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Belgian Journal of Entomology

**Two new species of the genus
Neogergithoides Sun, Meng & Wang, 2012
extend its distribution to Northern Vietnam
(Hemiptera: Fulgoromorpha: Issidae)**

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Abstract

The genus *Neogergithoides* Sun, Meng & Wang, 2012 (Issinae, Hemisphaeriini) is mentioned for the first time from Vietnam with two new species from Northern Vietnam: *N. baviana* sp. nov. from Ba Vi National Park, and *N. grootaerti* sp. nov. from Pia Oac National Park. They are compared to *N. tubercularis* Sun, Meng & Wang, 2012, the single species hitherto described in the genus. Habitus, details, male genitalia, live specimen and habitat are illustrated, and a distribution map is provided. The genus *Neogergithoides* now contains three species.

Keywords: Global Taxonomic Initiative, Tonkin, Planthopper, Fulgoroidea, Homoptera, China.

Introduction

Among the Issidae material collected in 2010 in Pia Oac National Park (at the time a Nature Reserve) and in 2015 in Ba Vi National Park during fieldwork in the frame of our Global Taxonomic Initiative project “A step further in the entomodiversity of Vietnam” (Parts 1 and 6), we collected two new species of the genus *Neogergithoides* Sun, Meng & Wang, 2012.

Ba Vi National Park is an isolated limestone mountain reaching 1290 m in altitude, situated 50 km west of Hanoi, in the plain of the Red River. It is covered with tropical evergreen forest.

Pia Oac National Park is situated in Cao Bang province, not far from the Chinese border. It reaches more than 1900 m in altitude and is covered with primary and secondary mountain tropical evergreen forest.

SUN *et al.* (2012) described the genus *Neogergithoides* to accommodate one new species from China (Hainan, Guangxi): *Neogergithoides tubercularis* Sun, Meng & Wang, 2012. They stated that the genus is close *Gergithoides* Schumacher, 1915, *Macrodaruma* Fennah, 1978 and might fall in a group of taxa including also *Mongoliana* Distant, 1909 and *Choutagus*

Zhang, Wang & Che, 2006. A key to the genera of Hemisphaeriini was also provided, extensively illustrated with the characteristic features of the new taxa.

More recently, CHEN *et al.* (2014) illustrated genitalia attributed to the species but failed to indicate the origin of the specimen. Moreover, strong discrepancies obviously appear when comparing to the illustrations of SUN *et al.* (2012) e.g. in the shape of the different parts of the aedeagus, of the anal tube and of the gonostyli, and CHEN *et al.* (2014) illustrations should not be taken as indicative of the type species. *Ad minima*, more work on Hainan and continental China material is needed to resolve this issue.

The present paper aims at describing two new species from northern Vietnam, extending the known distribution of the genus.

Material and methods

Most of the specimens were captured by hand using small transparent vials with which they were slowly covered. Others were collected by sweeping the lower vegetation in the forest.

The genitalia were extracted after boiling the abdomen about one hour in a 10% solution of potassium hydroxide (KOH) at about 100°C. Some drops of saturated alcoholic Chlorazol black solution were added for contrasting (CARAYON, 1969). 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 corresponding specimen.

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

Photographs were taken with a Canon EOS 700D camera equipped with a Tamron DI SP 90 mm Macro lens, staked with CombineZ software and optimized with Adobe Photoshop CS3. Observations were done with a Leica MZ8 stereo microscope.

Acronyms used for the collections.

RBINS: Royal Belgian Institute of Natural Sciences, Brussels, Belgium.

VNMN: Vietnam National Museum of Nature, Hanoi, Vietnam.

Taxonomy

Family Issidae Spinola, 1839

Subfamily Issinae Spinola, 1839

Tribe Hemisphaeriini Melichar, 1906

Genus *Neogergithoides* Sun, Meng & Wang, 2012

Neogergithoides SUN *et al.*, 2012: 43 [described, illustrated, key to Hemisphaeriini genera]

Type species: *Neogergithoides tubercularis* Sun, Meng & Wang, 2012 by original designation.

Neogergithoides – CHEN *et al.*, 2014: 46 [described, distribution map – in Chinese], 188 [described – in English]; FLOW, BOURGOIN, 2015: <http://www.hemiptera-databases.org/flow/?page=explorer&db=flow&lang=en&card=taxon&rank=genus&id=17639>.

NOTES.

In the original description of the genus, SUN *et al.* (2012) state that the vertex is tricarinate. This condition is not visible on the illustrations provided by SUN *et al.* (2012: figs 3 & 26) and has not been observed in the two new species from Vietnam. It is therefore considered as erroneous. However, the lateral margins of the vertex are strongly carinate in all species.

The species of *Neogergithoides* must be identified on the characters of the male genitalia and the diagnosis, based on external morphology, given for the new species are not sufficient to identify surely the species. More species are very probably awaiting discovery and for those reasons we do not propose an identification key here.

***Neogergithoides baviana* sp. nov.**

Figs 1, 2, 3, 6

ETYMOLOGY. The species epithet derives from Ba Vi and refers to the national park where the species was discovered.

TYPE MATERIAL

Holotype ♂ (dissected, right hind wing mounted): [Coll. I.R.Sc.N.B., Vietnam, Hanoi pr., BaVi N.P., 21°4'4"N 105°21'30"E, 25-29.VI.2015 day collecting, Leg. J. Constant & J. Bresseel, I.G.: 33.092] (RBINS).

Paratypes: 2♂, 3♀: same data as holotype (1♂, 2♀: RBINS; 1♂, 1♀: VNMN).

DIAGNOSIS. The species is easily separated **(1)** from *N. tubercularis* by the colour of the tegmina (pale yellow-green in the latter, showing a black reticulum in *N. baviana*), and **(2)** from *N. grootaerti* by the vertex more elongate in the latter (1.3 times as long as broad in the latter vs 1 time in *N. baviana*).

DESCRIPTION.

Measurements and ratios: LT: ♂ (n = 3): 6.4 mm (6.3 – 6.5); ♀ (n = 3): 7.2 mm (7.0 – 7.4). LTg/BTg = 2.24; LV/BV = 1; LF/BF = 1.4.

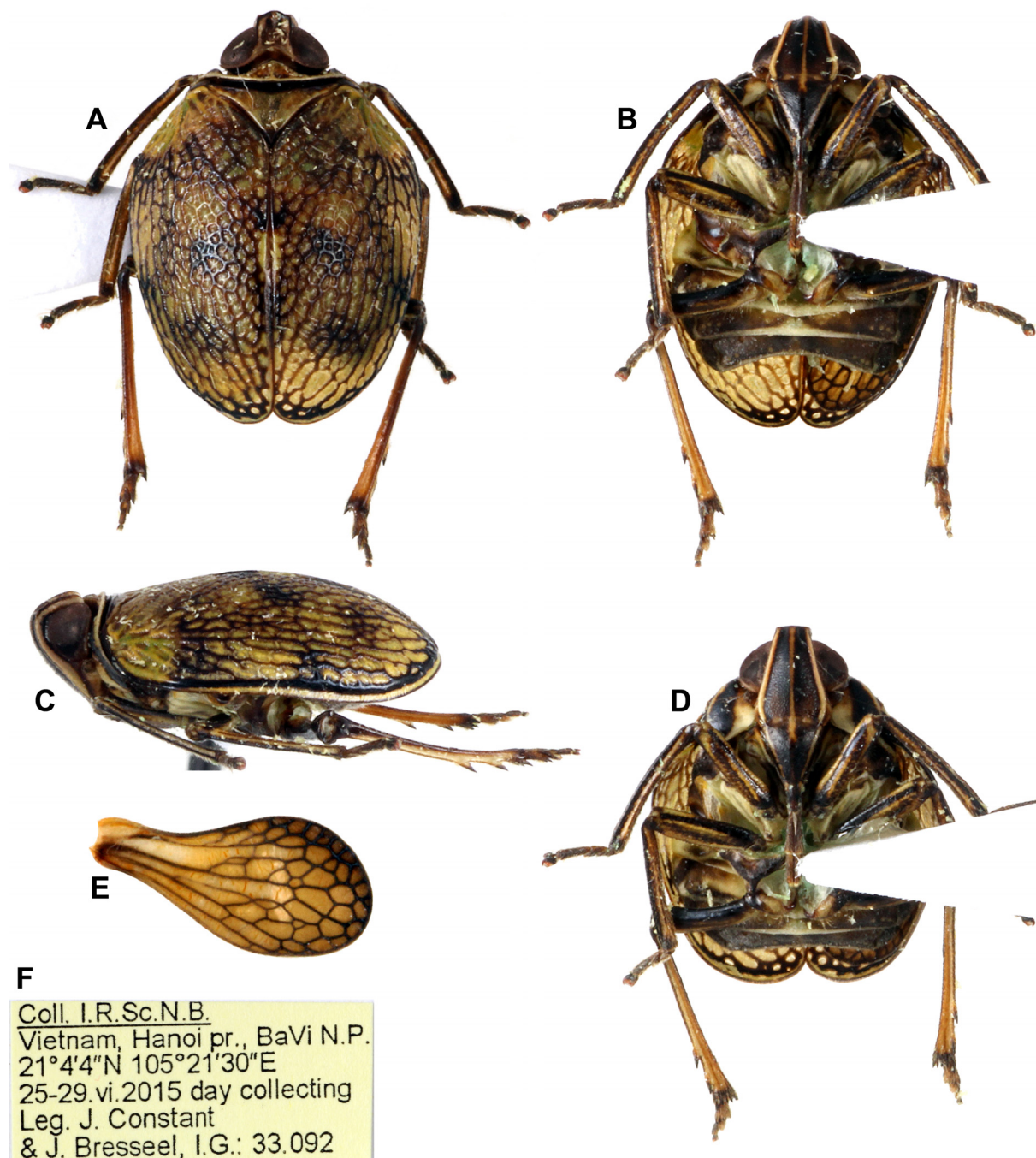


Fig. 1. *Neogergithoides baviana* sp. nov., holotype, total length: 6.4 mm. A, habitus, dorsal view. B, habitus, ventral view. C, habitus, lateral view. D, habitus, normal view of frons. E, right hind wing. F, label.

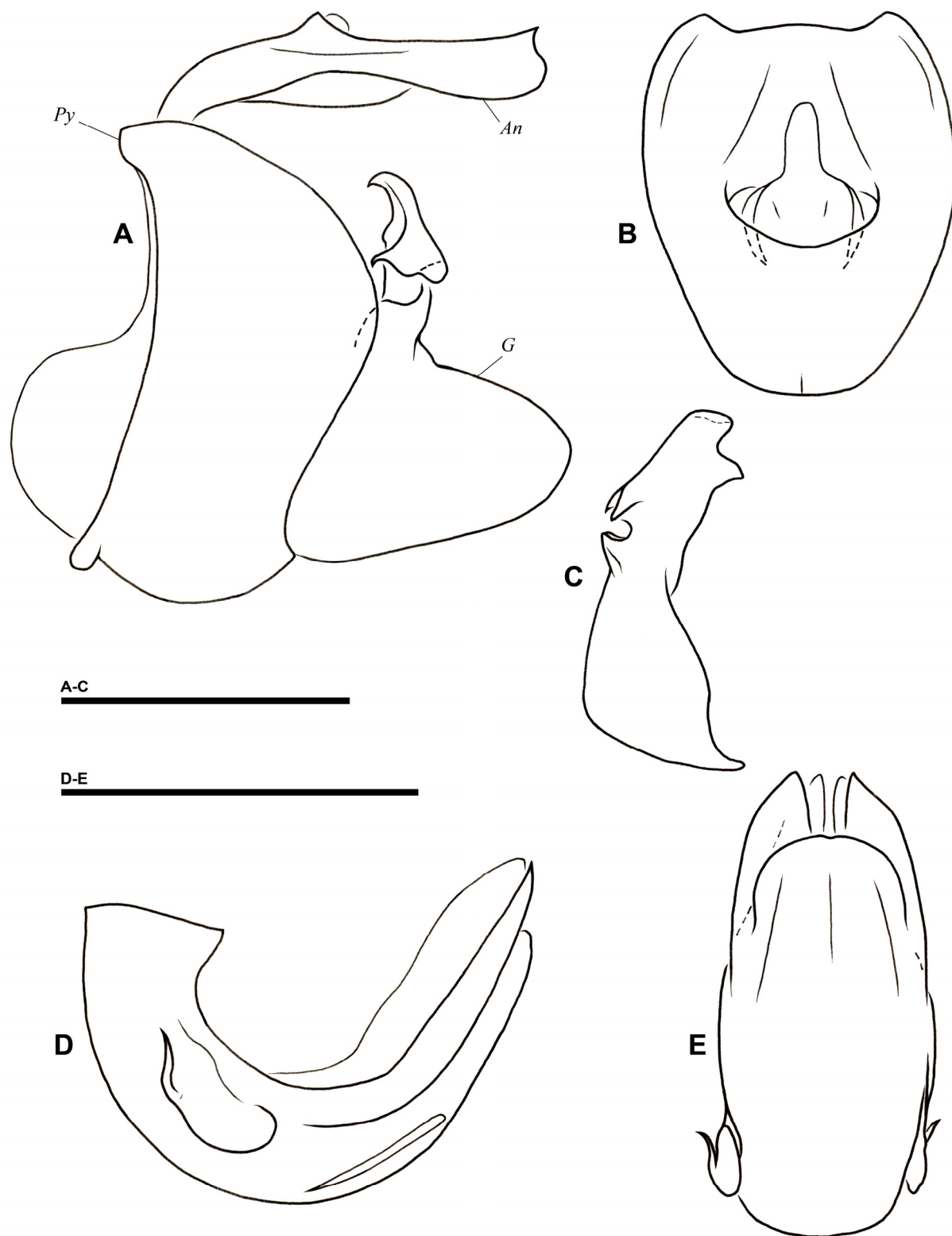


Fig. 2. *Neogergithoides baviana* sp. nov., holotype, genitalia ♂. A, pygofer, anal tube and gonostylus, left lateral view. B, anal tube, dorsal view. C, left gonostylus, posterior view. D, aedeagus, left lateral view. E, aedeagus, posteroventral view. An: anal tube; G: gonostyli; Py: pygofer. Scale 1mm.

Head: (Fig. 1 A, C, D) vertex subquadrate, yellowish with margins carinate, anterior and lateral ones black-brown; in dorsal view, anterior margin convex, posterior one concave and lateral subparallel; disc excavate with narrow longitudinal groove on basal half and often pair of parallel black-brown lines on anterior half. Side of head yellowish, narrowly black-brown along dorsal margin and around eye; black-brown line from ventral margin of eye to fronto-clypeal suture. Frons elongate and smooth, black-brown with sides carinated, yellowish, and median carina yellowish, extending to base of clypeus. Fronto-clypeal suture marked with yellowish. Clypeus black-brown, elevated medially and with lateral margins yellowish. Scape short, ring-shaped; pedicel bulbous, dark brown. Labium brown with last segment longer than broad, and shorter than penultimate.

Thorax: (Fig. 1 A, C, D) yellowish dorsally. Pronotum very short with posterior margin and discal carinae laminate; disc concave with obsolete median carina and tubercles; broad black line extending from behind eye to lateroventral angle of paranotal lobes; outer margin of paranotal lobes narrowly yellowish, inner margin broadly yellowish. Mesonotum short, slightly coriaceous with obsolete median carina and obsolete impressed point on each side of disc; transverse carina along anterior margin; yellowish; black anteriorly to transverse carina. Tegulae dark brown.

Tegmina: (Fig. 1 A, C) broadly semicircular, subcoriaceous; yellowish with submarginal narrow black line from anterior angle to posterosutural angle, running on margin only on basal 1/5; apical half of lateral margin and posterior one very narrowly bordered with brown. Venation reticulate with main longitudinal veins barely distinct basally and numerous cross-veinlets. Veins and veinlets brown, more or less dark; yellowish and forming a pale area on anterocostal angle with cells dark brown; transverse area behind scutellum darker; a transverse row of 3-5 more or less distinct darker markings at mid length.

Hind wings: (Fig. 1 E) brown, unilobed, with veins darker, slightly shorter than tegmina. Venation reticulate with main longitudinal veins distinct basally (C, ScP+R, MP, CuA), anal area absent; numerous cross-veinlets; veins thicker and darker along antero-distal margin. Costal and cubital margins sinuate, distal margin rounded.

Legs: (Fig. 1 A, B) elongate and slender, brown with darker and paler markings. Tarsi, broad longitudinal zones on femora, carinae and apex of anterior and median tibiae, and lateral spines of posterior tibiae, dark brown. Posterior tibiae with 2 lateral spines on apical 1/3 and 6 apical spines. Metatibiotarsal formula: (2) 6/8/2.

Abdomen: (Fig. 1 B) dark brown ventrally with posterior margin of sternites bordered with yellowish.

Genitalia ♂: pygofer higher than broad and with posterior margin strongly sinuate and roundly projecting posteriorly in middle in lateral view (Fig. 2 A). Gonostyli (Fig. 2 A, C) elongate in lateral view with capitulum of style well developed, elongate and projecting dorsointernally; capitulum with 2 processes on dorsal margin, a basolateral laminate process pointed anteroventrally and a deep basal transverse groove. Anal tube (Fig. 2 A, B) 1.25 times longer than broad, slightly sinuate in lateral view, dorso-ventrally flattened with sides broadly rounded and apicolateral angles roundly projecting ventroposteriorly. Aedeagus strongly curved posterodorsally, rather simple (Fig. 2 D). Phallobase with lateral hook-shaped process projecting anterodorsally at basal half (Fig. 2 D); apex of process slightly curved laterally (Fig. 2 E); laminate processes separated apically, slightly dissymmetrical with external margin of left process more convex apically (Fig. 2 E). Ventral lobe of phallobase broad and spatulate, slightly emarginate apically (Fig. 2 E).

BIOLOGY. *N. baviana* sp. nov. was collected at the end of June on lower vegetation, in moist evergreen low mountain forest at an altitude around 1100 m asl. Typical biotope for the species is illustrated Fig. 3 A. Most of the specimens were found sitting on broad smooth leaves (Fig. 3 B-E).



Fig. 3. *Neogergithoides baviana* sp. nov. in Ba Vi National Park, 1100 m, 29.VI.2015 (photographs J. Constant). A, habitat. B–E, live specimen.

Neogergithoides grootaerti sp. nov.

Figs 4, 5, 6

ETYMOLOGY. The species is dedicated to Dr Patrick Grootaert, the head of Entomology at RBINS in acknowledgment for his permanent support and help to our projects in Vietnam.

TYPE MATERIAL

Holotype ♂ (dissected, right hind wing mounted): [Coll. I.R.Sc.N.B., Vietnam, Pia-Oac Mount, 22°36'N / 105°53'E, 03.VIII.2010, I.G. 31.668, Leg. J. Constant & P. Limbourg] (RBINS).

DIAGNOSIS. The species is easily separated **(1)** from *N. tubercularis* by the colour of the tegmina (pale yellow-green in the latter, showing a brown reticulum and black spot on disc in *N. grootaerti*), and **(2)** from *N. baviana* by the vertex less elongate in the latter (1 time as long as broad in the latter vs 1.3 time in *N. grootaerti*).

DESCRIPTION.

Measurements and ratios: LT: ♂ (n = 1): 6.3 mm. LTg/BTg = 2.28; LV/BV = 1.28; LF/BF = 1.53.

Head: (Fig. 4 A, C, D) vertex elongate, yellowish with lateral and posterior margins carinate; anterior and lateral margins black-brown; in dorsal view, anterior margin convex, posterior one concave and lateral subparallel; disc excavate with narrow longitudinal groove on basal half and pair of parallel black-brown lines on anterior half merging in middle, leaving a pale, elongate yellowish spot behind anterior margin. Side of head pale yellowish, narrowly black-brown along dorsal margin and around eye; black-brown marking from anterodorsal part of eye to anterodorsal angle of gena; brown line from ventral margin of eye to fronto-clypeal suture. Frons elongate and very slightly coriaceous between carinae; brown with sides carinated, pale yellowish, and strong median pale yellowish carina, extending to apex of clypeus. Clypeus brown with pale yellowish line along lateral margins. Scape short, ring-shaped; pedicel bulbous, dark brown. Labium brown with last segment longer than broad, and shorter and paler than penultimate.

Thorax: (Fig. 4 A, C, D) brown dorsally. Pronotum very short with posterior margin and discal carinae laminate; disc concave with obsolete median carina and tubercles; narrow pale yellowish line extending on posterior margin of pronotum to posterior and ventral margins of paranotal lobes, broadening at internoventral angle of lobes. Mesonotum short, slightly coriaceous with obsolete median and lateral carinae; transverse carina along anterior margin; slightly darker in middle; dark brown anteriorly to transverse carina. Tegulae dark brown.

Tegmina: (Fig. 4 A, C) broadly semicircular, subcoriaceous; yellowish-green with submarginal narrow dark brown line from anterior angle to posterosutural angle, running on margin only on basal 1/5; apical third of lateral margin and posterior one very narrowly bordered with brown. Venation reticulate with main longitudinal veins barely distinct basally and numerous cross-veinlets. Veins and veinlets brown, more or less dark; yellowish and forming a pale area on anterocostal angle with cells yellowish; transverse area behind scutellum slightly darker; brown marking at mid length merging to sutural margin.

Hind wings: (Fig. 4 E) yellow-brown, unilobed, with veins darker, slightly shorter than tegmina. Venation reticulate with main longitudinal veins distinct basally (C, ScP+R, MP, CuA), anal area absent; numerous cross-veinlets; veins slightly darker along distal margin. Costal and cubital margins sinuate, distal margin rounded.

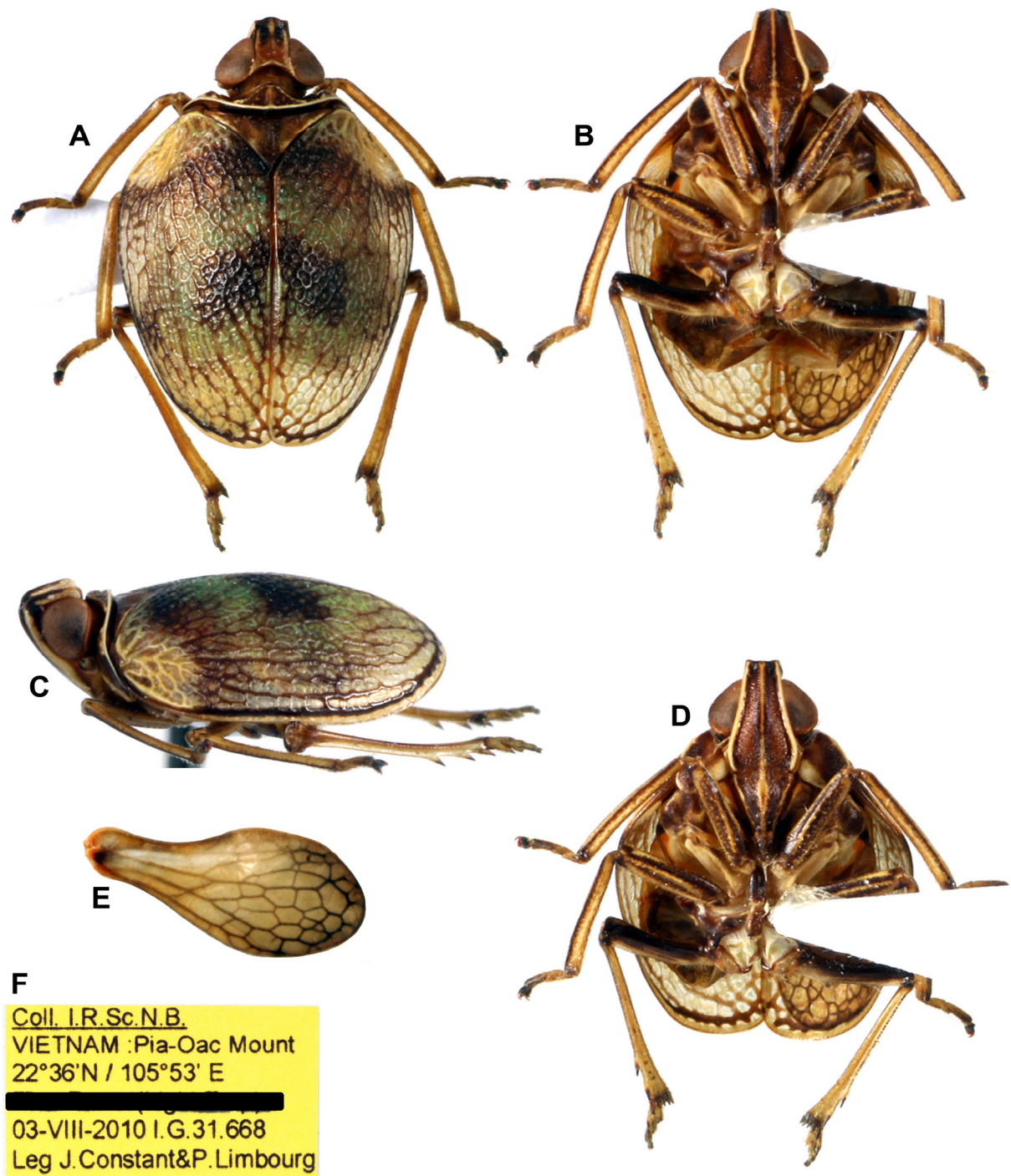


Fig. 4. *Neogergithoides grootaerti* sp. nov., holotype, total length: 6.3 mm. A, habitus, dorsal view. B, habitus, ventral view. C, habitus, lateral view. D, habitus, normal view of frons. E, right hind wing. F, label.

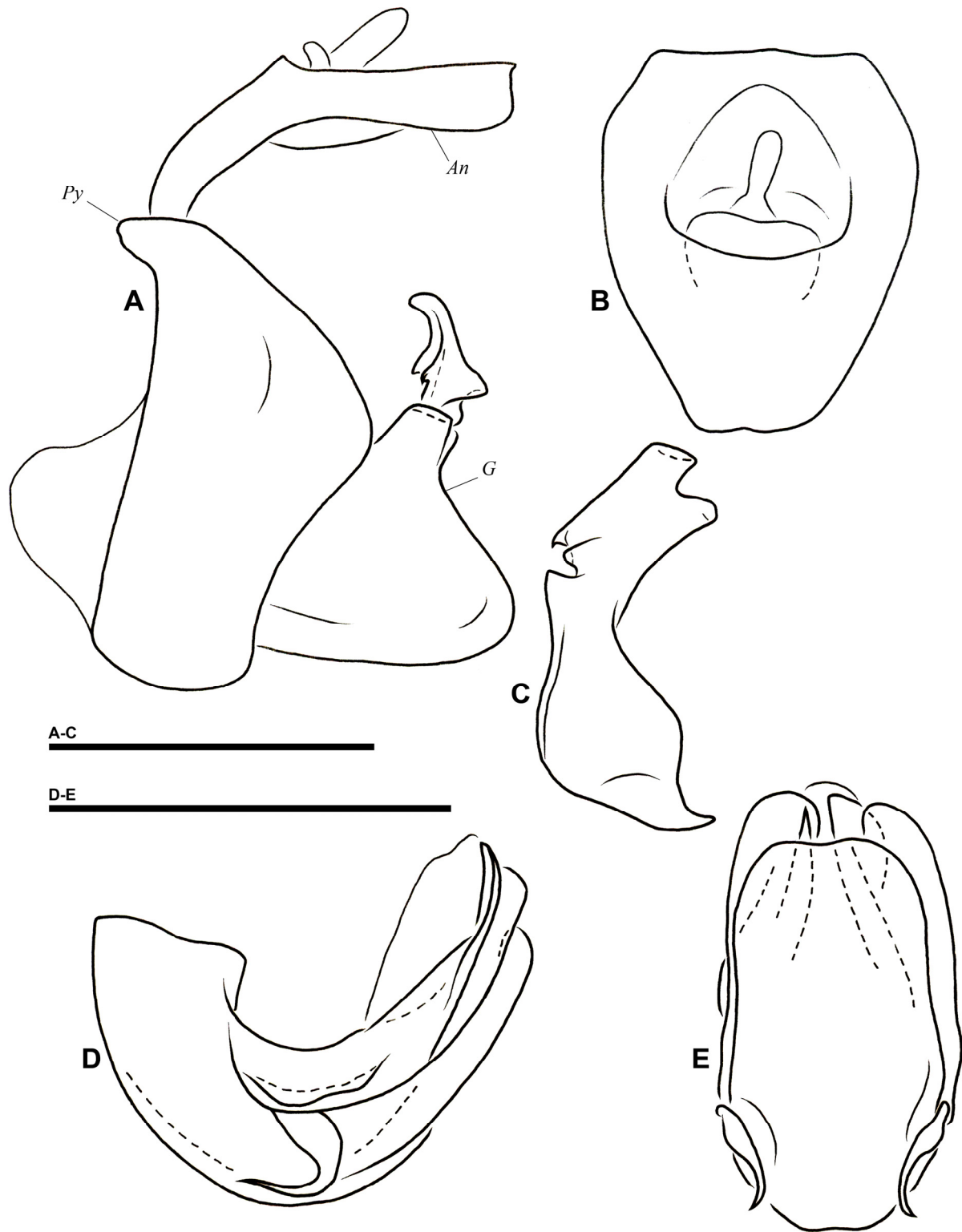


Fig. 5. *Neogergithoides grootaerti* sp. nov., holotype, genitalia ♂. A, pygofer, anal tube and gonostylus, left lateral view. B, anal tube, dorsal view. C, left gonostylus, posterior view. D, aedeagus, left lateral view. E, aedeagus, posteroventral view. *An*: anal tube; *G*: gonostyli; *Py*: pygofer. Scale 1mm.

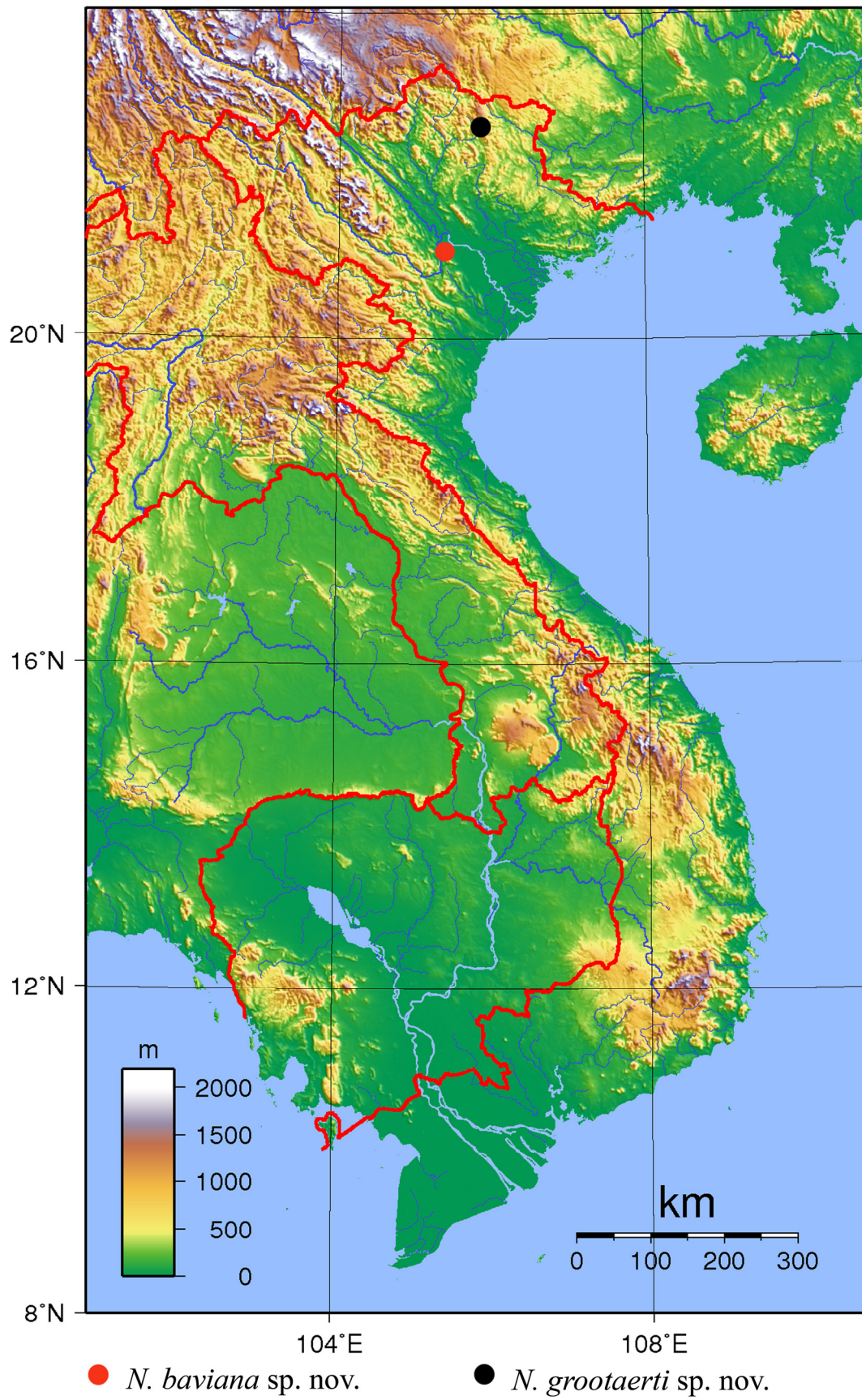


Fig. 6. *Neogergithoides* of Vietnam: distribution map in mainland.

Legs: (Fig. 4 A, B) elongate and slender, yellowish with darker and paler markings. Broad longitudinal zones on femora, carinae and apex of anterior and median tibiae, and lateral spines of posterior tibiae, brown. Posterior tibiae with 2 lateral spines on apical 1/3 and 6 apical spines. Metatibiotarsal formula: (2) 6/8/2.

Abdomen: (Fig. 4 B) brown ventrally with basal sternites yellowish.

Genitalia ♂: pygofer higher than broad and with posterior margin strongly sinuate and roundly projecting posteriorly in middle in lateral view (Fig. 5 A). Gonostyli (Fig. 5 A, C) subtriangular in lateral view with capitulum of style well developed, elongate and projecting dorsointernally; capitulum with 2 processes on dorsal margin, two basolateral processes pointing lateroventrally and a deep basal transverse groove. Anal tube (Fig. 5 A, B) 1.20 times longer than broad, slightly curved in lateral view; dorso-ventrally flattened with sides broadly rounded and apical margin cut nearly straight in dorsal view, and lateroapical angles slightly projecting ventrally. Aedeagus strongly curved posterodorsally, rather simple (Fig. 5 D). Phallobase with lateral hook-shaped process projecting anteriorly at basal half (Fig. 5 D); laminate processes separated apically, slightly dissymmetrical with external margin of left process projecting externally in a thin lamina (Fig. 5 D, E). Ventral lobe of phallobase broad and spatulate, slightly emarginate apically (Fig. 5 E).

BIOLOGY. *N. grootaerti* sp. nov. was collected on lower vegetation, in moist evergreen tropical mountain forest at an altitude between 1600 and 1900 m asl.

Discussion

The tribe Hemisphaeriini in Vietnam now counts 6 genera with 17 species (GNEZDILOV *et al.*, 2014; CONSTANT & PHAM, 2014) but in the last five years (CONSTANT & PHAM, 2011; GNEZDILOV, 2013; CONSTANT & PHAM, 2014) six new species (35%) were described. This represents however only a fraction of the real diversity of Hemisphaeriini of the country (CONSTANT, unpublished data).

Acknowledgments

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