



Revision of the Eurybrachidae (XII). The Oriental genus *Nicidus* Stål, 1858 (Hemiptera: Fulgoromorpha)

JEROME CONSTANT

Royal Belgian Institute of Natural Sciences, Department of Entomology, Vautier street 29, B-1000 Brussels, Belgium.

E-mail: entomo@naturalsciences.be

Abstract

The Oriental genus *Nicidus* Stål, 1858 (Hemiptera, Fulgoromorpha, Eurybrachidae) is redescribed and reviewed. Male and female genitalia are illustrated and photos of habitus, distribution maps and biological data are provided with the description of the species. Two species are placed in the genus: *N. fusconebulosus* Stål, 1858 and *N. stali* Schmidt, 1911. An identification key to the species is proposed. Lectotypes are designated for *N. stali* and *Kandiana lewisi* Distant, 1892.

Key words: Eurybrachini, Sri Lanka, Malaysia, Borneo

Introduction

This paper is the twelfth of a series intended to revise the family Eurybrachidae. It is the fourth one dealing with the Oriental fauna (Constant, 2006d, 2007a, b), the others dealing with the Australian (Constant, 2005c, 2006a, b, c) and Afrotropical faunas (Constant, 2004, 2005a, b, 2007c). The study starts with the necessary preliminary one-by-one revision and redefinition of the genera and is aimed at proposing a more natural classification for the family. This will also allow tentative understanding of the phylogeny and zoogeography of the family.

The genus *Nicidus* Stål, 1858 is one of the genera of the tribe Eurybrachini Schmidt, 1908 defined by the following main distinctive features: (1) clavus open, (2) claval veins not fused in clavus, (3) infra-ocular spine present. This tribe is restricted to the Oriental region and contains five genera (Schmidt, 1908; Metcalf, 1956): *Eurybrachys* Guérin-Méneville, 1834, *Messena* Stål, 1861, *Nicidus* Stål, 1858, *Purusha* Distant, 1906 and *Thessitus* Walker, 1862.

Stål (1858) created the genus *Nicidus* for a new species from Ceylon (presently Sri Lanka), *N. fusconebulosus* Stål, 1858. He stated that the genus is close to *Eurybrachys* Guérin-Méneville, 1834, but strongly differs in the shape of the head and tegmina. Distant (1892) described the genus *Kandiana* for one new species from Ceylon, *Kandiana lewisi* Distant, 1892. He stated that the genus is close to *Messena* Stål, 1861, but has tegmina long and narrow, much longer than the hind wings, and six spines on the hind tibiae. Melichar (1903) redescribed *Nicidus*, proposed *Kandiana* as a synonym and agreed with Distant's (1892) view that the genus is close to *Messena*. The genus was described again by Distant (1906) who also proposed a key to the Oriental genera of Eurybrachidae including *Nicidus* with the following diagnostic characters: (1) eyes spinose beneath, (2) wings not broader than tegmina, (3) face distinctly broader than pronotum, (4) tegmina very long and narrow, very much longer than wings, (5) apex of wings obtusely subangulate, not rounded, (6) hind tibiae with six spines. Schmidt (1908) placed *Nicidus* in the tribe Eurybrachini Schmidt, 1908, a view followed by Met-

calf (1956). Schmidt (1911) added a second species to the genus: *N. stali* Schmidt, 1911 from Borneo. Two species are presently placed in the genus (Metcalf, 1956): *N. fusconebulosus* and *N. stali*.

Material and methods

Dissection of male and female genitalia was done after boiling the abdomen for about one hour in a 10% solution of potassium hydroxide (KOH) and two drops of saturate alcoholic solution of chlorazol black. The pygofer was separated from the rest of the abdomen and the phallic complex was extracted from the males. The dissected genitalia and abdomen were stored in glycerin under the specimen.

For routine identification of the males, acetic acid boiling was done (10–15 minutes) as the specific structures on the phallic complex are directly visible after removing the gonostyli.

The terminology for the female genitalia follows Bourgoïn (1993) with some additions from Soulier-Perkins (1997) and Soulier-Perkins & Bourgoïn (1998) on the family Lophopidae.

Lectotypes are designated when necessary in order to stabilize nomenclature in the group. Each species is described and the genitalia as well as other characters useful for identification are figured. Distribution maps produced by the software *CFF* (Barbier & Rasmont, 2000) and photos of habitus are also provided.

Where appropriate, the current name of each locality is given in parentheses after the one transcribed from the label. For the labels of the types, the wording on each single label is limited by square brackets. Geographical coordinates for the localities are given.

The following acronyms are used for the measurements (measurements are taken as in Constant, 2004): BF, breadth of the frons – BT, breadth of the thorax – BTg, breadth of the tegmen – BV, breadth of the vertex – LF, length of the frons – LM, length of the mesonotum – LP, length of the pronotum – LT, total length – LTg, length of the tegmen – LV, length of the vertex.

Acronyms used for the collections:

BMNH	The Natural History Museum, London, United Kingdom
CAS	California Academy of Sciences, San Francisco, California, U.S.A.
MMBC	Moravske Museum (coll. Melichar), Brno, Czech Republic
RBINS	Royal Belgian Institute of Natural Sciences, Brussels, Belgium
RSME	National Museum of Scotland, Edinburgh, United Kingdom
USNM	National Museum of Natural History, Washington D.C., U.S.A.
ZMHB	Museum für Naturkunde der Humboldt Universität, Berlin, Germany
ZMPA	Polish Academy of Sciences, Museum of the Institute of Zoology, Warsaw, Poland
ZSMC	Zoologische staatsammlung, München, Germany

Taxonomy

Genus *Nicidus* Stål, 1858

Nicidus Stål, 1858: 451; Melichar, 1903: 69; Distant, 1906: 220, 229; Kirkaldy, 1906: 446; Schmidt, 1908: 242; Schmidt, 1911: 216; Metcalf, 1956: 30.

Type-species (by monotypy): *Nicidus fusconebulosus* Stål, 1858.

Kandiana Distant 1892, synonymised by Melichar, 1903: 69

Type-species (by monotypy): *Kandiana lewisi* Distant 1892

Etymology. *Nicidus*: possibly derivated from the name of the Ancient Greece character *Nikidès*.

— *Kandiana*: the name is assumed to refer to the city of Kandy (Sri Lanka) where the specimen had probably been collected.

Diagnosis. The genus is recognizable by the following combination of characters: (1) medium sized insects (~ 15–22 mm in length); (2) tegmina narrow, more than 3 times longer than broad; (3) infraocular spine well developed, visible from above; (4) frons flat or slightly concave, not convex, at least twice as wide as long (e.g., Figs 16 and 21); (5) first segment of hind tarsi without pad of microsetae (Fig. 2); (6) hindwings narrowing and rounded apically; (7) clavus of tegmen open; (8) anterior tibiae flattened but not foliaceous. Known distribution restricted to the Oriental region.

Redescription. General coloration: greyish brown suffused with red to reddish brown.

Head: dorso-ventrally depressed, slightly broader than thorax; vertex nearly flat, twice broader than long, with all margins carinate, hind margin concave and anterior margin roundly pointed; lateral margins sinuate in lateral view (e.g., Figs 17 and 22); sides of head, infraocular spine and antennae largely visible from above; frons 2.0–2.4 times broader than long, with anterior margin rounded and carina on anterior margin of disc parallel to frons margin; nearly flat or with slight transverse depression in middle (e.g., Figs 16 and 21); clypeus reaching median coxae; labium surpassing median trochanters; apical segment of labium (Fig. 1) longer than broad, shorter and more narrow than penultimate, obliquely cut apically (Fig. 1); ocelli absent; antennae with scape very short and pedicel longer than broad, subcylindrical; infra-ocular spine well developed.

Thorax: about 1.4 times broader than length of pro- and mesonotum together; pronotum with oblique carina on each side of disc anteriorly and obsolete median carina; mesonotum with median carina, obsolete carina on each side of disc, and joint of scutellum distinct.

Tegmina: flat, elongate and narrow, subrectangular, about 3.3–3.8 times longer than broad; apex rounded; clavus open. Venation: vein C distinct on less than first third; veins Sc and R separated close to base; first fork of vein M well beyond Sc-R separation; veins A1 and A2 fused before apex of claval joint; cross-veinlets numerous, more abundant near apex.

Hind wings: well developed; as broad as, and 25–33% shorter than, tegmina, roundly pointed apically; not reaching apex of tegmina at rest; anal area well developed; cross-veinlets numerous; infusate with transverse darker and paler bands near apex.

Legs: I and II short with femur and tibia dorso-ventrally flattened, elongate, not foliaceous; tibia III with 5–6 lateral and 8–9 apical spines; first hind tarsomere (Fig. 2) with 12–14 teeth ventrally near apex and without pad of microsetae (Fig. 2).

Genitalia ♂: pygofer longer than broad, subtriangular in lateral view; gonostyli with postero-dorsal process; anal tube flattened dorso-ventrally, surpassing gonostyli; phallic complex reduced, with dorsal pair of processes.

Genitalia ♀: anal tube elongate, curved postero-ventrad, surpassing gonoplacs, v-shaped in cross section; gonoplacs large and unilobous; gonapophysis IX much smaller than gonoplacs; gonapophysis VIII strongly reduced; gonocoxae VIII well developed ventrally and pilose; anterior vagina placed ventrally and showing longitudinal grooves, smaller than posterior vagina; spermatheca attached postero-laterally, not apically; posterior vagina developed vertically, sinuate and grooved; bursa copulatrix large, elongate, attached dorso laterally to and much larger than posterior vagina.

Sexual dimorphism: no evident sexual dimorphism has been observed; males only slightly smaller than females.

Size: 15–22 mm

Distribution: Oriental region, known from Sri Lanka, Peninsular Malaysia and Borneo.

Biology. Nothing is known of the biology of this genus.

Identification key to the species

- 1 Anterior margin of frons rounded in ventral view; fronto-clypeal joint without transverse black line (Fig. 16).....*Nicidus fusconebulosus* Stål
 - Anterior margin of frons showing concave emargination on each side in ventral view; fronto-clypeal joint with a transverse black line (Fig. 21)..... *Nicidus stali* Schmidt

***Nicidus fusconebulosus* Stål, 1858**

Figs. 1–10; 13–17; 24

Nicidus fusconebulosus Stål, 1858: 451; Kirby, 1891: 146; Melichar, 1903: 70, 224, 247, Pl. III, Fig. 14; Distant, 1906: 230, Fig. 97; Schmidt, 1911: 216; Metcalf, 1956: 30.

Kandiana lewisi Distant, 1892: 280, Pl. XIII, Figs 2, 2a, synonymised by Melichar, 1903: 70.

Etymology. *fusconebulosus*: from *fuscus* (adj., Latin) = brown, dark and *nebulosus* (adj., Latin) = cloudy, literally "covered with brown clouds". The name is assumed to refer to the brown patches on the tegmina.

— *lewisi*, the species is assumed to be dedicated to the collector, Lewis.

Types: the original type material of *N. fusconebulosus* was from the collection Dohrn which is deposited in ZMPA. It has not been found in ZMPA collections (A. Stroinski, *pers. com.* 2007) and despite considerable efforts, it has not been possible to locate it in any other collection. It is therefore considered as lost. My recognition of the species is based on a male from Sri Lanka labeled: [Sri Lanka: Kal. Dist., Morapitiya, 27-28 May 1975, S.L. Wood & J.L. Petty] [Collected in black light trap] [*Nicidus fusconebulosus* Stål, 1858, Jérôme Constant det. 2008] *dissected, genitalia in glycerine* (USNM). Coordinates of Morapitiya: 6°32'N 80°16'E. This specimen matches Stål's original description and is also from Sri Lanka.

Lectotype ♀ of *Kandiana lewisi* Distant, 1892 (present designation): [Ceylon (Lewis)] [*Kandiana lewisi* Dist.] [Distant Coll. 1911-383] [Lectotype ♀ *Kandiana lewisi* Distant, 1892, Jérôme Constant des. 2008] [*Nicidus fusconebulosus* Stål, 1858, Jérôme Constant det. 2008] (BMNH).

Other material examined: 1 ♀: no data [MMBC] – Sri Lanka: 1 ♀: Ceylon [MMBC]; 2 ♀: Kandy (7°18'N 80°38'E), v.1907 [BMNH]; 1 ♂: idem, vii.1902, Distant coll. 1911-383 [BMNH]; 1 ♀: idem, viii.1902, Distant coll. 1911-383 [BMNH]; 1 ex (abdomen missing): idem, viii.1902, Distant coll. 1911-383 [BMNH]; 1 ♀: idem, viii.1902, E.P. VanDuzee collection [CAS]; 1 ♀: idem, iv.1905, E.P. VanDuzee collection [CAS]; 1 ♀: idem, v.1909, MacDougall [RSME]; 1 ♀: idem, vi.1907 [ZSMC]; 1 ♂: idem, ix.1902 [ZSMC]; 1 ♂: Peradeniya (7°15'N 80°36'E) Botanical Garden, i.1971, Piyadasa & Somapa [RBINS, ex USNM]

Additional data (Melichar, 1903): 2 ♀: Ambepusse (= Ambepussa) (7°15'N 80°12'E), ix.1896; 1♂, 1 ♀: Nabampane (= Nabampana) (6°44'N 80°12'E), vii.1895; 1 ♂: Southern Province. All listed from Colombo Museum.

Note: despite considerable efforts, it has not been possible to obtain material from any institution in Sri Lanka for this study.

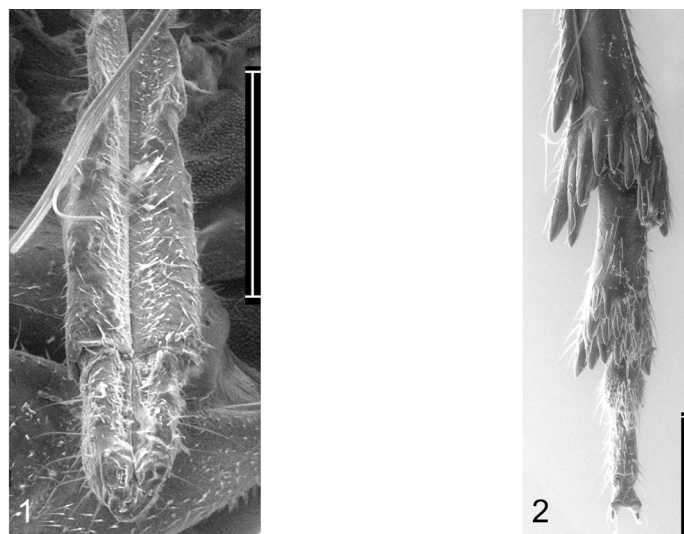
Diagnosis. (1) anterior margin of frons rounded in ventral view; (2) fronto-clypeal joint without transverse black line; (3) maximal breadth of tegmina near apex; (4) known only from Sri Lanka.

Redescription

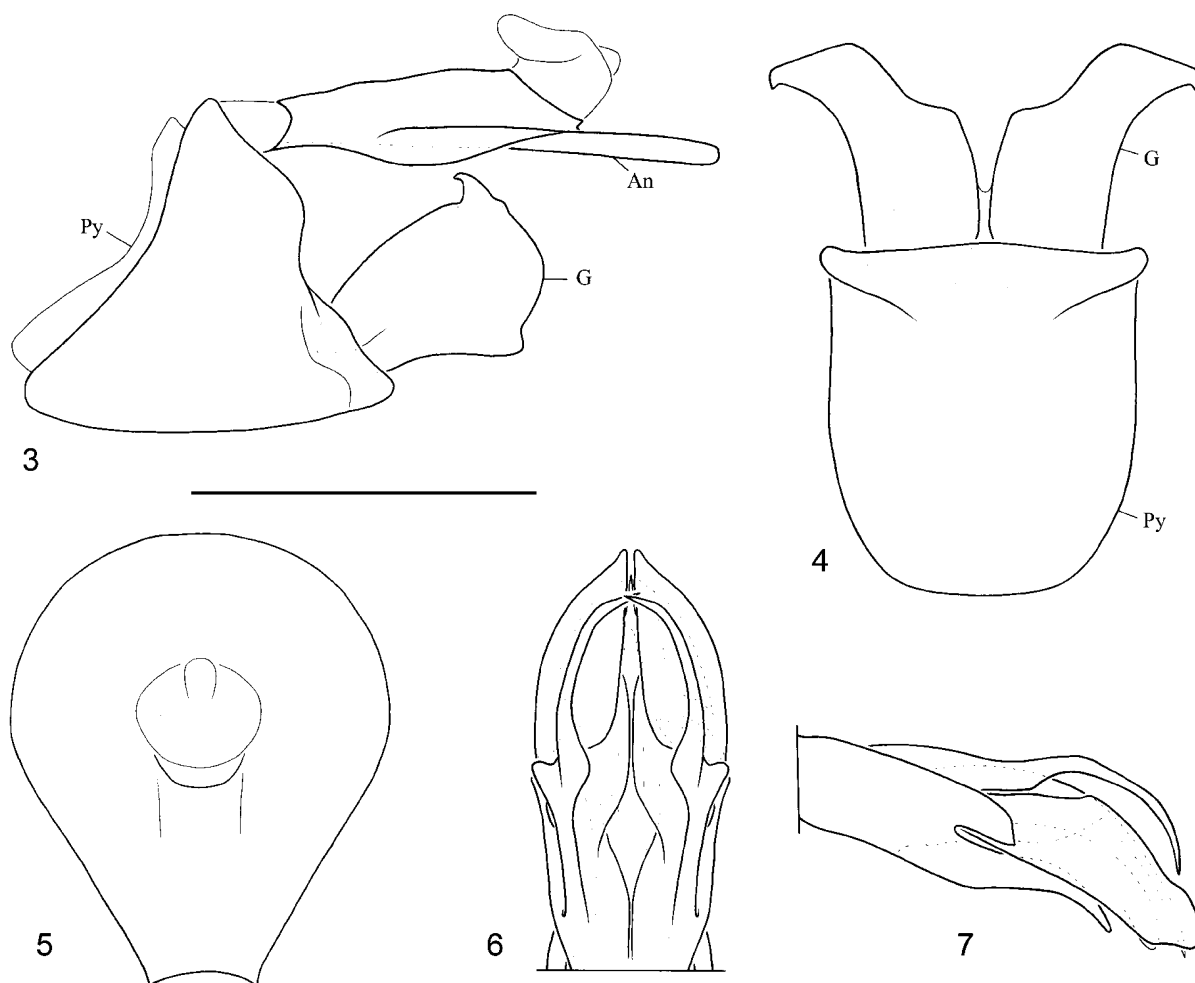
LT: ♂ (n = 3): 16.3 mm (15.5 to 17.4); ♀ (n = 5): 18.6 mm (18.3 to 18.8).

Head: all parts visible in dorsal view, variegated yellowish brown; vertex slightly transversely concave (Figs. 13, 17); infra-ocular spines surpassing antennae and lateral projections of frons; eyes strongly emarginate by infra-ocular spines (Fig. 17); frons very slightly convex, nearly flat, pale yellowish with area between anterior margin and peridiscal carina variegated yellowish brown (Fig. 16); sides of head yellowish ventrally

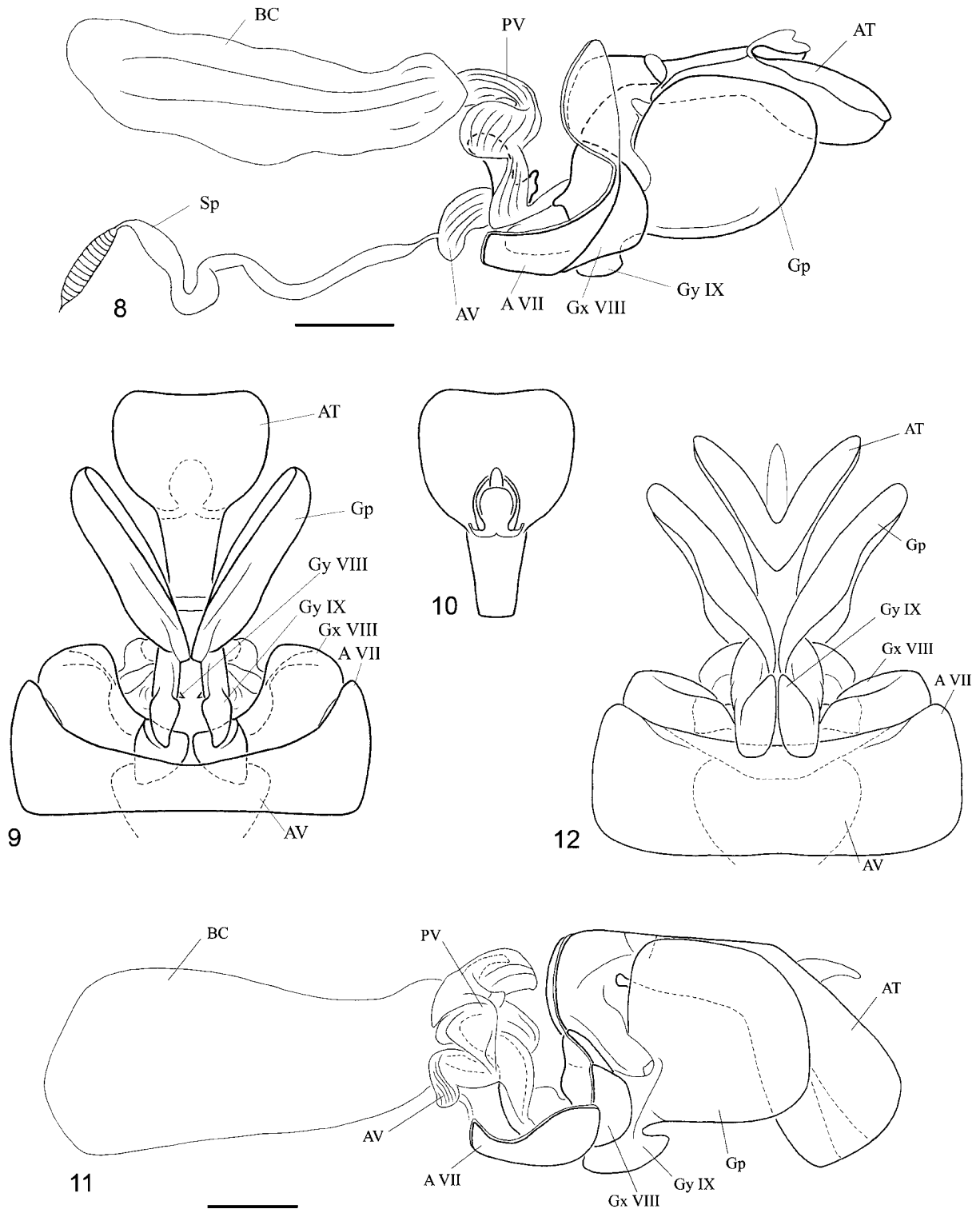
with brown patch near clypeus; carina between frons and side of head obsolete ventrally; clypeus yellowish basally turning to brown apically; labium brown; antennae brown with posterior face paler; ratio BV/LV = 2.0; BF/LF = 2.4.



FIGURES 1–2. *N. fusconebulosus*. 1, apex of labium, ventral view. 2, hind tarsus, ventral view. Scale 0.5 mm.

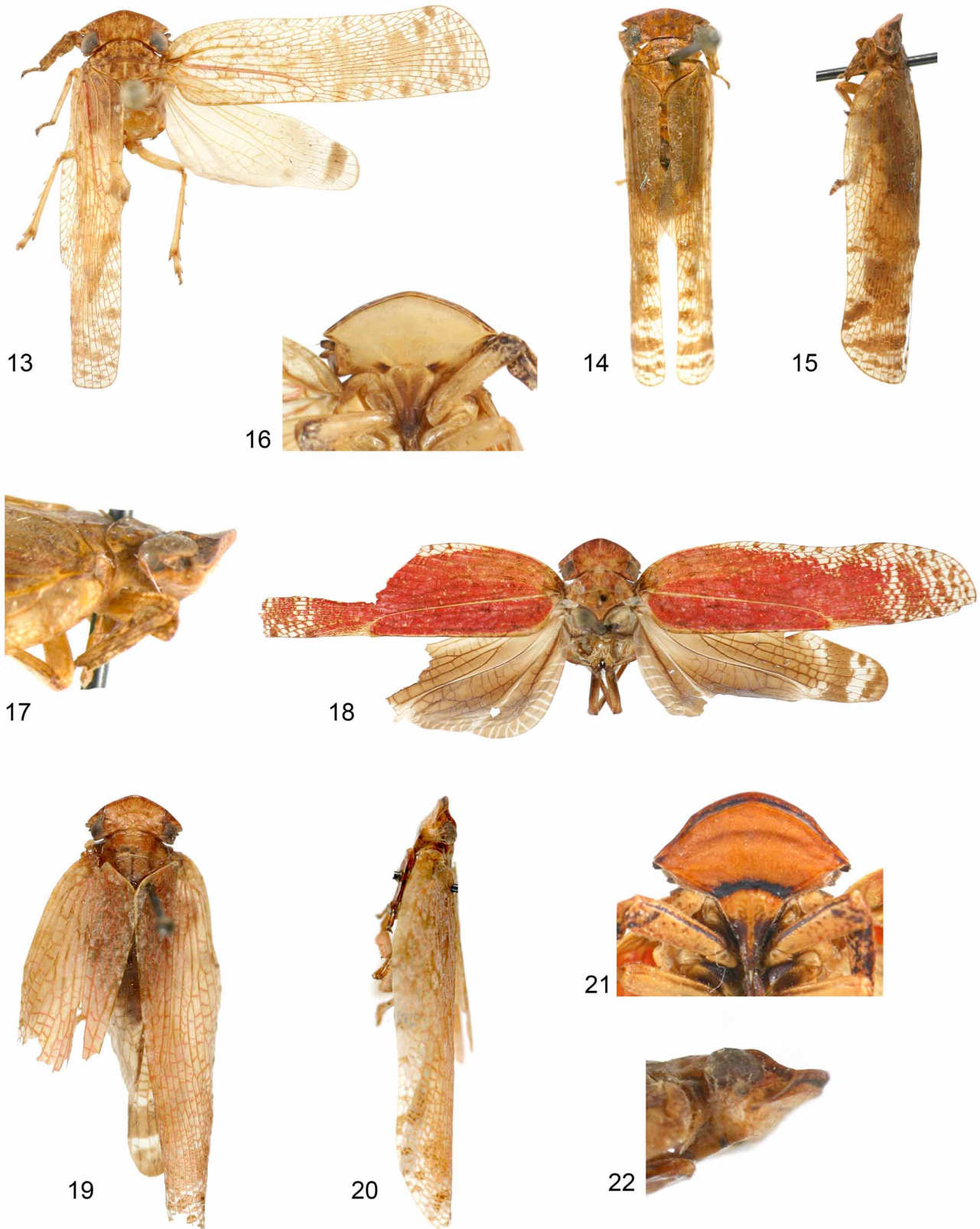


FIGURES 3–7. *N. fusconebulosus*: genitalia ♂. 3, pygofer, anal tube and gonostyli, left lateral view (An – anal tube; G – gonostyli; Py – pygofer). 4, pygofer and gonostyli, ventral view. 5, anal tube, dorsal view. 6, phallic complex, dorsal view. 7, phallic complex, left lateral view. Scale 1 mm.



FIGURES 8–12. 8–10: *N. fusconebulosus*: genitalia ♀. 8, left lateral view. 9, ventral view (external). 10, anal tube, dorsal view. 11–12: *N. stali*: genitalia ♀. 11, left lateral view. 12, ventral view (external). *A VII*: abdominal segment VII; *AT*: anal tube; *AV*: anterior vagina; *BC*: bursa copulatrix; *Gp*: gonoplac; *Gx VIII*: gonocoxa VIII; *Gy VIII*: gonapophysis VIII; *Gy IX*: gonapophysis IX; *PV*: posterior vagina; *Sp*: spermatheca. Scale 1 mm.

Thorax: variegated yellowish brown dorsally; pale yellowish ventrally; pronotum with slight median carina, disc slightly impressed at each side of carina; mesonotum with 3 obsolete carinae; ratio $LP+LM/BT = 0.73$.



FIGURES 13–22. 13–17: *N. fusconebulosus*. 13, habitus, dorsal view (LT = 17.4 mm). 14, habitus at rest, dorsal view (LT = 18.3 mm). 15, habitus, left lateral view. 16, frons, ventral view. 17, head, right lateral view. 18–22: *N. stali*. 18, habitus, dorsal view. 19, habitus at rest, dorsal view (LT = 22 mm). 20, habitus, left lateral view. 21, frons, ventral view. 22, head, right lateral view.

Tegmina: (Fig. 13) pale yellowish, nearly hyaline, variegated with numerous irregular brown patches; brown markings darker, better defined and more numerous apically; veins and often area along claval joint suffused with red; costal and sutural margins subparallel, costal margin slightly sinuate; maximal breadth near apex; apex obliquely rounded; ratio LTg/BTg = 3.7.

Hind wings: (Fig. 13) infusate on basal 3/4; apical fourth whitish with median transverse brown marking not reaching sutural margin; apical margin brown; sutural margin sinuate.

Legs: tibiae I and II and apex of femora I variegated yellowish brown, much darker on legs I; rest of legs yellowish with spines of legs III brown; tibiae I narrowing from base to apex with margins slightly sinuate and external margin emarginate apically; femora I narrowing from apex to base, with apex broader than base of tibia; tibia II narrower than I, narrowing from base to apex, with external margin slightly sinuate; tibiae III with 5 lateral and 9 apical spines; first hind tarsomere with group of 14 subapical teeth ventrally.

Abdomen: yellowish brown.

Genitalia ♂: pygofer in lateral view narrowing dorsally, subtriangular with posterior margin bisinuate (Fig. 3); in ventral view, longer than broad with posterior margin nearly straight (Fig. 4); gonostyli produced dorso laterad, with dorsal and posterior margins rounded and ventral margin concave in lateral view (Fig. 3); posterior margin emarginate in ventral view (Fig. 4); anal tube flattened dorso-ventrally, rounded in dorsal view (Fig. 5); phallic complex: see Figs. 6–7.

Genitalia ♀: (Figs. 8–10) anal tube slightly curved ventrad in lateral view (Fig. 8) and with posterior margin concave (Fig. 10); gonopods with postero-ventral angle largely rounded (Fig. 8); gonocoxae VIII convex (Figs 8, 9); gonapophysis IX slightly projecting posterad (Fig. 8).

Notes. The species seems to be restricted to Sri Lanka. It is probably not as scarce as the low number of collection specimens could suggest but it is probably overlooked and under collected due to its cryptic habits. One specimen was collected at light trap.

Nicidus stali Schmidt, 1911

Figs. 11–12; 18–22; 24

Nicidus stali Schmidt, 1911: 216.

Nicidus stali Schmidt, 1911: Metcalf, 1956: 30.

Etymology: Assumed to be dedicated to Carl Stål.

Types examined: Lectotype ♀ of *Nicidus stali* Schmidt, 1911 (present designation) [Lawas, Sept. 6, 1909] [Type] [E. Schmidt] [*Nicidus stali* Schmidt ♀. Edm. Schmidt determ. 1910.] [Mus. Zool. Polonicum, Warszawa, 12/45] [Lectotype ♀ *Nicidus stali* Schmidt, 1911, Jérôme Constant des. 2008] *left tegmen missing apical half* (ZMPA). Coordinates of Lawas: 4°51'N 115°24'E.

Paralectotype ♀ of *Nicidus stali* Schmidt, 1911: [Telang, Borneo, 12.81] [Telang, Borneo, 12.81] [Type] [*Nicidus stali* Schmidt ♀. Edm. Schmidt determ. 1910.] [Paralectotype ♀ *Nicidus stali* Schmidt, 1911, Jérôme Constant des. 2008] *left tegmen missing apico-costal fourth, left hind wing missing apical third, dissected* (ZMHB). Coordinates of Telang: 2°07'S 115°00'E.

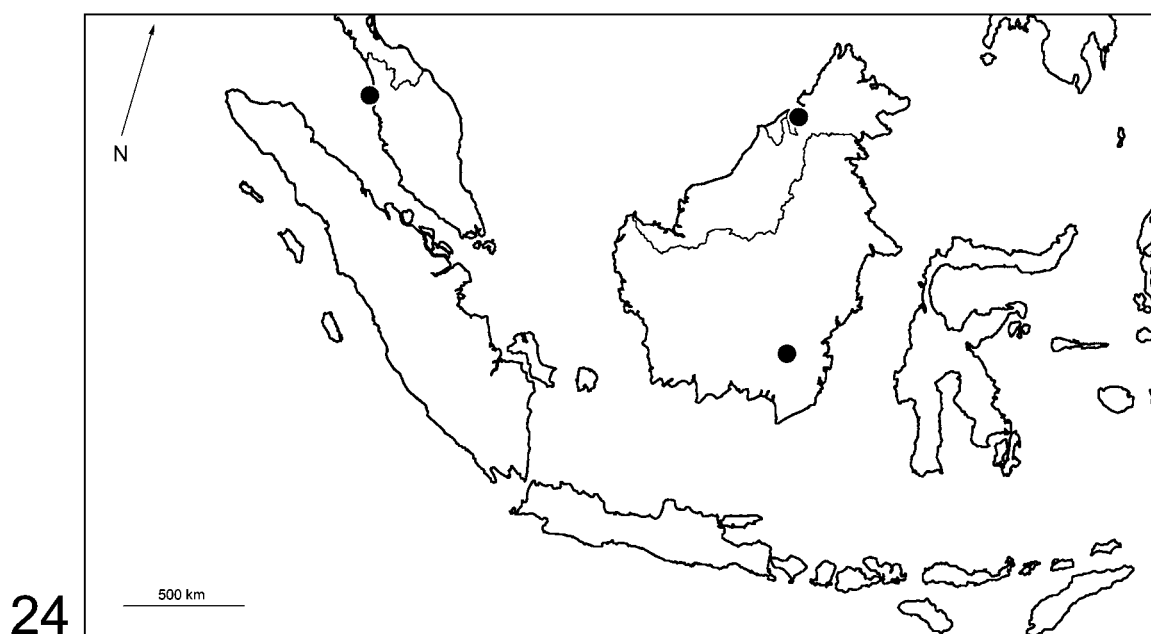
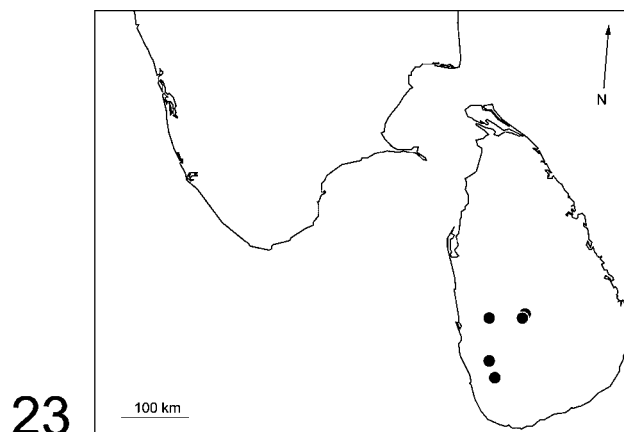
Other material examined. Malaysia: 1 ♀: Penang, Batu Feringgi (5°28'N 100°15'E), iv.1958 (RBINS).

Diagnosis. (1) anterior margin of frons showing concave emargination on each side in ventral view; (2) fronto-clypeal joint with a transverse black line; (3) maximal breadth of tegmina at basal third; (4) known from Peninsular Malaysia and Borneo.

Redescription. LT: ♀ (n = 2): 22.0 mm (21.9 to 22.0).

Head: all parts visible in dorsal view variegated yellowish brown suffused with red; vertex slightly concave, slightly depressed on middle of disc (Figs 19, 22); infra-ocular spine shorter than antennae and lateral projection of frons in dorsal view; eyes emarginate by infra-ocular spine (Fig. 22); frons transversely

depressed, yellowish brown to reddish yellow with brown patch at lateral angle; area between anterior margin and peri-discal carina darker, with blackish brown line (Figs 21, 22); sides of head coloured as frons with brown patch at antero-ventral angle; lateral carina of frons between clypeus and lateral projection slightly marked on ventral half; fronto-clypeal joint with black line; clypeus coloured as frons with sides and apex brown; antennae and labium brown; ratio BV/LV = 2.0; BF/LF = 2.1.



FIGURES 23–24. Distribution maps. 23, *N. fusconebulosus* in Sri Lanka. 24, *N. stali* in peninsular Malaysia and Borneo.

Thorax: variegated yellowish brown suffused with red dorsally, brownish ventrally; pronotum with disc slightly depressed, obsolete median carina and transverse depression at each side of disc; mesonotum with 3 obsolete carinae; ratio LP+LM/BT = 0.71.

Tegmina: (Fig. 18) reddish to pale yellowish brown with veins reddish; area along costal margin on apical 3/4, apex and ante-apical transverse band with celled hyaline marked by brown spots; costal margin sinuate; apical margin obliquely rounded; maximal breadth at first third; ratio LTg/BTg = 3.4.

Hind wings: (Fig. 18) infusate with apical 1/4 darker marked by 2 ante-apical transverse paler bands; sutural margin bisinuate on basal 3/4, strongly emarginate at apical 1/4.

Legs: all legs yellowish brown suffused with red; tibiae I with irregular black markings ventrally; femora I with subapical black markings and longitudinal black line ventrally; all coxae and trochanters with brown

patch; femora I narrowing from apex to base; tibiae I with external margin curved and obliquely truncate apically; internal margin sinuate; tibiae II with internal margin straight and external sinuate; tibiae III with 5-6 lateral and 8 apical spines; first hind tarsomere with 12 subapical teeth ventrally.

Abdomen: brown.

Genitalia ♂: unknown.

Genitalia ♀: (Figs 11–12) anal tube strongly curved ventrad in lateral view (Fig. 11); gonoplasts with postero-ventral angle angulosly rounded; gonocoxae VIII slightly concave (Figs 11, 12); gonapophysis IX projecting posterad (Fig. 11).

Notes. Nothing is known about this species other than that it was previously reported only from Borneo. It seems to be much more widespread as it is also found in Peninsular Malaysia but its shape and colour are surely good camouflage when it sits on branches or trunks.

Discussion

The genus *Nicidus* is easily recognizable among the Eurybrachidae. It is closest to *Eurybrachys* Guérin-Méneville, 1834 and *Messena* Stål, 1861 (Stål, 1858; Distant, 1892; Melichar, 1903) with which it shares a number of characters such as the shape of the head (*Messena*, *Eurybrachys*) and the colour pattern of the hind wings (*Eurybrachys*). However, both *Messena* and *Eurybrachys* possess shorter and broader tegmina and a pad of microsetae on the first hind tarsomere. Schmidt (1908) and Metcalf (1956) placed the genus in the tribe Eurybrachini Schmidt, 1908 and this view is followed here.

Nothing is known of the life history of either species of the genus and the male of *N. stali* is yet to be discovered. Specimens are scarce in collections although *N. fusconebulosus* appears well represented in Sri Lanka (e.g. around Kandy) and *N. stali* has a wider distribution than previously thought.

It is likely that both species have been overlooked because of their cryptic shape and colour which presumably renders them difficult to detect when they sit on branches or trunks as do the other members of the family (e.g. Constant, 2004, 2005a, b, c, 2006c).

Acknowledgements

I thank here the following curators for the loan of material in their care: M. Webb (BMNH), N. Penny (CAS), I. Malenovsky (MMBC), P. Grootaert (RBINS), A. Whittington (RSME), S. McKamey (USNM), J. Deckert (ZMHB), J. Szwedo & A. Stroinski (ZMPA) and T. Kothe (ZSMC). I also thank Dr Thierry Bourgoin (Muséum National d'Histoire Naturelle, Paris, France), Dr Murray J. Fletcher (Orange Agricultural Institute, Orange, New South Wales, Australia) and Mr Pol Limbourg (RBINS) for their comments and permanent support.

References

- Barbier, Y. & Rasmont, P. (2000) *Carto Fauna-Flora 2.0. Guide d'utilisation*. Université de Mons Hainaut, Mons, Belgique, 59 pp.
- Bourgoin, T. (1993) Female genitalia in Hemiptera Fulgoromorpha, morphological and phylogenetic data. *Annales de la Société Entomologique de France*, 29, 225–244.
- 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, 11–28.
- Constant, J. (2005a) Revision of the Eurybrachidae (II). Description of the new genus *Usambrachys*, review of the genera *Harmosma* Fennah, 1964 and *Neoplatybrachys* Lallemand, 1950 and key to the Afrotropical genera (Hemiptera:

- Fulgoromorpha: Eurybrachidae). *Bulletin de l'Institut royal des Sciences naturelles de Belgique*, 75, 29–39.
- Constant, J. (2005b) Revision of the Eurybrachidae (III). The Afrotropical genus *Metoponitys* Karsch, 1890 (Hemiptera: Fulgoromorpha: Eurybrachidae). *Bulletin de l'Institut royal des Sciences naturelles de Belgique*, 75, 41–56.
- Constant, J. (2005c) Revision of the Eurybrachidae (IV). The Australian genus *Gelastopsis* Kirkaldy, 1906 (Hemiptera Fulgoromorpha: Eurybrachidae). *Bulletin de l'Institut royal des Sciences naturelles de Belgique*, 75, 57–69.
- Constant, J. (2006a) Revision of the Eurybrachidae (VI). The Australian genus *Nirus* Jacobi, 1928 (Hemiptera: Fulgoromorpha: Eurybrachidae). *Annales Zoologici*, 56(2), 305–309.
- Constant, J. (2006b) Revision of the Eurybrachidae (V). Description of the new Australian genus *Kirkaldybrachys* Constant (Hemiptera: Fulgoromorpha: Eurybrachidae). *Bulletin de la Société Royale Belge d'Entomologie*, 142, 47–54.
- Constant, J. (2006c) Revision of the Eurybrachidae (VII). The Australian genera *Hackerobrachys* and *Fletcherobrachys* (Hemiptera Fulgoromorpha: Eurybrachidae). *Bulletin de l'Institut royal des Sciences naturelles de Belgique*, 76, 31–40.
- Constant, J. (2006d) Revision of the Eurybrachidae (VIII). The Oriental genera *Klapperibrachys* Constant and *Macrobrachys* Lallemand (Hemiptera Fulgoromorpha: Eurybrachidae). *Bulletin de l'Institut royal des Sciences naturelles de Belgique*, 76, 41–48.
- Constant, J. (2007a) Revision of the Eurybrachidae (IX). The new Oriental genus *Nilgiribrachys* (Hemiptera: Fulgoromorpha). *Annales de la Société Entomologique de France (nouvelle série)*, 43 (2), 225–229.
- Constant, J. (2007b) Revision of the Eurybrachidae (X). The Oriental genus *Chalia* Walker, 1858 (Hemiptera Fulgoromorpha). *Bulletin de l'Institut royal des Sciences naturelles de Belgique*, 77, 71–86.
- Constant, J. (2007c) Revision of the Eurybrachidae (XI). The Afrotropical genus *Mesonitys* Schmidt, 1908 (Hemiptera Fulgoromorpha). *Bulletin de l'Institut royal des Sciences naturelles de Belgique*, 77, 87–105.
- Distant, W.L. (1892) XVII. Contribution to a knowledge of the Homopterous family Fulgoridae. *The Transactions of the Royal Entomological Society of London*, 1892 (4), 275–286.
- Kirby, W.F. (1891) Catalogue of the described Hemiptera Heteroptera and Homoptera of Ceylon, based on the collection formed (chiefly at Pundaloy) by Mr. E. Ernest Green. *Journal of the Linnean Society of Zoology*, 24, 72–176, pls. 4–6.
- Kirkaldy, G.W. (1906) Leafhoppers and their natural enemies. *Bulletin of the Hawaiian Sugar Plant Association Division of Entomology*, 1(9), 271–479.
- Melichar, L. (1903) Homopteren-Fauna von Ceylon, 248 pp.
- Metcalf, Z.P. (1956) *General Catalogue of the Homoptera. Fascicle IV Fulgoroidea. Part 18 Eurybrachidae and Gengidae*. Raleigh (U.S.A.) North Carolina State College, 81pp.
- Schmidt, E. (1908) Beitrag zur Kenntnis der Eurybrachinen (Hemiptera – Homoptera). *Zoologischer Anzeiger*, 33, 241–247.
- Soulier-Perkins, A. (1997) Systématique phylogénétique et test d'hypothèses biogéographiques chez les Lophopidae (Homoptera, Fulgoromorpha). Thèse, MNHN, Paris, 128 pp.
- Soulier-Perkins, A. & Bourgoïn T. (1998) Copulatory mechanisms and sexual selection in the Lophopidae (Hemiptera: Fulgoromorpha). *Annales de la Société Entomologique de France (N.S.)*, 34(2), 149–162.
- Stål, C. (1858) Hemipterologiska bidrag. *Öfversigt Svenska Vetenskaps-Akademiens Förhandlingar*, 15, 433–454.