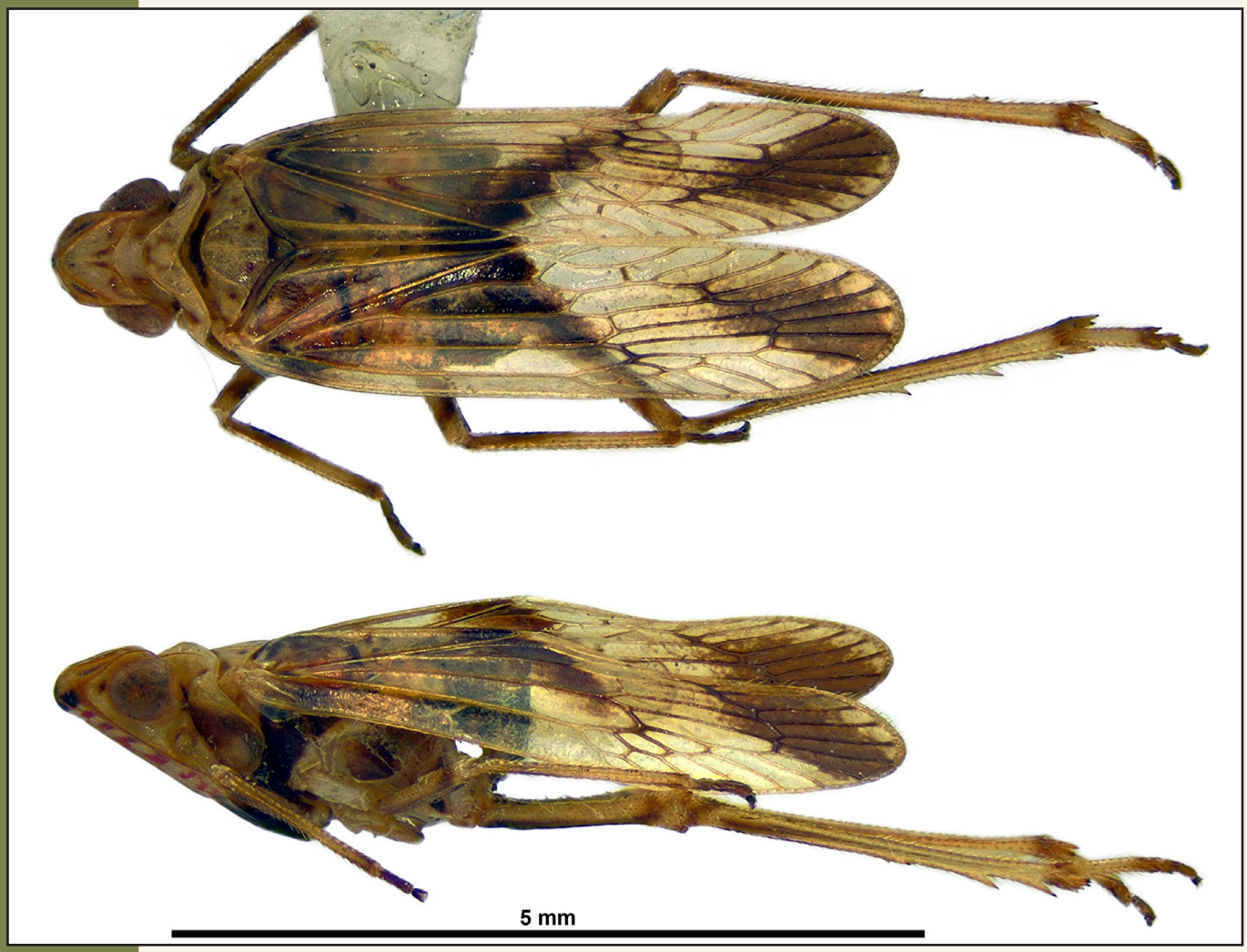
2024 • 155

Belgian Journal of Entomology

Belgian Journal of Entomology

First record of the tropiduchid planthopper genus *Sogana* Matsumura, 1914 from Thailand with a new species (Hemiptera: Tropiduchidae)

Kawin Jiaranaisakul & Jérôme Constant



Societas Regalis Belgica Entomologica
Bruocsella 9.IV.1855

Citation: Jiaranaisakul K. & Constant J., 2024. First record of the tropiduchid planthopper genus *Sogana* Matsumura, 1914 from Thailand with a new species (Hemiptera: Tropiduchidae) *Belgian Journal of Entomology*, 155: 1–13.

urn:lsid:zoobank.org:pub:19375A41-DD57-4F6C-AABE-617EDD40B081

In compliance with Article 8.6 of the ICZN, printed versions of all papers are deposited in the following libraries:

- Royal Library of Belgium, Boulevard de l'Empereur 4, B-1000 Brussels.
- Library of the Royal Belgian Institute of Natural Sciences, Vautier street 29, B-1000 Brussels.
- American Museum of Natural History Library, Central Park West at 79th street, New York, NY 10024-5192, USA.
- Central library of the Museum national d'Histoire naturelle, rue Geoffroy Saint-Hilaire 38, F-75005 Paris, France.
- Library of the Muséum d'Histoire naturelle de Genève, route de Malagnou 1, CH-1208 Genève, Suisse.
- Zoological Record, Thomson Reuters, Publication Processing, 1500 spring Garden Street, Fourth Floor, Philadelphia PA 19130, USA.

ISSN: 1374-5514 (Print Edition)
ISSN: 2295-0214 (Online Edition)

Published: 27 November 2024

The Belgian Journal of Entomology is published by the Royal Belgian Society of Entomology, a non-profit association established on April 9, 1855.

www.srbe-kbve.be
Head office: Vautier street 29, B-1000 Brussels.
N° d'entreprise SRBE : 0408709597
RPM Bruxelles

The publications of the Society are partly sponsored by the University Foundation of Belgium.

Front cover: *Sogana khaokrachomana* sp. nov., holotype ♂ (THNHM) © JC.

First record of the tropiduchid planthopper genus *Sogana* Matsumura, 1914 from Thailand with a new species (Hemiptera: Tropiduchidae)

Kawin Jiaranaisakul [1] & Jérôme Constant [2]

[1] Rabbit in the Moon Foundation, 399, Village No. 3, Suan Phueng, Ratchaburi, 70180, Thailand (corresponding author: kawin2127@gmail.com)

[2] Royal Belgian Institute of Natural Sciences, O.D. Phylogeny and Taxonomy, Entomology, Vautier street 29, B-1000 Brussels, Belgium (email: jerome.constant@naturalsciences.be)

Abstract

The planthopper genus *Sogana* Matsumura, 1914 (Hemiptera: Tropiduchidae) is recorded and documented from Thailand for the first time. A new species discovered in the framework of the "Natural Communication Project", *Sogana khaokrachomana* sp. nov., is described. The differential diagnosis and distribution map are also provided.

Keywords: Fulgoroidea, Fulgoromorpha, new species.

Introduction

The family Tropiduchidae contains about 682 species distributed worldwide, according to the FLOW database (Fulgoromorpha Lists On the Web – Bourgoin, 2024). The Thai fauna of the family is extremely poorly known, currently containing only four described species, *Daradax grandis* Muir, 1931, *Garumna pseudolepida* (Muir, 1931), *Numicia graminivora sinensis* Ghauri, 1976 and *Lukabales ecarinatus* Stroiński & Szwedo, 2015 (Bourgoin, 2024). As a comparison, Vietnam counts 28 species of Tropiduchidae (Bourgoin, 2024).

The genus *Sogana* Matsumura, 1914 is distributed in Southeast Asia and presently contains 14 species but the genus was never recorded from Thailand. Neverthless, the majority of the species of the genus were described from neighbouring countries: six from Vietnam: *S. bachmana* Constant & Pham, 2019, *S. baviana* Constant & Pham, 2019, *S. longiceps* Fennah, 1978, *S. condaoana* Constant & Pham, 2013, *S. cucphuongana* Constant & Pham, 2013 and *S. cysana* Constant & Pham, 2020 (Constant & Pham, 2020), one from Myanmar: *S. extrema* Melichar, 1914 (Melichar, 1914), two from Laos: *S. clara* Liang & Wang, 2008 and *S. pseudohopponis* Liang & Wang, 2008 (Liang & Wang, 2008), one from Cambodia: *S. chartieri* Constant, 2019 (Constant, 2019), one from Taiwan: *S. hopponis* Matsumura, 1914 (Matsumura, 1914) and four from China but this last number needs re-assessment (Chang & Chen, 2013; Constant & Pham, 2013, 2019).

A recent expedition in the framework of the project "Natural Communication Project" in Khao Krachom mountain, Ratchaburi Province, western Thailand, allowed the discovery of the first species of the genus for the country, *S. khaokrachomana* sp. nov. The aim of this paper is to describe the new species as an addition to the biodiversity of Thailand.

Material and methods

The male genitalia were soaked in a 10% solution of potassium hydroxide (KOH) for one night. The pygofer was separated from the abdomen and the aedeagus dissected with a needle blade for examination. The whole was then placed in glycerine for preservation in a tube attached to the pin of the specimen. The hind wings were glued with white glue on a small white cardboard rectangle attached to the pin of the corresponding specimen.

The external morphological terminology follows O'Brien & Wilson (1985), for the male terminalia, Bourgoin & Huang (1990), and for the female terminalia, Bourgoin (1993). The metatibiotarsal formula gives the number of spines on (side of metatibia) apex of metatibia/apex of first metatarsus/apex of second metatarsus. The terminology of the wing venation follows Bourgoin *et al*. (2015), apical cells of the tegmina were counted along margin from vein ScP to CuP.

The photographs of the collection specimens and terminalia were taken with a Leica EZ4W stereomicroscope with integrated camera, stacked with CombineZ software and optimized with Adobe Photoshop CS3. The distribution map was produced with SimpleMappr (Shorthouse, 2010).

The measurements were taken as in Constant (2004) and the following acronyms are used:

BF = maximum breadth of the frons
BTg = maximum breadth of the tegmen
BV = maximum breadth of the vertex
LF = length of the frons in median line
LTg = maximum length of the tegmen
LT = total length (apex of head to apex of tegmina)
LV = length of the vertex in median line

Acronym used for collections:

RBINS = Royal Belgian Institute of Natural Sciences, Brussels, Belgium.
THNHM = Thailand Natural History Museum, Pathum Thani, Thailand.

Results

Order **Hemiptera** Linnaeus, 1758
Suborder **Auchenorrhyncha** Duméril, 1806
Infra-order **Fulgoromorpha** Evans, 1946
Superfamily **Fulgoroidea** Latreille, 1807
Family **Tropiduchidae** Stål, 1866
Subfamily **Tropiduchinae** Stål, 1866
Tribe **Isporisini** Fennah, 1982

Genus ***Sogana*** Matsumura, 1914

Sogana Matsumura, 1914: 268. Type species: *Sogana hopponis* Matsumura, 1914, by monotypy.

Sogana – Melichar, 1914: 194; Distant, 1916: 54; Metcalf, 1954: 130; Tsaur, 1990: 245; Liang & Wang 2008: 30; Constant 2010: 64; Constant & Pham 2013: 72; Constant, 2019: 4; Constant & Pham 2019: 4.

***Sogana khaokrachomana* sp. nov.**

Figs 1–4

urn:lsid:zoobank.org:act:19EE6AC7-D40F-4ED5-81C3-000C6A264543

Etymology

The species epithet refers to the type locality, Khao Krachom mountain, Ratchaburi Province.

Type material

Holotype

THAILAND • ♂ (dissected, genitalia in glycerine, right hind wing mounted Figs 1–2); Ratchaburi province, Suan Phueng district; 13°33’43.6”N 99°12’24.1”E; 15 Nov. 2019; K. Jiaranaisakul leg.; KJ07-00008; THNHM.

Paratypes (6♂♂, 14♀♀)

THAILAND • 1♀; Ratchaburi province, Suan Phueng district; 13°33’39.3”N 99°12’25.7”E; 27 Aug. 2019; K. Jiaranaisakul leg.; KJ07-00002; THNHM • 3♀♀; Ratchaburi province, Suan Phueng district; 13°33’43.6”N 99°12’24.1”E; 15 Nov. 2019; K. Jiaranaisakul leg.; KJ07-00003, KJ07-00004 and KJ07-00007; THNHM • 1♂; Ratchaburi province, Suan Phueng district; 13°33’38.2”N 99°12’37.6”E; 590 m a.s.l.; 5 Jun. 2020; K. Jiaranaisakul leg.; KJ07-00010; THNHM • 3♀♀; Ratchaburi province, Suan Phueng district; 13°33’43.6”N 99°12’24.1”E; 560 m a.s.l.; 10 Jun. 2020; K. Jiaranaisakul leg.; KJ07-00018, KJ07-00020; THNHM • 1♂, 1♀; Ratchaburi province, Suan Phueng district; 13°33’43.6”N 99°12’24.1”E; 560 m a.s.l.; 13 Jun. 2020; K. Jiaranaisakul leg.; KJ07-00021, KJ07-00023; THNHM • 1♂; Ratchaburi province, Khao Krachom; 13°34’07.1”N 99°11’46.0”E; 920 m a.s.l.; 8 May 2021, K. Jiaranaisakul leg.; KJ07-00032; THNHM • 1♀; Ratchaburi province, Suan Phueng district; 13°33’43.6”N 99°12’24.1”E; 15 Sep. 2019; K. Jiaranaisakul leg.; KJ07-00005; RBINS • 1♀; Ratchaburi province, Suan Phueng district; 13°33’43.6”N 99°12’24.1”E; 4 Nov. 2019; K. Jiaranaisakul leg.; KJ07-00006; RBINS • 1♀; Ratchaburi province, Suan Phueng district; 8 Jun. 2020; P. Wongdee leg.; KJ07-00012; RBINS • 1♂; Ratchaburi province, Suan Phueng district; 13°33’43.6”N 99°12’24.1”E; 560 m a.s.l.; 10 Jun. 2020; K. Jiaranaisakul leg.; KJ07-00013; RBINS • 1♂; same collection data as for preceding; KJ07-00016; RBINS • 1♀; same collection data as for preceding; KJ07-00017; RBINS • 1♀; Ratchaburi province, Khao Krachom; 13°34’07.1”N 99°11’46.0”E; 920 m a.s.l.; 12 Mar. 2021; K. Jiaranaisakul leg.; KJ07-00028; RBINS • 1♀; Ratchaburi province, Khao Krachom; 13°34’07.1”N 99°11’46.0”E; 920 m a.s.l.; 8 May 2021; K. Jiaranaisakul leg.; KJ07-00030; RBINS • 1♂; Ratchaburi province, Khao Laem; 13°33’43.6”N 99°12’24.1”E; 560m a.s.l.; 15 May 2021; K. Jiaranaisakul leg.; KJ07-00031; RBINS.

Diagnosis

The species can be separated from the other *Sogana* species by the combination of the following characters:

1. Median carina of vertex reaching anterior margin, furcate on basal 1/3 and reaching posterior margin (Fig. 1I).

2. Frons with six red transverse fasciae interrupted in the middle and linked on external side by longitudinal narrow red line with an additional narrow one along frontoclypeal suture; median carina reaching ventral margin and interrupted before dorsal margin (Fig. 1H).

3. Clypeus black-brown with pale brown marking basally (Fig. 1H).

4. Tegmina with 16 apical cells; transverse oblique dark brown band on middle of posterior margin extending to 2/3 of the disc with longitudinal dark brown patch apically (Fig. 1D).

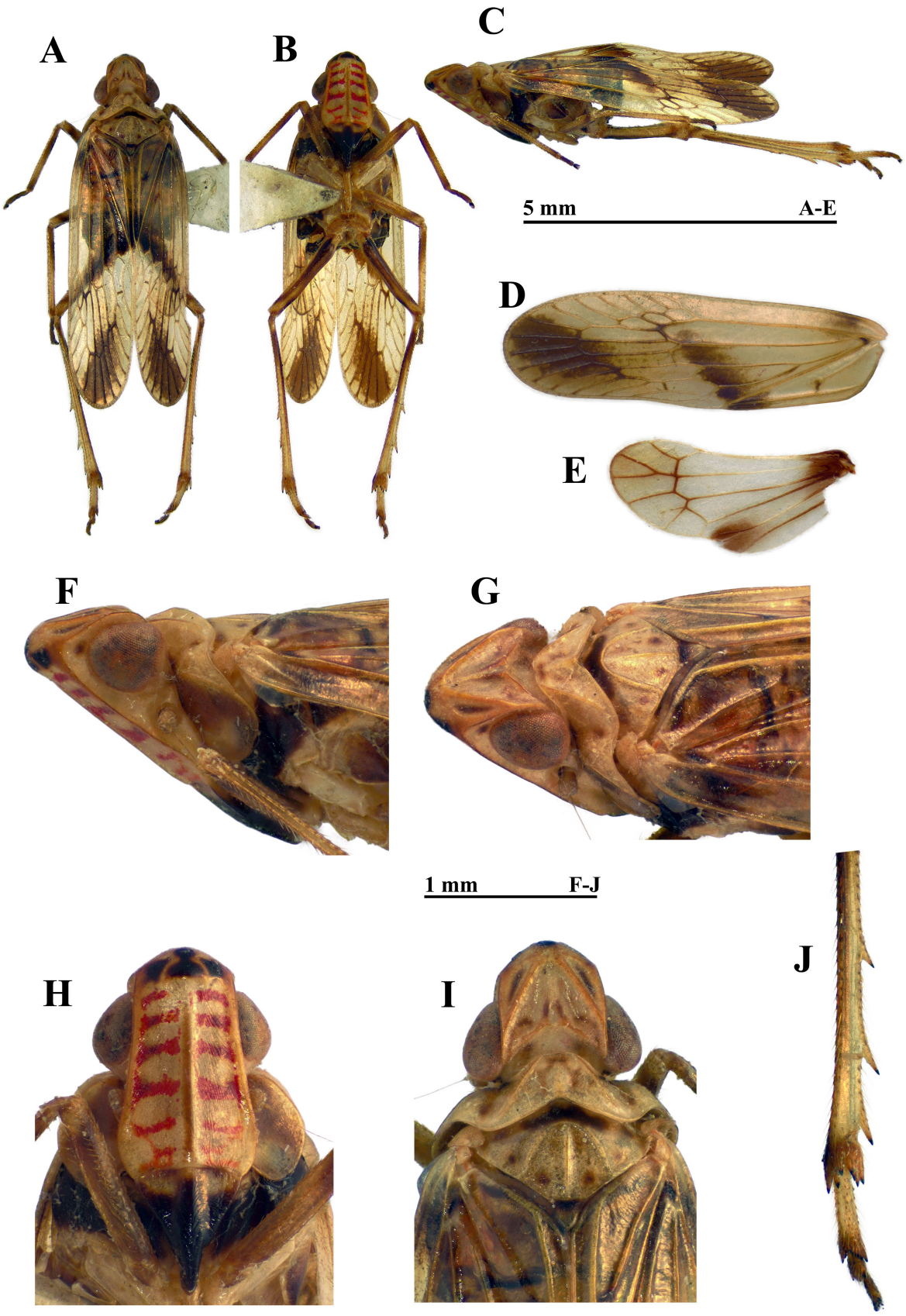


Fig. 1. *Sogana khaokrachomana* sp. nov. holotype ♂ (THNHM). **A**, habitus dorsal view. **B**, habitus, ventral view. **C**, habitus, lateral view. **D**, left tegmen. **E**, left posterior wing. **F**, head and thorax, lateral view. **G**, head and thorax, laterodorsal view. **H**, frons, perpendicular view. **I**, head and thorax, dorsal view. **J**, distal portion of right posterior leg, ventral view.

5. Anal tube elongate and narrow with apical margin slightly obliquely truncate in dorsal view (Fig. 2A–B).

6. Aedeagus with two pointed processes dorsally slightly curved and projecting dorso-anteriorly (Fig. 2H).

7. Periandrium ventrally with a hook-shaped process curved along to the right (Fig. 2N).

The new species is closely related to *S. extrema* Melichar, 1914 from Tenasserim (Myanmar), *S. chartieri* Constant, 2019 which share the character of a black-brown clypeus and a dorsal process of aedeagus, *S. longiceps* Fennah, 1978 and *S. clara* Liang & Wang, 2008 which share the character of the marking on the apical margin of tegmina but it can be separated by the clypeus almost entirely black-brown (clypeus yellow-brown in *S. clara*, *S. extrema* and *S. longiceps*; longitudinal yellow-brown marking on the median carina in *S. chartieri*) and by the transverse oblique band on the disc of tegmina and dark brown patch on apical margin (no marking in *S. extrema*; dark brown marking only on apical cell in *S. chartieri*; apex of radial, median and cubital cells narrowly dark brown and dark brown marking on apical cell in *S. clara* and *S. longiceps*).

Description

Measurements and ratios: Holotype ♂ (n = 1): LT = 7.18 mm; LTg/BTg = 3.34; LV/BV = 0.58; LF/BF = 1.50.

Paratype: ♂ (n = 3): 8.06 mm. LTg/Btg = 3.26; LV/BV = 0.64; LF/BF = 1.48; ♀ (n = 12): 8.50 mm. LTg/Btg = 3.38; LV/BV = 0.66; LF/BF = 1.52.

Colouration: vertex yellow-brown with elongate dark brown marking at anterolateral depression and angular brown marking at laterobasal angles of vertex. Posterior side of head yellow-brown with two pale brown markings. Frons yellow-brown with 6 transverse red bands on each side of median carina and linked on external side by longitudinal narrow red line, with an additional narrow one along frontoclypeal suture; anterior margin of frons with 2 black-brown markings on lateral margin and 2 markings joining at the middle. Genae yellow-brown with brown spot at anterodorsal angle. Clypeus black-brown with pale brown marking basally. Pronotum brown with longitudinal pale brown markings on disc along carinae and behind eyes, brown patch on lateroventral lobes. Mesonotum yellow-brown with median and discal carinae joining anteriorly and 4 spots along posterior margin, brown. Scutellum dark brown basally; tegulae yellow-brown; lateral pleura of mesothorax with black-brown band aligned with the markings on anterior coxae and clypeus. Tegmina with dark brown marking near base of postcostal cell; small brown patch at base of median cell; oblique dark brown band extending from nearly apex of vein M to apex of clavus; vein PCu with brown marking; apex of veins R+M narrowly dark brown. Hind wings with brown marking basally and at apex of PCu+A.

Legs yellow-brown with base of procoxae dark brown; apex of pro- and mesotibiae slightly infuscate; base and subapical ring on pro- and mesofemora brown; pro- and mesotibiae with base brown; metafemora with longitudinal dark brown markings; metatibiae dark brown basally. Abdomen brown with terminalia darker.

Head (Fig. 1F–I): moderately elongate with anterior margin rounded in dorsal view. Vertex excavate in middle; laterodiscal carinae strongly oblique and well marked, joining lateral margin at half of eye length; area between laterodiscal carina and lateral margin of head slightly excavate; median carina not reaching anterior margin and furcate in basal third. Frons elongate; oblique and straight in lateral view, with dorsal portion projecting anteriorly; median carina extending to apex of clypeus but not reaching dorsal margin of frons.

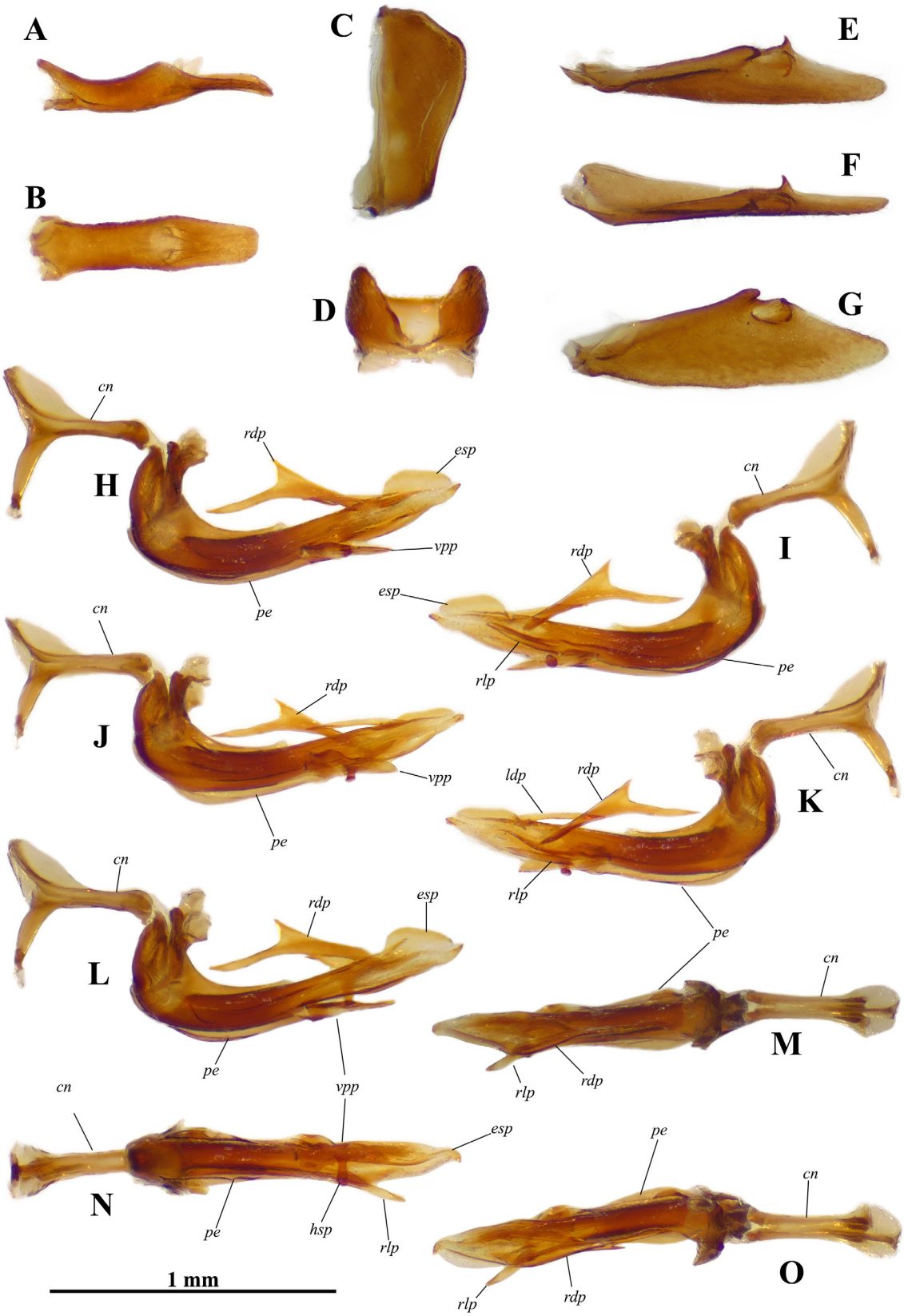


Fig. 2. *Sogana khaokrachomana* sp. nov., holotype ♂, terminalia. **A**, anal tube, left lateral view. **B**, anal tube dorsal view. **C**, pygofer, left lateral view. **D**, pygofer, dorsal view. **E**–**G**, left gonostylus. **E**, left dorsolateral view. **F**, dorsal view. **G**, left lateral view. **H**–**O**, aedeagus. **H**, left lateral view. **I**, right lateral view. **J**, left lateroventral view. **K**, right lateroventral view. **L**, left laterodorsal view. **M**, dorsal view. **N**, ventral view. **O**, left dorsolateral view. *cn*: connective. *esp*: ear-shaped process of aedeagus. *hsp*: hook-shaped process. *ldp*: left dorsal process of aedeagus. *pe*: periandrium. *rdp*: right dorsal process of aedeagus. *rlp*: right lateral process. *vpp*: ventral process of periandrium.

Thorax (Fig. 1F–I): posterior margin of pronotum bisinuate; median carina weakening towards anterior and posterior; lateral carinae strong. Median carina on mesonotum not reaching anterior margin.

Tegmina (Fig. 1D): elongate, subhyaline with veins slightly darker.Veins ScP+R and MP not forked before nodal line; CuA forked once before nodal line, at about basal ¼ of tegmen. Eight subapical and 14-15 apical cells; subapical cells 5-6 and apical cells 6-11 infuscate.

Hind wings (Fig. 1E): hyaline with veins mostly dark brown; 6-7 apical cells.

Legs (Fig. 1A–C, J): elongate and slender; metatibiae with 3 lateral and 7 apical spines; first hind tarsomere with 8 apical spines. Metatibiotarsal formula: (3) 7/8/2.dark brown basally; metatibiae with ; metatibiae with 3 lateral and 7 apical spines; first hind tarsomere with 8 apical spines. Metatibiotarsal formula: (3) 7/8/2.

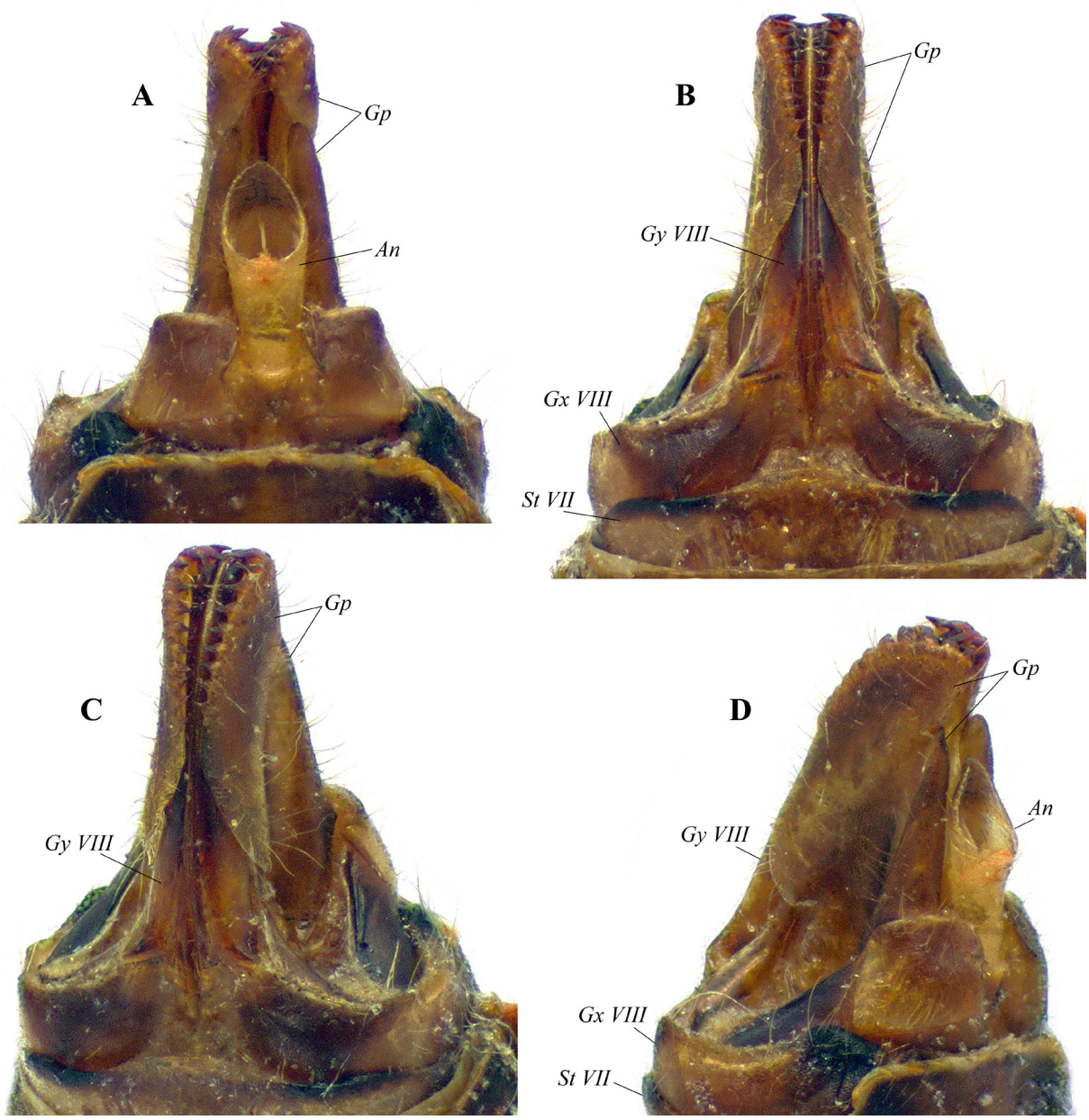


Fig. 3. *Sogana khaokrachomana* sp. nov., paratype ♀, terminalia. **A**, dorsal view. B, ventral view. **C**, lateroventral view. **D**, lateral (slightly dorsal) view. *An*: anal tube; *Gp*: gonoplac; *Gx VIII*: gonocoxa VIII; *Gy VIII*: gonapophysis VIII; *St VII*: sternite VII.

Terminalia ♂ (Fig. 2): pygofer rather narrow with posterior margin angularly rounded, slightly projecting caudad on dorsal ¾ in lateral view, ventral portion weakly sinuate; about 2.33 times higher than long in lateral view (Fig. 2C); anterior margin weakly sinuate (Fig. 2C); posterior margin abruptly and deeply notched dorsally (Fig. 2D). Anal tube (Fig. 2A–B) elongate and narrow, slightly more developed to the right side in dorsal view, with sides subparallel and apex slightly truncate with rounded angles; sinuate in lateral view; anal column slightly posterior to half length. Gonostyli (Fig. 2E–G) very elongate, about 3.74 as long as high in lateral view (measured without dorsal process), laterally compressed, with apex narrowly rounded; 3 hooked processes on dorsal margin slightly posteriorly to half length; basal one directed posteriorly, others directed medially. Aedeagus (Fig. 2H–O) assymmetrical, elongate and narrow, with 2 pointed elongate dorsal processes recurved and projecting dorso-anteriorly (Fig. 2H–I); processes more or less dorsoventrally flattened; right dorsal process (*rdp*) bifid, with secondary

Fig. 4. *Sogana khaokrachomana* sp. nov. **A**, live specimen feeding on *Chromolaena odorata* (L.) R.M. King & H. Rob (Asteraceae) in nature. **B**, A pair specimens mating in captivity. **C**, habitat in Khao Krachom Mountain, Ratchaburi Province.

dorsal process at mid-length, rather short and pointing anterodorsally; distal portion elongate, projecting anteriorly and nearly reaching to base of periandrium in lateral view (Fig. 2H–I); left dorsal process (*ldp*) simple, elongate, apically pointed, projecting anteriorly and surpassing base of right dorsal process; right lateral process (*rlp*) developed from distal 2/3, projecting posterolaterally and apically pointed; subapical ear-shaped process dorsally (Fig. 2H–I, L, N); periandrium (Fig. 2N) strongly asymmetrical, with spatulate ventral process (*vpp*) weakly projecting posteroventrally and with hooked-shaped process (*hsp*) directed perpendicularly to the right, curved along aedeagus and apically rounded. Connective (*cn*) well developed, strongly curved in lateral view with laterally flattened tectiductus.

Terminalia ♀ (Fig. 3): Anal tube (*An*) oboval in dorsal view (Fig. 3A). Gonoplacs (*Gp*) with 15–16 strongly sclerotized teeth along ventral and apical margins (Fig. 3A–D). Gonapophyses VIII (*Gy VIII*) strongly sclerotized with serration followed by 6 teeth towards the posterior, on ventral margin (Fig. 3B–D). Gonocoxa VIII (*Gx VIII*) produced into one stout lobe basally (Fig. 3B–D). Sternite VII (*St VII*) with posterior margin weakly rounded (Fig. 3B, D).

Biology

The species inhabits open areas, like grassy areas, in secondary forest, at 200–560m in altitude (Fig. 4C). One pair of specimens was collected alive and later observed mating in a mesh cage (Fig. 4B). The species was found to feed well in captivity on the Asteraceae *Chromolaena odorata* (L.) R.M. King & H. Rob and *Mikania micrantha* Kunth. (Fig. 4A) but the host plant in the wild is not known. However, the captive specimens were found to die after 4–5 days.

Distribution

Thailand: Ratchaburi Province, Khao Krachom (Fig. 5).

Fig. 5. *Sogana khaokrachomana* sp. nov., distribution map.

Discussion

A species of the genus *Sogana* is here documented from Thailand for the first time. The number of tropiduchid species from the country (5) is probably still much under the real figure as Thailand comprises two zoogeographical regions: Indochina and Sunda. Furthermore, the lack of efforts in collecting and studying the material (including museum specimens) impedes a quick progress in the knowledge of the Thai planthopper fauna (Constant & Jiaranaisakul, unpublished data).

The type locality of the new species is affected by annual forest fires that cause habitat loss for the entomofauna (Jiaranaisakul & Constant, 2021). The cooperation of citizen scientists and government authorities will help to further document the resilience of the biodiversity of the area and of the entomofauna in Thailand more generally, and can be used to secure the long term protection of the forests.

Acknowledgements

The survey is part of the "Natural Communication Project" offered by the Rabbit in the Moon Foundation. We would like to thank the staff of this foundation: Mr. Charnchai Bindusen and Miss Juthamas Wangaryattawanich for their support and coordination. The Natural History Park initiated by Her Royal Highness Princess Maha Chakri Sirindhorn is also thanked for allowing us to study in the Khao Krachom Mountain.

References

Bourgoin T., 1993. - Female genitalia in Hemiptera Fulgoromorpha, morphological and phylogenetic data. *Annales de la Société entomologique de France*, 29: 225-244. https://doi.org/10.1080/21686351.1993.12277686

Bourgoin T., 2024. - FLOW (Fulgoromorpha Lists on The Web): a world knowledge base dedicated to Fulgoromorpha. V.8, updated [IV.2020]. http://hemiptera-databases.org/flow/ - Accessed March 23th, 2024.

Bourgoin T. & Huang J., 1990. - Morphologie comparée des genitalia mâles des Trypetimorphini et remarques phylogénétiques (Hemiptera: Fulgoromorpha: Tropiduchidae). *Annales de la Société entomologique de France, Nouvelle Série*, 26(4): 555-564.

Bourgoin T., Wang R.R., Asche M., Hoch H, Soulier-Perkins A., Stroinski A., Yap S. & Szwedo J., 2015. - From micropterism to hyperpterism: recognition strategy and standardized homology-driven terminology of the fore wing venation patterns in planthoppers (Hemiptera: Fulgoromorpha). *Zoomorphology*, 134(1): 63-77.

Chang Z.-M. & Chen X.-S., 2013. - A taxonomic study of the genus *Sogana* Matsumura (Hemiptera, Tropiduchidae) with one new record species from China. *Acta Entomologica Sinica*, 38(4): 912-916.

Constant J., 2004. - Révision des Eurybrachidae (I). Le genre *Amychodes* Karsch, 1895 (Homoptera: Fulgoromorpha: Eurybrachidae). *Bulletin de l'Institut royal des Sciences naturelles de Belgique*, 74: 11-27.

Constant J., 2010. - *Sogana* from the Greater Sunda (Hemiptera: Fulgoromorpha: Tropiduchidae). *Zootaxa*, 2693: 63-68.

Constant J., 2019. - First record of the tropiduchid planthopper genus *Sogana* Matsumura, 1914 from Cambodia with one new species (Hemiptera: Fulgoromorpha: Tropiduchidae). *Belgian Journal of Entomology*, 82: 1-11.

Constant J. & Pham H.T., 2013. - Two new species of *Sogana* Matsumura, 1914 (Hemiptera: Fulgoromorpha: Tropiduchidae) with an identification key to the hitherto known species from Vietnam. *Annales Zoologici*, 63(1): 71-77.

Constant J. & Pham H.T., 2019. - The planthopper genus *Sogana* Matsumura, 1914 in Vietnam: Two new species, new records and identification key (Hemiptera: Fulgoromorpha: Tropiduchidae). *Belgian Journal of Entomology*, 85: 1-19.

Constant J. & Pham H.T., 2020. - *Sogana cysana* sp. nov., a new tropiduchid planthopper from Chu Yang Sin National Park in Vietnam and key to Vietnamese species of the genus (Hemiptera: Fulgoromorpha: Tropiduchidae). *Belgian Journal of Entomology*, 95: 1-13.

Jiaranaisakul K. & Constant J., 2021 - The Lanternflies (Hemiptera, Fulgoromorpha, Fulgoridae) of Khao Krachom Mountain, Thailand. *Far Eastern Entomologist*, 435: 7-19.

Liang A.-P. & Wang R.R., 2008. - A review of the Oriental planthopper genus *Sogana* Matsumura, 1914 (Hemiptera: Fulgoromorpha: Tropiduchidae) with description of three new species. *Zootaxa*, 1732: 29-44.

Matsumura S., 1914. - Beitrag zur kenntnis der Fulgoriden Japans. *Annales Historico-Naturales Musei Nationalis Hungarici*, 12: 261-305.

Melichar L., 1914. - Monographie der Tropiduchiden. *Verhandlungen des naturforshenden Vereines in Brünn*, 53: 1-145.

O'Brien L.B. & Wilson S.W., 1985. - *The systematics and morphology of planthoppers (Fulgoroidea). In*: Nault, L.R., Rodriguez, J.G. (Eds.), *The Leafhoppers and Planthoppers*. Wiley, New York, pp. 61-102.

Shorthouse D.P., 2010. - SimpleMappr, an online tool to produce publication-quality point maps. [Retrieved from http://www.simplemappr.net. Accessed February 15, 2020].