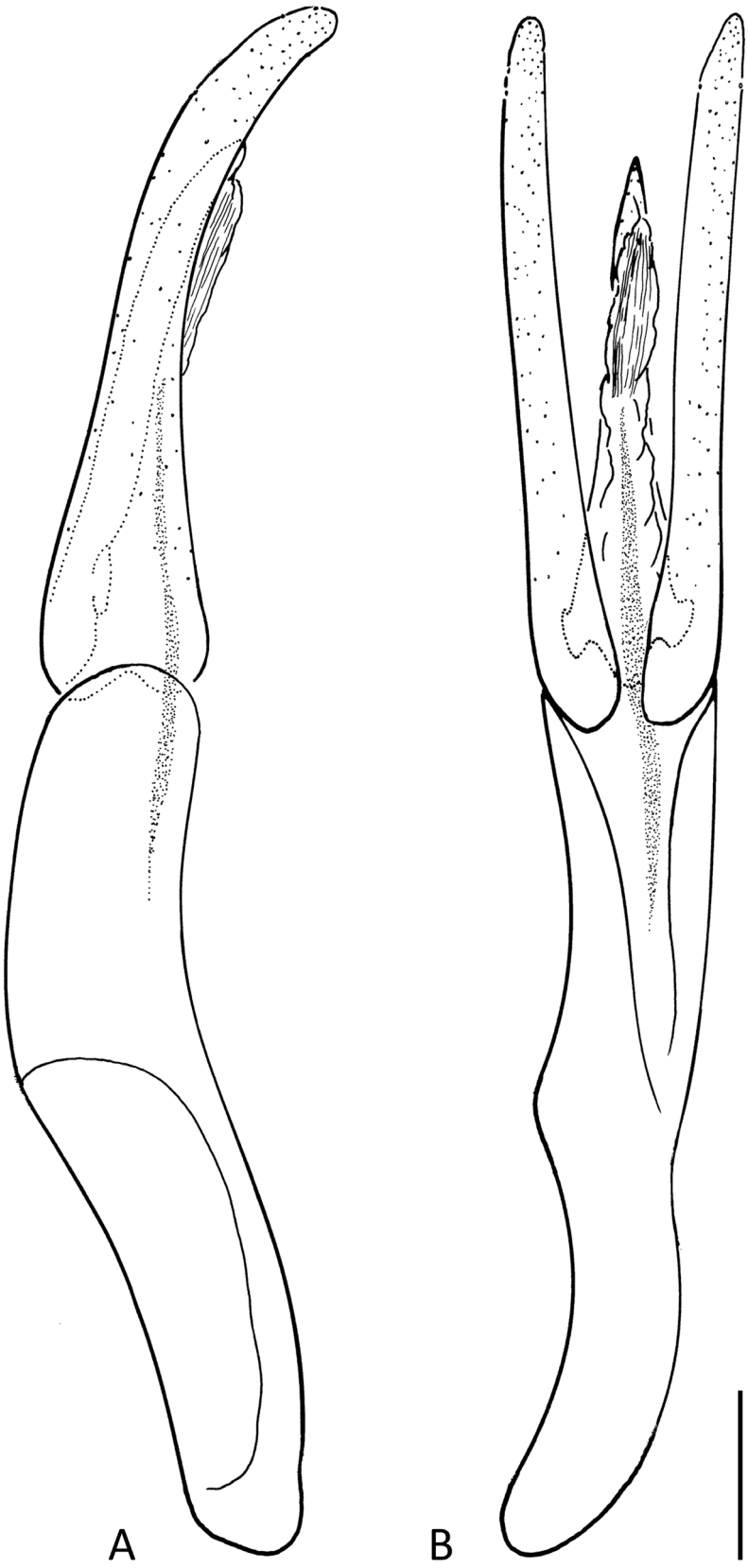

Fig. 88. *Elmomorphus jii* sp. nov., holotype (IAECAS), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

as long as wide, with round punctures. Median part of metaventrite flat, posteriorly widened; long setae absent in both sexes. Elytra elongate oval, moderately convex, widest at base of second third, EL/EW: ♂ 1.26 (n = 1), ♀♀ 1.36–1.37 (n = 2); surface distinctly microreticulate, with small, scattered punctures and large deep punctures arranged in nine striae; large punctures separated by 0.5–1.0 × puncture diameter. Tibiae slightly curved; protibia ca 1.5 × as long as protarsus, PrTL/PL: ♂ 0.95 (n = 1), ♀♀ 0.99 (n = 2). Terminal protarsomere as long as three preceding tarsomeres combined.

Ventrites covered with plastron on entire surface. Ventrite 1 with two longitudinal keels medially. Apex of ventrite 5 truncate in males; rounded in females with short longitudinal keel. Aedeagus (Fig. 88): phallobase short, PhL/PrL: 1.32 (n = 1); parameres slender, rather long in relation to phallobase, curved ventrad, apices narrowly rounded (lateral aspect); penis apically narrowly rounded; sclerotised fibula rather long.

Secondary sexual dimorphism

Ventrite 5 in males slightly truncate at apex, in females rounded with short longitudinal keel.

Distribution

China (Hunan) (Fig. 114D).

Elmomorphus schoenmanni sp. nov.
urn:lsid:zoobank.org:act:8483BE43-4C4C-430D-B7B0-06A1E29A3564
Figs 89, 91A, 114E

Differential diagnosis

Elmomorphus schoenmanni sp. nov. (Fig. 89) is characterised by having the dorsal plastron confined to small areas around the antennal insertions. The elytral striae are distinctly impressed. The pronotal surface is smooth, not microreticulate as in *E. schillhammeri* sp. nov. and *E. globosus* sp. nov. The absence of microgranules on the pronotal disc and elytra and the absence of long erect setae on the labrum, prosternal process, and metaventrite in males distinguishes this species from *E. ovalis* sp. nov. and *E. minutus* sp. nov. The surface of the vertex is smooth, not microreticulate as in *E. jii* sp. nov. The microreticulation of the elytra is formed by relatively coarse transverse lines, whereas in *E. jii* and *E. vietnamensis* sp. nov. it is formed by irregular polygonal meshes. The pronotum is strongly convex, with the anterior angles strongly deflexed. The phallobase is rather long, and the parameres are strongly narrowed apically (Fig. 91A), PhL/PrL: 2.03 (n = 1).

Etymology

The epithet is a proper noun in the genitive case honouring the exceptional collecting efforts of Dr Heinrich Schönmann (†), an Austrian entomologist of the NMW, who collected 18 new species of *Elmomorphus* in China, which equals 60% of the total number of species known from this country.

Type material

Holotype

CHINA – **Guangxi Autonomous Region** • ♂; "CHINA: SE-Guangxi Distr. Yulin Liuwan Mts. SW Yulin | 20.11.1993 120m, (26) [CWBS 49], leg. Schönmann"; IAECAS.

Paratypes

CHINA – **Guangxi Autonomous Region** • 1 ♀; "CHINA, Guangxi 1993 10km N Liuzhou 10.11., 200m leg. Schillhammer (17) [CWBS 38]"; NMW • 1 ♀; same label data as for preceding, but "leg. L. JI"; NMW.

Fig. 89. *Elmomorphus schoenmanni* sp. nov., holotype, male (IAECAS), TL: 2.98 mm.

Type locality

China, Guangxi Autonomous Region, Yulin Prefecture, Liuwan Da Shan; stream, ca 0.3–0.5 m wide, flowing through a rather flat area, rather sandy, ca 500 m a.s.l. (CWBS 49; Jäch & Ji 1995).

Description

Measurements (mm): TL: ♂ 2.98 (n=1), ♀♀ 3.07–3.21 (n=2); PL: ♂ 0.80 (n=1), ♀♀ 0.73–0.77 (n=2); PW: ♂ 1.53 (n=1), ♀♀ 1.55–1.63 (n=2); EL: ♂ 2.18 (n=1), ♀♀ 2.34–2.44 (n=2); EW: ♂ 1.74 (n=1), ♀♀ 1.79–1.91 (n=2); PhL: 0.67 (n=1); PrL: 0.33 (n=1).

Body broadly oval, strongly convex dorsally (Fig. 89). Integument black; mouthparts, antennae, and legs reddish brown. Pubescence consisting of very short, almost inapparent yellowish setae. Plastron covering anterolateral portions of frontoclypeus and ventral surface, except prosternal process, and median parts of metaventrite and ventrite 1.

Head on dorsal surface finely microreticulate, without microgranules, with small round punctures smaller than an eye facet, distance ca 0.5–1.0× puncture diameter. Labrum transverse, anterior margin broadly emarginate; surface microreticulate, with small round setiferous punctures; setae equal in length in both sexes. Anterior margin of clypeus straight. Eyes oval, interfacetal setae short; ID: ♂ 0.56 mm (n=1), ♀♀ 0.52–0.58 mm (n=2); APD/ID: ♂ 1.55 (n=1), ♀♀ 1.61–1.63 (n=2). Antennae 11-segmented, densely setose.

Pronotum transverse, strongly convex, PW/PL: ♂ 1.92 (n=1), ♀♀ 2.11–2.13 (n=2); rim of anterior margin as wide as three eye facets, interrupted in middle; anterior angles strongly deflexed, prominent; lateral pronotal sides convergent, rounded; surface smooth, with round punctures, microgranules present in lateral portions. Prosternal process wider than long, lateral edges divergent, straight, posterior edge rounded; lateral portions rather wide, raised, without longer setae in males; median keel moderately arcuate. Scutellum as long as wide, with round punctures. Median part of metaventrite slightly convex, posteriorly widened; groups of long setae absent in both sexes. Elytra oval, strongly convex, widest at base of second fourth; EL/EW: ♂ 1.25 (n=1), ♀♀ 1.28–1.30 (n=2). Dorsal surface with coarse microreticulation formed by short transverse lines and with small scattered punctures, and large deep punctures arranged in nine striae, punctures separated by about half a puncture diameter. Tibiae slightly curved; protibia ca 1.5× as long as protarsus, PrTL/PL: ♂ 0.90 (n=1), ♀♀ 0.95–1.01 (n=2). Terminal protarsomere as long as three preceding tarsomeres combined.

Ventrites entirely covered with plastron, except for median part of ventrite 1 between two admedian keels. Ventrite 5 in males with triangular excision at apex, in females rounded. Aedeagus (Fig. 91A): phallobase expanded proximally, PhL/PrL: 2.03 (n=1); parameres curved ventrad, apices narrow, pointed (lateral aspect); penis apically rounded in lateral aspect.

Secondary sexual dimorphism

Ventrite 5 in males with triangular excision at apex, in females rounded.

Distribution

China (Guangxi) (Fig. 114E).

Elmomorphus vietnamensis sp. nov.

urn:lsid:zoobank.org:act:64F099FB-5D19-4F60-9820-06D6556B9D2E

Figs 90, 91B–C, 114F

Differential diagnosis

Elmomorphus vietnamensis sp. nov. (Fig. 90) is characterised by having the dorsal plastron confined to small areas on the frontoclypeus around the antennal insertions. The elytral striae are composed of large,

Fig. 90. *Elmomorphus vietnamensis* sp. nov., holotype, male (NMW), TL: 3.27 mm

Fig. 91. A. *Elmomorphus schoenmanni* sp. nov., holotype (IAECAS), aedeagus, lateral aspect. **B**. *E. vietnamensis* sp. nov., paratype from type locality (CKB), aedeagus, lateral aspect. **C**. Same, ventral aspect. Scale bar: 0.1 mm.

deeply impressed punctures. The pronotal surface is smooth, not microreticulate as in *E. schillhammeri* sp. nov. and *E. globosus* sp. nov. The absence of microgranules on the pronotal disc and elytra and the absence of long erect setae on the labrum, prosternal process, and metaventrite in males separate this species from *E. ovalis* sp. nov. and *E. minutus* sp. nov. The surface of the vertex is smooth and not microreticulate as in *E. jii* sp. nov. The microreticulation of the elytra is formed by irregular polygonal meshes, whereas in *E. schoenmanni* sp. nov. it is formed by transverse lines. The pronotum is moderately convex, with the anterior angles moderately deflexed. The phallobase and parameres are rather long and slender (Fig. 91B–C) (PhL/PrL: 2.02±0.13).

Etymology

The epithet is a Latin adjective in the nominative singular referring to Vietnam.

Type material

Holotype

VIETNAM – **Vinh Phúc Province** • ♂; "N-VIETNAM: Tam Dao (2) 1.-8.6.1996 leg. Dembicky & Pacholatko"; NMW.

Paratypes

VIETNAM – **Vinh Phúc Province** • 8 ♂♂, 4 ♀♀, 4 ex.; same collection data as for holotype; CKB, NMW.

Type locality

Vietnam, Vinh Phúc Province, Tam Dao.

Description

Measurements (mm): TL: ♂♂ 3.14–3.34 (3.27±0.06, n=9), ♀♀ 3.36–3.47 (3.41±0.05, n=4); PL: ♂♂ 0.75–0.85 (0.80±0.03, n=9), ♀♀ 0.80–0.85 (0.82±0.02, n=4); PW: ♂♂ 1.48–1.61 (1.55±0.04, n=9), ♀♀ 1.55–1.66 (1.59±0.04, n=4); EL: ♂♂ 2.39–2.52 (2.47±0.04, n=9), ♀♀ 2.55–2.63 (2.59±0.03, n=4); EW: ♂♂ 1.74–1.92 (1.85±0.05, n=9), ♀♀ 1.85–1.95 (1.92±0.04, n=4); PhL: 0.72–0.83 (0.78±0.03, n=9); PrL: 0.35–0.41 (0.39±0.02, n=9).

Body broadly oval, widest before midlength of elytra; dorsum moderately convex (Fig. 90). Colour dark brown to black, mouthparts and antennae reddish brown; trochanters, tarsi, and distal portions of femora usually dark brown. Pubescence on head, pronotum and elytra consisting of very short and sparse yellowish setae. Plastron on dorsum confined to small areas around antennal insertions; on venter confined to median part of prosternum, prosternal process, and median part of metaventrite.

Head surface with weak microreticulation in anterior portion and with minute microgranules in lateral portions around eyes; round punctures smaller than eye facets, separated by 1.0–1.5 × puncture diameter. Plastron confined to small areas around antennal insertions. Anterior margin of clypeus straight. Labrum microreticulate on exposed portion, with minute round setiferous punctures; setae of equal length in both sexes. Eyes slightly protruding from head outline, interfacetal setae short. Antennae 10-segmented, densely setose.

Pronotum transverse, PW/PL: ♂♂ 1.88–2.00 (1.95±0.04, n=9), ♀♀ 1.90–2.00 (1.95±0.04, n=4). Surface smooth, with round setiferous punctures and rather inapparent microgranules on lateral portions; plastron absent. Anterior rim as wide as two eye facets; anterior angles strongly deflexed, produced anteriorly; lateral pronotal sides weakly rounded. Hypomeron widest behind middle, covered with plastron. Prosternum covered with plastron, except on prosternal process and narrow triangular area before prosternal process. Lateral edges of prosternal process divergent, straight; posterior edge rounded;

lateral portions broad, flat, separated from median portion by distinct, deeply impressed narrow ridges; median keel flat; prosternal process without groups of long setae in males. Metaventrite covered with plastron, except for posteriorly widened, convex median part; without groups of long setae in males. Elytra broad, strongly convex, widest before middle, EL/EW: ♂♂ 1.30–1.39 (1.34±0.03, n=9), ♀♀ 1.32–1.38 (1.35±0.02, n=4). Surface with distinct microreticulation formed by irregular meshes, and small punctures scattered over entire surface; nine deep longitudinal striae with large round punctures, separated by 0.5–1.0× puncture diameter; plastron absent. Tibiae slightly curved, PTL/PL: ♂♂ 0.94–1.03 (0.97±0.03, n=9), ♀♀ 0.88–0.98 (0.92±0.04, n=4). Protarsus about 0.7× as long as protibia; terminal protarsomeres slightly shorter than three previous tarsomeres combined.

Ventrites covered with plastron, except for middle of ventrite 1 between two admedian keels. Ventrite 5 in males with minute, often inapparent triangular excision at apex; in females arcuate at apex with short longitudinal keel. Aedeagus (Fig. 91B–C); phallobase rather long, proximally expanded, PhL/PrL: 1.76–2.29 (2.02±0.13, n=9); parameres long, slightly curved ventrad in distal third, apices pointed in lateral view; penis slender; sclerotised fibula slender. Bursa copulatrix without spiny microsclerites.

Secondary sexual dimorphism

Male ventrite 5 with minute triangular excision at apex, in female rounded with short longitudinal keel.

Distribution

Vietnam (Fig. 114F).

Elmomorphus reticulatus sp. nov.
urn:lsid:zoobank.org:act:49D3C75A-5861-4EEC-8FEC-1090B0FE7056
Figs 92–93, 115A

Differential diagnosis

Elmomorphus reticulatus sp. nov. (Fig. 92) may be separated from all other congeners by its conspicuous coarse elytral microreticulation formed by small irregular meshes. The dorsal plastron is confined to small areas around the antennal insertions. The ventral plastron is absent only on the prosternal process and the median part of the metaventrite. The elytral punctures are relatively small and indistinct, scattered over the entire surface.

Etymology

The epithet is a Latin adjective in the nominative singular referring to the strong elytral reticulation.

Type material

Holotype

CHINA – **Hainan Province** • ♂; "CHINA: Hainan ([CWBS] 194) 30km E Maoyang, 18.1. Wuzhi Shan Resort 1996 700-800m, leg. Jäch"; IAECAS.

Paratypes

CHINA – **Hainan Province** • 10 ♂♂, 4 ♀♀, 2 ex.; same collection data as for holotype; CKB, NMW • 11 ex.; "CHINA: Hainan ([CWBS] 188) 7km W Qiongzhong Baihua Ling, 300m 16.1.1996, leg. Jäch"; CKB, NMW • 2 ex.; "CHINA: Hainan ([CWBS] 191) 4 kmW Qiongzhong 150m 16.1.1996, leg. Jäch"; NMW • 18 ex.; "CHINA: Hainan, ([CWBS] 193) 30km E Maoyang 600 m Wuzhi Shan resort, 1996 17./18.1., leg. Ji & Wang"; CKB, NMW • 1 ex.; "CHINA: Hainan ([CWBS] 198) 3 km NE Maoyang Wuzhi Shan Riv., 100m 19.1.1996, Ji & Wang"; NMW • 1 ex.; "CHINA: Hainan ([CWBS] 204) 4km E Jianfeng, 150 m Jianfeng Mt., 1996 22./24.1., Ji & Wang"; NMW • 1 ex.; "CHINA: Hainan, ([CWBS] 205) Jianfeng Mts., 800m 5km NE Tian Chi 22.1.1996, leg. Jäch"; NMW • 5 ex.; "CHINA: Hainan, ([CWBS] 207) Jianfeng Mts., 800m 500m NE Tian Chi 22.1.1996, leg. Jäch"; NMW • 1 ex.; "CHINA: Hainan ([CWBS] 208) Jiangfeng Mts., 800 m 5km E Tian Chi 23.1.1996, leg. Ji & Wang"; NMW •

Fig. 92. *Elmomorphus reticulatus* sp. nov., holotype, male (IAECAS), TL: 3.20 mm.

1 ex.; "CHINA: Hainan isl. [MF17a] Limushan Mts., 3 km NNW of first administr. centre, at a dam 19°10′N 109°44′E [at light] 560 m; 6.v.2011, Fikáček lgt."; NMPC.

Type locality

China, Hainan Province, Qiongzhong County; stream, ca 5 m wide, densely shaded, flowing partly through a deep gorge in primary forest, above Wuzhi Shan Resort; ca 700–800 m a.s.l. (CWBS 194; Jäch & Ji 1998).

Description

Measurements (mm): TL: ♂♂ 3.00–3.54 (3.30±0.17, n=11), ♀♀ 3.29–3.50 (3.39±0.10, n=4); PL: ♂♂ 0.73–0.83 (0.79±0.03, n=11), ♀♀ 0.79–0.83 (0.81±0.03, n=4); PW: ♂♂ 1.43–1.71 (1.60±0.08, n=11), ♀♀ 1.58–1.71 (1.66±0.05, n=4); EL: ♂♂ 2.16–2.60 (2.39±0.13, n=11), ♀♀ 2.44–2.57 (2.53±0.06, n=4); EW: ♂♂ 1.69–2.00 (1.89±0.09, n=11), ♀♀ 1.87–2.03 (1.96±0.07, n=4); PhL: 0.49–0.58 (0.54±0.03, n=11); PrL: 0.29–0.34 (0.32±0.02, n=11).

Body oval, strongly convex dorsally (Fig. 93). Integument black; mouth parts, antennae, and legs reddish brown. Pubescence yellowish. Dorsal plastron absent, ventral plastron lacking on prosternal process and median part of metaventrite.

Dorsal surface of head smooth, with round punctures slightly smaller than an eye facet, separated by 1.0–1.5× puncture diameter. Labrum transverse, anterior margin slightly emarginate, exposed portion microreticulate with small setiferous punctures; setae equally long. Anterior margin of clypeus straight. Eyes rather small, oval; interfacetal setae short, ID: ♂♂ 0.48–0.57 mm (0.53±0.03, n=11), ♀♀ 0.51–0.55 mm (0.53±0.02, n=4), APD/ID: ♂♂ 1.68–1.76 (1.71±0.03, n=11), ♀♀ 1.72–1.84 (1.79±0.06, n=4). Antennae 11-segmented, densely setose.

Pronotum strongly convex, PW/PL: ♂♂ 1.95–2.13 (2.03±0.06, n=11), ♀♀ 2.00–2.10 (2.05±0.05, n=4); anterior margin rimmed laterally, twice as wide as one eye facet; anterior angles moderately prominent, strongly deflexed; lateral pronotal sides convergent, strongly rounded; surface smooth, with round punctures, microgranules lacking. Prosternal process wider than long, lateral edges divergent, straight, posterior edge rounded; lateral portions rather wide, moderately raised, without groups of long setae in both sexes; median keel moderately arcuate. Scutellum wider than long, with round punctures. Metaventrite with median part slightly convex, posteriorly widened, without groups of long setae. Elytra strongly convex, widest before middle, EL/EW: ♂♂ 1.22–1.33 (1.26±0.03, n=11), ♀♀ 1.27–1.31 (1.29±0.02, n=4); dorsal surface with strong microreticulation consisting of minute irregular meshes; small punctures scattered over entire surface; pubescence almost inapparent, consisting of very short and thin setae. Tibiae slightly curved; protibia ca 1.5× as long as protarsus, PrTL/PL: ♂♂ 0.94–0.98 (0.96±0.02, n=11), ♀♀ 0.94–1.00 (0.97±0.03, n=4). Terminal protarsomere slightly longer than three preceding tarsomeres combined.

Ventrites covered with plastron. Ventrite 5 rounded at apex, in females with short longitudinal keel before apex. Aedeagus (Fig. 93): phallobase rather robust, slightly expanded basally, PhL/PrL: 1.60–1.77 (1.68±0.05, n=11); parameres rather slender, moderately curved ventrad, apices rounded (lateral aspect); penis wide, apex rounded; sclerotised fibula short.

Secondary sexual dimorphism

Ventrite 5 in females with short longitudinal subapical keel.

Distribution

China (Hainan) (Fig. 115A).

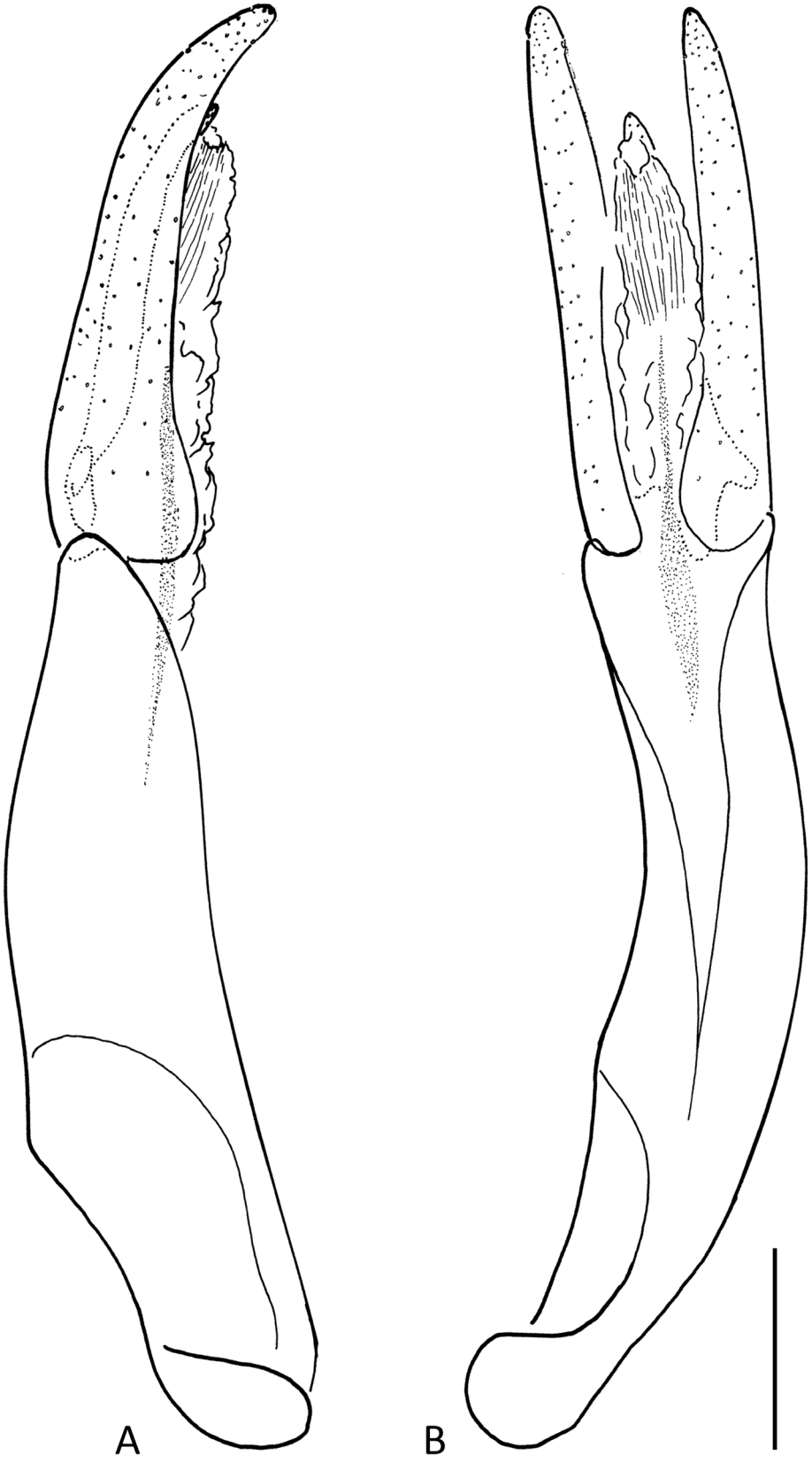

Fig. 93. *Elmomorphus reticulatus* sp. nov., paratype from type locality (CKB), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Elmomorphus superficialis sp. nov.
urn:lsid:zoobank.org:act:EBA24DA5-4656-41E5-886E-9ED5F52CB0D0
Figs 94–95, 115B

Differential diagnosis

Elmomorphus superficialis sp. nov. (Fig. 94) is characterised by having the strongly convex body and by the dorsal plastron confined to small areas of the frontoclypeus (around antennal insertions). The elytron has small, scattered punctures and large punctures arranged in longitudinal rows. The head and pronotum are smooth, the elytra weakly microreticulate; microgranules are absent. This species resembles *E. jii* sp. nov., *E. schoenmanni* sp. nov., and *E. vietnamensis* sp. nov., but it differs from these in the absence of microreticulation on the head and pronotum; the elytral microreticulation is formed by irregular polygonal meshes; ventrite 1 is entirely covered with plastron and ventrite 5 lacks plastron on a narrow area along the posterior margin. In general appearance, *E. superficialis* closely resembles *E. simplex* sp. nov., *E. glabriclunis* sp. nov., and *E. comosiclunis* sp. nov., but it differs from these in the presence of distinct elytral striae.

Etymology

The epithet 'superficialis' ('superficial') is a Latin adjective in the nominative singular referring to the distinct, but weakly impressed, longitudinal rows of large elytral punctures.

Type material

Holotype

CHINA – **Anhui Province** • ♂; "CHINA: Anhui, Dabie Shan 20km N Yuexi, 6.11.1997 env.[ironment of] Shi Guan, 950-1000m leg. Schönmann (CWBS 297)"; IAECAS.

Paratypes

CHINA – **Anhui Province** • 18 ♂♂, 13 ♀♀; same collection data as for holotype, but some specimens "leg. Wang"; CKB, NMW • 4 ♀♀; "CHINA: Anhui, Dabie Shan 40km N Yuexi, 5.11.1997 env. Gui Xing Di, 800m leg. Schönmann (CWBS 295)"; NMW • 1 ex.; "CHINA: Anhui, Dabie Shan 50km NW Yuexi, 7.11.1997 Huang Liyan/Baojia, 1050m leg. M. Wang (CWBS 298)"; NMW • 3 ♂♂, 1 ♀; "CHINA: Anhui, Dabie Shan 50 km NW Yuexi, 8.11.1997 Huang Liyan/Baojia, 1050m leg. M. Wang (CWBS 299)"; CKB, NMW • 5 ♂♂, 6 ♀♀; "CHINA: Anhui, Dabie Shan 25km N Yuexi 9.11.1997 env. Shi Guan, 1100m leg. M. Wang (CWBS 300)"; CKB, NMW • 5 ♂♂, 6 ♀♀; "CHINA: Anhui, Dabie Shan 25km N Yuexi, 9.11.1997 env. Shi Guan, 1100m leg. Schönmann (CWBS 301)"; CKB, NMW. – **Fujian Province** • 1 ex.; "CHINA: FUJIAN, Chong'an Wuyi Shan, 3 km W Da'an 500m, 19.1.1997 leg. Ji & Wang (CWBS 250)"; NMW • 1 ex.; "CHINA: FUJIAN, Yong'an 5km N Xiyang, 400m 26.1.1997 leg. Ji & Wang (CWBS 258)"; NMW. – **Jiangxi Province** • 1 ex.; "CHINA: Jiangxi, Jiuling Shan 35km W Shangfu, 14.11.1997 env. Dong Xi Ling, 800m leg. M. Wang (CWBS 305)"; NMW • 1 ex.; "CHINA: Jiangxi, Jiuling Shan 18km NW Shangfu, 15.11.1997 env. Jiu Xian, 800m leg. M. Wang (CWBS 306)"; NMW.

Type locality

China, Anhui Province, Anqing Prefecture, Yuexi County, Dabie Shan, near Shi Guan, ca 20 km north of Yuexi City; stream, ca 0.5–1.0 m wide, surrounded by dense bushes and *Cunninghamia* forest, completely shaded, small waterfalls, sections with gravel, decaying leaves, 950–1000 m a.s.l. (CWBS 297; Jäch & Ji 1998).

Description

Measurements (mm): TL: ♂♂ 3.21–3.52 (3.36±0.10, n=13), ♀♀ 3.24–3.75 (3.49±0.14, n=13); PL: ♂♂ 0.67–0.81 (0.74±0.04, n=13), ♀♀ 0.71–0.79 (0.76±0.02, n=13); PW: ♂♂ 1.50–1.65

Fig. 94. *Elmomorphus superficialis* sp. nov., paratype, male from type locality (CKB), TL: 3.36 mm.

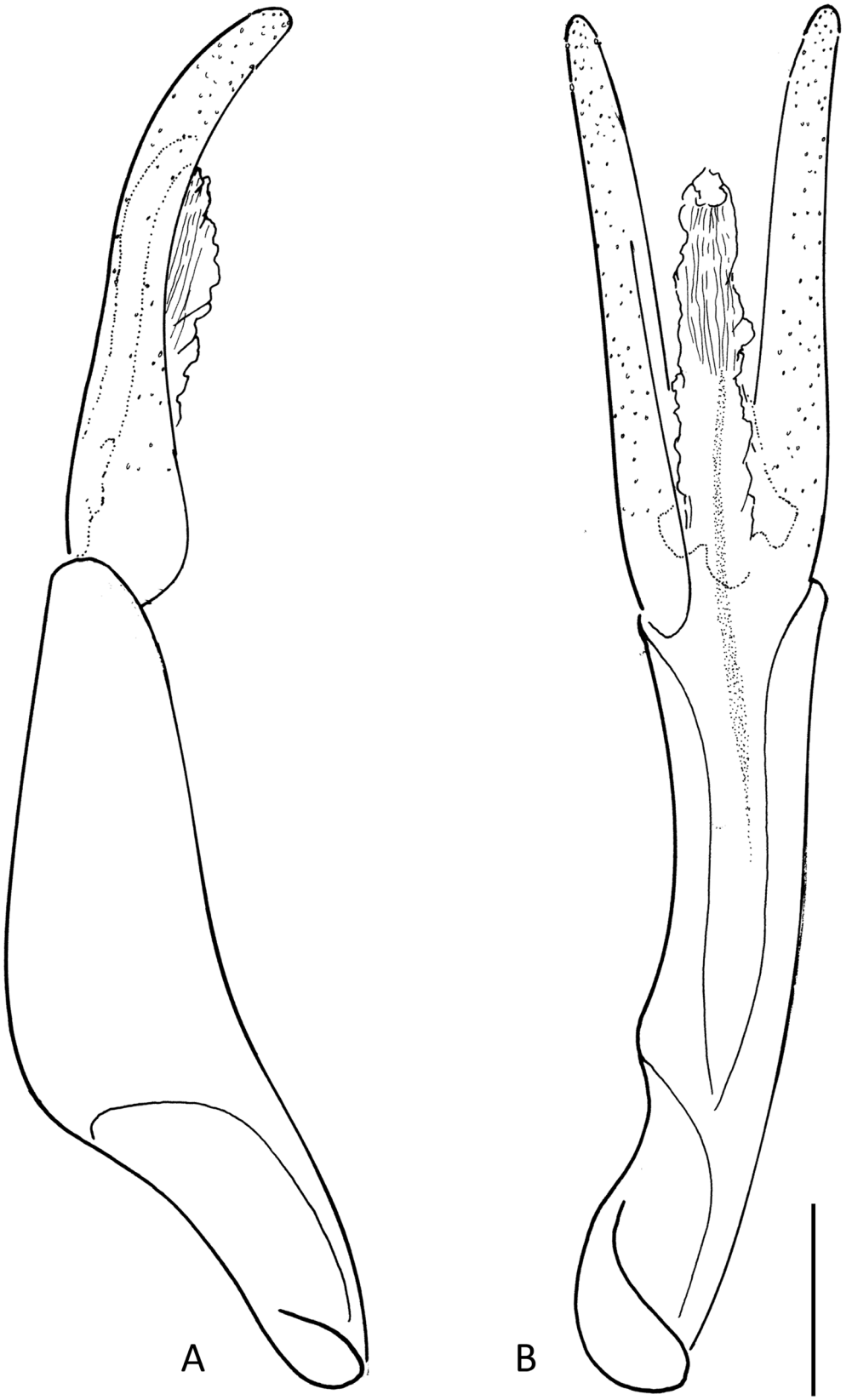

Fig. 95. *Elmomorphus superficialis* sp. nov., paratype from type locality (CKB), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

(1.59±0.05, n=13), ♀♀ 1.50–1.73 (1.65±0.07, n=13); EL: ♂♂ 2.50–2.73 (2.62±0.07, n=13), ♀♀ 2.54–2.96 (2.74±0.12, n=13); EW: ♂♂ 1.82–2.02 (1.93±0.07, n=13), ♀♀ 1.82–2.15 (2.01±0.08, n=13); PhL: 0.47–0.59 (0.53±0.05, n=13); PrL: 0.32–0.37 (0.35±0.01, n=13).

Body broadly oval, strongly convex dorsally (Fig. 94). Integument black; mouth parts, antennae, and legs reddish-brown. Pubescence consisting of short thin yellowish setae. Dorsal plastron present only around antennal insertions; ventral plastron present on entire surface, except on prosternal process, median part of metaventrite, and along apical margin of ventrite 5.

Dorsal surface of head smooth with round setiferous punctures (diameter slightly smaller than an eye facet); punctures separated by 0.5–1.5× puncture diameter. Labrum emarginate anteriorly, exposed portion microreticulate; setae of equal length in both sexes. Eyes oval, interfacetal setae short. Antennae 10-segmented, densely setose.

Pronotum transverse, moderately convex, PW/PL: ♂♂ 2.03–2.25 (2.16±0.06, n=13), ♀♀ 2.05–2.25 (2.17±0.05, n=13); surface smooth, with round setiferous punctures; rim of anterior margin as wide as two eye facets, interrupted in middle; anterior angles strongly deflexed, prominent; lateral pronotal sides rounded. Prosternal process without groups of long setae. Scutellum slightly wider than long; surface smooth with round punctures. Median part of metaventrite widened posteriorly; groups of long setae absent in both sexes. Elytra oval, strongly convex, widest before middle, EL/EW: ♂♂ 1.31–1.41 (1.36±0.03, n=13), ♀♀ 1.33–1.40 (1.36±0.02, n=13); surface smooth in anterior portions, very finely microreticulate in posterior portions; small punctures scattered over entire surface; large round punctures arranged in nine rather indistinct longitudinal rows, distance between punctures about half a diameter. Tibiae slightly curved; protibia ca 1.4× as long as protarsus, PrTL/PL: ♂♂ 0.96–1.17 (1.04±0.05, n=13), ♀♀ 0.97–1.11 (1.04±0.04, n=13). Terminal protarsomere as long as three preceding tarsomeres combined.

Ventrites covered with plastron, except on narrow, medially expanded area along posterior margin of ventrite 5. Ventrite 1 with two longitudinal keels medially. Ventrite 5 simple, convex, posterior margin rounded. Aedeagus (Fig. 95): phallobase rather short, expanded proximally; PhL/PrL: 1.36–1.68 (1.52±0.10, n=13); parameres evenly narrowed to apices, slightly curved ventrad, apices rounded (lateral aspect); penis apically narrowly rounded; sclerotised fibula long and slender.

Secondary sexual dimorphism

Ventrite 5 in females with short longitudinal subapical keel.

Distribution

China (Anhui, Fujian, Jiangxi) (Fig. 115B).

Elmomorphus hamatus sp. nov.
urn:lsid:zoobank.org:act:72E22E5E-4709-4E97-BF2B-32CF9CC6467F
Figs 96–97, 106A, 115C

Differential diagnosis

Elmomorphus hamatus sp. nov. (Fig. 96) is characterised by the strongly convex body and by having the dorsal plastron confined to small areas on the frontoclypeus around the antennal insertions. The elytra has small, scattered punctures and shallow, large punctures arranged in nine shallow striae. The head is microreticulate in anterior portions, the pronotum is smooth, and the elytra weakly microreticulate. *Elmomorphus hamatus* most closely resembles *E. superficialis* sp. nov., but differs in its larger body

dimensions (TL in *E. hamatus*: ♂♂ 3.58–4.11 mm (3.75±0.14, n=10), ♀♀ 3.74–4.00 mm (3.88±0.08, n=10), in *E. superficialis*: ♂♂ 3.21–3.52 mm (3.36±0.10, n=13), ♀♀ 3.24–3.75 mm (3.49±0.14, n=13)), less convex and more elongate body, punctures on the pronotal disc being distinctly smaller than those on the head, and the parameres being strongly curved apically (Fig. 97). From *E. simplex* sp. nov., *E. glabriclunis* sp. nov., and *E. comosiclunis* sp. nov. it differs in the presence of superficial elytral striae. From *E. jii* sp. nov., *E. schoenmanni* sp. nov., and *E. vietnamensis* sp. nov. it can be distinguished by the presence of plastron on the entire first abdominal ventrite and by the absence of plastron in the posteromedian portion along the posterior margin of ventrite 5.

Etymology

The epithet 'hamatus' ('hooked') is a Latin adjective in the nominative singular and refers to the curved parameres.

Type material

Holotype

CHINA – **Hunan Province** • ♂; "CHINA: Hunan, 30.3.2003 Dawei Shan Nat. Park 114°06′31″E 28°25′01″N ca. 1450m, leg. Schönmann, Komarek & Wang (CWBS 519)"; IAECAS.

Paratypes

CHINA – **Hunan Province** • 3 ♂♂, 6 ♀♀, 3 ex.; same collection data as for holotype; CKB, NMW • 7 ♂♂, 7 ♀♀, 1 ex.; "CHINA: Hunan, 30.3.2003 Dawei Shan (outside NP) 114°11′10″E 28°25′44″N ca. 1360 m leg. Schönmann, Komarek & Wang (CWBS 518)"; CKB, NMW • 4 ex.; "CHINA: Hunan, 30.3.2003 Dawei Shan Nat. Park 114°06′31″ E 28°25′01″ N ca. 1450 m, leg. Schönmann, Komarek & Wang (CWBS 520)"; NMW.

Type locality

China, Hunan Province, Dawei Mountain National Forest Park, 28°25′1″ N, 114°6′31″ E.

Description

Measurements (mm): TL: ♂♂ 3.58–4.11 (3.75±0.14, n=10), ♀♀ 3.74–4.00 (3.88±0.08, n=10); PL: ♂♂ 0.94–1.04 (0.95±0.03, n=10), ♀♀ 0.87–0.98 (0.94±0.03, n=10); PW: ♂♂ 1.73–1.98 (1.83±0.07, n=10), ♀♀ 1.77–1.94 (1.86±0.05, n=10); EL: ♂♂ 2.71–3.13 (2.84±0.12, n=10), ♀♀ 2.92–3.13 (3.00±0.08, n=10); EW: ♂♂ 1.92–2.21 (2.04±0.09, n=10), ♀♀ 2.00–2.17 (2.08±0.05, n=10); PhL: 0.55–0.61 (0.58±0.02, n=10); PrL: 0.39–0.44 (0.41±0.01, n=10).

Body oval, strongly convex, widest just before elytral midlength (Fig. 96). Colouration black, antennae, mouthparts, and legs reddish brown. Dorsal pubescence consists of short, thin, decumbent setae arising from small, round punctures. Dorsal plastron present only on small areas of frontoclypeus around antennal insertions. Ventral plastron on entire ventral surface, except for prosternal process, metaventrite in median portion, and abdominal ventrite 5 in posteromedian portion and along posterior margin.

Cranium with small, round punctures, each smaller than eye facet, separated from each other by ca 0.5–1.0× puncture diameter; plastron present in small lateral areas of frontoclypeus around antennal insertions. Labrum transverse, anterior margin straight, exposed portion microreticulate, with small setiferous punctures; setae equal in length in both sexes. Anterior margin of clypeus straight. Eyes oval, weakly protruding, ID: ♂♂ 0.61–0.72 mm (0.64±0.03, n=10), ♀♀ 0.66–0.70 mm (0.67±0.02, n=10). Antennae short, 11-segmented, densely setose.

Pronotum transverse, moderately convex, widest at base, PW/PL: ♂♂ 1.84–2.00 (1.92±0.06, n=10), ♀♀ 1.89–2.05 (1.97±0.06, n=10); pronotal disc smooth, with round setiferous punctures smaller than

Fig. 96. *Elmomorphus hamatus* sp. nov., holotype, male (IAECAS), TL: 3.75 mm.

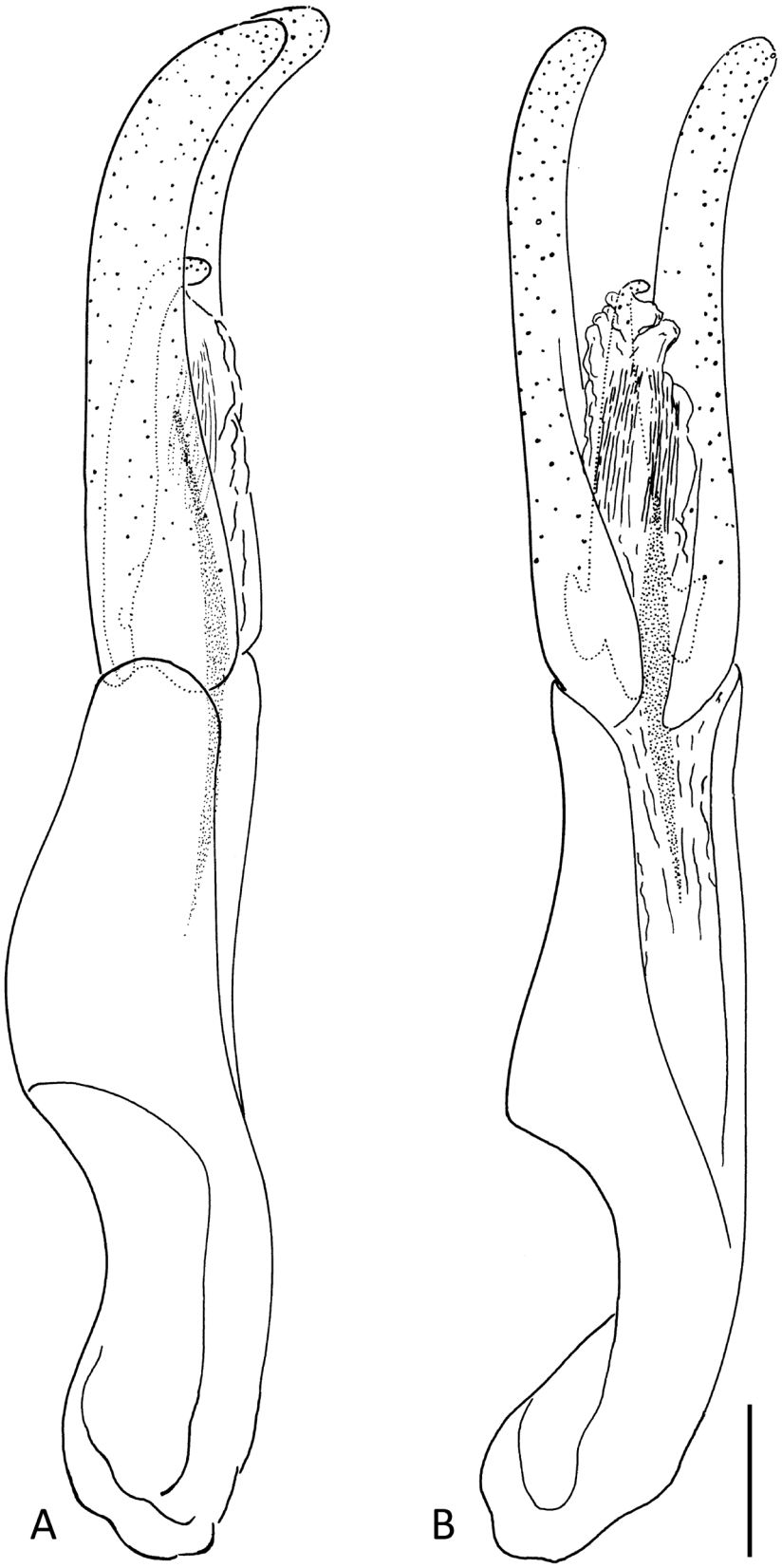

Fig. 97. *Elmomorphus hamatus* sp. nov., holotype (IAECAS), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

those on head; anterior angles protruding and deflexed; lateral pronotal sides convergent and rounded. Prosternal process with lateral and posterior edges rounded, lateral margins slightly raised, without clusters of erect setae, median keel arched. Scutellum slightly longer than wide, smooth with several setiferous punctures. Metaventral process with lateral margins slightly raised, metaventral disc flattened, area without plastron widened posteriorly. Elytra oval, widest before middle, EL/EW: ♂♂ 1.36–1.45 (1.40±0.02, n=10), ♀♀ 1.42–1.50 (1.44±0.03, n=10); plastron absent; surface with very weak microreticulation formed by irregular meshes; small punctures scattered over entire surface, shallow, large punctures hardly discernible, placed in nine indistinct striae. Tibiae slightly curved; protibia ca 1.4× as long as protarsus; PrTL/PL: ♂♂ 0.90–0.98 (0.94±0.03, n=10), ♀♀ 0.86–1.01 (0.95±0.05, n=10). Terminal protarsomere ca as long as three preceding segments combined.

Ventrites covered with plastron, except for median area on posterior half of ventrite 5, which expands along posterior margin of ventrite. Ventrite 5 evenly convex in both sexes; posterior margin weakly emarginate in male, rounded in female. Aedeagus (Fig. 97): phallobase short, broad, PhL/PrL: 1.34–1.47 (1.42±0.04, n=10); parameres widest basally, gradually evenly tapering toward apices, nearly straight along basal two-thirds then strongly curved ventrad at apical third, apices widely rounded (lateral aspect); penis apex narrowly rounded, reaching only slightly over parameral midlength; sclerotised fibula rather long, slender. Bursa copulatrix with two lateral clusters of numerous minute microsclerites in distal part, and with numerous minute ventrolateral microsclerites in proximal part (Fig. 106A).

Secondary sexual dimorphism

Ventrite 5 in males weakly emarginated at apex, in females with rounded apical margin.

Distribution

China (Hunan) (Fig. 115C).

Elmomorphus oblongus sp. nov.
urn:lsid:zoobank.org:act:EBE16BA6-51C3-4D05-8231-D6D949DD8BEC
Figs 98–99, 106B, 115D

Differential diagnosis

Elmomorphus oblongus sp. nov. (Fig. 98) is characterised by having elytra with scattered punctation lacking longitudinal rows of large punctures. The dorsal plastron is present only on the frontoclypeus reaching the level of the midlength of the eyes. Ventrite 1 is entirely covered with plastron; ventrite 5 is without plastron on the median area before the apex and the area without plastron extends laterad along the posterior margin. The species generally resembles *E. comosiclunis* sp. nov., *E. glabriclunis* sp. nov., and *E. simplex* sp. nov. but differs from all of them in the presence of plastron on almost the entire frontoclypeus and in the oblong oval and less convex body (Fig. 98). Moreover, from *E. comosiclunis*, it differs in the absence of long setae on ventrite 5. From *E. glabriclunis*, it differs in the evenly convex ventrite 5, without a large glabrous area.

Etymology

The epithet ‘oblongus’ (‘oblong’) is a Latin adjective referring to the characteristic elongate body shape.

Type material

Holotype

VIETNAM – **Lam Dong Province** • ♂; “S-VIETNAM: 17.-21.4. 12km N Dalat 1995 Lang Bian | 12°03′N 108°27′E 1580 - 1750 m Pacholatko & Dembicky”; NMW.

Fig. 98. *Elmomorphus oblongus* sp. nov., holotype, male (NMW), TL: 3.35 mm.

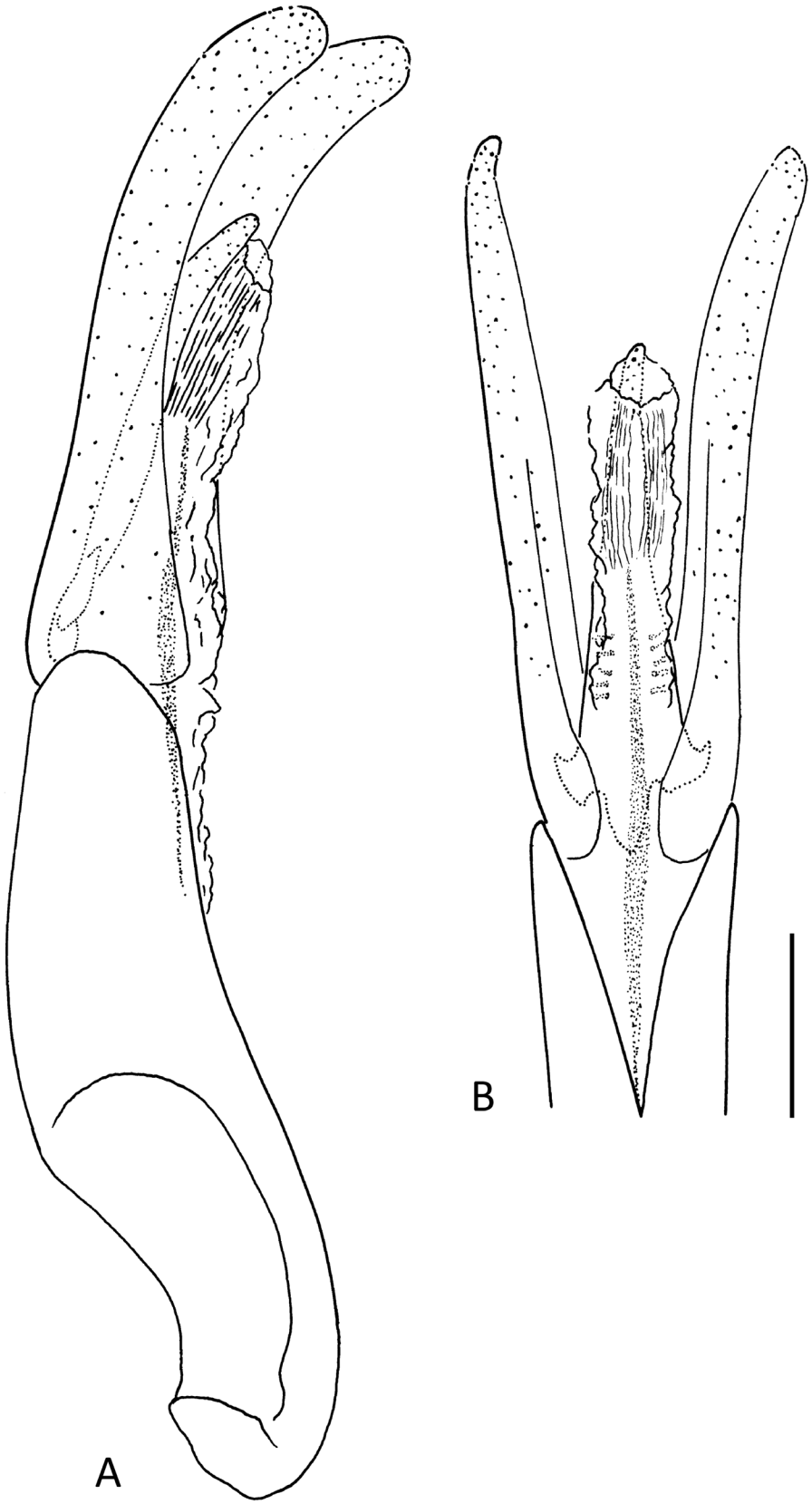

Fig. 99. *Elmomorphus oblongus* sp. nov., holotype (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Paratypes

VIETNAM – **Lam Dong Province** • 139 ex.; same collection data as for holotype; CKB, NMW.

Type locality

Vietnam, Lam Dong Province, Lang Bian, 12°3′ N, 108°27′ E.

Description

Measurements (mm): TL: ♂♂ 3.21–3.50 (3.34 ± 0.09, n = 8), ♀♀ 3.42–3.58 (3.48 ± 0.05, n = 8); PL: ♂♂ 0.71–0.81 (0.76 ± 0.03, n = 8), ♀♀ 0.73–0.83 (0.79 ± 0.03, n = 8); PW: ♂♂ 1.40–1.57 (1.51 ± 0.05, n = 8), ♀♀ 1.50–1.60 (1.56 ± 0.03, n = 8); EL: ♂♂ 2.54–2.75 (2.64 ± 0.06, n = 8), ♀♀ 2.71–2.88 (2.76 ± 0.05, n = 8); EW: ♂♂ 1.67–1.79 (1.74 ± 0.04, n = 8), ♀♀ 1.75–1.90 (1.83 ± 0.04, n = 8); PhL: 0.47–0.51 (0.49 ± 0.01, n = 8); PrL: 0.39–0.42 (0.41 ± 0.01, n = 8).

Body oblong oval, strongly convex, widest between first and second thirds of elytra (Fig. 98). Colouration black, antennae, mouthparts, and tarsi reddish brown, remaining parts of legs brown. Dorsal pubescence consisting of very short and thin yellowish setae. Plastron present in anterior portions of frontoclypeus, along lateral elytral edge in posterior half, and entire ventral surface except prosternal process, median part of metaventrite, and narrow area along posterior edge of ventrite 5.

Dorsal cranial surface with coarse setiferous punctures, each approximately as wide as eye facet, separated by 0.5–1.0× puncture diameter; plastron in anterior portions of frontoclypeus, reaching above antennal insertions. Labrum transverse, anterior margin weakly emarginate, exposed portion microreticulate, setae concentrated along anterior margin, equal in length in both sexes. Eyes oval, weakly protruding, ID: ♂♂ 0.51–0.57 mm (0.55 ± 0.02, n = 8), ♀♀ 0.55–0.61 mm (0.58 ± 0.01, n = 8). Antennae short, 10-segmented, densely setose.

Pronotum transverse, moderately convex, widest at base, PW/PL: ♂♂ 1.88–2.06 (1.97 ± 0.05, n = 8), ♀♀ 1.92–2.09 (1.99 ± 0.06, n = 8); surface smooth, with round setiferous punctures; anterior angles protruding, deflexed; lateral sides convergent, weakly rounded. Prosternal process with lateral and posterior edges rounded; lateral portions weakly raised, without clusters of long setae; median keel arcuate. Scutellum slightly longer than wide, with several round punctures. Metaventral disc weakly convex, without clusters of long setae. Elytra oval, widest between first and second thirds, EL/EW: ♂♂ 1.48–1.55 (1.51 ± 0.02, n = 8), ♀♀ 1.46–1.57 (1.51 ± 0.04, n = 8); surface very weakly microreticulate, with scattered round punctures; plastron present in posterior half in narrow bands along lateral edges. Tibiae weakly curved, protibia ca 1.5× as long as protarsus; PrTL/PL: ♂♂ 0.99–1.10 (1.04 ± 0.04, n = 8), ♀♀ 0.82–1.12 (1.03 ± 0.09, n = 8). Terminal protarsomere as long as three preceding segments combined.

Ventrites covered with plastron, except on median area before apex of ventrite 5, which extends laterad along posterior edge. Ventrite 5 weakly emarginate at apex in males, rounded at apex, with short longitudinal keel in females.

Aedeagus (Fig. 99): phallobase short, PhL/PrL: 1.16–1.27 (1.22 ± 0.04, n = 8); parameres relatively long, moderately bent ventrad in distal half, apices narrowly rounded (lateral aspect); penis narrowly rounded at apex, reaching two-thirds of parameral length; sclerotised fibula present. Bursa copulatrix (Fig. 106B) with numerous microsclerites.

Secondary sexual dimorphism

Ventrite 5 in males weakly emarginate at apex, in female rounded at apex, with short longitudinal keel.

Distribution

Vietnam (Fig. 115D).

Elmomorphus glabriclunis sp. nov.
urn:lsid:zoobank.org:act:97854318-7333-4566-90A6-D1CADF579AE4
Figs 100–101, 106C, 115E

Differential diagnosis

Elmomorphus glabriclunis sp. nov. (Fig. 100) is characterised by having a strongly convex body and the dorsal plastron confined only to small areas around the antennal insertions. Elytral striae are absent, and ventrite 1 is entirely covered with plastron. This species strongly resembles *E. simplex* sp. nov. and *E. comosiclunis* sp. nov., but it differs from both in the ventrite 5, which is strongly convex anteriorly and deflexed posteriorly with a sizeable median area without plastron. In *E. simplex*, ventrite 5 is evenly convex, and the area lacking plastron along the posterior margin is narrow. In *E. comosiclunis*, ventrite 5 is simple and evenly convex in females, while males have a large flat oval area with remarkably long setae.

Etymology

The epithet, a noun (nominative singular) in apposition, is a combination of the Latin words 'glaber' ('glabrous') and 'clunis' ('rump'). It refers to the glabrous area on ventrite 5.

Type material

Holotype

CHINA – **Hong Kong** • ♂; "HONGKONG leg. Dudgeon [printed] | Tai Po Kau 19.1.1978 K [handwritten by M.A. Jäch]"; NMW.

Paratypes

CHINA – **Hong Kong** • 2 ex.; "HONGKONG 1977-1979 Benthic Coll. Tai Po Kau leg. Dudgeon"; NMW • 1 ♂; "HONGKONG Tai Po Kau 2.11.1978 leg. Dudgeon (K)"; NMW • 1 ex.; "Tai Po Kau riv. 27.IV.1978 K5 | HONGKONG leg. Dudgeon"; NMW • 1 ex.; "HONGKONG Tai Po Kau 9.3.1978 leg. Dudgeon (K)"; NMW • 1 ex.; "HONGKONG Tai Po Kau 2.1.1979 leg. Dudgeon (3)"; NMW • 1 ex.; "HONGKONG Tai Po Kau 28.7.1983 leg. Dudgeon (upstr.)"; NMW • 1 ex.; "HONGKONG, Tai Po Kau 12.-13.4.1984 leg. Dudgeon (contr.)"; NMW • 2 ex.; "HONGKONG (3) [CWBS 4] 1992 N.T.-Plover C.[ove] Res.[ervoire] 25.VI. leg.Jäch"; NMW • 1 ♂; "HONGKONG (7) [CWBS 8] 1992 N.T.- Tai Po N.Res. 27.VI. leg. Jäch"; NMW. – **Fujian Province** • 1 ex.; "CHINA: FUJIAN, Yong'an, 5 km SW Xiyang, 550 m Ziyungdong Shan, 25. 1. 1997, leg. Ji & Wang (CWBS 256)"; NMW • 1 ♂, 1 ♀; "CHINA: FUJIAN, Longyan Jiangshan (20 km N Longyan) Keshan monastery, 900 m Meihua Shan, 28.1.1997 leg. H. Schönmann (CWBS 260)"; NMW • 3 ♂♂, 6 ♀♀; "CHINA: FUJIAN, Longyan Shizong, Shangfang Shan 850m 31.1.1997 leg. Ji & Wang (CWBS 264)"; CKB, NMW • 5 ♂♂, 3 ♀♀; "CHINA: Fujian, Yong'an 5 km N Xiyang, 400m 26.1.1997 leg. Ji & Wang (CWBS 258)"; CKB, NMW. – **Guangdong Province** • 1 ex.; "CHINA: Guangdong Prov. 50 km E Fengkai 23°27′36″N 111°54′36″E 31.10./2.11.2001, ca. 150 m Jäch & Komarek (CWBS 455)"; NMW • 1 ♂, 4 ♀♀; "CHINA: Guangdong Prov. 50 km E Fengkai 23°27′04″N 111°53′53″E 1.11.2001, ca. 300-400 m Jäch & Komarek (CWBS 456)"; NMW • 1 ex.; "CHINA: Guangdong Prov. 60 km E Fengkai 23°26′38″N 111°58′10″E 1.11.2001, ca. 230 m Jäch & Komarek (CWBS 458)"; NMW • 2 ♂♂, 1 ♀; "CHINA: Guangdong Prov. 45 km N Zengcheng 23°37′28″N 113°50′10″E 13.11.2001, ca. 500 m leg. M. Wang (CWBS 495)"; NMW • 1 ♂, 1 ♀; "CHINA: GUANGDONG Prov. W of Qixing, 1–3.v.2011 HEISHIDING nature reserve (forested stream valley; at light) 23°27.9′N, 111°54.3′E, 190 m M. Fikáček & J. Hájek leg."; NMPC. – **Guangxi Autonomous Region** • 8 ex.; "CHINA: SE-Guangxi, Distr. Yulin, Liuwan Mts. SW Yulin | 18.11.1993 300m leg. Schönmann (23) [CWBS 45]"; CKB, NMW • 2 ex.; same collection data as for preceding, but "leg. Schillhammer"; NMW • 1 ex.; same collection data as for preceding, but "leg. L. JI"; NMW • 11 ♂♂, 11 ♀♀; "CHINA SE-Guangxi Distr. Yulin Liuwan Mts. SW Yulin | 20.11.1993 120m (26) [CWBS 49] leg. Schönmann"; CKB, NMW • 7 ex.; "CHINA, SE-Guangxi Distr. Yulin Liuwan Mts. SW

Fig. 100. *Elmomorphus glabriclunis* sp. nov., paratype, male from China, locality CWBS 49 (CKB), TL: 3.39 mm.

Yulin | 17.11.1993 Kuishan, 600-700m leg. L. Ji (21) [CWBS 43]"; NMW • 2 ex.; same collection data as for preceding , but "leg. Schillhammer"; CKB, NMW • 5 ex.; same collection data as for preceding, but "leg. L. JI"; NMW • 7 ex.; "CHINA SE-Guangxi Distr. Yulin Liuwan Mts. SW Yulin | 16.11.1993 350-400m leg. Schönmann (20) [CWBS 42]"; NMW • 3 ex.: same collection data as for preceding, but "leg. Schillhammer"; NMW • 1 ♂, 2 ♀♀; "CHINA SE-Guangxi Distr. Yulin Liuwan Mts. SW Yulin | 18.11.1993 200m, (24) [CWBS 46] leg. Schönmann"; NMW • 1 ♀: "CHINA SE-Guangxi Distr. Yulin Liuwan Mts. SW Yulin | 17.11.1993 Kuishan, 300m leg. Schönmann (22) [CWBS 44]"; NMW.

Type locality

China, Hong Kong Special Administrative Region, New Territories, Tai Po Kau Nature Reserve.

Description

Measurements (mm): TL: ♂♂ 3.14–3.63 (3.39±0.11, n=15), ♀♀ 3.36–3.70 (3.50±0.12, n=10); PL: ♂♂ 0.67–0.81 (0.73±0.04, n=15), ♀♀ 0.69–0.81 (0.73±0.03, n=10); PW: ♂♂ 1.52–1.69 (1.60±0.05, n=15), ♀♀ 1.52–1.79 (1.65±0.08, n=10); EL: ♂♂ 2.47–2.93 (2.66±0.10, n=15), ♀♀ 2.63–2.97 (2.77±0.11, n=10); EW: ♂♂ 1.79–2.02 (1.90±0.06, n=15), ♀♀ 1.80–2.02 (1.95±0.08, n=10); PhL: 0.53–0.61 (0.56±0.02, n=15); PrL: 0.40–0.48 (0.43±0.02, n=15).

Body oval, moderately convex dorsally (Fig. 101). Integument black; mouthparts, antennae, and legs reddish brown. Pubescence yellowish. Plastron on dorsum confined to an area around antennal insertions; ventral plastron present on entire surface, except on prosternal process, median part of metaventrite, and median part of terminal ventrite.

Head smooth with round punctures slightly smaller than an eye facet, puncture distance 0.5–1.0× diameter. Labrum microreticulate on exposed portion, with small setiferous punctures; setae equal in length in both sexes; anterior margin finely emarginate. Eyes oval, interfacetal setae short. Antennae 10-segmented, densely setose.

Pronotum moderately convex; PW/PL: ♂♂ 2.06–2.34 (2.21±0.09, n=15), ♀♀ 2.10–2.46 (2.26±0.13, n=10); rim of anterior margin as wide as 2–3 eye facets, interrupted in middle; anterior angles strongly deflexed, prominent; lateral pronotal sides convergent, rounded; surface smooth, with round setiferous punctures. Prosternal process with lateral edges straight, posterior edge rounded, lateral portions moderately raised, without groups of long setae, median keel arcuate. Scutellum wider than long, smooth, with minute punctures. Median part of metaventrite slightly convex, posteriorly widened; groups of long setae absent in both sexes; lateral margins of metaventral process raised. Elytra oval, moderately convex, widest before middle, EL/EW: ♂♂ 1.30–1.50 (1.40±0.06, n=15), ♀♀ 1.38–1.48 (1.42±0.04, n=10); surface microreticulate, with scattered round punctures. Tibiae slightly curved, protibia ca 1.6× as long as protarsus; PrTL/PL: ♂♂ 1.02–1.19 (1.11±0.05, n=15), ♀♀ 0.96–1.21 (1.09±0.08, n=10). Terminal protarsomere as long as three preceding tarsomeres combined.

Abdomen covered with plastron, except on sizeable oval area on ventrite 5. Ventrite 1 with two longitudinal keels medially. Ventrite 5 with short longitudinal keel before apex in females. Aedeagus (Fig. 101): phallobase slightly expanded basally, PhL/PrL: 1.13–1.51 (1.29±0.09, n=14); parameres rather long and narrow, curved ventrad in apical half, apices rounded (lateral aspect); penis apically narrowly rounded; sclerotised fibula slender. Bursa copulatrix (Fig. 106C) with several microsclerites located laterally in proximal portion.

Secondary sexual dimorphism

Ventrite 5 in females with short longitudinal keel before apex.

Distribution

China (Fujian, Guangdong, Guangxi, Hong Kong) (Fig. 115E).

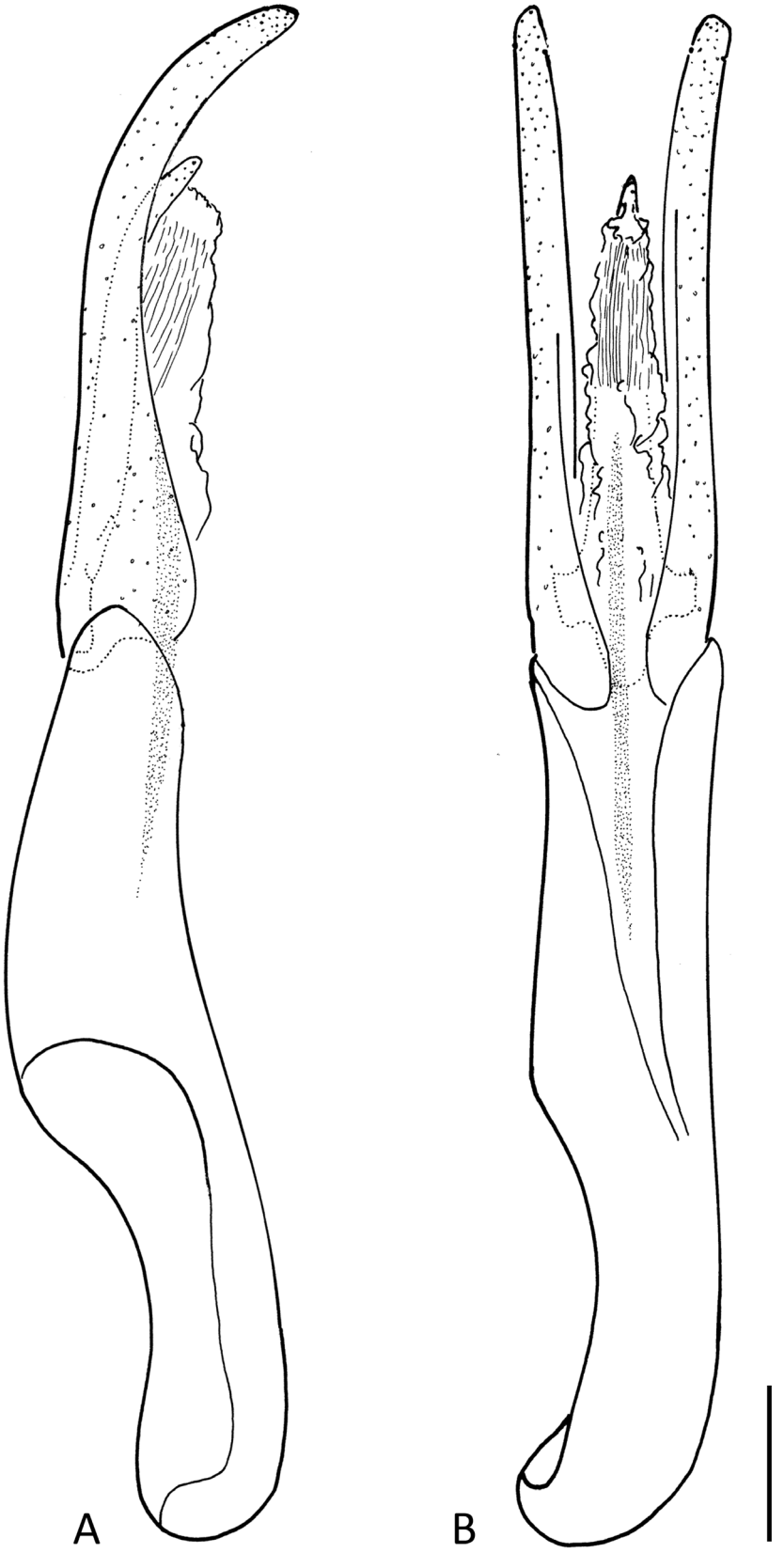

Fig. 101. *Elmomorphus glabriclunis* sp. nov., paratype from China, locality CWBS 49 (CKB), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

Elmomorphus simplex sp. nov.
urn:lsid:zoobank.org:act:5DA24AA2-9325-4F75-93A2-E62BE5D6F533
Figs 102–103, 106D, 115F

Differential diagnosis

Elmomorphus simplex sp. nov. (Fig. 102) is characterised by a strongly convex body; the dorsal plastron is confined to small areas around the antennal insertions; the elytral punctation is uniform, and striae are missing. The entire ventrite 1 is covered with plastron; ventrite 5 is evenly convex in both sexes, and the plastron is absent only in a narrow area along the posterior margin. The species resembles *E. glabriclunis* sp. nov. and *E. comosiclunis* sp. nov.; the former differs in ventrite 5, which is strongly convex anteriorly and deflexed posteriorly, and the plastron is absent on a sizeable median area. *Elmomorphus comosiclunis* differs in the simple female ventrite 5 with a narrow posterior area without plastron, and the male ventrite 5 bearing a large flat oval area with remarkably long setae.

Etymology

The epithet 'simplex' ('simple') is a Latin adjective and refers to the simple elytral surface lacking striae and plastron.

Type material

Holotype

CHINA – **Jiangxi Province** • ♂; "CHINA, Jangxi [Jiangxi] W Jinggang Shan (Ciping), 2. - 14. VI. 1994"; NMW.

Paratypes

CHINA – **Jiangxi Province** • 4 ♂♂, 2 ♀♀; same collection data as for holotype; CKB, NMW • 6 ♂♂, 3 ♀♀; "CHINA: Jiangxi, Jiuling Shan 18km NW Shangfu, 12.11.1997 env. Jiu Xian, 700-800m leg. Schönmann (CWBS 302)"; CKB, NMW • 1 ♂, 1 ♀; "CHINA: Jiangxi, Jiuling Shan 8km NW Shangfu 13. 11. 1997 env. Shang Bao, 700m leg. M. Wang (CWBS 304)"; NMW • 2 ♂♂, 3 ♀♀; "CHINA: Jiangxi, Jiuling Shan 35km W Shangfu 14.11.1997 env. Dong Xi Ling, 800m leg. Schönmann (CWBS 305)"; NMW • 4 ♂♂, 6 ♀♀; "CHINA: Jiangxi, Jiuling Shan 18km NW Shangfu 15.11.1997 env. Jiu Xian, 800m leg. M. Wang (CWBS 306)"; CKB, NMW • 1 ♂; "CHINA: JIANGXI Prov., 26.iv.2011 Jinggang Shan Mts. HUYANGTA (fen, stream) 26°29.9′N, 114°07.3′E, 1490 m M. Fikáček & J. Hájek leg."; NMPC • 1 ex.; "CHINA, JIANGXI prov.,23-29.iv.2011 Jinggang Shan Mts. BAIYINHU vill. env. (stream valley; wet rock; at light) 26°36.8′N, 114°11.1′E, 800 m M. Fikáček & J. Hájek leg."; NMPC. – **Fujian Province** • 2 ♀♀; "CHINA: FUJIAN Prov. Wuyishan Mts NNR, Guadun vill. env., J. Hájek, D. Král, J. Růžička & L. Sekerka leg., 25.+29.v.2018 | 1075–1250 m 27°44.0–2′N, 117°38.3–7′E tea plantation-mixed forest + bamboo"; NMPC • 1 ♀; "CHINA: FUJIAN Prov. 25.v.2018 Wuyishan Mts NNR, Guadun vill. env., mixed forest + bamboo; wet rock along road 27°44.0′N, 117°38.7′E, 1075 m J. Hájek, D. Král, J. Růžička & L. Sekerka lgt."; NMPC. – **Hunan Province** • 17 ♂♂, 7 ♀♀; "CHINA, NW-Hunan 1993, Wulingyuan, N Dayong Zangjiajie [Zhangjiajie], 29.10., 650m, leg. L. JI (1) [CWBS 20]"; CKB, NMW • 8 ♂♂, 4 ♀♀; "CHINA, NW-Hunan 1993 Wulingyuan, N Dayong Zangjiajie [Zhangjiajie], 29. 10. | 650m, leg. Schönmann et Schillhammer (2) [CWBS 21]"; CKB, NMW • 1 ♂; "CHINA, NW-Hunan 1993 Wulingyuan, N Dayong Suoxiyu, 31.10., 400m leg. L. Ji (5) [CWBS 24]"; NMW • 1 ♀; "CHINA, NW-Hunan 1993 Wulingyuan, N Dayong Suoxiyu, 31.10., 400m leg. Schönmann (6) [CWBS 25]"; NMW • 1 ex.; "CHINA: Hunan, 19.3.2003 ca. 25 km N Pingjiang City 113°37′26″E 28°50′52″N ca. 200 m, leg. Schönmann, Komarek & Wang (CWBS 498)"; NMW • 1 ex.; "CHINA: Hunan, 20.3.2003 ca. 25 km N Pingjiang City 113°38′05″E 28°50′10″N ca. 200 m, leg. Schönmann, Komarek & Wang (CWBS 499)"; NMW • 9 ex.; "CHINA: Hunan, 21.3.2003 NE Nanjiangqiao, Mufu Shan 113°48′03″E 28°57′17″N ca. 600 m, leg. Schönmann, Komarek & Wang

Fig. 102. *Elmomorphus simplex* sp. nov., paratype, male from China, locality CWBS 20 (CKB), TL: 3.57 mm.

(CWBS 503)"; CKB, NMW • 10 ex.; "CHINA: Hunan, 21.3.2003 NE Nanjiangqiao, Mufu Shan 113°48′03″E 28°57′17″N \ ca. 600 m, leg. Schönmann, \ Komarek & Wang (CWBS 504)"; NMW. – **Zhejiang Province** • 1 ex.; "CHINA: Zhejiang Prov. Lishui City Reg., 5.4.2001 1 km W Yunfeng vill., 950 m | leg. M. Wang (CWBS 419)"; NMW • 3 ex.; "CHINA: Zhejiang Prov. Lishui City Reg., 6.4.2001 | 1 km N Huangyuan vill., 1150 m leg. M. Wang (CWBS 420)"; NMW • 6 ex.; "CHINA: Zhejiang Prov. | Lishui City Reg., 6.4.2001 2 km S Huangyuan vill., 1100 m leg. M. Wang (CWBS 421)"; NMW • 4 ex.; "CHINA: Zhejiang Prov. | Lishui City Reg., 7.4.2001 rd. Yunhe-Yunfeng, 1000 m leg. M. Wang (CWBS 422)"; NMW • 2 ex.; "CHINA: Zhejiang Prov. | Lishui City Reg., 10.4.2001 40 km S Longquan, 900 m leg. M. Wang (CWBS 427)"; NMW • 1 ex.; "CHINA: Zhejiang Prov.| Lishui City Reg., 11.4.2001 26 km S Longquan, 500 m leg. M. Wang (CWBS 430)"; NMW.

Type locality

China, Jiangxi Province, Jinggang Shan.

Description

Measurements (mm): TL: ♂♂ 3.36–3.89 (3.57±0.12, n=15), ♀♀ 3.24–3.96 (3.70±0.20, n=15); PL: ♂♂ 0.73–0.86 (0.81±0.03, n=15), ♀♀ 0.74–0.87 (0.82±0.04, n=15); PW: ♂♂ 1.50–1.73 (1.63±0.05, n=15), ♀♀ 1.50–1.77 (1.67±0.08, n=15); EL: ♂♂ 2.57–3.02 (2.76±0.12, n=15), ♀♀ 2.50–3.12 (2.88±0.16, n=15); EW: ♂♂ 1.82–2.11 (1.95±0.07, n=15); ♀♀ 1.79–2.13 (1.99±0.10, n=15); PhL: 0.52–0.65 (0.55±0.03, n=15); PrL: 0.32–0.38 (0.35±0.02, n=15).

Body broadly oval, strongly convex dorsally (Fig. 102). Integument black; mouthparts, antennae, trochanters, and tarsi reddish brown. Pubescence consisting of short yellowish setae. Plastron covering small anterolateral areas of frontoclypeus around antennal insertions and ventral surface, except for prosternal process and median part of metaventrite.

Head with small round punctures with diameters slightly smaller than eye facet, separated by ca 0.5–1.0× puncture diameter; microreticulation very fine, confined to anterior portion; plastron around antennal insertions only. Anterior margin of labrum shallowly emarginate in middle; exposed portion microreticulate, with small setiferous punctures; setae of equal length in both sexes. Anterior margin of clypeus straight. Antennae 11-segmented. Eyes oval, interfacetal setae short, ID: ♂♂ 0.49–0.56 mm (0.52±0.02, n=15), ♀♀ 0.51–0.57 mm (0.55±0.02, n=15), APD/ID: ♂♂ 1.64–1.92 (1.78±0.06, n=15), ♀♀ 1.62–1.81 (1.74±0.06). Mandibles with four teeth; mola well developed, setose; prostheca curved mesally in apical fourth, with numerous long sensilla along medial margin and short conical sensilla apically.

Pronotum moderately convex; PW/PL: ♂♂ 1.89–2.26 (2.02±0.09, n=15), ♀♀ 1.95–2.13 (2.05±0.05, n=15); surface smooth, with round setiferous punctures; plastron absent; rim of anterior margin as wide as 3× diameter of eye facet, interrupted in middle; lateral pronotal sides convergent, slightly rounded in dorsal aspect. Prosternal process with lateral edges divergent and straight, apical edge broadly rounded; lateral portions feebly raised without setal clusters; median keel arcuate. Scutellum as long as wide, surface smooth, with small punctures. Median part of metaventrite moderately convex and posteriorly widened; in both sexes, groups of long setae absent. Elytra oval, strongly convex, widest before middle, EL/EW: ♂♂ 1.33–1.49 (1.42±0.04, n=15), ♀♀ 1.10–1.50 (1.42±0.09, n=15); dorsal surface finely microreticulate, with round setiferous punctures; plastron missing. Tibiae slightly curved; protibia ca 1.3× as long as protarsus, PrTL/PL: ♂♂ 0.91–1.14 (1.00±0.06, n=15), ♀♀ 0.95–1.04 (1.00±0.02, n=15). Terminal protarsomere as long as three preceding tarsomeres combined.

Ventrites covered with plastron, except for narrow area along apical margin of ventrite 5. In males, ventrite 5 narrowly truncate or slightly emarginate apically; in females rounded, with short longitudinal keel. Aedeagus (Fig. 103): phallobase slightly expanded basally; PhL/PrL: 1.39–1.75 (1.55±0.10,

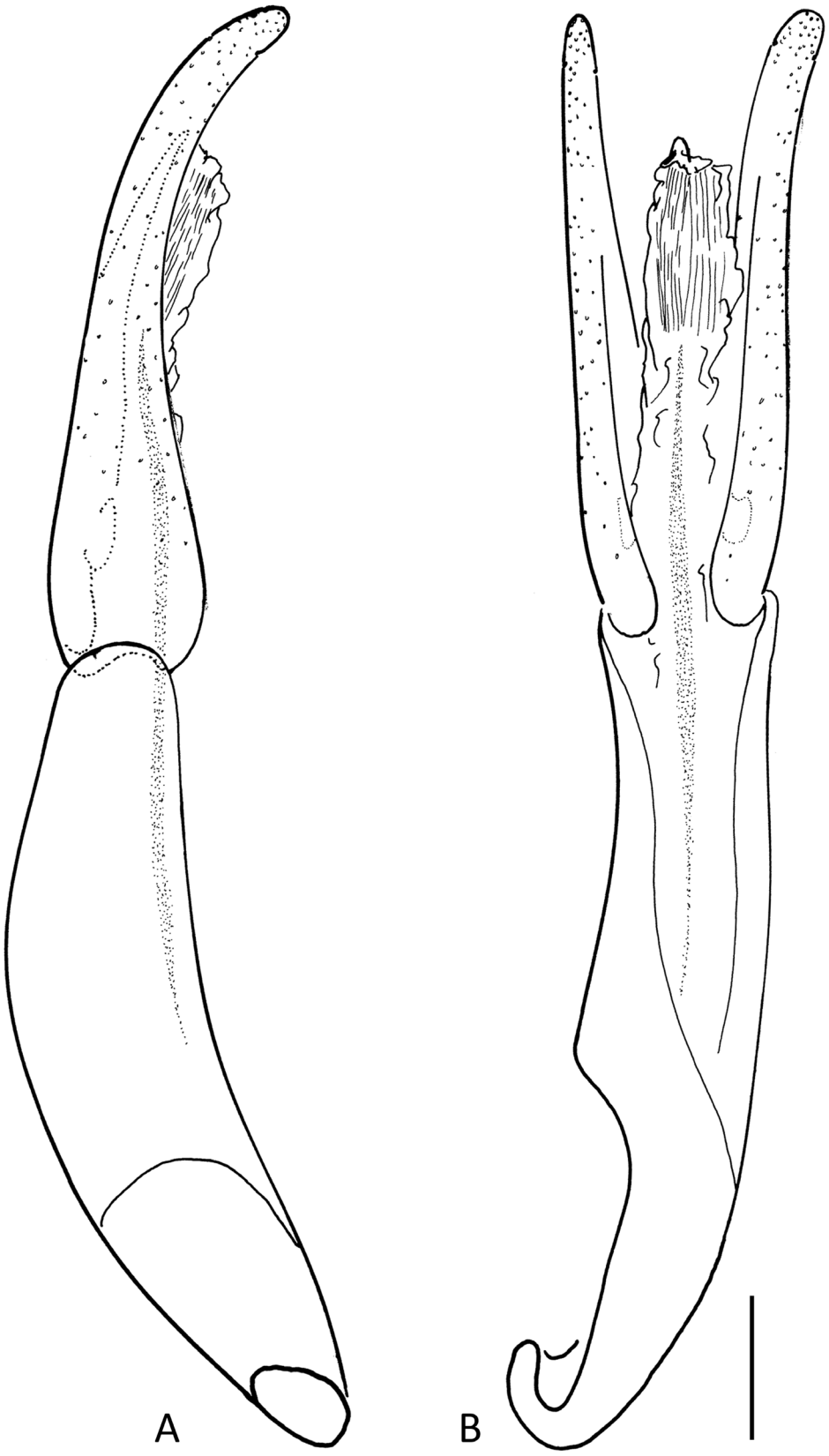

Fig. 103. *Elmomorphus simplex* sp. nov., paratype from China, locality CWBS 20 (CKB), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

n = 15); parameres slightly curved ventrad, apices rounded (lateral aspect); penis apically narrowly rounded; sclerotised fibula long. Bursa copulatrix (Fig. 106D) with microsclerites scattered laterally in proximal portions.

Secondary sexual dimorphism

Females with short subapical longitudinal keel on last ventrite.

Distribution

China (Fujian, Hunan, Jiangxi, Zhejiang) (Fig. 115F).

Elmomorphus comosiclunis sp. nov.
urn:lsid:zoobank.org:act:BBFE4ED5-2CFC-4A4F-989B-69D15D2F9A15
Figs 104–105, 106E, 116

Differential diagnosis

Elmomorphus comosiclunis sp. nov. (Fig. 104) is characterised by the strongly convex body; the dorsal plastron is confined to small areas around the antennal insertions; the elytral punctation is uniform and striae are absent; ventrite 1 is entirely covered with plastron. In general appearance, this species strongly resembles *E. glabriclunis* sp. nov. and *E. simplex* sp. nov.; it differs from both in the presence of remarkably long setae on a large flat oval area on male ventrite 5; female ventrite 5 is simple, evenly convex, and plastron lacking on a narrow area along the posterior margin. The bursa copulatrix has numerous small microsclerites scaterred in proximal and distal part (Fig. 106E).

Etymology

The epithet, a noun (nominative singular) in apposition, is composed of the Latin adjective 'comosus' ('very hairy') and the Latin noun 'clunis' ('rump'). The name refers to the conspicuous cluster of long setae on the male ventrite 5.

Type material

Holotype

CHINA – **Fujian Province** • ♂; "CHINA: FUJIAN, Guangze Wuyi Shan, 12 km S Zhima Li Fang, 400m, 22. 1. 1997 leg. H.Schönmann (CWBS 252)"; IAECAS.

Paratypes

CHINA – **Fujian Province** • 1 ♀; same collection data as for holotype; NMW • 1 ♀; "CHINA: FUJIAN, Chong'an Wuyi Shan, 3 km W Da'an 500m, 19.1.1997 leg. H. Schönmann (CWBS 250)"; NMW • 2 ♂♂; "CHINA: FUJIAN, Longyan Jiangshan (20 km N Longyan) Keshan monastery, 900m Meihua Shan, 28.1.1997 leg. Ji & Wang (CWBS 260)"; CKB, NMW • 1 ♂; "CHINA: FUJIAN, Longyan 2 km S Dachi, 750m Ceyan Shan, 29.1.1997, leg. Ji & Wang (CWBS 262)"; NMW • 2 ex.; "CHINA: FUJIAN, Xiaochi (20 km W Longyan) Meihua Shan, 650m, 30.1.1997, leg. Ji & Wang (CWBS 263)"; NMW • 3 ♂♂; "CHINA: FUJIAN, Longyan Shizhong, Shangfang Shan 850m, 31.1.1997 leg. Ji & Wang (CWBS 264)"; CKB, NMW. – **Guangdong Province** • 3 ♂♂; "CHINA: Guangdong Prov. Huaiji - Yangshan rd. 3.11.2001, ca. 530 m leg. Jäch, Komarek & Wang (CWBS 464)"; NMW • 1 ex.; "CHINA: Guangdong Prov. Nanling N.P., Yao Shan 24°53′03″N 112°57′37″E 4.11.2001, ca. 950 m Jäch & Komarek (CWBS 468)"; NMW • 1 ♀; "CHINA: Guangdong Prov. Changjia - Ruyan rd., ca. 40 km E Changjia 5.11.2001 Jäch & Komarek (CWBS 471)"; NMW.

Type locality

China, Fujian Province; Jianyuan Prefecture; Guangze County [= Shuanxi]; 12 km south of Zhima Town and 2 km north of Li Fang Village; small stream flowing from forested mountains (broadleaf trees,

Fig. 104. *Elmomorphus comosiclunis* sp. nov., paratype, male from Fujian Province (NMW), TL: 3.69 mm.

bamboo and *Cunninghamia*), ca 1 m wide, partly shaded by bushes, pools (filled with sand) and sections with granitic rocks and coarse crystalline gravel, 400 m a.s.l. (CWBS 252; Jäch & Ji 1998).

Description

Measurements (mm): TL: ♂♂ 3.59–3.87 (3.69±0.08, n=10), ♀♀ 3.41–4.03 (3.69±0.26, n=5); PL: ♂♂ 0.73–0.83 (0.79±0.03, n=10), ♀♀ 0.73–0.85 (0.79±0.04, n=5); PW: ♂♂ 1.71–1.79 (1.74±0.02, n=10), ♀♀ 1.58–1.85 (1.69±0.11, n=5); EL: ♂♂ 2.83–3.06 (2.90±0.07, n=10), ♀♀ 2.67–3.22 (2.90±0.23, n=5); EW: ♂♂ 2.02–2.11 (2.04±0.03, n=10), ♀♀ 1.92–2.18 (2.02±0.11, n=5); PhL: 0.57–0.65 (0.63±0.03, n=7); PrL: 0.52–0.57 (0.55±0.02, n=7).

Body obovate, strongly convex dorsally (Fig. 105). Integument black; antennae, mouthparts, and legs reddish-brown. Pubescence consists of very short yellowish setae. Plastron covers small area around antennal insertions and ventral surface, except prosternal process and median part of metaventrite.

Dorsal surface of head smooth, with round punctures slightly smaller than an eye facet, separated by 0.5–1.0× puncture diameter. Exposed portion of labrum microreticulate, with small setiferous punctures; setae somewhat longer in males than in females. Eyes oval, interfacetal setae short. Antennae 10-segmented, densely setose.

Pronotum transverse, moderately convex, PW/PL: ♂♂ 2.13–2.34 (2.22±0.06, n=10), ♀♀ 2.05–2.18 (2.14±0.05, n=5); rim of anterior margin as wide as 2–3 eye facets, interrupted in middle; anterior angles strongly deflexed, prominent; lateral pronotal sides weakly rounded; surface smooth, with rather deeply impressed, round punctures. Prosternal process with lateral edges straight, posterior edge rounded; lateral portions slightly raised, without setal clusters; median keel arcuate. Scutellum smooth, with small round punctures. Median part of metaventrite without plastron posteriorly widened, slightly convex; groups of long setae on metaventrite absent in both sexes. Elytra obovate, strongly convex, widest before middle, EL/EW: ♂♂ 1.40–1.45 (1.42±0.02, n=10); ♀♀ 1.39–1.52 (1.44±0.05, n=5); surface finely microreticulate, with scattered round punctures, striae absent. Tibiae slightly curved; protibia ca 1.4× as long as protarsus, PrTL/PL: ♂♂ 1.15–1.34 (1.23±0.05, n=10), ♀♀ 0.90–1.14 (1.05±0.09, n=5). Terminal protarsomere as long as three preceding segments combined.

Ventrites covered with plastron, except on narrow portion along posterior margin of ventrite 5 in females. In males, ventrite 5 with very long setae on large oval area protruding beyond posterior margin of ventrite; in females with short longitudinal keel before apex. Aedeagus (Fig. 105): phallobase slightly expanded proximally, PhL/PrL: 1.00–1.24 (1.14±0.07, n=7); parameres long, strongly curved ventrad, apices acute (lateral aspect); penis with apex pointed in ventral aspect and narrowly rounded in lateral aspect; sclerotised fibula present. Bursa copulatrix with numerous small microsclerites scaterred in proximal and distal parts (Fig. 106E).

Secondary sexual dimorphism

Ventrite 5 in males with group of very long setae; in females with short longitudinal keel.

Distribution

China (Fujian, Guangdong) (Fig. 116).

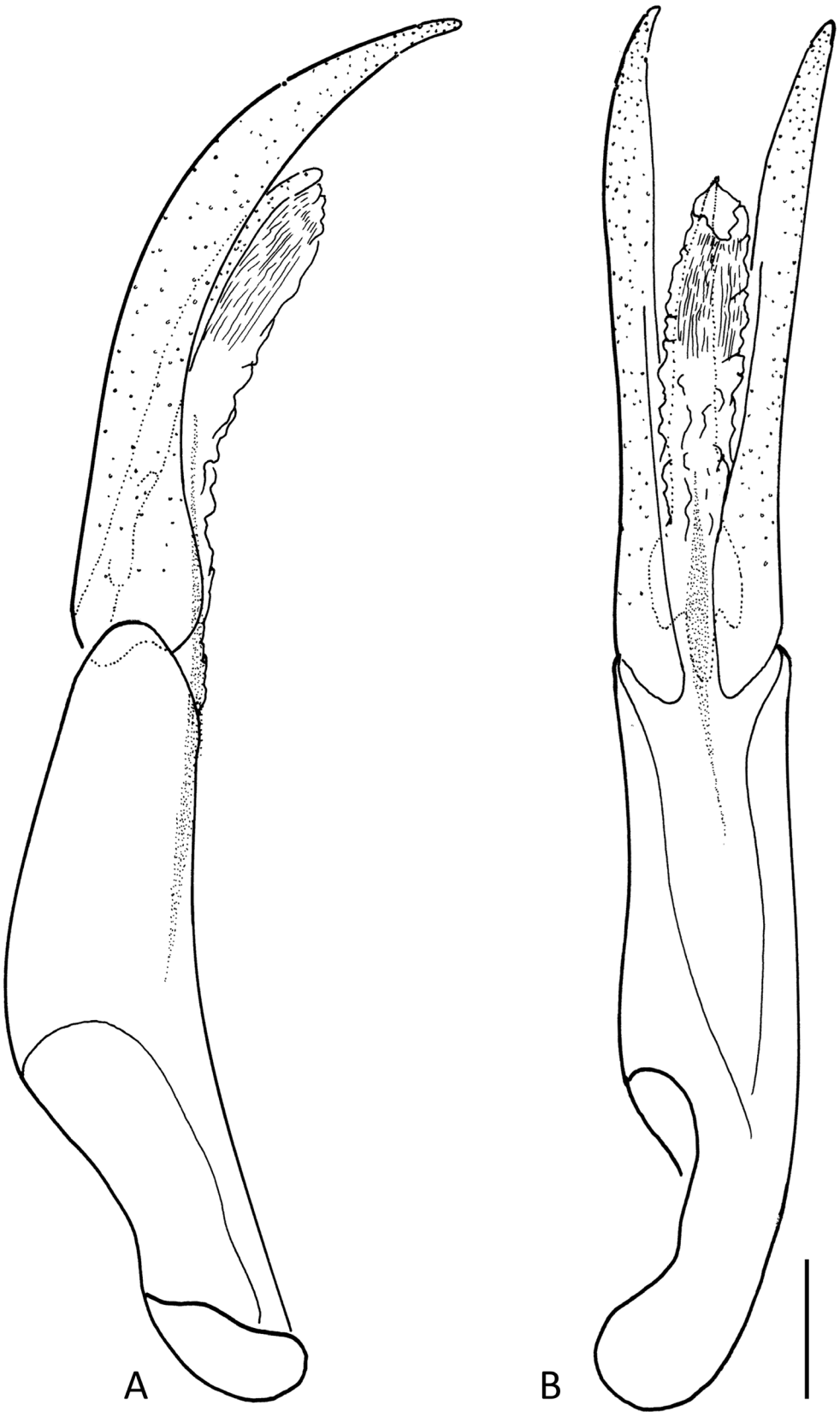

Fig. 105. *Elmomorphus comosiclunis* sp. nov., paratype from Fujian Province (NMW), aedeagus. **A**. Lateral aspect. **B**. Ventral aspect. Scale bar: 0.1 mm.

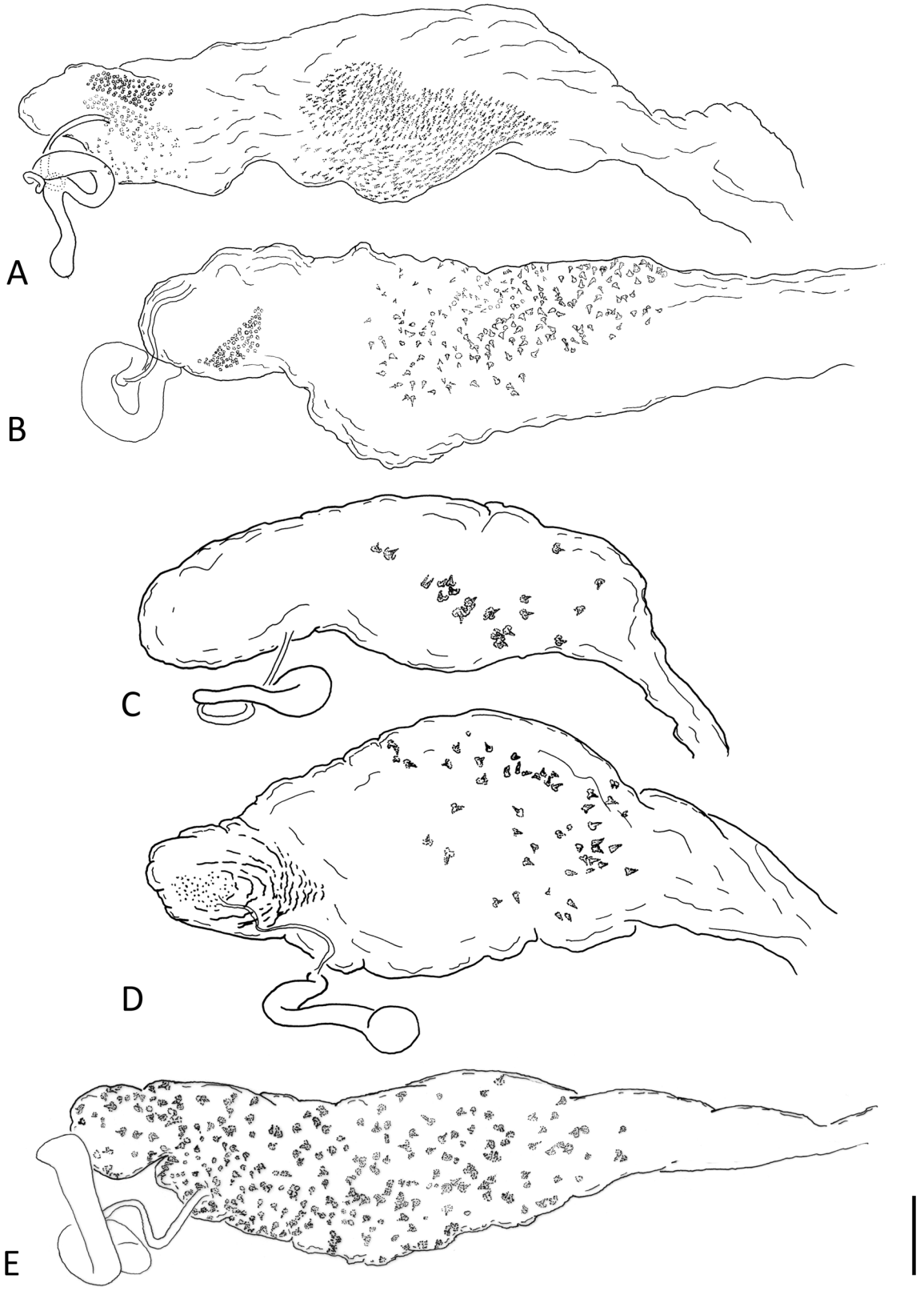

Fig. 106. Bursa copulatrix and vagina. **A**. *Elmomorphus hamatus* sp. nov., paratype from type locality (NMW). **B**. *E. oblongus* sp. nov., paratype from type locality (NMW). **C**. *E. glabriclunis* sp. nov., paratype from China, locality CWBS 258 (CKB). **D**. *E. simplex* sp. nov., paratype from type locality (CKB). **E**. *E. comosiclunis* sp. nov., paratype from China, locality CWBS 468. Scale bar: 0.1 mm.

Fig. 107. Habitats of selected species of *Elmomorphus* Sharp, 1888. **A**. Vietnam, Phong Mỹ, Sông Ô Lâu River (16°31′15.3″ N, 107°15′00.3″ E); *E. striatellus* Delève, 1968 and *E. siamensis* Kodada, Selnekovič & Jäch sp. nov. were found in clumps of leaves and on rootlets of *Neptunia* sp. **B**. Vietnam, Thành Sơn (20°30′01.4″ N, 105°06′19.3″ E); *E. dentipes* sp. nov., and *E. similis* sp. nov. were found in clumps of leaves. **C**. Vietnam, Thành Sơn, Kho Mường (20°28′51.3″ N, 105°07′51.6″ E); *E. paramontanus* Kodada, Selnekovič & Jäch sp. nov., *E. similis* sp. nov., and *E.* cf. *sulcatus* were found on submerged rootlets of bamboo and banana trees. **D**. Same locality, showing submerged rootlets. **E**. Vietnam, Trung Mỹ (21°23′35.3″N, 105°42′52.7″E); *E.* cf. *sulcatus* was found in clumps of leaves and on submerged rootlets of bamboo, *Bauhinia* sp., and *Sterculia lanceolata* Cav. **F**. Same locality, clump of leaves and partly submerged rootlets.

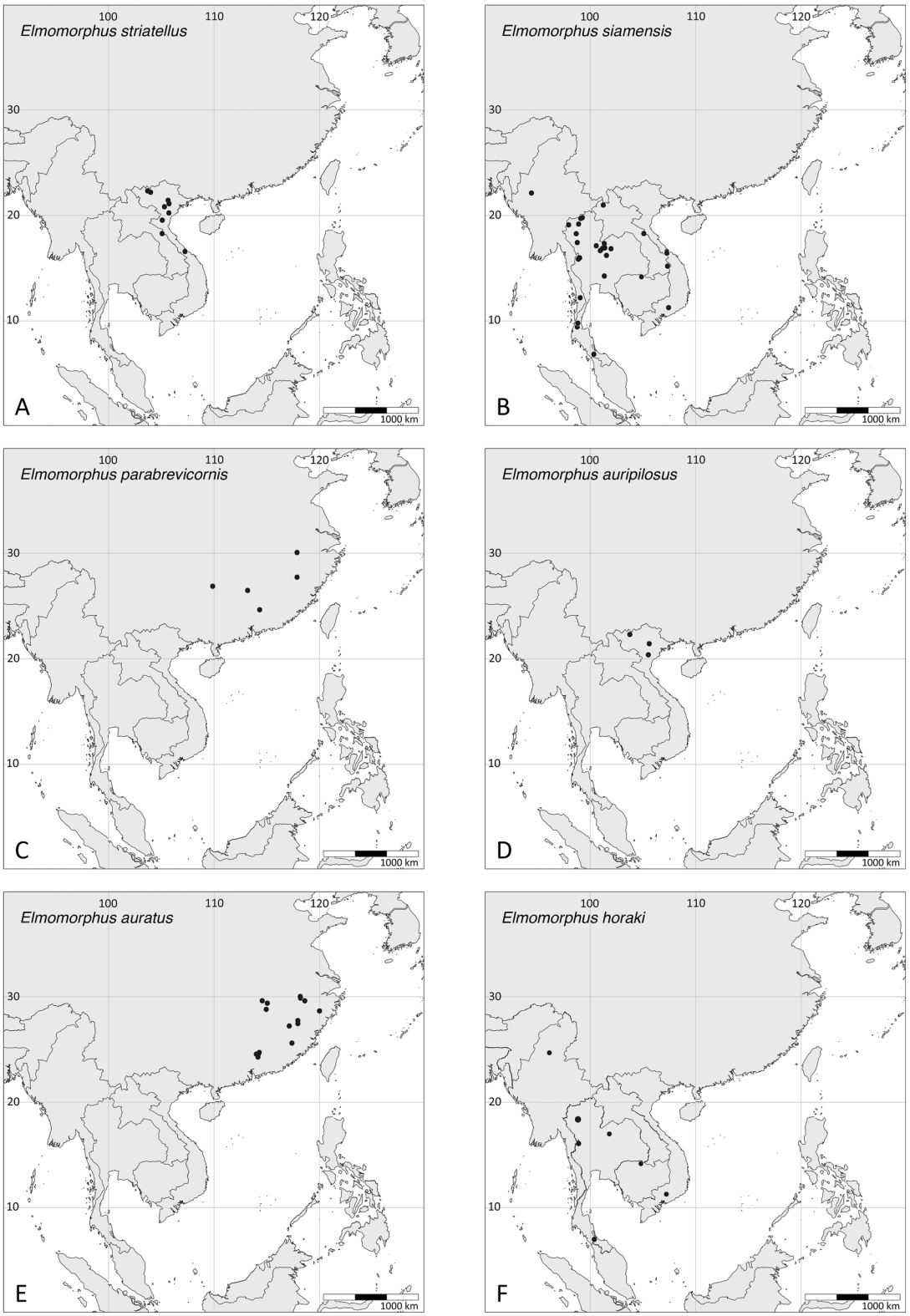

Fig. 108. Distribution maps. **A**. *Elmomorphus striatellus* Delève, 1968. **B**. *E. siamensis* Kodada, Selnekovič & Jäch sp. nov. **C**. *E. parabrevicornis* sp. nov. **D**. *E. auripilosus* sp. nov. **E**. *E. auratus* sp. nov. **F**. *E. horaki* Kodada, Selnekovič & Jäch sp. nov.

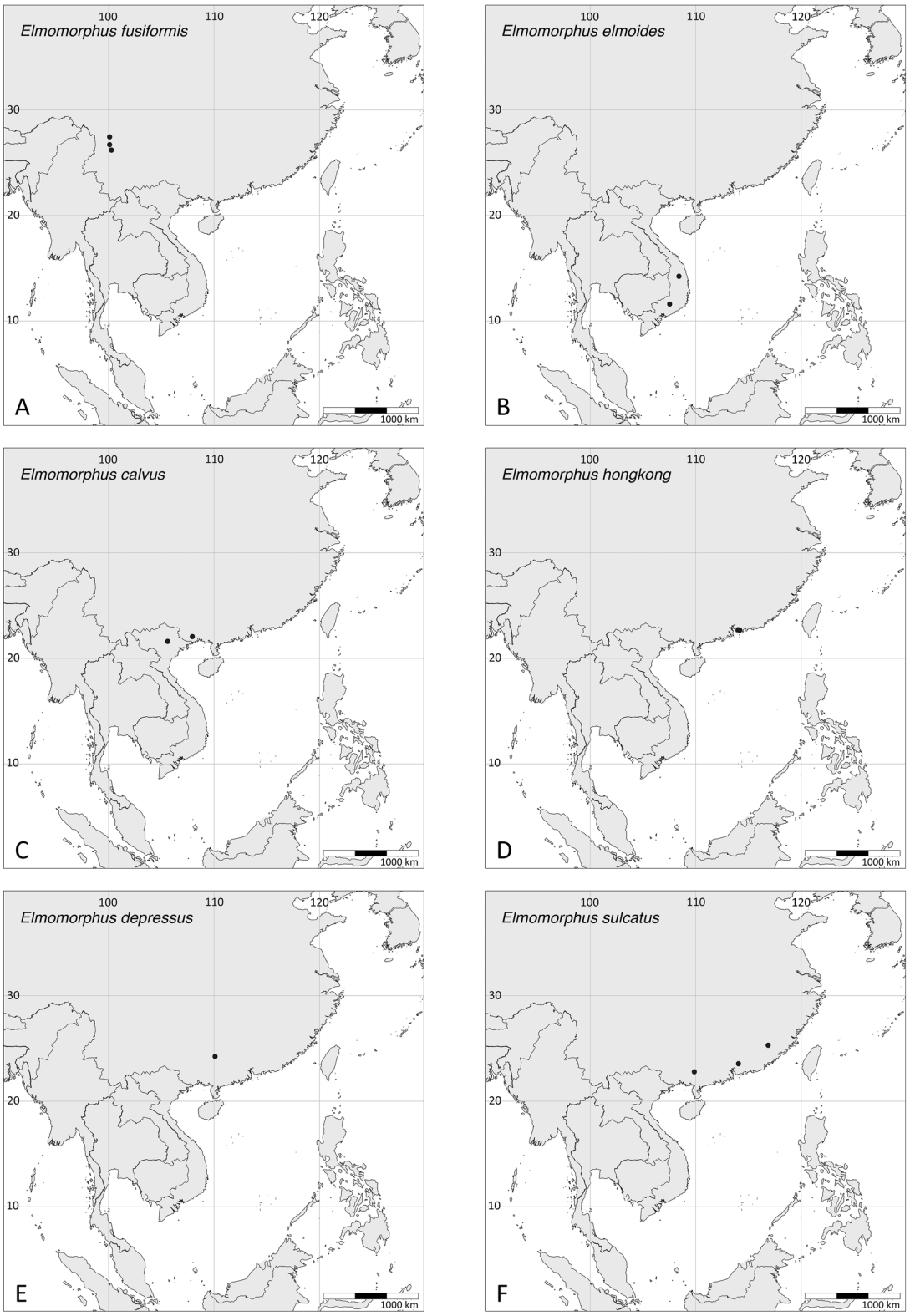

Fig. 109. Distribution maps. **A**. *Elmomorphus fusiformis* sp. nov. **B**. *E. elmoides* sp. nov. **C**. *E. calvus* sp. nov. **D**. *E. hongkong* sp. nov. **E**. *E. depressus* sp. nov. **F**. *E. sulcatus* Kodada, Selnekovič & Jäch sp. nov.

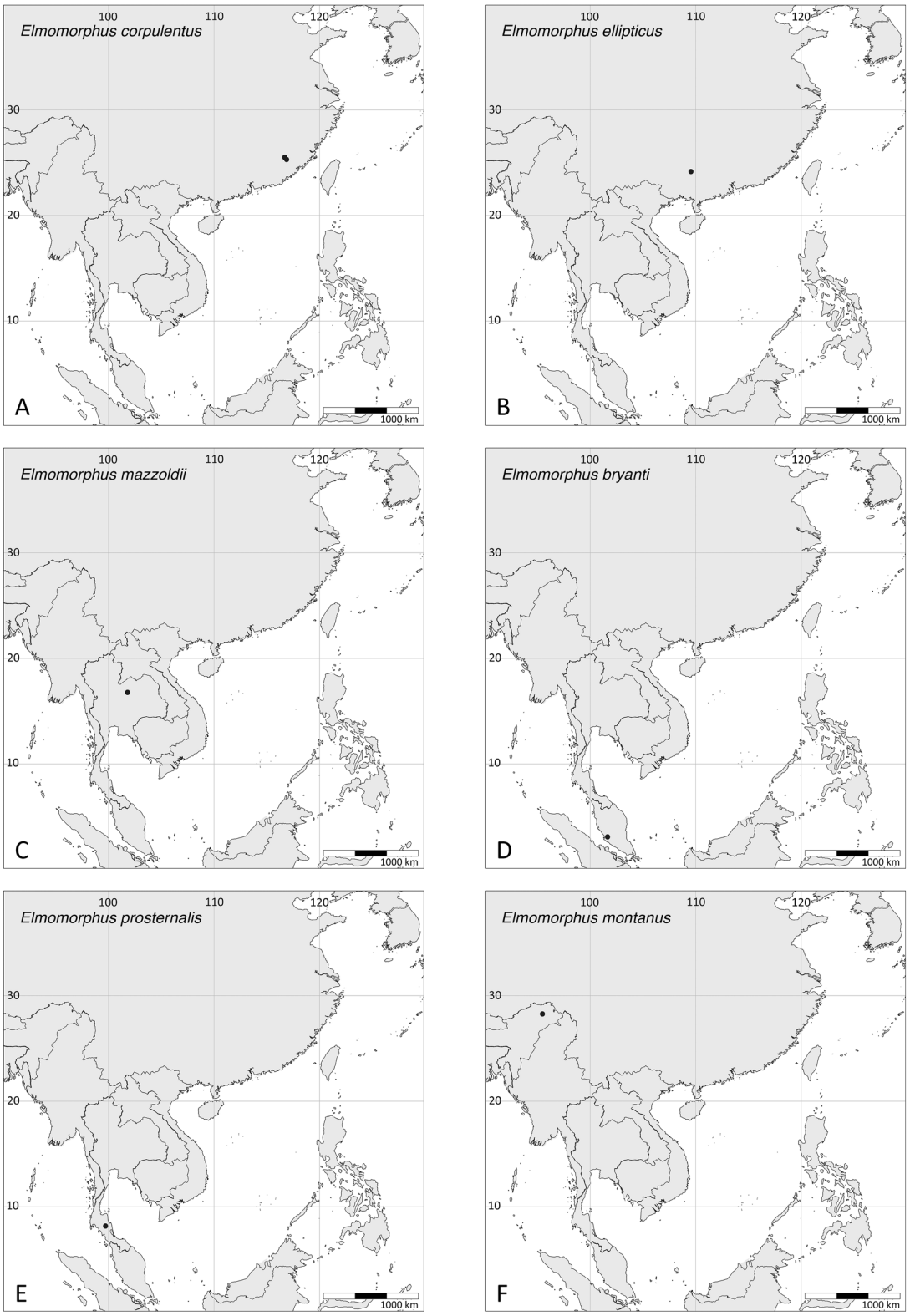

Fig. 110. Distribution maps. **A**. *Elmomorphus corpulentus* sp. nov. **B**. *E. ellipticus* sp. nov. **C**. *E. mazzoldii* sp. nov. **D**. *E. bryanti* Hinton, 1935. **E**. *E. prosternalis* Hinton, 1935. **F**. *E. montanus* (Grouvelle, 1913).

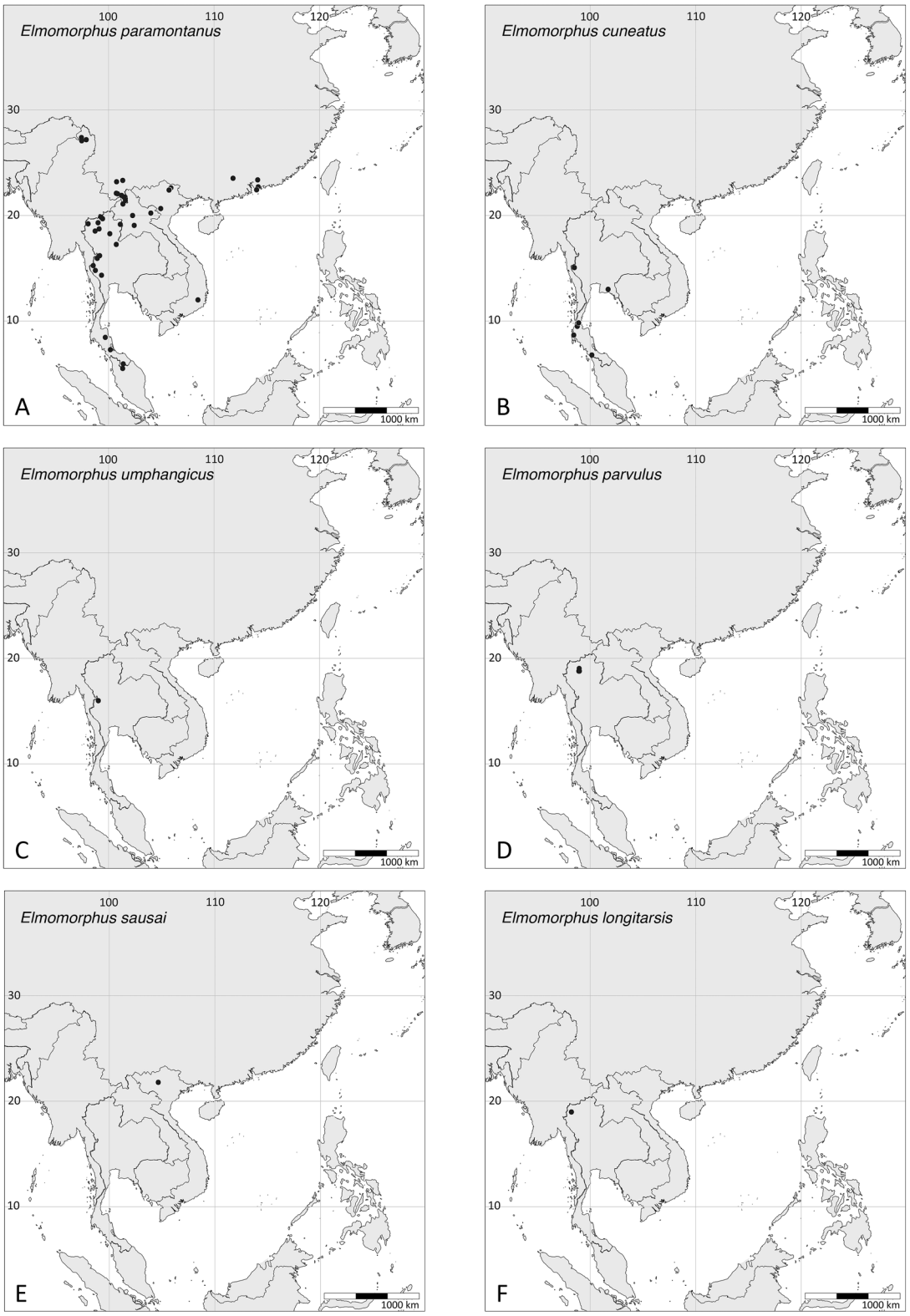

Fig. 111. Distribution maps. **A**. *Elmomorphus paramontanus* Kodada, Selnekovič & Jäch sp. nov. **B**. *E. cuneatus* sp. nov. **C**. *E. umphangicus* Kodada, Selnekovič & Jäch sp. nov. **D**. *E. parvulus* sp. nov. **E**. *E. sausai* Kodada, Selnekovič & Jäch sp. nov. **F**. *E. longitarsis* sp. nov.

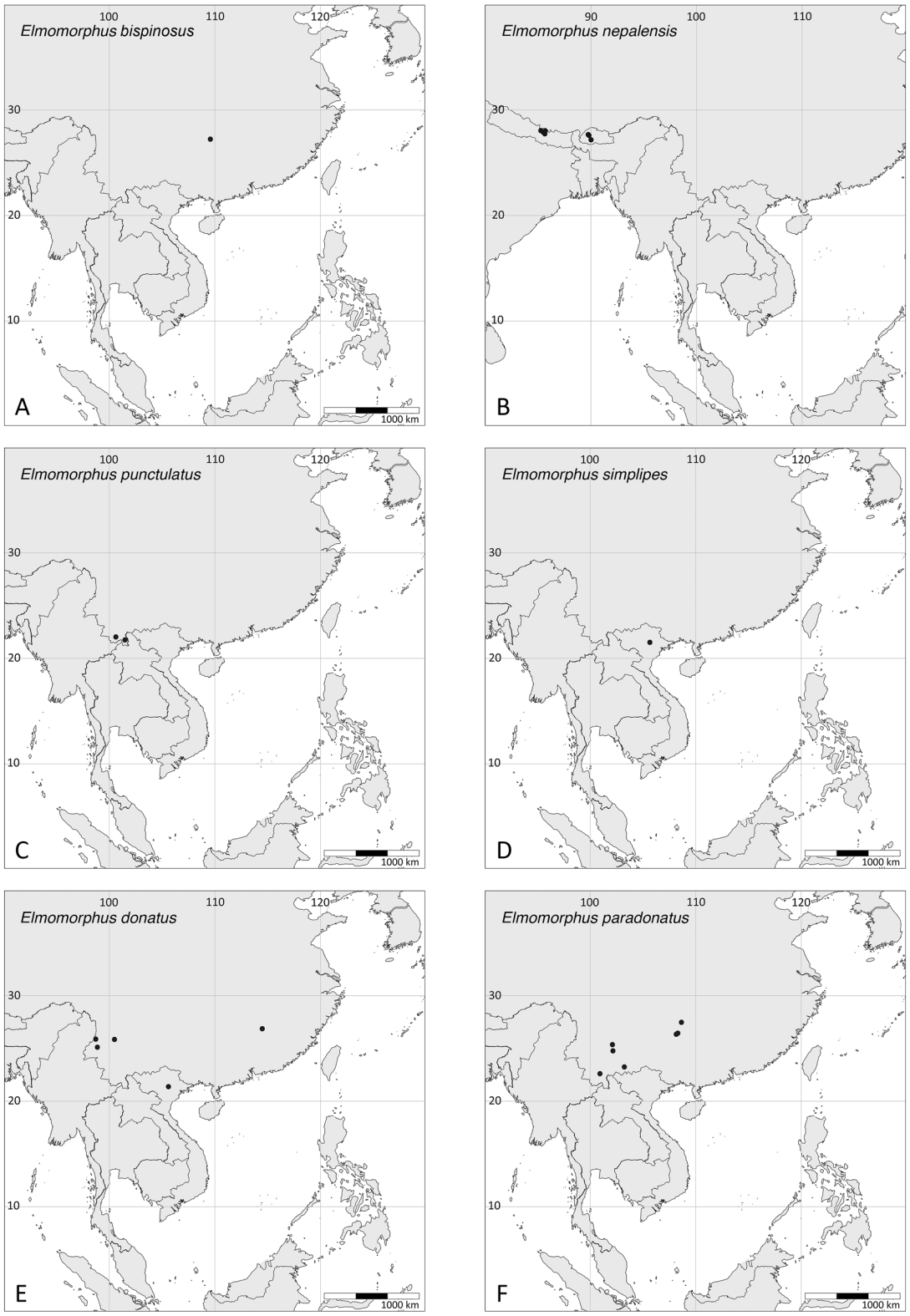

Fig. 112. Distribution maps. **A**. *Elmomorphus bispinosus* sp. nov. **B**. *E. nepalensis* Satô, 1981. **C**. *E. punctulatus* sp. nov. **D**. *E. simplipes* sp. nov. **E**. *E. donatus* Kodada, Selnekovič & Jäch sp. nov. **F**. *E. paradonatus* sp. nov.

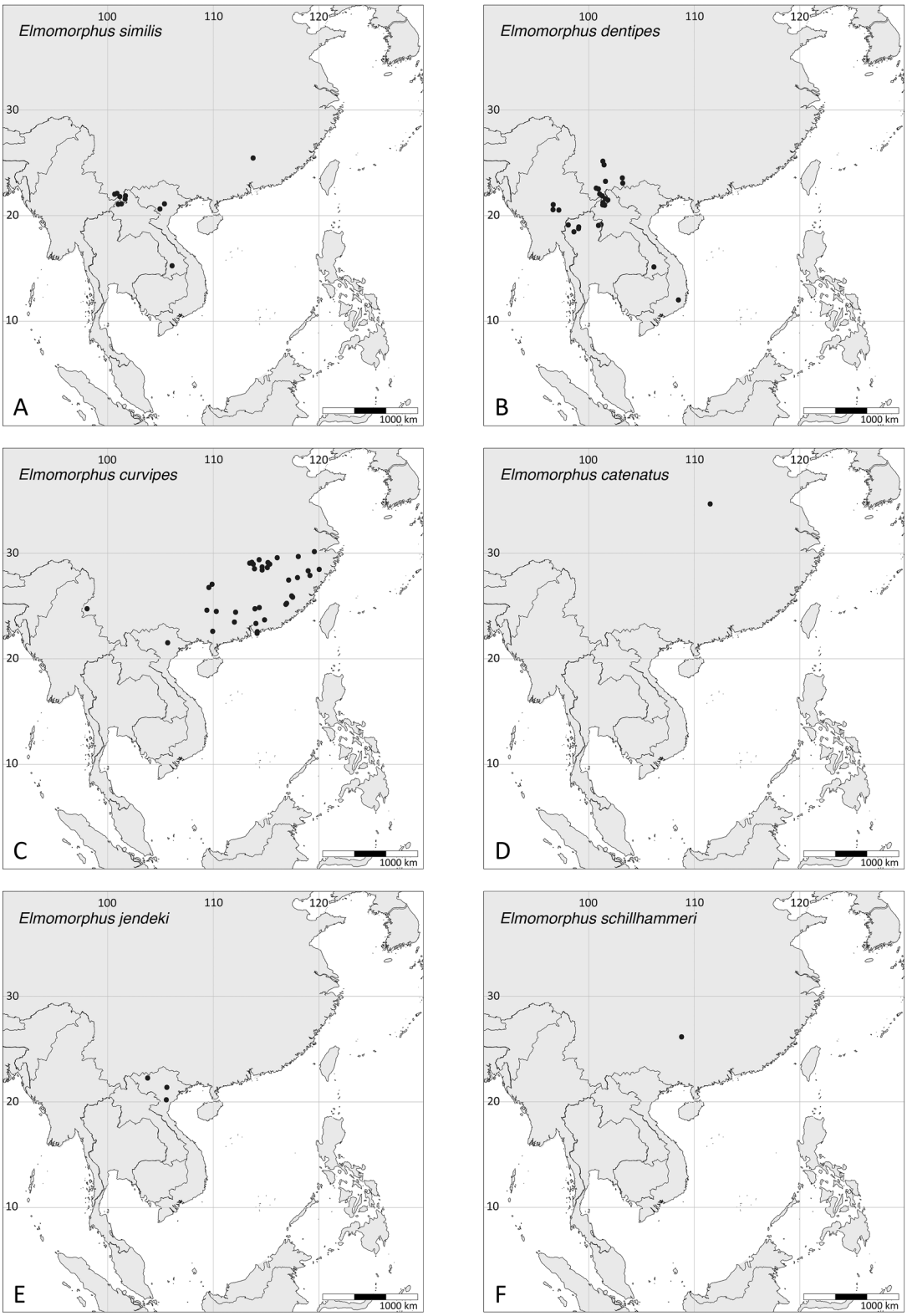

Fig. 113. Distribution maps. **A**. *Elmomorphus similis* sp. nov. **B**. *E. dentipes* sp. nov. **C**. *E. curvipes* sp. nov. **D**. *E. catenatus* sp. nov. **E**. *E. jendeki* Kodada, Selnekovič & Jäch sp. nov. **F**. *E. schillhammeri* sp. nov.

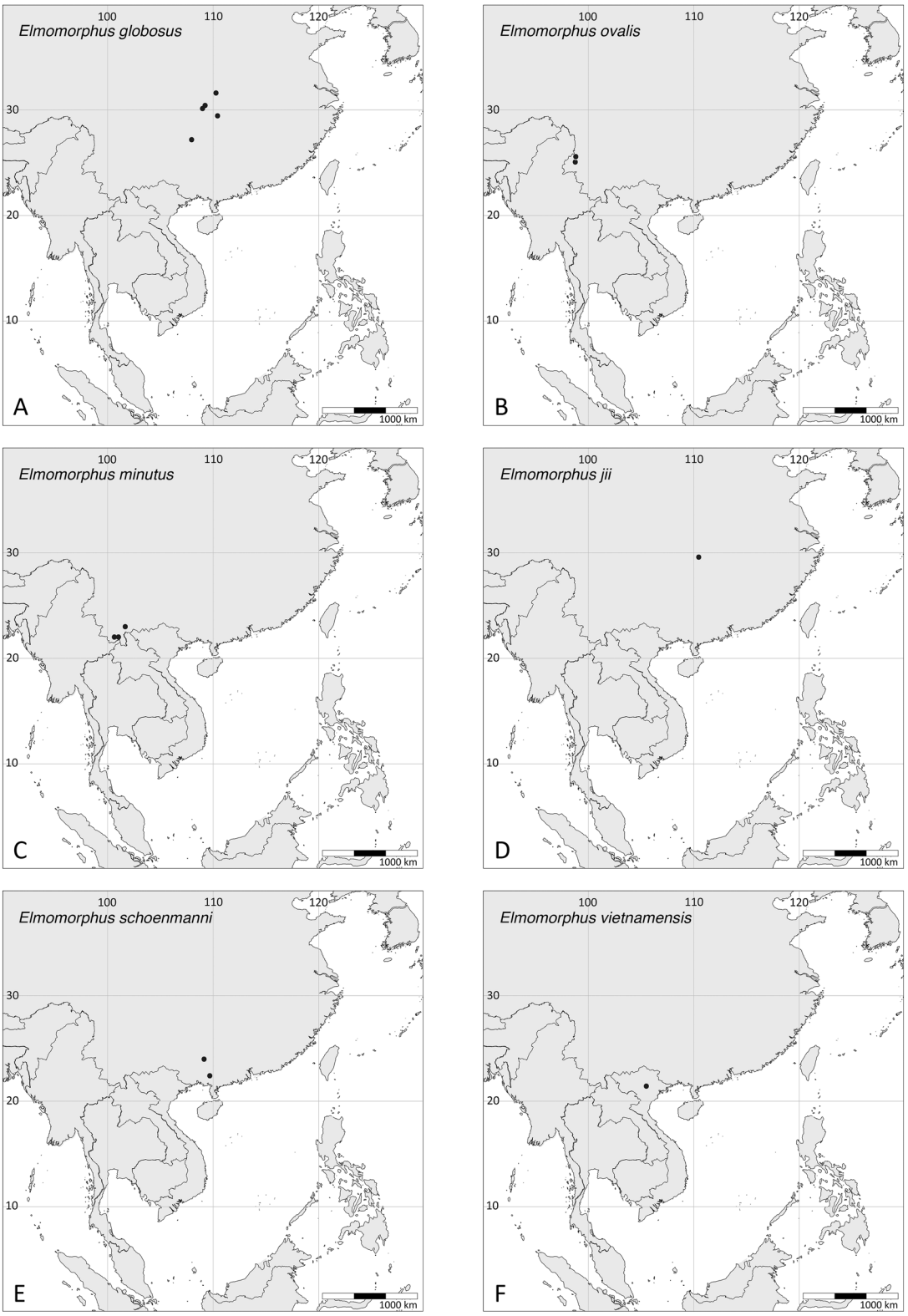

Fig. 114. Distribution maps. **A**. *Elmomorphus globosus* sp. nov. **B**. *E. ovalis* Kodada, Selnekovič & Jäch sp. nov. **C**. *E. minutus* sp. nov. **D**. *E. jii* sp. nov. **E**. *E. schoenmanni* sp. nov. **F**. *E. vietnamensis* sp. nov.

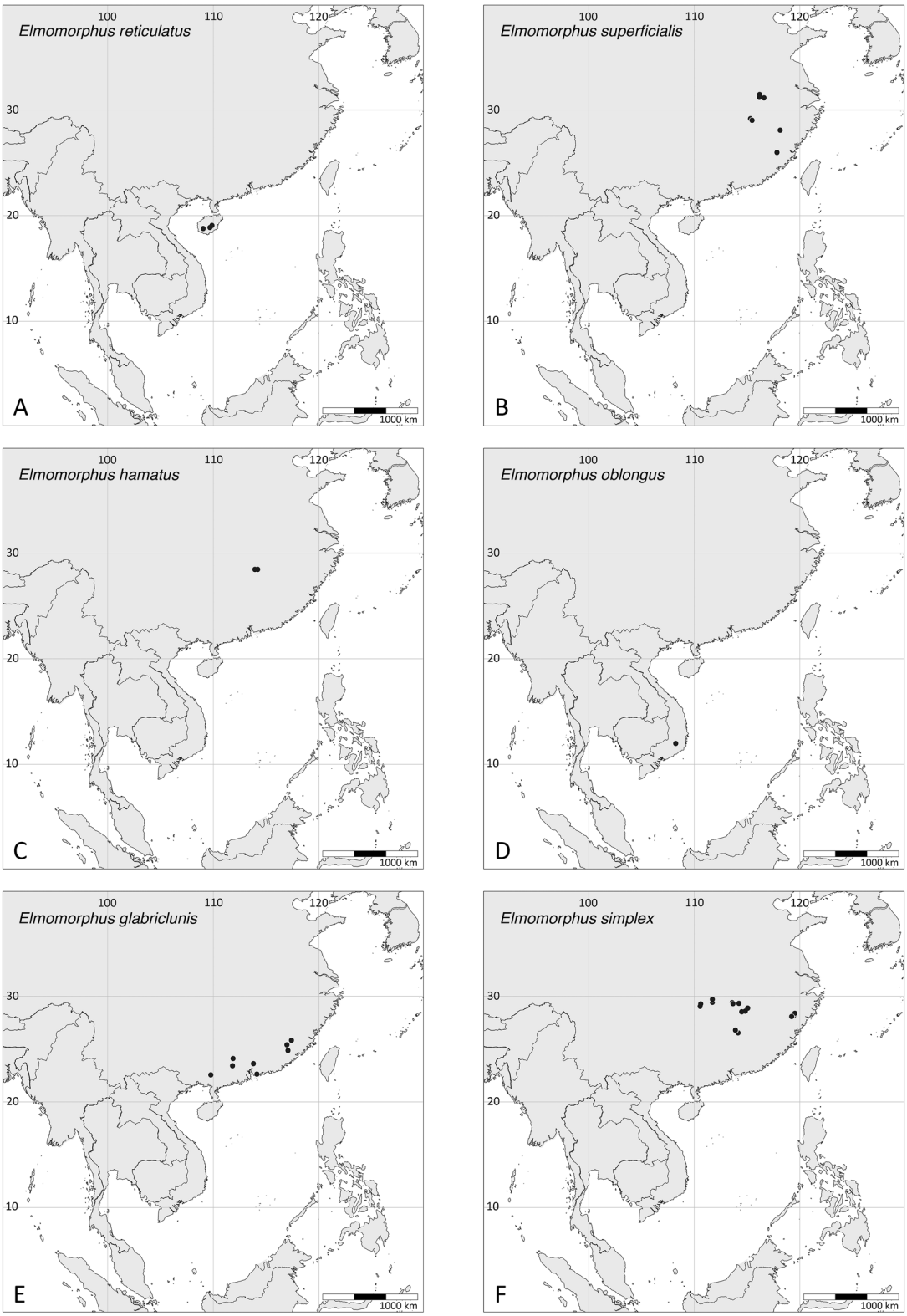

Fig. 115. Distribution maps. **A**. *Elmomorphus reticulatus* sp. nov. **B**. *E. superficialis* sp. nov. **C**. *E. hamatus* sp. nov. **D**. *E. oblongus* sp. nov. **E**. *E. glabriclunis* sp. nov. **F**. *E. simplex* sp. nov.

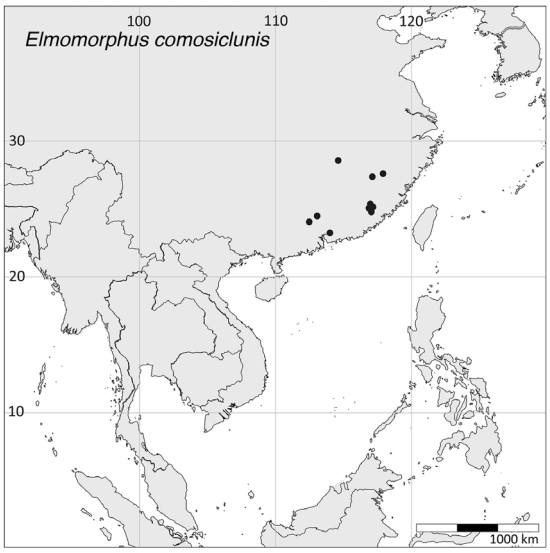

Fig. 116. Distribution map of *Elmomorphus comosiclunis* sp. nov.

Discussion

The redescription of the genus *Elmomorphus* is based on the type specimens of all known species, except *E. nepalensis* of which we have examined numerous specimens collected very close to the type locality. We consider the following characteristics as autapomorphies of the genus: 1) the form and setation of the antennal segments, 2) the flat oval scales of the dorsal plastron, 3) the longitudinal row of long setae on the dorsal face of the mesofemur.

The genus *Elmomorphus* is morphologically rather diverse, especially with regard to body form and body size, length of legs, extent of plastron, secondary sexual dimorphism, as well as the number and distribution of the sclerites on the bursa copulatrix. On the other hand, several species can be distinguished only based on the male and/or female genitalia.

In some species, the plastron covers almost the entire dorsal surface, while in others, the plastron is reduced to a varying extent and covers only small parts of the head, pronotum or elytra, or it is almost completely absent. The plastron cover on the ventral side varies particularly on the ventrites 1, 2, and 5.

The elytral striae can be well impressed, or in some species, only as longitudinal rows of punctures, or the striae and serial punctures are completely absent.

The male genitalia of *Elmomorphus* are highly homogeneous. They differ primarily in the length ratio of the parameres and the phallobase, or in the curvature of the parameres and the shape of their apices.

The female genitalia of *Elmomorphus* are especially noteworthy due to their importance in species identification. Several species, such as *E. donatus* sp. nov. and *E. paradonatus* sp. nov., cannot be reliably distinguished morphologically without examination of the diagnostic spines and sclerites of the bursa copulatrix. Molecular evidence of the specific distinctness of some of these species will be provided in a forthcoming publication (see below).

Elmomorphus appears to be most closely related to *Stenomystax*. There are certain similarities in the overall external appearance and the plastron distribution (Kodada *et al*. 2003). It is difficult to interpret

the relationships between these genera based solely on morphological characters. However, during the past few years, we have collected numerous specimens of both genera from Malaysia (Sarawak) and Vietnam suitable for DNA analyses. Hopefully, these analyses will enable us to clarify the phylogenetic relationships between *Elmomorphus*, *Stenomystax*, and other Asian aquatic dryopid genera, such as *Helichus* Erichson, 1847, *Parahelichus* Löbl & Smetana, 2020, *Pachyparnus* Fairmaire, 1888, and *Dryops* Olivier, 1791.

So far, the genus *Elmomorphus* has not received much attention from taxonomists. Between 1888 and 1992, only four species were described from the study area, and no additional new species have been added since then. Most of the 50 species currently known from the focus area occur in China (31 spp.); 16 species are now known from Vietnam, nine from Thailand (including the unconfirmed record of *E. bryanti*), four each from Laos and Myanmar, two from Cambodia, and one from India, Nepal, and Bhutan.

Within China, the most speciose administrative unit is Yunnan (11 spp.), followed by Fujian (9 spp.), Guangdong (8 spp.), Hunan and Guangxi (7 spp. each), Jiangxi (5 spp.), Hong Kong (4 spp.), Anhui, Guizhou, and Zhejiang (3 spp. each), and Hainan, Hubei, and Shaanxi (1 sp. each). The distribution of *Elmomorphus* in China agrees reasonably well with the area commonly regarded as part of the Oriental Region (see Roselaar 2006). Interestingly, so far no species have been found in Sichuan or Taiwan.

In India, *Elmomorphus* is currently known only from Arunachal Pradesh (*E. montanus*) and Manipur (*E*. sp.). The latter was erroneously identified as *E. brevicornis* by Devi *et al.* (2016) (see Kodada *et al*. (2021) for details); the identity of these three specimens from Manipur remains unclear. No other specimens of *Elmomorphus* from India are known to us.

It is to be expected that numerous new species of *Elmomorphus* will be found in the future, even in the area treated herein. Comprehensive molecular studies will undoubtedly be necessary to improve our knowledge of the taxonomy of this genus.

Currently, the authors are planning a DNA based phylogenetic review of the Vietnamese species of *Elmomorphus*, as well as a taxonomic revision of the species of Malaysia, Brunei, and Indonesia.

Acknowledgements

We would like to thank David Boukal (České Budějovice, Czech Republic), Alexander Dostal (Vienna, Austria), David Dudgeon (Hong Kong, China), Horst Forster (Kautzen/Triglas, Austria), Hendrik Freitag (Dessau, Germany), Milada Holecová (Bratislava, Slovakia), Jan Horák (Prague, Czechia), Eduard Jendek (Bratislava, Slovakia), Albrecht Komarek (NMW), Vítězslav Kubáň (Brno, Czechia), Chi-Feng Lee (Taichung, Taiwan), Michael Madl (NMW), Hans Malicky (Lunz, Austria), Paolo Mazzoldi (Irma, Italy), Otto Moog (University of Natural Resources and Life Sciences, Vienna, Austria), Andreas Pütz (Eisenhüttenstadt, Germany), Guillaume-Marie de Rougemont † (London, UK), Masataka Satô † (Nagoya, Japan), Ondrej Šauša (Bratislava, Slovakia), William D. Shepard (CSS), Andre Skale (Gera, Germany), and Jan Strnad (Prague, Czechia) for their generous donations of material used in the present study. We also thank Alica Christophoryová (Bratislava, Slovakia) for her help in editing the habitus images. We are grateful to Nicole Berti † (MNHN), Svatopluk Bílý † (NMPC), Michel Brancucci † (NMB), Michael Geiser (NHMUK), Ottó Merkl † (HNHM), Christine Taylor (NHMUK), and William D. Shepard (CSS) for the loan of specimens. This work was supported by the Slovak Research and Development Agency under contract no. APVV-19-0076 and by the Grant Agency of the Ministry of Education, Science, Research, and Sport of the Slovak Republic (grants nos VEGA 1/0515/19 and VEGA 1/0541/23).

References

Bollow H. 1940. Monographie der palaearktischen Dryopidae mit Berücksichtigung der eventuell transgredierenden Arten (Col.). *Mitteilungen der Münchner entomologischen Gesellschaft* 30 (1): 24–71.

Chûjô M. & Satô M. 1964. 11. Family Dryopidae. *In:* Kira T. & Umesao T. (eds) *Nature and Life in Southeast Asia. Vol. III*: 193–194. Fauna and Flora Research Society, Kyoto.

Delève J. 1968. Dryopidae et Elminthidae du Vietnam. *Annales historico-naturales Musei nationalis hungarici, Pars Zoologica* 60: 149–181.

Delève J. 1973. Coleoptera: Dryopidae et Elminthidae. Report No. 25 from the Lund University Ceylon Expedition in 1962 (Per Brinck, Hugo Andersson, Lennart Cederholm). *Entomologica Scandinavica Supplement* 4: 5–23.

Devi M.B., Devi O.S. & Wanghengbam L. 2016. Redescription of the first record of the species *Elmomorphus brevicornis* from the family Dryopidae (Coleoptera) in Manipur. *Journal of Entomology and Zoology Studies* 4 (3): 371–373.

Freitag H., Jäch M.A. & Wewalka G. 2016. Diversity of aquatic and riparian Coleoptera of the Philippines: checklist, state of knowledge, priorities for future research and conservation. *Aquatic Insects* 37 (3): 177–213. https://doi.org/10.1080/01650424.2016.1210814

Grouvelle A. 1896. Potamophilides, Dryopides, Helmides et Heterocerides des Indes orientales. *Annali del Museo civico di Storia naturale di Genova (Serie II)* 17: 32–56.

Grouvelle A. 1913. [Zoological results of the Abor expedition, 1911—1912] VIII[.] Coleoptera, I: Rhysodidae, Nitidulidae, Colydiidae, Cucujidae, Passandridae, Discolomidae, Cryptophagidae, Mycetophagidae, Dryopidae. *Records of the Indian Museum* VIII (2): 99–117. https://doi.org/10.26515/rzsi/v8/i2/1913/163160

Hayashi M. 2015. Description of larva of *Elmomorphus brevicornis* Sharp (Coleoptera, Dryopidae). *Bulletin of the Hoshizaki Green Foundation* 18: 219–223. [In Japanese with English abstract.]

Hayashi M. & Kadowaki H. 2008. Records on aquatic Coleoptera from rivers in and around Mt. Daisen, Tottori Prefecture, Japan, part II. *Bulletin of the Hoshizaki Green Foundation* 11: 269–286. [In Japanese with English abstract.]

Hinton H.E. 1935. Notes on the Dryopoidea (Col.). *Stylops* 4 (8): 169–179. https://doi.org/10.1111/j.1365-3113.1935.tb00660.x

Jäch M.A. 1984. Die Koleopterenfauna der Bergbäche von Südwest-Ceylon (Col.). *Archiv für Hydrobiologie*, *Supplementum* 69 (2): 228–332.

Jäch M.A. & Ji L. 1995. Introduction. *In:* Jäch M.A. & Ji L. (eds) *Water Beetles of China. Vol. I*: 5–32. Zoologisch-Botanische Gesellschaft in Österreich and Wiener Coleopterologenverein, Vienna.

Jäch M.A. & Ji L. 1998. China Water Beetle Survey (1995–1998). *In:* Jäch M.A. & Ji L. (eds) *Water Beetles of China. Vol. II*: 1–23. Zoologisch-Botanische Gesellschaft in Österreich and Wiener Coleopterologenverein, Vienna.

Jäch M.A. & Ji L. 2003. China Water Beetle Survey (1999–2001). *In:* Jäch M.A. & Ji L. (eds) *Water Beetles of China. Vol. III*: 1–20. Zoologisch-Botanische Gesellschaft in Österreich and Wiener Coleopterologenverein, Vienna.

Jäch M.A. & Sharma S. 1998. Nepalese water beetles (Coleoptera). Dryopidae, Elmidae, Helophoridae, Hydraenidae, Heteroceridae, and Hydroscaphidae. *Proceedings of the International Conference on Ecohydrology of High Mountain Areas, Kathmandu, Nepal 24–28 March 1996*: 599–607.

Kodada J. 1993. *Revízia rodov Elmomorphus Sharp & Dryopidius Grouvelle (Coleoptera: Dryopidae)*. PhD thesis. Comenius University, Bratislava, Slovakia. [In Slovak.]

Kodada J. & Jäch M.A. 1995. Dryopidae: 1. Check list and bibliography of the Dryopidae of China (Coleoptera). *In:* Jäch M.A. & Ji L. (eds) *Water Beetles of China, Vol. I*: 325–328. Zoologisch-Botanische Gesellschaft in Österreich and Wiener Coleopterologenverein, Vienna.

Kodada J. & Jäch M.A. 2006a. New nomenclatorial and taxonomic acts, and comments. Dryopidae. *In:* Löbl I. & Smetana A. (eds) *Catalogue of Palaearctic Coleoptera. Vol. 3. Scarabaeoidea, Scirtoidea, Dascilloidea, Buprestoidea, Byrrhoidea*: 61. Apollo Books, Stenstrup, Denmark.

Kodada J. & Jäch M.A. 2006b. Family Dryopidae Billberg, 1820. *In:* Löbl I. & Smetana A. (eds) *Catalogue of Palaearctic Coleoptera. Vol. 3. Scarabaeoidea, Scirtoidea, Dascilloidea, Buprestoidea, Byrrhoidea*: 441–443. Apollo Books, Stenstrup, Denmark.

Kodada J. & Jäch M.A. 2016. Family Dryopidae Billberg, 1820 (1817). *In:* Löbl I. & Löbl D. (eds) *Catalogue of Palaearctic Coleoptera. Vol. 3. Revised and updated edition. Scarabaeoidea, Scirtoidea, Dascilloidea, Buprestoidea and Byrrhoidea*: 603–607. Brill, Leiden & Boston.

Kodada J., Jäch M.A. & Čiampor F. 2003. Dryopidae: I. *Stenomystax*, a new aquatic genus (Coleoptera). *In:* Jäch M.A. & Ji L. (eds) *Water Beetles of China. Vol. III*: 431–472. Zoologisch-Botanische Gesellschaft in Österreich and Wiener Coleopterologenverein, Vienna.

Kodada J., Jäch M.A. & Čiampor F. 2016. 19.3. Dryopidae Billberg, 1820 (1817). *In*: Beutel R.G. & Leschen R.A.B. (eds) *Handbook of Zoology, Vol. IV (Part 38), Coleoptera, Beetles, Vol. 1: Morphology and Systematics (Archostemata, Adephaga, Myxophaga, Polyphaga partim), 2nd Ed.*: 590–602. Walter de Gruyter, Berlin.

Kodada J., Selnekovič D., Jäch M.A., Goffová K. & Vďačný P. 2021. Taxonomic revision of the genus *Elmomorphus* Sharp, 1888 I. Japanese and Korean species (Coleoptera: Dryopidae). *European Journal of Taxonomy* 758: 97–121. https://doi.org/10.5852/ejt.2021.758.1427

Kukalová-Peck J. & Lawrence J.F. 1993. Evolution of the hind wing in Coleoptera. *Canadian Entomologist* 125 (2): 181–258. https://doi.org/10.4039/Ent125181-2

Lawrence J.F., Ślipiński A., Seago A.E., Thayer M.K., Newton A.F. & Marvaldi A.E. 2011. Phylogeny of the Coleoptera based on morphological characters of adults and larvae. *Annales Zoologici* 61: 1–217. https://doi.org/10.3161/000345411X576725

Nomura S. 1959. Notes on Japanese Dryopidea (Coleoptera) II. *Tôhô-Gakuhô* 9: 33–38.

Roselaar K. 2006. The boundaries of the Palearctic region. *British Birds* 99: 602–618.

Satô M. 1973. Notes on dryopoid beetles from New Guinea. *Pacific Insects* 15 (3–4): 436–471.

Satô M. 1981. Dryopoidea (Coleoptera) of Nepal I. Family Dryopidae. *Bulletin of the National Science Museum, Series A* 7 (1): 51–56.

Satô M. 1992. Notes on the Coleopteran fauna of Malaysia I. The Malaysian species of the genus *Elmomorphus* (Dryopidae). *Elytra* 20 (1): 67–71.

Sharp D. 1888. Descriptions of some new Coleoptera from Japan. *Annals and Magazine of Natural History, including Zoology, Botany and Geology, Series VI* 2 (9): 242–245. https://doi.org/10.1080/00222938809460918

Shepard W.D. & Sites R.W. 2016. Aquatic beetles of the families Dryopidae and Elmidae (Insecta: Coleoptera: Byrrhoidea) of Thailand: Annotated list and illustrated key to genera. *Natural History Bulletin of the Siam Society* 61 (2): 89–126.

Thorpe W.H. 1950. Plastron respiration in aquatic insects. *Biological Reviews* 25: 344–390. https://doi.org/10.1111/j.1469-185X.1950.tb01590.x

Zaitzev P. 1910. Pars 17. Dryopidae, Cyathoceridae, Georyssidae, Heteroceridae. *In:* Schenkling S. (ed.) *Coleopterorum Catalogus*: 1–68. W. Junk, Berlin.
Available from https://www.biodiversitylibrary.org/page/48593623 [accessed 8 Aug. 2024].

Manuscript received: 9 October 2023
Manuscript accepted: 10 June 2024
Published on: 11 September 2024
Topic editor: Tony Robillard
Section editor: Maxwell Barclay
Desk editor: Kristiaan Hoedemakers

Printed versions of all papers are deposited in the libraries of four of the institutes that are members of the *EJT* consortium: Muséum national d'Histoire naturelle, Paris, France; Meise Botanic Garden, Belgium; Royal Museum for Central Africa, Tervuren, Belgium; Royal Belgian Institute of Natural Sciences, Brussels, Belgium. The other members of the consortium are: Natural History Museum of Denmark, Copenhagen, Denmark; Naturalis Biodiversity Center, Leiden, the Netherlands; Museo Nacional de Ciencias Naturales-CSIC, Madrid, Spain; Leibniz Institute for the Analysis of Biodiversity Change, Bonn – Hamburg, Germany; National Museum of the Czech Republic, Prague, Czech Republic; The Steinhardt Museum of Natural History, Tel Aviv, Israël.