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Monograph

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Revision of the Eurybrachidae (XVII). The new Australian genus *Kamabrachys* gen. nov. with ten new species (Hemiptera: Fulgoromorpha)

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Abstract. The Australian genus of Eurybrachidae (Hemiptera, Fulgoromorpha) *Kamabrachys* gen. nov. is described to accommodate *Platybrachys signata* Distant, 1892 and *Euronotobrachys plana* Kirkaldy, 1906, the former being the type species. The new combinations *Kamabrachys signata* (Distant, 1892) gen. et comb. nov. and *K. plana* (Kirkaldy, 1906) gen. et comb. nov. are subsequently proposed. Ten new species are also included in the genus and described: *K. andersoni* gen. et sp. nov., *K. brennani* gen. et sp. nov., *K. campbelli* gen. et sp. nov., *K. danielsi* gen. et sp. nov., *K. falcata* gen. et sp. nov., *K. fasciata* gen. et sp. nov., *K. pedemontana* gen. et sp. nov., *K. rieki* gen. et sp. nov., *K. v-carinatum* gen. et sp. nov. and *K. waineri* gen. et sp. nov. The male and female genitalia of each species are illustrated and photographs of habitus, distribution maps, biological data and an identification key are provided. The mating behaviour of *K. signata* is described, illustrated and discussed. The genus *Kamabrachys* currently contains 12 species and is associated to trees in the family Myrtaceae.

Keywords. Planthopper, gum tree, terminalia, genitalia, camouflage.

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Introduction

With 42 genera and 200 species, the Eurybrachidae Stål, 1862 are a small family of planthoppers (Fulgoromorpha) representing only 1.7% of the genera and 1.4% of the species of the global Fulgoromorpha Evans, 1946 fauna. The family is restricted to the Old World and is distributed in the Afrotropical, Oriental and Australasian regions, with some species present in the southeasternmost part of the Palaearctic region in China; it is not recorded from Madagascar and Taiwan (Metcalf 1956; Bourgoin 2022). In Australia, the fauna of Eurybrachidae counts 15 genera and 53 species which all belong to the tribe Platybrachini Schmidt, 1908 of the subfamily Platybrachinae Schmidt, 1908. This subfamily is widely distributed in the Afrotropical, Oriental and Australasian regions and counts 21 genera. It is divided in two tribes: the Ancyirini Schmidt, 1908 with the single Oriental genus, *Ancyra* White, 1845, and the Platybrachini Schmidt, 1908 with 20 genera distributed in the Afrotropical and Australasian

regions (Metcalf 1956; Fennah 1964; Bourgoïn 2022). From the beginning of my revision of the family Eurybrachidae (Constant 2004), a redefinition and review of all existing genera appeared crucial. Confirming the view of Kirkaldy (1906) that it was “badly in need of revision”, the genus *Platybrachys* Stål, 1859 was rapidly recognized as problematic, poorly defined and containing several species which needed to be moved to another genus or deserved the erection of new genera to accommodate them. This was the case for *Fletcherobrachys* Constant, 2006, erected to accommodate *Platybrachys stillata* Bergroth, 1907 (Constant 2006b), and for *Chewobrachys* Constant, 2008 to accommodate *Platybrachys sanguiflua* (Walker, 1858) (Constant 2008); *Lyncilia nobilis* Stål, 1863 was transferred to *Platybrachys* by Fennah (1964) without justification, and was finally placed in the genus *Olonia* Stål, 1862 (Constant 2018) while, as a consequence of the revision of this genus, *O. ornata* Lallemand, 1928 was provisionally transferred into *Platybrachys* (Constant 2018). The scrutiny of the species within *Platybrachys* revealed that *P. signata* Distant, 1892 doesn't belong to *Platybrachys* because, for example, its hind wings marked with orange and white while they are always uniformly dark brown in *P. lanifera* (Stål, 1854), the type species of *Platybrachys*, and closely allied species examined; the male pygofer of *P. signata* is dorsoventrally flattened and shows a lateroventral lobe (pygofer laterally compressed and without lobe in *P. lanifera* and allies); the gonostyli are large and fused (fused only very basally and relatively smaller in *P. lanifera* and allies); the anal tube is roundly oval and dorsoventrally flattened (elongate and with an apical hook in *P. lanifera* and allies), etc. Furthermore, the study of the other species in the genus *Euronotobrachys* Kirkaldy, 1906 showed that *E. plana* Kirkaldy, 1906 is not congeneric with the type species *E. arcuata* Kirkaldy, 1906 and hence must be excluded from *Euronotobrachys*. For example, its hind wings are yellow basally while they are always uniformly dark brown in *Euronotobrachys* spp.; the male pygofer is dorsoventrally flattened and shows a lateroventral lobe (pygofer laterally compressed and without lobe in *Euronotobrachys* spp.); the gonostyli are large and fused (fused only very basally and relatively smaller in *Euronotobrachys* spp.); the anal tube is roundly oval, and dorsoventrally flattened (elongate and deeply grooved after anal opening in *Euronotobrachys* spp.); the tegmina venation shows a very basal first fork of MP and a first fork of CuA after half-length of tegmen (first fork of MP after half of tegmen and first fork of CuA very basal in *Euronotobrachys* spp. – Constant 2006a: fig. 2). *Euronotobrachys plana* is actually very close to *Platybrachys signata* and the two species cannot be placed in any existing genus.

The present paper is the 17th part of the ongoing revision of the family Eurybrachidae. It aims to describe the new genus *Kamabrachys* gen. nov. to accommodate *Platybrachys signata* and *Euronotobrachys plana* together with ten additional new species from collections accessions, recent field trips or previously misidentified material. It provides complete illustration of the twelve species identified, an identification key to species, distribution maps and biological data.

Material and methods

The specimens from the field expeditions in 2019–2022 were collected by light trapping or by visually scanning the trunks of *Eucalyptus* L'Hér. trees and other closely related Myrtaceae Juss. tree genera, the latter method being by far the most productive. When detected, the specimens were photographed whenever possible and captured by slowly covering them with a small transparent plastic tube (length: 50 mm; diameter: 15 mm). The tree species were identified by Dr J. Wainer (Agriculture Victoria, Melbourne, Australia) from photographs.

The types of all previously described species have been studied and as much material as possible has been examined. The genitalia of all the males have been checked. The genitalia were extracted after boiling the abdomen for some minutes 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) when necessary. The pygofer was separated from the abdomen and the aedeagus dissected with a needle blade for examination in 70% ethanol. The organs were then placed in glycerine for preservation in a

polyethylene tube attached to the pin of the corresponding specimen. Posterior wings have also been mounted for a number of specimens: they have been glued on white cardboard or transparent plastic rectangles and pinned under the specimen.

The external morphological terminology mostly follows O'Brien & Wilson (1985). The description of the female genitalia follows Bourgoïn (1993) with some additions from the study of Soulier-Perkins (1997) and Soulier-Perkins & Bourgoïn (1998) on the family Lophopidae; the description of wing venation follows Bourgoïn *et al.* (2015). The metatibiotarsal formula gives the number of spines on (side of metatibia) apex of metatibia/apex of first metatarsus/apex of second metatarsus.

The photographs of the larger collection specimens were taken with a Canon 700D camera equipped with a Sigma 50 mm Macro lens, the photographs of the other specimens and male and female genitalia were taken with a Leica EZ4W stereo microscope with integrated camera. They were stacked with CombineZ software and optimized with Adobe Photoshop CS3. The photographs in the field were taken with a Sony DSC-H300 digital camera (2019 and 2020 expeditions) or an Olympus Tough TG-6 digital camera (2022 expedition). All photographs are from the author unless otherwise stated and accordingly credited. The distribution maps were produced with SimpleMappr (Shorthouse 2010). The bioregion(s) as defined by the Interim Biogeographic Regionalisation for Australia, ver. 7 (see <http://www.environment.gov.au/land/nrs/science/ibra>) are given together with the distribution. In the Results section, species are treated in alphabetical order; the descriptions and figures of the male genitalia are to be used in parallel with Figs 2–3. The citation of the examined material follows EJT recommendations, with the data on the labels cited verbatim, between “ ”, for the type specimens.

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

- BF = maximum breadth of the frons
- BT = maximum breadth of the thorax
- BTg = maximum breadth of the tegmen
- BV = maximum breadth of the vertex
- BW = maximum breadth of the posterior wing
- LF = length of the frons in midline
- LM = length of the mesonotum in midline
- LP = length of the pronotum in midline
- LT = total length from anterior margin of vertex to apex of tegmina
- LTg = maximum length of the tegmen
- LV = length of the vertex in midline
- LW = maximum length of the posterior wing

Abbreviations used for the male terminalia descriptions

- adp* = apicodorsal process of aedeagus
- An* = anal tube
- avp* = apicoventral process of aedeagus
- bap* = basal apodeme of pygofer
- bmp* = basomedian process of periandrium
- cfp* = crest of furcate process of periandrium
- dhg* = dorsal hook of gonostylus
- ldg* = laterodorsal process of gonostylus
- ldp* = laterodorsal process of periandrium
- lvl* = lateroventral lobe of pygofer

<i>lvp</i>	=	lateroventral process of periandrium
<i>mfp</i>	=	median furcate process of periandrium
<i>mlla</i>	=	mediolateral angle of gonostylus
<i>pa</i>	=	paraprocts
<i>Py</i>	=	pygofer
<i>vlp</i>	=	ventral lamina of pygofer
<i>vp</i>	=	ventral process of gonostylus

Other abbreviations

s. lat.	=	sensu lato
s. str.	=	sensu stricto

Acronyms used for the collections are as follows:

AMS	=	Australian Museum, Sydney, New South Wales, Australia
ANIC	=	Australian National Insect Collection, CSIRO, Canberra, Australian Capital Territory, Australia
ASCU	=	Agricultural Scientific Collections Unit, Orange Agricultural Institute, Orange, New South Wales, Australia
BMNH	=	The Natural History Museum, London, United Kingdom
BPBM	=	Bernice P. Bishop Museum, Honolulu, Hawaii, USA
CAS	=	California Academy of Sciences, San Francisco, California, USA
DPIRD	=	Department of Primary Industries and Regional Development, Perth, Western Australia, Australia
FSAG	=	University of Liège, Gembloux Agro-Bio Technologies, Gembloux, Belgium
INHS	=	Illinois Natural History Survey, Prairie Research Institute, Champaign, Illinois, USA
MAMU	=	Macleay Museum, University of Sydney, Sydney, New South Wales, Australia
MVMA	=	Museum of Victoria, Melbourne, Victoria, Australia
NHMB	=	Naturhistorisches Museum Basel, Switzerland
QDPI	=	Queensland Department of Primary Industries, Indooroopilly, Queensland, Australia
QM	=	Queensland Museum, South Brisbane, Queensland, Australia
RBINS	=	Royal Belgian Institute of Natural Sciences, Brussels, Belgium
SAM	=	South Australian Museum, Adelaide, South Australia, Australia
USNM	=	National Museum of Natural History, Washington D.C., USA
ZMPA	=	Polish Academy of Sciences, Museum of the Institute of Zoology, Warsaw, Poland
ZSM	=	Zoologische Staatssammlung München, Munich, Germany

Note

It seems necessary to mention that in the course of this study, several series of specimens, including type series of new species described in the present paper, were found to have been previously split between different collections. It is the case for *K. falcata* gen. et sp. nov. (ANIC, BMNH, ASCU (MJF coll.), FSAG), *K. fasciata* gen. et sp. nov. (ANIC, AMS) and *K. v-carinatum* gen. et sp. nov. (NHMB, FSAG). It seems likely in some case, that specimens were sent to Victor Lallemand for identification purpose (Lallemand's collection is now in FSAG), who in turn sent samples to BMNH for comparison with the type material stored in their collection, as attested by identification labels by Izzard and W.E. China attached to some specimens, and as confirmed by Lallemand (1935).

Results

Taxonomy

Class Insecta Linnaeus, 1758
Order Hemiptera Linnaeus, 1758
Suborder Auchenorrhyncha Duméril, 1806
Infraorder Fulgoromorpha Evans, 1946
Superfamily Fulgoroidea Latreille, 1807
Family Eurybrachidae Stål, 1862
Subfamily Platybrachinae Schmidt, 1908
Tribe Platybrachini Schmidt, 1908

Genus *Kamabrachys* gen. nov.

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Figs 1–5

Type species

Platybrachys signata Distant, 1892 by present designation.

Diagnosis

Small to medium sized (6.8–12.6 mm) eurybrachids, brownish grey variegated with black and white, with tegmina flat usually with an antepical white transverse line. The venation of the tegmina shows veins ScP+RA and RP separated close to base, the first fork of MP very basal, at the level of ScP+RA–RP separation and the first fork of CuA slightly before the apex of the closed clavus. The posterior wings show basicostal area widely, distinctly paler, whitish to yellow orange. The abdomen is bright red. The frons is slightly convex, uniformly coloured and the genae don't possess subocular spine. The male terminalia show a pygofer with strongly developed lateroventral lobes, the gonostyli fused along most of their length and with a strong dorsal hook (no spoon-shaped process), the anal tube is flat and mostly circular; the connective is very elongate, the aedeagus is bifid with both shafts furcate and with a complex dorsal periandrium showing two lateral processes and one median furcate process. The female terminalia show an excavate membranous fold of gonocoxae VIII delimited dorsally by gonapophysis VIII and ventrally by the posterolateral process and a posterior triangular process of sternite VI.

Differential diagnosis

The females of *Kamabrachys* gen. nov. differ from those of all other genera by the ventral excavate membranous fold of gonocoxae VIII on the terminalia, delimited dorsally by gonapophysis VIII and ventrally by the posterolateral process and a posterior triangular process of sternite VI.

Among all Australian genera of Eurybrachidae, the males of *Kamabrachys* gen. nov. can be separated from those of *Chewobrachys* Constant, 2008, *Fletcherobrachys* Constant, 2006, *Hackerobrachys* Constant, 2006, *Maeniana* Metcalf, 1952, *Nirus* Jacobi, 1928, *Olonia* Stål, 1862 and *Stalobrachys* Constant, 2018 by the absence of a spoon-shaped process on the dorsal margin of the gonostyli.

From the remaining genera, males of *Kamabrachys* gen. nov. can be separated from those of

- *Dardus* Stål, 1859, *Gelastopsis* Kirkaldy, 1906, *Maon* Fennah, 1964 and *Navorillina* Fennah, 1964 by its less broad frons, 1.3–1.5 times as broad as long, as opposed to at least 1.9 times as broad as long in the four other genera and by possessing hind wings with large, differently coloured basicostal area (hind wings uniformly infusate in the four other genera); *Kamabrachys* gen. nov. furthermore differs from *Dardus* by having flat tegmina (convex in *Dardus*); it also differs from *Gelastopsis* and

- Navorillina* by a uniformly coloured frons (dorsal half of the frons black and modified into fake eyes or tubercles in *Gelastopsis* and *Navorillina*) and from *Dardus*, *Maon* and *Navorillina* by having shorter antennae, not surpassing eye (antennae elongate, surpassing eye in the three other genera).
- *Euronotobrachys* Kirkaldy, 1906, *Kirkaldybrachys* Constant, 2006, *Loisobrachys* Constant, 2008 and *Platybrachys* Stål, 1859 (as defined by *P. lanifera* (Stål, 1854), its type species), by possessing hind wings with large, differently coloured basicostal area (hind wings uniformly infusate in the four other genera); *Kamabrachys* gen. nov. also differs from *Kirkaldybrachys* by having a round anal tube in males (anal tube elongate and apically hooked in *Kirkaldybrachys*); from *Euronotobrachys* and *Platybrachys* by the gonostyli fused along most length (gonostyli fused only basally *Euronotobrachys* and *Platybrachys*) and from *Loisobrachys* by the flat tegmina and slightly convex frons (strongly convex frons and convex tegmina in *Loisobrachys*).
 - *Gedrosia* Stål, 1862 by possessing relatively short antennae, not surpassing eye, while *Gedrosia* possesses greatly enlarged, subcylindrical antennae, largely surpassing eye, by having elongate and flat tegmina while the tegmina are tuberculate and tapering towards apex in *Gedrosia* and by the lateral angular projections of the frons while the sides of the frons are round in *Gedrosia*.

Etymology

The genus name is formed by the combination of ‘*kama*’ and ‘*brachys*’. The former derives from the ‘*kamasutra*’, an ancient Indian Hindu Sanskrit text on sexuality, eroticism and emotional fulfilment in life and refers to the peculiar copulation position observed in this genus; the latter, ‘*brachys*’ (Greek), means ‘short’ and is a common ending of generic names in Eurybrachidae. Gender feminine.

Description

SIZE: ♂: 7.8–11.1 mm; ♀: 8.1–12.6 mm.

COLOURATION. Head, pro- and mesonotum, and tegmina brownish grey with irregular black markings, frons usually darker. Tegmina sometimes with squarish black marking in middle of clavus and/or one or two black transverse lines or bands, more rarely with a pale transverse band; subapical white line or band, sometimes interrupted in middle, nearly always present; apical white spot often present. Posterior wings brown to black with basal third to basal half differently coloured in yellowish brown to orange; sometimes a white marking along posterior margin between veins A1 and CuA; sometimes an apical white spot or narrow band. Legs brown variegated with black to nearly all black; sometimes femora reddish; posterior legs usually paler. Abdomen and ventral face of thorax bright red; genital segments brown to black.

HEAD. Slightly narrower than thorax; vertex 3–4 times as broad as long, concave with all margins slightly carinate; anterior and posterior margins rounded, parallel; frons about 1.3–1.5 times as broad as long, slightly convex, slightly wrinkled to rugulose with peridiscal carina slightly marked; upper margin of frons straight to slightly rounded in perpendicular view of frons; lateral margin slightly incurved above lateral projection of frons, slightly rounded under the projection. Clypeus reaching mesocoxae, elongate, with median carina on anteclypeus prolonged with obsolete carina, sometimes only marked by a dark line, on postclypeus; base of clypeus rounded, rather deeply inserted in frons. Labium reaching metacoxae, with apical segment as long as broad, acuminate, shorter and slightly more slender than penultimate. No infra-ocular spines on genae; ocelli absent; antennae elongate, not surpassing eye, not visible from above; scape about as long as broad, pedicel subcylindrical, elongate, narrowing towards apex.

THORAX. About 1.15–1.35 times as broad as combined length of pro- and mesonotum; mesonotum 2.5–3.2 times as long as pronotum. Pronotum with disc weakly wrinkled, carina parallel to anterior margin

and 2 slightly impressed points on disc. Mesonotum with disc weakly wrinkled, median and peridiscal carinae slightly marked; median carina stopped before scutellum.

TEGMINA (Fig. 1A). Flat, elongate, about 2.5–2.9 times as long as broad; costal margin moderately rounded along basal fifth, then straight to nodal line; apex rounded, slightly sinuate; apical margin obliquely rounded.

VENATION. Veins ScP+RA and RP separated close to base; first fork of MP very basal, at the level of ScP+RA–RP separation; first fork of CuA slightly before apex of clavus; clavus closed; Pcu and A1 fused at about $\frac{3}{4}$ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimitating small elongate cells.

POSTERIOR WINGS (Fig. 1B). Well developed, as broad as tegmina, about 1.6–1.8 times as long as broad, rounded apically; anal area well developed; sutural margin weakly trilobous; not reaching apex of tegmina at rest. All main veins visible from base, forked at or after nodal line and forming a few closed cells; transverse veinlets delimiting elongate cells on apical $\frac{1}{4}$; veins A1 and A2 sometimes with 2–3 terminals. Arrangement of secondary veins and veinlets variable between specimens and sometimes between the two wings of the same specimen.

LEGS. Pro- and mesofemora and tibiae dorsoventrally flattened, elongate and slender; metatibiae (PT) with 3 lateral (*lSp*) and 10 apical spines (*aSp*); first metatarsomere (*MtI*) ventrally with pad of microsetae (*PMs*) at internoapical angle and two parallel rows of 4 spines (*Sp*) (Fig. 1C) along outer margin, following the two middle apical spines. Metatibiotarsal formula: (3) 10/4/0.

MALE TERMINALIA (Figs 2–3). Pygofer (*Py*) rather short, as high as long and oblique in lateral view, about twice as wide as high in caudal view; internal basal apodeme (*bab*) well developed and sclerotized, sinuate in dorsal view; dorsal portion narrow; lateroventral portion strongly developed into a lateroventral lobe (*lvl*) projecting ventrally; in ventral view, ventral lobe forming posteriorly a round or pointed projection; ventral portion separated from lateroventral lobe by a well-marked depression; ventral portion developed posterad into a ventral lamina (*vlp*) with anterior and posterior margins parallel in ventral view and posterolateral angles rounded. Anal tube (*An*) dorsoventrally flattened, round or oval, sometimes with apical margin slightly indented; paraprocts (*pa*) at basal $\frac{1}{4}$. Gonostyli (*G*) fused, attached together by a flexible median membrane; gonostyli developed ventrally into a subtriangular, dorsoventrally flattened, ventral process (*vp*), and basolaterally into an elongate, laminate, laterodorsal process (*ldg*) sinuate in caudal view and showing a mediolateral angle (*mlla*) when abruptly curving mesad; laterodorsal process ended with a strong dorsal hook (*dhg*) curved lateroventrad to anterolaterad. Connective (*cv*) strongly developed, with two pairs of lateral apodemes; apodemes of anterior pair forming a moderately broad lateral lamina along the connective; apodemes of posterior pair ribbon-like, strongly developed laterally and attached to the inner wall of the pygofer; posterior portion of the connective dorsoventrally flattened and with pair of sclerotized shafts. Aedeagus s. lat. rather complex and symmetrical, generally moderately upcurved. Aedeagus s. str. with pair of elongate apical processes; each process split apically into a simple apicoventral process (*avp*) smoothly tapering towards the posterior and narrowly rounded apically, and a sinuate apicodorsal process (*adp*) which is laterally inflated at base, then more or less abruptly tapering towards apex and narrowly rounded at apex. Dorsal periandrium well developed, with two lateral pairs of elongate, spinose processes, one laterodorsal (*ldp*) and one lateroventral (*lvp*), one pair of elongate basomedian processes (*bmp*) apically blunt on each side of elongate median furcate process (*mfp*) upcurved and bearing a dorsal crest (*cfp*) on each arm of the apical furca.

FEMALE TERMINALIA (Fig. 4 – based on *K. signata*). Abdominal sternite VI (*As VI*) with anterior margin broadly rounded in ventral view (Fig. 4D) and with sides upcurving in caudal view (Fig. 4B); posterior margin in ventral view (Fig. 4D) projecting posteriorly on sides and with median deep, wide,

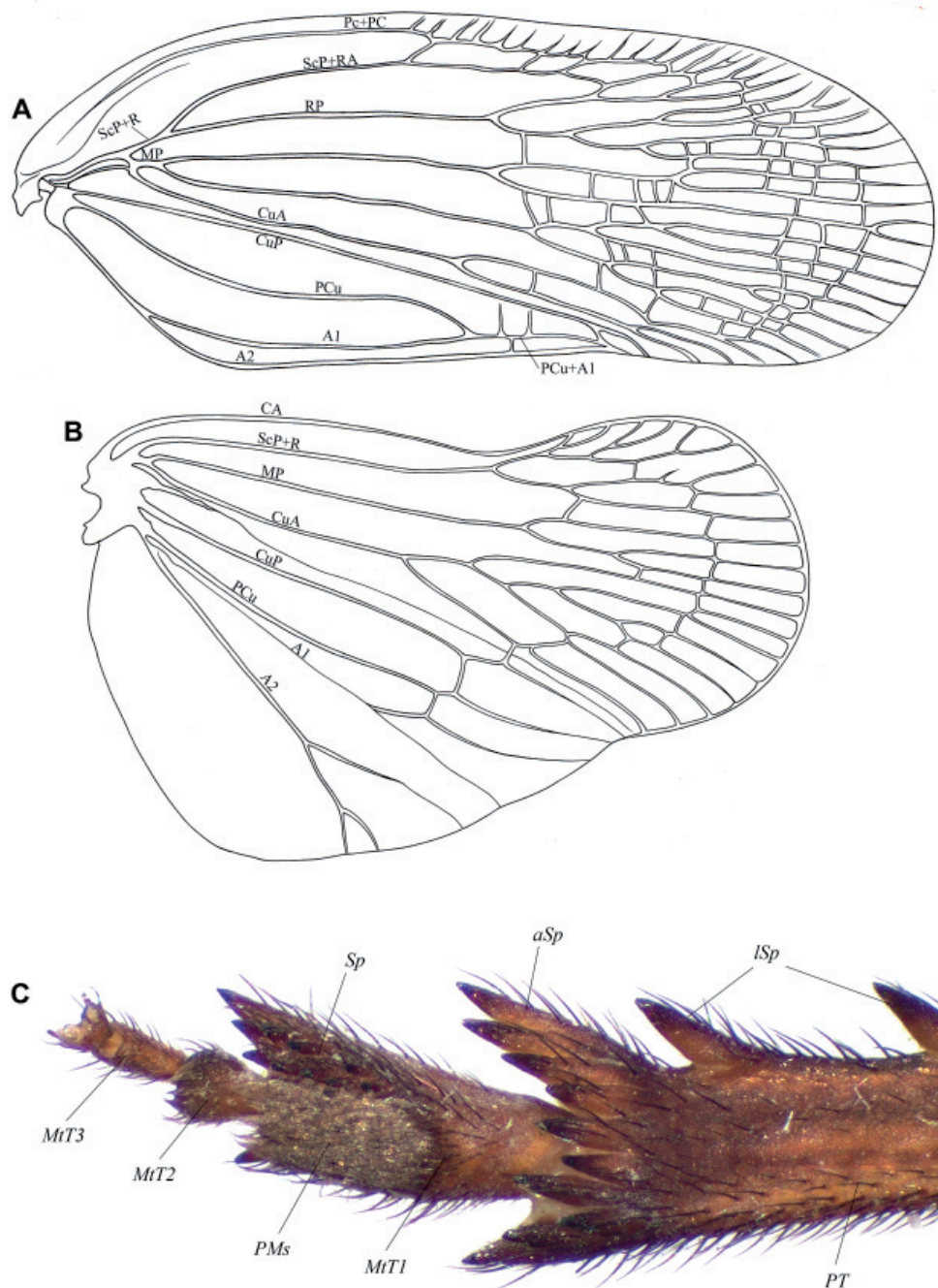


Fig. 1. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov. **A.** Right tegmen, venation. **B.** Right posterior wing, venation. **C.** Right posterior leg, distal portion, ventral view. Abbreviations: *A1* = first anal vein; *A2* = second anal vein; *aSp* = apical spines; *CA* = costa anterior; *CuA* = cubitus anterior; *CuP* = cubitus posterior; *lSp* = lateral spines; *MP* = media posterior; *MtT1* = first metatarsomere; *MtT2* = second metatarsomere; *MtT3* = third metatarsomere; *Pc+CP* = precosta + costa posterior; *PCu* = postcubitus; *PMs* = pad of microsetae; *PT* = posterior tibia; *R* = radius; *RA* = radius anterior; *RP* = radius posterior; *ScP* = subcosta posterior; *Sp* = spines.

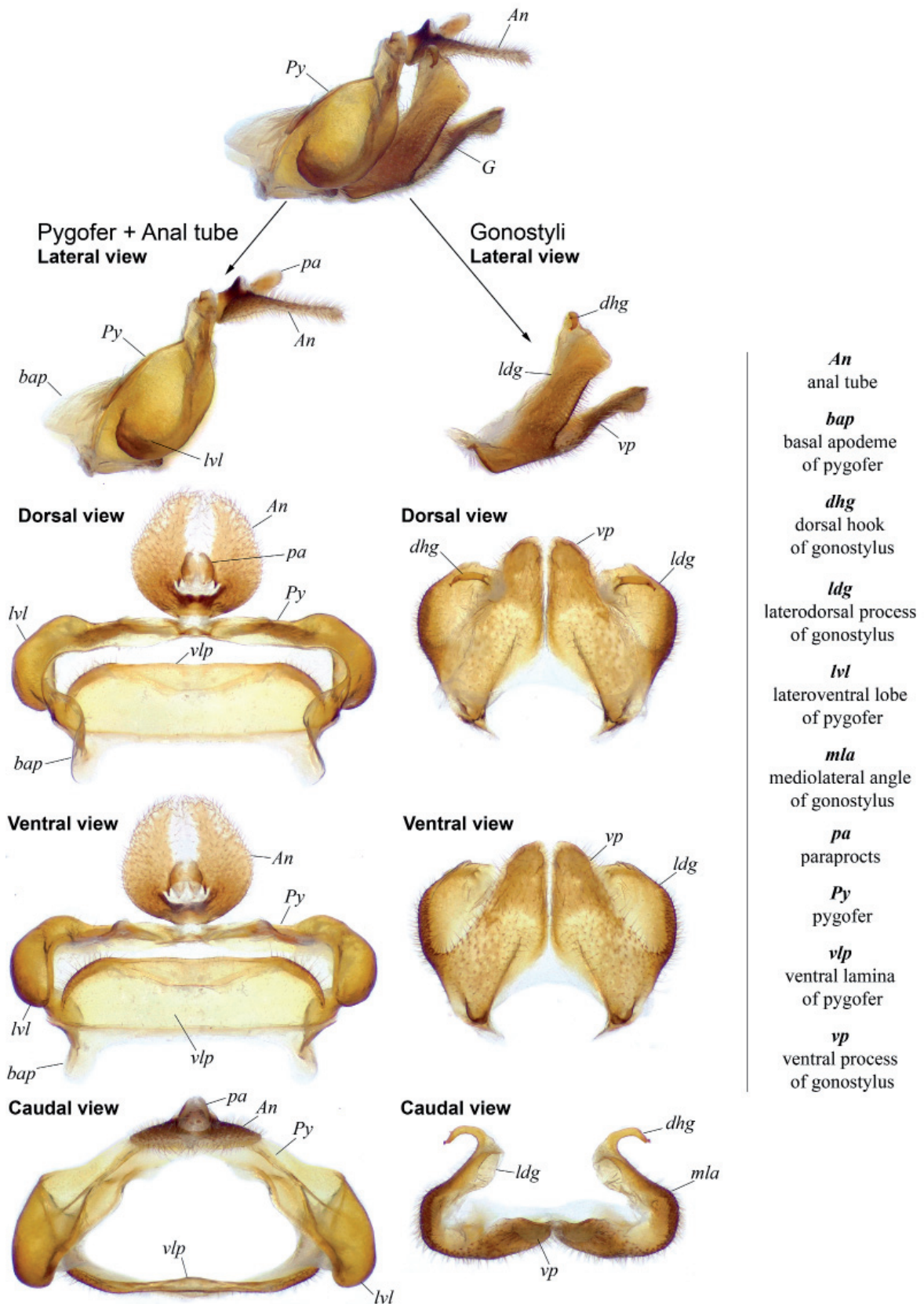


Fig. 2. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov., male terminalia. Nomenclature used for the description of the pygofer, anal tube and gonostyli.

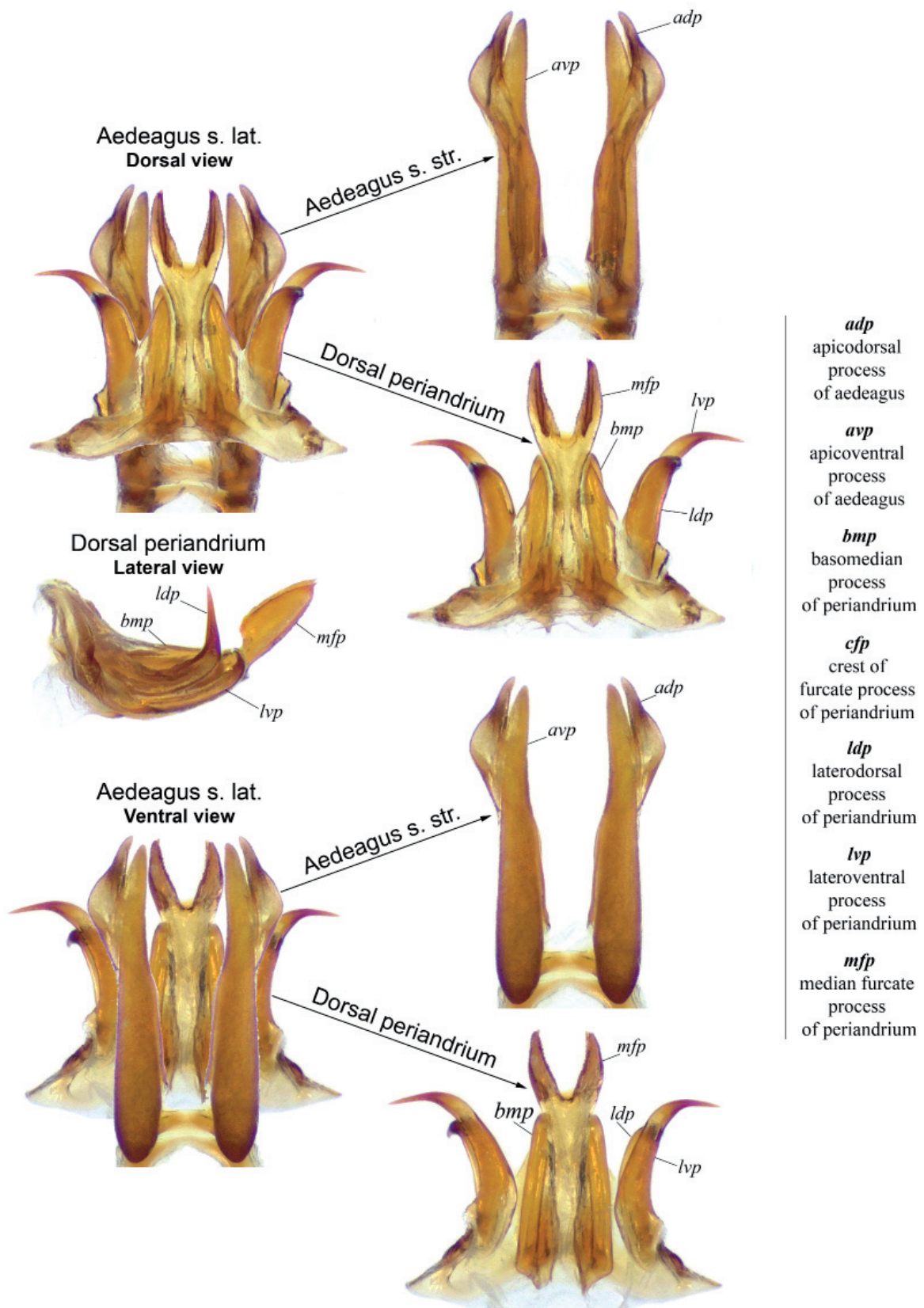


Fig. 3. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov., male terminalia. Nomenclature used for the description of the aedeagus and periandrium.

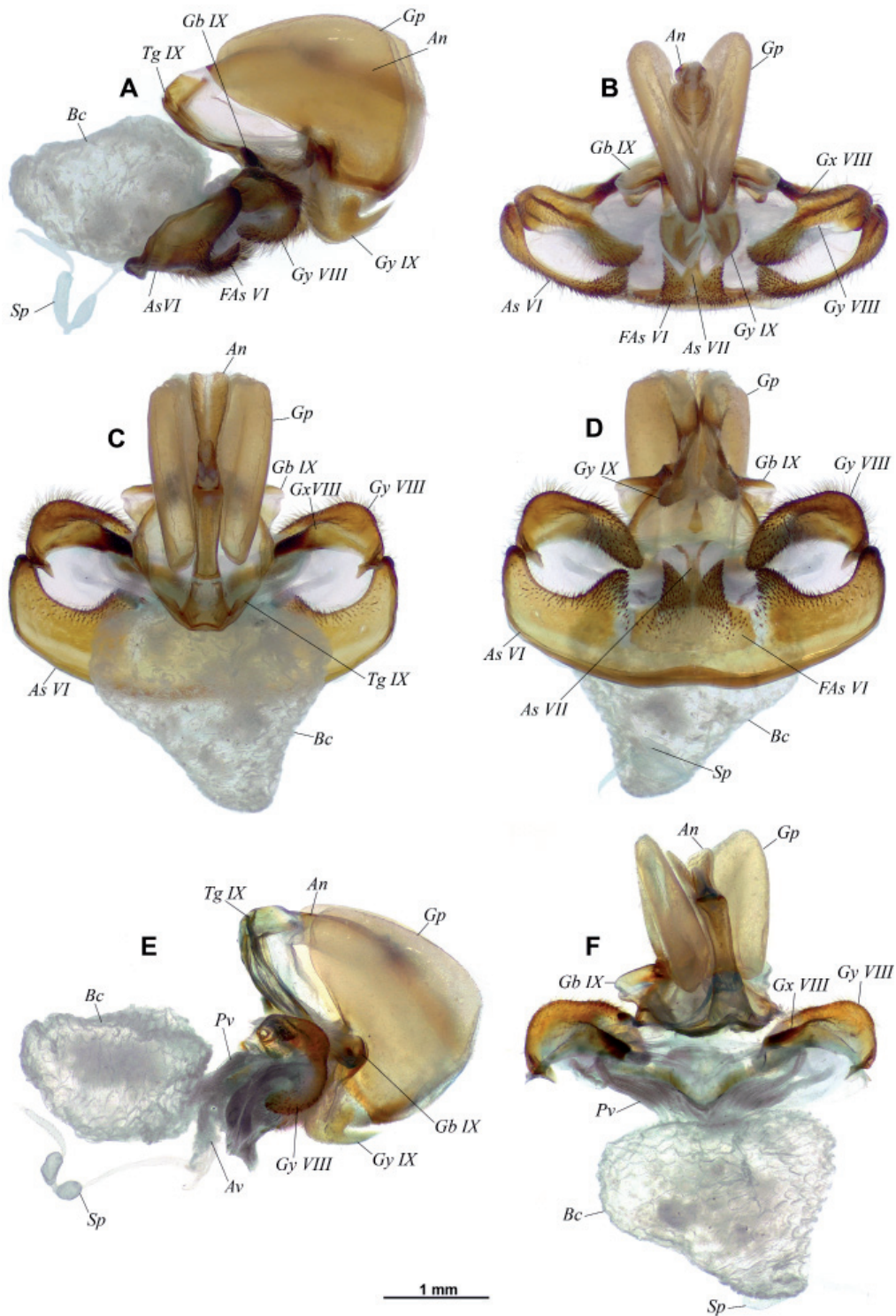


Fig. 4. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov., female genitalia. **A.** Left lateral view. **B.** Caudal view. **C.** Dorsal view. **D.** Ventral view. **E–F.** Sternite VI removed, gonocoxa VIII and gonapophysis VIII detached. **E.** Lateral view. **F.** Dorsal view. Abbreviations: *An* = anal tube; *Av* = anterior vagina; *As VI* = sixth abdominal sternite; *As VII* = seventh abdominal sternite; *Bc* = bursa copulatrix; *FAs VI* = furca-shaped medioventral process of sixth abdominal sternite; *Gb IX* = gonocoxal base IX; *Gp* = gonoplac; *Gx VIII* = gonocoxa VIII; *Gy VIII* = gonapophysis VIII; *Gy IX* = gonapophysis IX; *Pv* = posterior vagina; *Sp* = spermatheca; *Tg IX* = ninth abdominal tergite.

subquadrate emargination accommodating a furca-shaped medioventral process (*FAs VI*); on each side of emargination, a large triangular process directed posterodorsad; rather deep rounded emargination between triangular process and lateral projection (Fig. 4B, D, F); points of furca of sternite VI diverging and curved posterodorsad (Fig. 4B, D). Sternite VII (*As VII*) reduced to 2 small oblique sclerites. Gonocoxa VIII (*Gx VIII*) and gonapophysis (*Gy VIII*) fused, forming (in caudal view – Fig. 4B) a horizontally Y-shaped sclerotized structure with dorsal branch, formed by inner end of gonocoxa, joining tergite IX; outer base of the common shaft joining posterolateral projection of sternite VI; common shaft strongly curved in posteroventral view (Fig. 4D) with inner end of gonapophysis VIII tapering towards apex and reaching near triangular process of sternite VI; posterior margin of gonapophysis VIII roundly projecting posterolaterad in ventral view (Fig. 4D). Area between sternite VI and gonapophysis VIII forming a lateroventral oval and excavate membranous fold of gonocoxae VIII (Fig. 4B, D – mf in Bourgoin 1993: fig. 4); inner portion of gonapophysis VIII, furca, triangular processes and adjacent part of posterior margin of sternite VI densely covered in short strong setae (Fig. 4B, D). Tergite IX (*Tg IX*) narrow and curved dorsocephalad with posterior margin projecting posteriorly at base of anal tube (Fig. 4 A, C). Gonoplacs (*Gp*) unilobed, large and semicircular, mostly hiding the anal tube. Gonocoxal bases IX (*Gb IX*) projecting laterally. Gonapophysis IX (*Gy IX*) flattened laterally, strongly reflexed posterodorsad and strongly tapering apically. Anal tube (*An*) elongate and narrow, curved posteroventrad, v-shaped in cross section beyond anus, lanceolate in dorsal view (Fig. 4A–B, D). Anterior vagina (*Av*) small and membranous, dorsoventrally flattened, with spermatheca (*Sp*) attached posterodorsally (Fig. 4E). Posterior vagina (*Pv*) more strongly sclerified, dorsoventrally flattened, short, wide basally, strongly tapering distally and bearing transverse grooves (Fig. 4E–F). Bursa copulatrix (*Bc*) attached apically, suboval and tapering distally, much larger than posterior vagina (Fig. 4A, E–F); walls bearing reticulated ornamentation (Fig. 4E–F).

SEXUAL DIMORPHISM. Females about 10% larger than males.

Distribution

Australia: widely distributed throughout the country (Fig. 5) with the westernmost record in southwest Western Australia (125°48'53" E) and the southernmost one in northeast New South Wales (29°28'16" E).

Biology

The species of *Kamabrachys* gen. nov. seem present more or less all year round. They were recorded from trees in the family Myrtaceae, in the genera *Corymbia* K.D.Hill & L.A.S.Johnson, *Eucalyptus* L'Hér., *Gossia* N.Snow & Guymmer and *Melaleuca* L. The typical habitat of this genus seems to be open woodland where they are very well camouflaged on the bark of their host tree, usually hiding in the cracks; they are regularly found on partly burnt tree trunks. When disturbed, the specimens tend to walk quickly sideways or backwards, apparently keeping their eyes on the potential 'enemy' while escaping, try to hide on the opposite side of the trunk or branch they sit on, out of sight, or move to another nearby hiding place or a high enough spot, out of reach of their presumed 'aggressor'; if this strategy doesn't work, they will jump and fly away, their jump being so powerful that it can hardly be detected by the human eye.

The mating behaviour is known in only one species and the male is attached upside down to the female while mating, holding on to the tegmina of the female with its legs, and having its body largely hidden under that of the female; they seem able to quickly separate when disturbed (C. Foelz & A. McDougall pers. com., Apr. 2020).

In some females, a symmetrical waxy structure (not made of waxy filaments as on gonoplacs but instead, of white silicone-like wax – see Fig. 45B–D), was observed in the area between sternite VI and gonapophysis VIII. It originates under the gonapophysis IX and extends laterally through the excavate

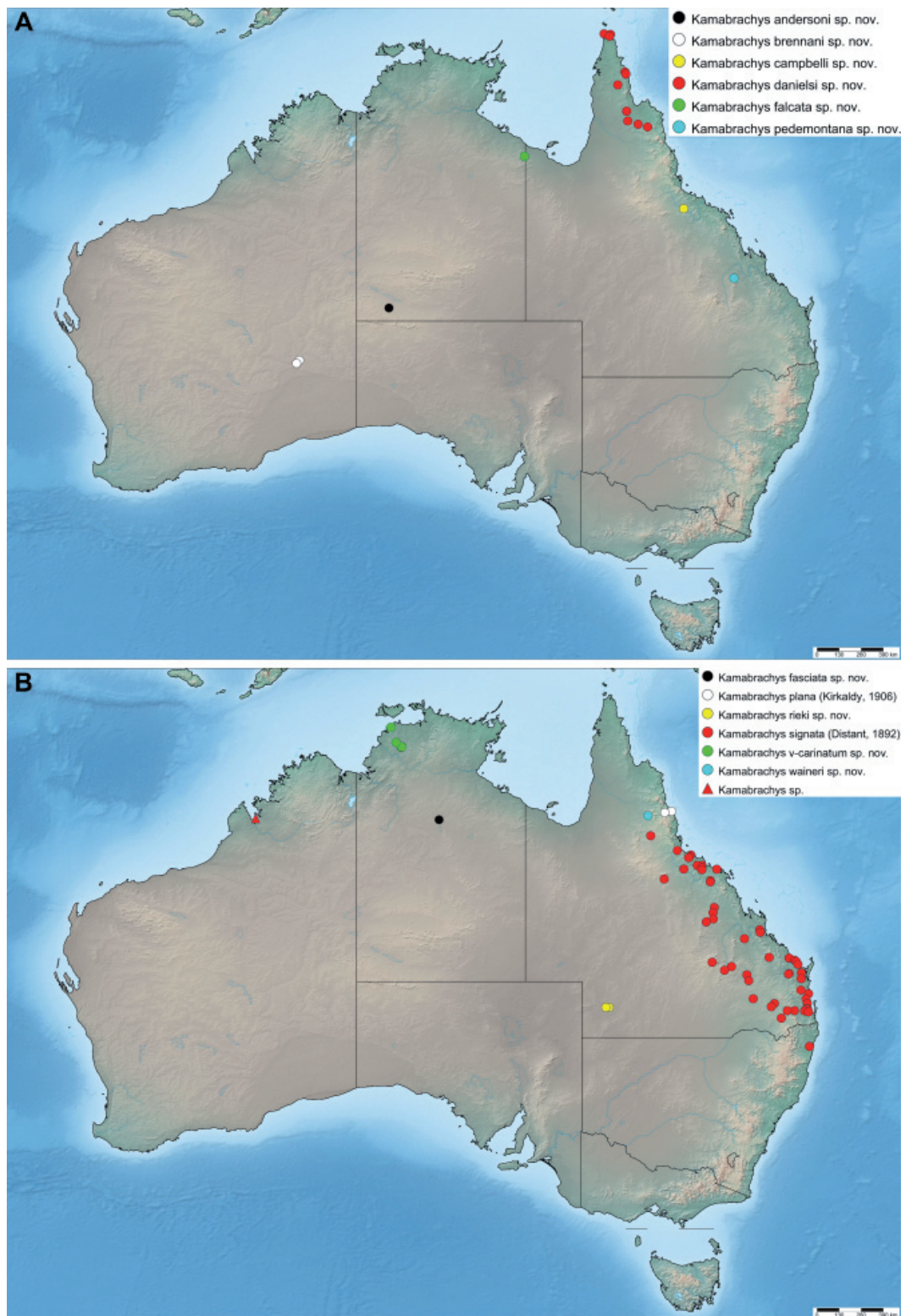


Fig. 5. *Kamabrachys* spp., distribution maps. **A.** *K. andersoni* gen. et sp. nov., *K. brennani* gen. et sp. nov., *K. campbelli* gen. et sp. nov., *K. danielsi* gen. et sp. nov., *K. falcata* gen. et sp. nov., *K. pedemontana* gen. et sp. nov. **B.** *K. fasciata* gen. et sp. nov., *K. plana* (Kirkaldy, 1906) gen. et comb. nov., *K. rieki* gen. et sp. nov., *K. signata* (Distant, 1892) gen. et comb. nov., *K. v-carinatum* gen. et sp. nov., *K. waineri* gen. et sp. nov., *K. sp.*

membranous fold of gonocoxae VIII in an arm widening towards apex and bearing apical, more or less curved processes; two additional ventral processes, tapering evenly from base to apex, are curved under the body and directed cephalad, diverging slightly towards apex. The formation and role of this secretion remains unknown (see discussion).

Species included (12)

- K. andersoni* gen. et sp. nov.
- K. brennani* gen. et sp. nov.
- K. campbelli* gen. et sp. nov.
- K. danielsi* gen. et sp. nov.
- K. falcata* gen. et sp. nov.
- K. fasciata* gen. et sp. nov.
- K. pedemontana* gen. et sp. nov.
- K. plana* (Kirkaldy, 1906) gen. et comb. nov.
- K. rieki* gen. et sp. nov.
- K. signata* (Distant, 1892) gen. et comb. nov.
- K. v-carinatum* gen. et sp. nov.
- K. waineri* gen. et sp. nov.

Kamabrachys andersoni gen. et sp. nov.

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Figs 5A–9

Diagnosis

The species can be recognized by the following combination of characters:

- (1) posterior margin of the lateroventral lobes of the pygofer (*lvl*) rounded with middle portion obliquely straight in lateral view (Fig. 7A) and rounded in ventral view (Fig. 7C), inner margin of lobes concave in ventral view (Fig. 7C), ventral margin rounded in caudal view (Fig. 7E);
- (2) posterior margin of laterodorsal process of gonostylus (*ldg*) emarginate, leaving a widely open angle between laterodorsal process and ventral process of gonostylus (*vp*) in lateral view (Fig. 7A);
- (3) crest of furcate process of periandrium (*cfp*) only along distal portion and not merging basally (Fig. 9D), in lateral view, wider in distal portion (Fig. 9E);
- (4) laterodorsal process of periandrium (*ldp*) tapering in distal portion and curved laterodorsad, slightly shorter than lateroventral process (*lvp*) (Fig. 9D–E);
- (5) lateroventral process of periandrium (*lvp*) dorsoventrally flattened only in basal portion and curved laterodorsad distally (Fig. 9D–F);
- (6) apicodorsal process of aedeagus (*adp*) strongly sinuate, rather wide and stocky distally and shorter than apicoventral process (*avp*) (Fig. 9A–C);
- (7) posterior wing without whitish marking along sutural margin (Fig. 6A).

Etymology

The species epithet is a patronym dedicated to H.E. Anderson who collected the type series.

Type material

Holotype

AUSTRALIA • ♂; [Northern Territory], The Olgas; 25°18' S, 130°44' E; 5 Apr. 1962; H.E. Anderson leg.; “The Olgas N.T., 5 April 1962, H.E. Anderson”; ANIC.

Paratypes

AUSTRALIA • 2 ♂♂; same collection data as for holotype; ANIC • 2 ♂♂; same collection data as for holotype; RBINS.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 5): 8.3 mm (8.00–8.51); BV/LV = 4.03; BF/LF = 1.40; LP+LM/BT = 0.88; LM/LP = 2.46; LTg/BTg = 2.74; LW/BW = 1.85.

HEAD (Fig. 6A–D). Slightly narrower than thorax. Vertex brown irregularly variegated with black; 4 times as broad as long, concave with all margins slightly carinate; anterior and posterior margins rounded, parallel. Frons brown irregularly variegated with black, more densely black than vertex; sometimes with a slightly paler transverse band above lateral angles and a slightly transverse paler marking on upper middle area of frons; about 1.4 times as broad as long, slightly convex, slightly rugulose with peridiscal carina slightly marked; upper margin of frons slightly rounded in perpendicular view of frons; lateral margin slightly incurved above lateral projection of frons, slightly rounded under the projection. Clypeus brown with median black line and regular oblique lines on each side of postclypeus, anteclypeus black with median pale reddish-brown line on carina; clypeus reaching mesocoxae, elongate, with median carina on anteclypeus prolonged with obsolete carina on postclypeus; base of clypeus rounded. Labium dark brown, reaching metacoxae, with apical segment as long as broad, acuminate, shorter and slightly more slender than penultimate. Genae reddish-brown. Ocelli absent. Antennae brown, not surpassing eye, not visible from above; scape about as long as broad, pedicel subcylindrical, elongate, narrowing towards apex.

THORAX (Fig. 6A, C). About 1.15 times as broad as combined length of pro- and mesonotum. Pronotum brown irregularly variegated with black, generally paler than vertex; disc weakly wrinkled, carina parallel to anterior margin and 2 obsolete impressed points on disc marked by black spot; paranotal lobes pale to dark brown. Mesonotum brown irregularly variegated with black, more densely black and generally darker than pronotum; disc weakly wrinkled, median and peridiscal carinae weakly marked; median carina stopped before scutellum. Tegulae bicolour with ventral half black and dorsal half pale brown.

TEGMINA (Fig. 6A–C). Pale brown irregularly variegated with black markings; antepical transverse white line, sometimes reduced to 2 white triangles along margins; 2 more or less complete transverse black bands often present, more basal one at basal $\frac{1}{4}$, second one at mid-length of tegmen, these bands can be reduced to triangles along costal margin, or absent. Flat, elongate, about 2.7 times as long as broad; costal margin weakly rounded along basal fifth, then straight or very weakly incurving to nodal line; apex rounded.

VENATION. Veins ScP+RA and RP separated close to base; first fork of MP very basal, at the level of ScP+RA–RP separation; first fork of CuA slightly before apex of clavus; clavus closed; Pcu and A1 fused at about $\frac{3}{4}$ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimitating small elongate cells.

POSTERIOR WINGS (Fig. 6A–B). Pale yellow with apical $\frac{1}{3}$ and moderately broad band along posterior margin blackish brown, apical white marking extending on 3–6 cells. Well developed, as broad as tegmina, about 1.85 times as long as broad, rounded apically; anal area well developed; sutural margin weakly trilobous; not reaching apex of tegmina at rest. All main veins visible from base, forked at or after nodal line and forming a few closed cells; few transverse veinlets delimiting elongate cells on apical $\frac{1}{4}$; veins A1 and A2 sometimes with 2 terminals.

LEGS (Fig. 6A–E). Pro- and mesofemora brown densely variegated with black; pro- and mesotibiae brown; pro- and mesotarsi paler than corresponding tibia but blackish apically; posterior legs brown

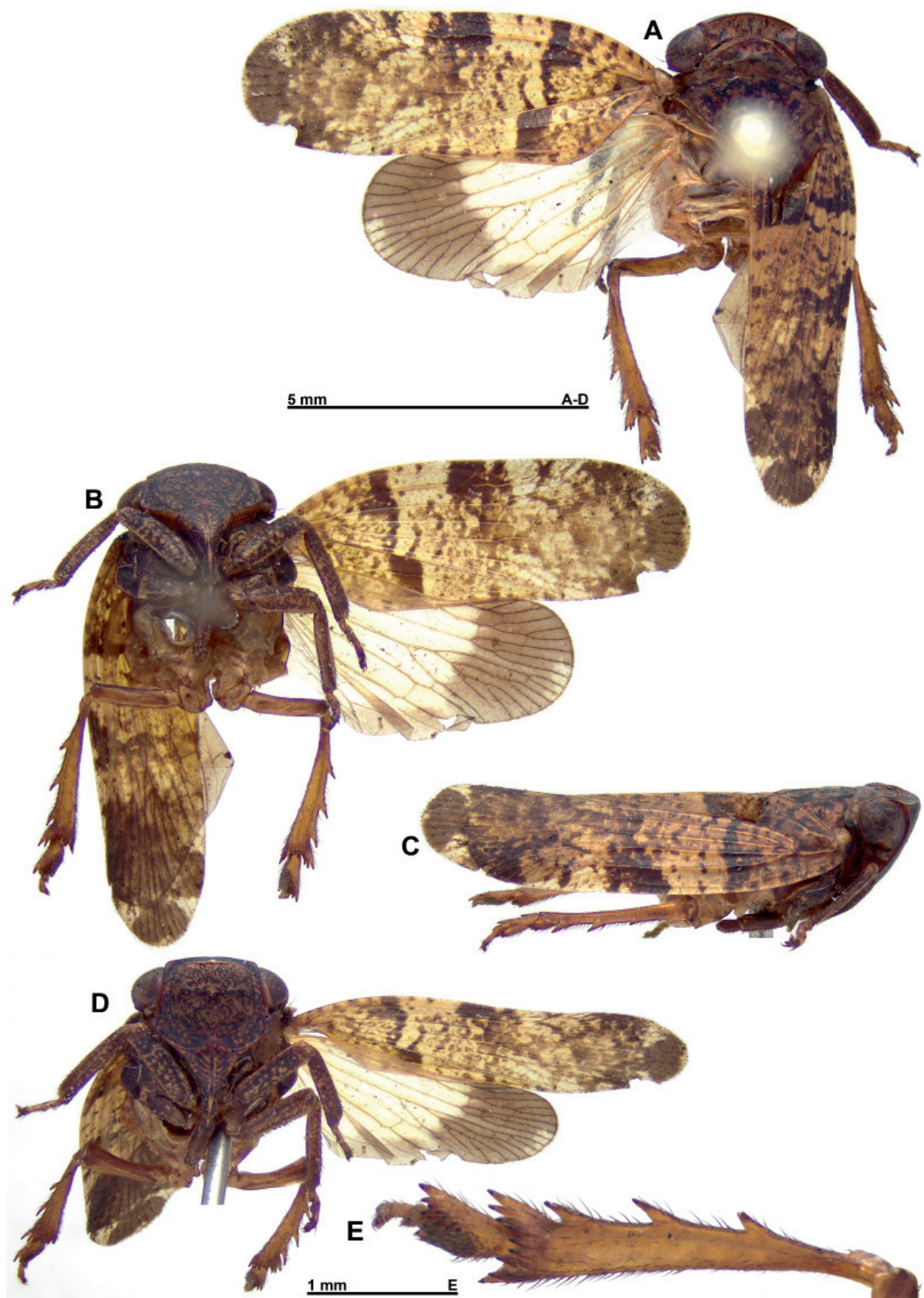


Fig. 6. *Kamabrachys andersoni* gen. et sp. nov., holotype, ♂ (ANIC). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons. **E.** Posterior leg.

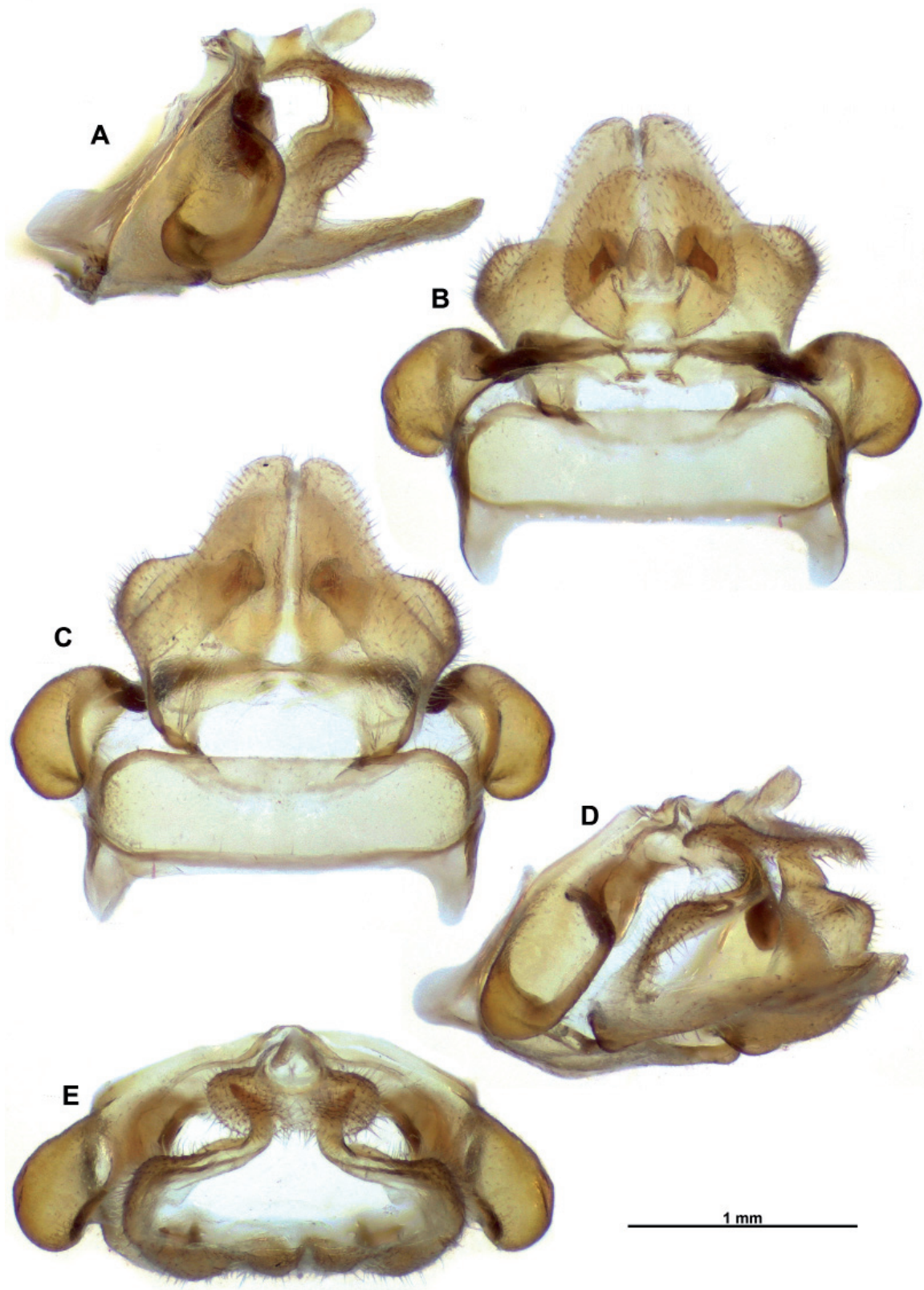


Fig. 7. *Kamabrachys andersoni* gen. et sp. nov., holotype, ♂ (ANIC), terminalia: pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Dorsal view. **C.** Ventral view. **D.** Left posterolateral view. **E.** Caudal view.

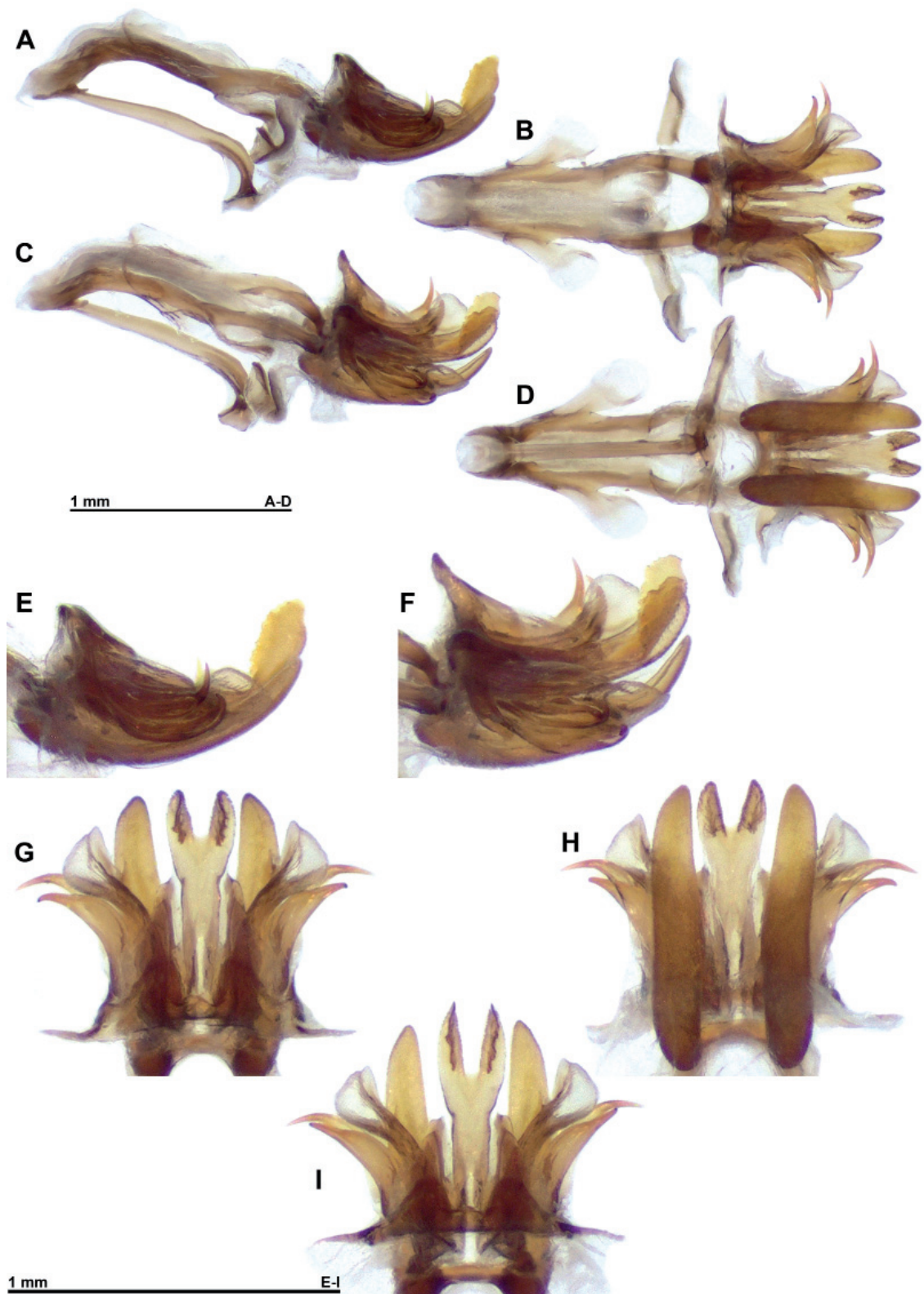


Fig. 8. *Kamabrachys andersoni* gen. et sp. nov., holotype, ♂ (ANIC), genitalia. **A–D.** Aedeagus s. lat. and connective. **A.** Left lateral view. **B.** Dorsal view. **C.** Left laterodorsal view. **D.** Ventral view. **E–I.** Aedeagus s. lat., detail. **E.** Lateral view. **F.** Left laterodorsal view. **G.** Dorsal view. **H.** Ventral view. **I.** Anterodorsal view.

with apex of tibial and tarsal spines darker. Pro- and mesofemora and tibiae dorsoventrally flattened, elongate and slender; metatibiae with 3 lateral and 10 apical spines; first metatarsomere ventrally with darker pad of microsetae at internoapical angle and two rows of 5 spines. Metatibiotarsal formula: (3) 10/4/0.



Fig. 9. *Kamabrachys andersoni* gen. et sp. nov., holotype, ♂ (ANIC), genitalia. **A–C.** Aedeagus s. str. **A.** Dorsal view. **B.** Left lateral view. **C.** Ventral view. **D–F.** Dorsal perianthium. **D.** Dorsal view. **E.** Left lateral view. **F.** Ventral view.

MALE TERMINALIA (Figs 7–9). Pygofer (*Py*) rather short, as high as long and oblique in lateral view (Fig. 7A), about 2.2 times as wide as high in caudal view (Fig. 7E); basal apodeme (*bap*) well developed and sclerotized, sinuate in dorsal view (Fig. 7A–C); dorsal portion narrow (Fig. 7A–B); lateroventral lobe (*lvl*) projecting posterolaterally and rounded in dorsal view (Fig. 7B); in ventral view, rounded anteriorly and posteriorly, more broadly rounded laterally and with inner margin excavate (Fig. 7C); in lateral view obliquely developed with middle portion of posterior margin straight and oblique (Fig. 7A); ventral portion separated from lateroventral lobe by a well-marked depression (Fig. 7C, E); ventral lamina (*vlp*) about 3.5 times as broad as long with anterior and posterior margins parallel in ventral view and posterolateral angles rounded and weakly projecting posterad (Fig. 7C). Anal tube as long as broad (*An*) dorsoventrally flattened (Fig. 7A), oval with base and apex more strongly rounded than side margins; side margins tapering towards apex; apical margin slightly indented in middle (Fig. 7B); paraprocts (*pa*) at basal $\frac{1}{4}$, well developed. Gonostyli (*G*) 1.17 times as broad as long in ventral view (Fig. 7C); ventral process (*vp*) in ventral view subtriangular with lateral margin weakly excavate, then rounded apically (Fig. 7C); laterodorsal process (*ldg*) partly visible in ventral view (Fig. 7C), sinuate in caudal view with mediolateral angle (*mlla*) well-marked (Fig. 7E), mediolateral angle projecting laterally (Fig. 7A, D); dorsal hook (*dhg*) subtriangular in lateral view, with anterior margin angularly excavate and posterior margin subangular basally (Fig. 7A) and apically curved laterodorsad. Connective (*cv*) strongly developed, about 1.5 times as long as aedeagus s. lat., with anterior pair of lateral apodemes forming a moderately broad lateral lamina directed posterolaterad and disc-shaped apically; posterior pair of apodemes ribbon-like, strongly developed laterally and sinuate (Fig. 8A–D). Aedeagus s. lat. moderately upcurved with periandrium slightly surpassing aedeagus s. str. posterad (Fig. 8E–I). Aedeagus s. str. (Fig. 9A–C) with apical processes about 5.6 times as long as broad at mid-length; apicoventral process (*avp*) smoothly tapering towards the posterior and narrowly rounded apically; apicodorsal process (*adp*) in dorsal view (Fig. 9A) rather strongly inflated and stocky, rather abruptly tapering towards apex and much shorter than apicoventral process. Dorsal periandrium (Fig. 9D–F) with laterodorsal processes (*ldp*) dorsoventrally laminate basally and curved laterad, then abruptly tapering and curved dorsad, apically pointed; lateroventral processes (*lvp*) dorsoventrally flattened on basal half, broadening from base to first $\frac{1}{4}$, then gently tapering and curled laterodorsad towards pointed apex, projecting posterolaterally beyond laterodorsal processes; basomedian processes (*bmp*) apically obliquely blunt in dorsal view and with sides parallel in ventral view; median furcate process (*mfp*) with furca slightly shorter than shaft (Fig. 8I) and rather strongly upcurved in lateral view (Fig. 9E), dorsal crest (*cfp*) on apical half of arms of furca, slightly reflexed in dorsal view (Fig. 9D), crest broadening from base to apex and with dorsal margin crenelated in lateral view (Fig. 9E), inner lateral walls of furca granulose (Fig. 9D).

SEXUAL DIMORPHISM. Unknown (no female specimen available).

Distribution and biology

The species is currently recorded from a single location of central Australia in southwestern Northern Territory (Fig. 5A), in Kata Tjuta (= The Olgas). Bioregion: Central Ranges.

The five specimens of the type series were all collected on the same day during the month of April.

Host plant unknown.

Kamabrachys brennani gen. et sp. nov.

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Figs 5A, 10–15

Diagnosis

The species can be recognized by the following combination of characters:

- (1) posterior margin of the lateroventral lobes of the pygofer (*lvl*) rounded in lateral view (Fig. 12A) and rounded in ventral view (Fig. 12C), inner margin of lobes concave in ventral view (Fig. 12C), ventral margin rounded in caudal view (Fig. 12E);
- (2) posterior margin of laterodorsal process of gonostylus (*ldg*) oblique, leaving a rather acute angle between laterodorsal process and ventral process of gonostylus (*vp*) in lateral view (Fig. 12A);
- (3) crest of furcate process of periandrium (*cfp*) only along distal portion and not merging basally (Fig. 14D), in lateral view, wider in distal portion (Fig. 14E);
- (4) laterodorsal process of periandrium (*ldp*) more or less evenly tapering from base to apex and curved laterodorsad, more or less reaching level of lateroventral process (*lvp*) (Fig. 14D–E);
- (5) lateroventral process of periandrium (*lvp*) dorsoventrally flattened in basal portion, up to abruptly curved laterad distal portion (Fig. 14D–F);
- (6) apicodorsal process of aedeagus (*adp*) strongly sinuate, rather wide and stocky distally and shorter than apicoventral process (*avp*) (Fig. 14A–C);
- (7) posterior wing without whitish marking along sutural margin (Fig. 10D).

Etymology

The species epithet is a patronym referring to Karl E.C. Brennan who collected the type series.

Type material

Holotype

AUSTRALIA • ♂; [Western Australia], Neale Junction, Connie Sue Highway; 28°06'19" S, 125°57'58" E; 11 Mar. 2008; 397 m a.s.l.; Mercury vapour light; K.E.C. Brennan leg.; "W.A.: Neale Junction, Connie Sue Hwy, 397m, 28°06'19"S 125°57'58"E, 11 March 2008; MV light, K.E.C. Brennan", "MLM02187"; DPIRD.

Paratypes

AUSTRALIA • 1 ♀; same collection data as for holotype; "MLM02188"; DPIRD • 1 ♂; [Western Australia], Neale Junction Nature Reserve; 28°16'13" S, 125°48'53" E; 500 m a.s.l.; Mercury vapour light; 8 Mar. 2008; K.E.C. Brennan leg.; "W.A.: Neale Junction Nature Reserve, 500m, MV light, 28°16'13"S 125°48'53"E, 08 March 2008, K.E.C. Brennan" "MLM02186"; RBINS.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 2): 8.14 mm (8.04–8.23), ♀ (n = 1): 9.56 mm; BV/LV: ♂ (n = 1): 3.40, ♀ (n = 1): 3.12; BF/LF: ♂ (n = 1): 1.41, ♀ (n = 1): 1.35; LP+LM/BT: ♂ (n = 1): 0.77, ♀ (n = 1): 0.76; BF/LF: ♂ (n = 1): 1.41, ♀ (n = 1): 1.35; LM/LP: ♂ (n = 1): 2.90, ♀ (n = 1): 2.99; LTg/BTg: ♂ (n = 1): 2.65, ♀ (n = 1): 2.63; LW/BW: ♂ (n = 1): 1.59, ♀ (n = 1): 1.69.

HEAD (Figs 10A–C, E, 11A–C, E). Slightly narrower than thorax. Vertex brown, more or less densely variegated with black; 3.1–3.4 times as broad as long, concave with all margins slightly carinate, slightly longer in mid-line than on sides; anterior and posterior margins rounded, subparallel. Frons mostly black irregularly variegated with brown to pale brown irregularly variegated with black; darker than vertex; sometimes with a slightly paler transverse band above lateral angles and a slightly transverse paler marking on upper middle area of frons; about 1.4 times as broad as long, slightly convex, slightly rugulose with peridiscal carina slightly marked; upper margin of frons weakly rounded in perpendicular view of frons; lateral margin slightly incurved above lateral projection of frons, slightly rounded under the projection. Clypeus brown with dense black markings: median black line and regular oblique lines on each side of postclypeus, anteclypeus black with median pale reddish-brown line on carina, sometimes paler, with black replaced by dark brown; clypeus reaching mesocoxae, elongate, with median carina on anteclypeus prolonged with obsolete carina on postclypeus; base of clypeus rounded. Labium dark

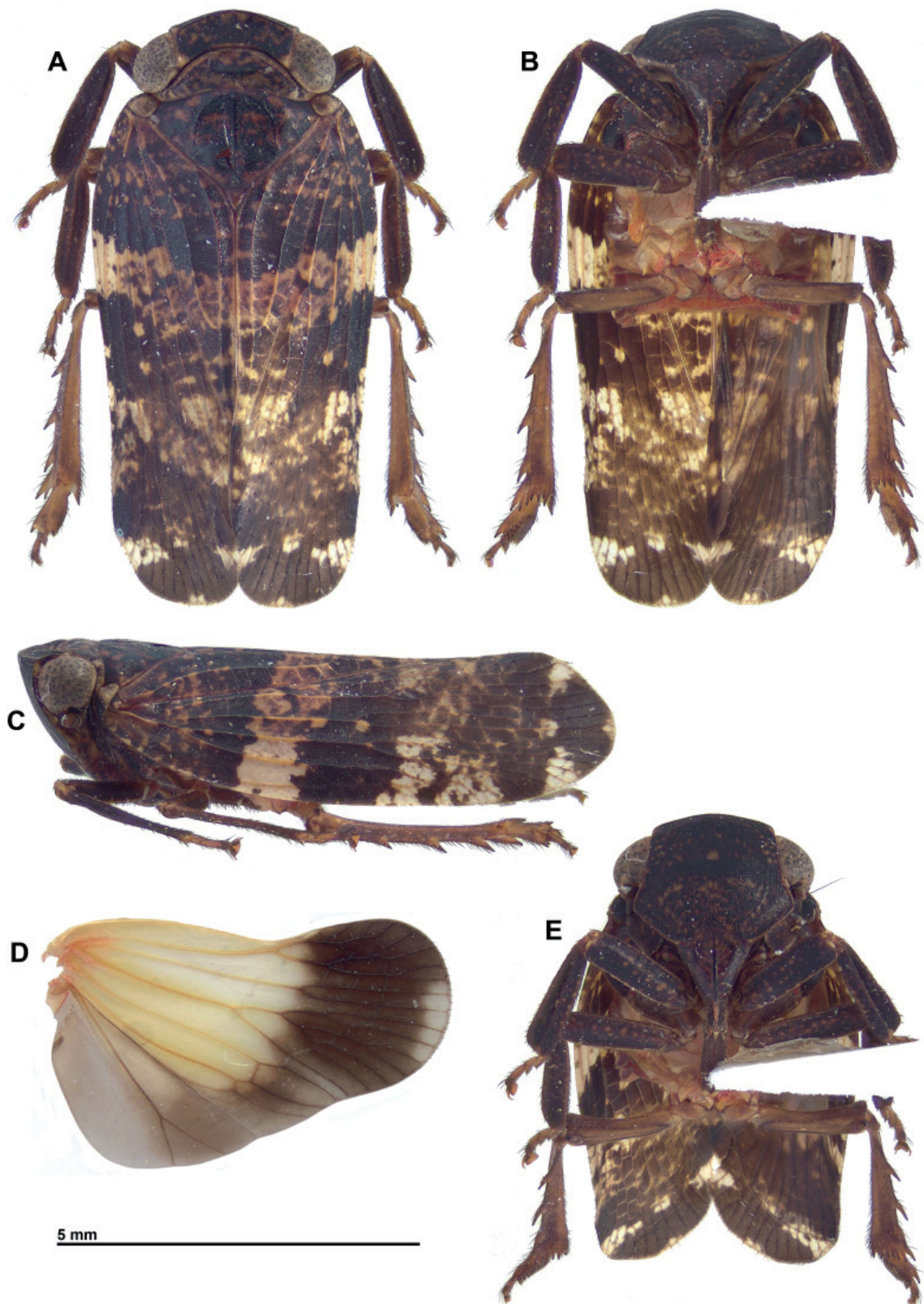


Fig. 10. *Kamabrachys brennani* gen. et sp. nov., holotype, ♂ (DPIRD). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Posterior wing. E. Habitus, perpendicular view of frons.

brown, reaching metacoxae, with apical segment as long as broad, acuminate, shorter and slightly more slender than penultimate. Genae pale brown variegated with black or brown, generally paler than vertex. Ocelli absent. Antennae dark brown, not surpassing eye, not visible from above; scape about as long as broad, pedicel subcylindrical, elongate, narrowing towards apex.

THORAX (Figs 10A, C, 11A, C). About 1.3 times as broad as combined length of pro- and mesonotum. Pronotum brown irregularly variegated with black, generally not or slightly paler than vertex; disc weakly wrinkled, carina parallel to anterior margin and 2 obsolete impressed points on disc included in black marking; paranotal lobes dark brown variegated with paler brown. Mesonotum brown irregularly (but sometimes rather densely) variegated with black, more densely black and generally darker than pronotum; disc weakly wrinkled, median and peridiscal carinae weakly marked; median carina stopped before scutellum. Tegulae bicolour with ventral half black and dorsal half pale brown.

TEGMINA (Figs 10A, C, 11A, C). Brown to black-brown irregularly variegated with paler markings; antepical transverse white line, sometimes interrupted in middle portion; 2 more or less complete transverse whitish bands with irregular darker markings, more basal one at basal $\frac{1}{3}$, second one at $\frac{2}{3}$ of tegmen length, basal one broader and more contrasted. Flat, elongate, about 2.65 times as long as broad; costal margin weakly rounded along basal fifth, then straight or very weakly incurving to nodal line; apex rounded.

VENATION. Veins ScP+RA and RP separated close to base; first fork of MP very basal, at the level of ScP+RA–RP separation [in female paratype, right tegmen with MP forked at basal $\frac{1}{3}$ of tegmen length, left tegmen normal]; first fork of CuA slightly before apex of clavus; clavus closed; Pcu and A1 fused at about $\frac{3}{4}$ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimitating small elongate cells.

POSTERIOR WINGS (Figs 10D, 11D). Pale yellow with base shortly red; apical $\frac{1}{3}$ and rather broad band along posterior margin blackish brown; anal lobe grey sometimes with area between veins A1 and A2 yellowish; apical white marking extending on 5–10 cells. Well developed, as broad as tegmina, about 1.6–1.7 times as long as broad, squarishly rounded apically; anal area well developed; sutural margin weakly trilobous; not reaching apex of tegmina at rest. All main veins visible from base, forked at or after nodal line and forming a few closed cells; few transverse veinlets delimiting elongate cells on apical $\frac{1}{4}$; veins A1 and A2 sometimes with 2 terminals.

LEGS (Figs 10A–C, E, 11A–C, E). Pro- and mesofemora and tibiae brown to black-brown rather sparsely variegated with paler spots; pro- and mesotarsi paler than corresponding tibia but blackish apically; posterior legs brown with apex of tibial and tarsal spines darker. Pro- and mesofemora and tibiae dorsoventrally flattened, elongate and slender; metatibiae with 3 lateral and 10 apical spines; first metatarsomere ventrally with darker pad of microsetae at internoapical angle and two rows of 5 spines. Metatibiotarsal formula: (3) 10/4/0.

MALE TERMINALIA (Figs 12–14). Pygofer (*Py*) rather short, as high as long and oblique in lateral view (Fig. 12A), about 2.25 times as high in caudal view (Fig. 12E); basal apodeme (*bap*) well developed and sclerotized, sinuate in dorsal view (Fig. 12A–C); dorsal portion narrow (Fig. 12A–B); lateroventral lobe (*lv*) projecting posterolaterally and rounded in dorsal view (Fig. 12B); in ventral view, rounded anteriorly and posteriorly, more broadly rounded laterally and with inner margin excavate (Fig. 12C); in lateral view more developed and broader in ventral portion with portion of posterior margin rather broadly rounded (Fig. 12A); ventral portion separated from lateroventral lobe by a well-marked depression (Fig. 12C, E); ventral lamina (*vlp*) about 3.2 times as broad as long with anterior and posterior margins parallel in ventral view, posterior margin slightly emarginated in middle and posterolateral angles rounded and weakly projecting posterad (Fig. 12C). Anal tube as long as broad (*An*) dorsoventrally



Fig. 11. *Kamabrachys brennani* gen. et sp. nov., paratype, ♀ (DPIRD). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Posterior wing. E. Habitus, perpendicular view of frons.

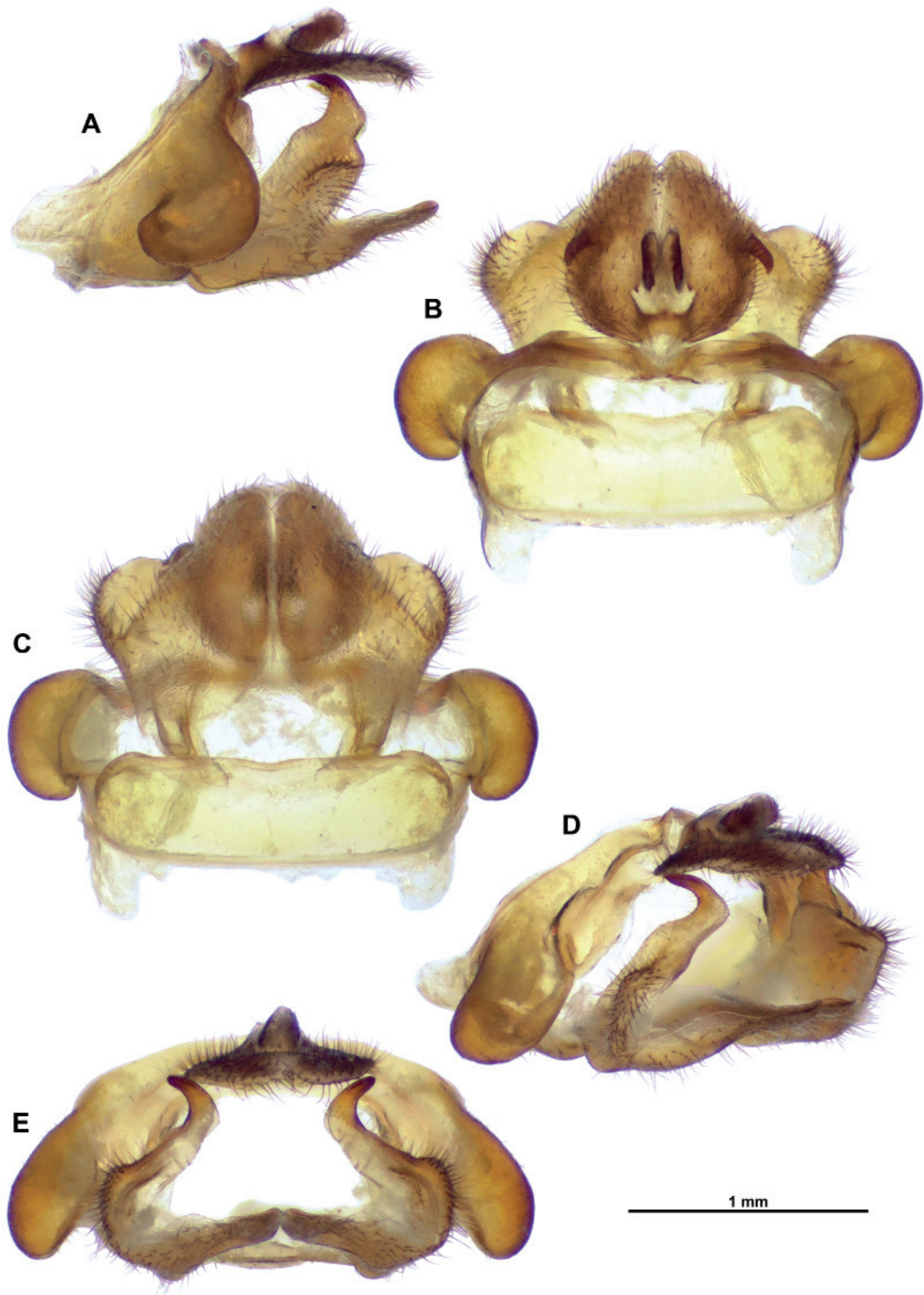


Fig. 12. *Kamabrachys brennani* gen. et sp. nov., holotype, ♂ (DPIRD), terminalia: pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Dorsal view. **C.** Ventral view. **D.** Left posterolateral view. **E.** Caudal view.

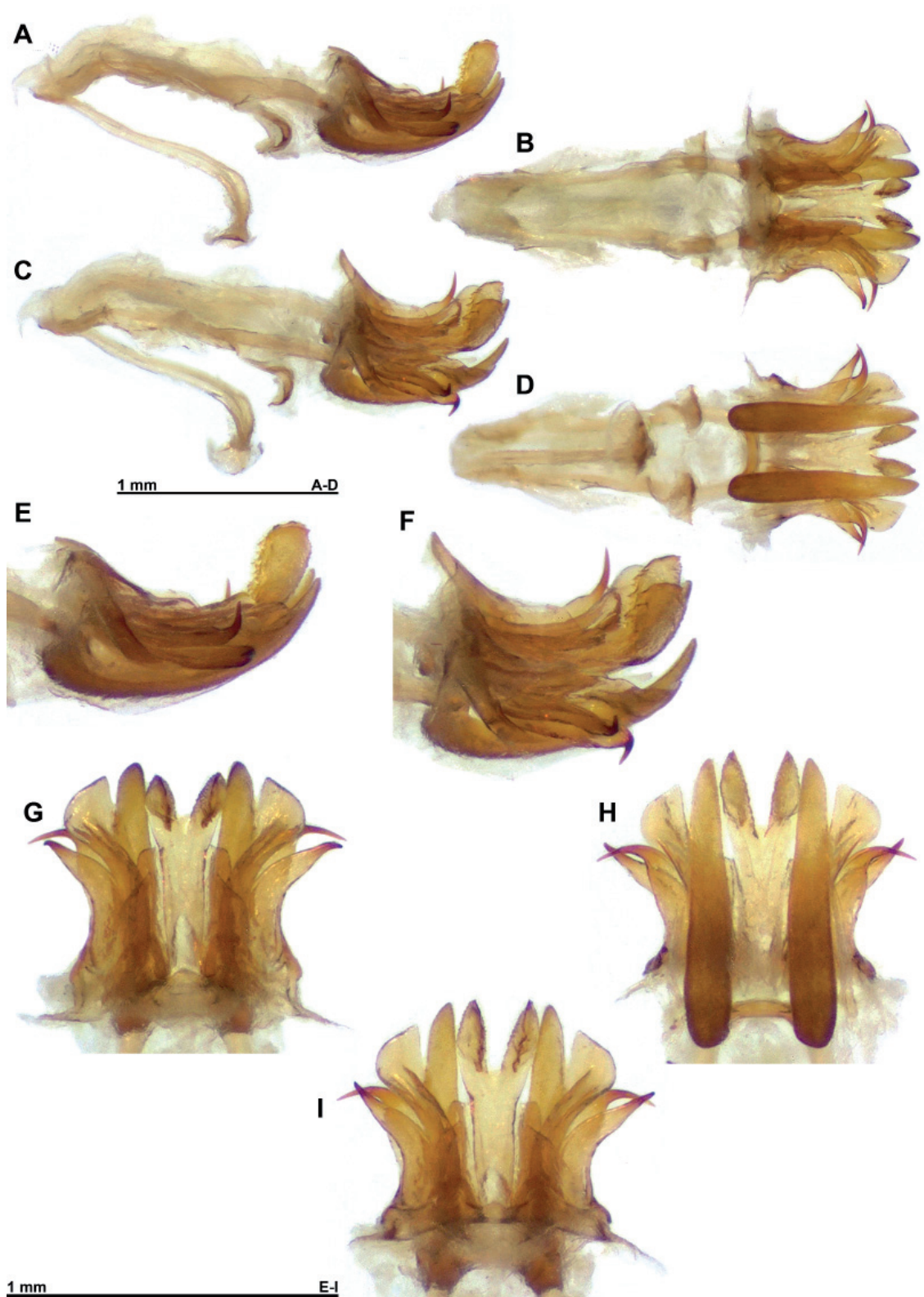


Fig. 13. *Kamabrachys brennani* gen. et sp. nov., holotype, ♂ (DPIRD), genitalia. **A–D.** Aedeagus s. lat. and connective. **A.** Left lateral view. **B.** Dorsal view. **C.** Left laterodorsal view. **D.** Ventral view. **E–I.** Aedeagus s. lat., detail. **E.** Lateral view. **F.** Left laterodorsal view. **G.** Dorsal view. **H.** Ventral view. **I.** Anterodorsal view.

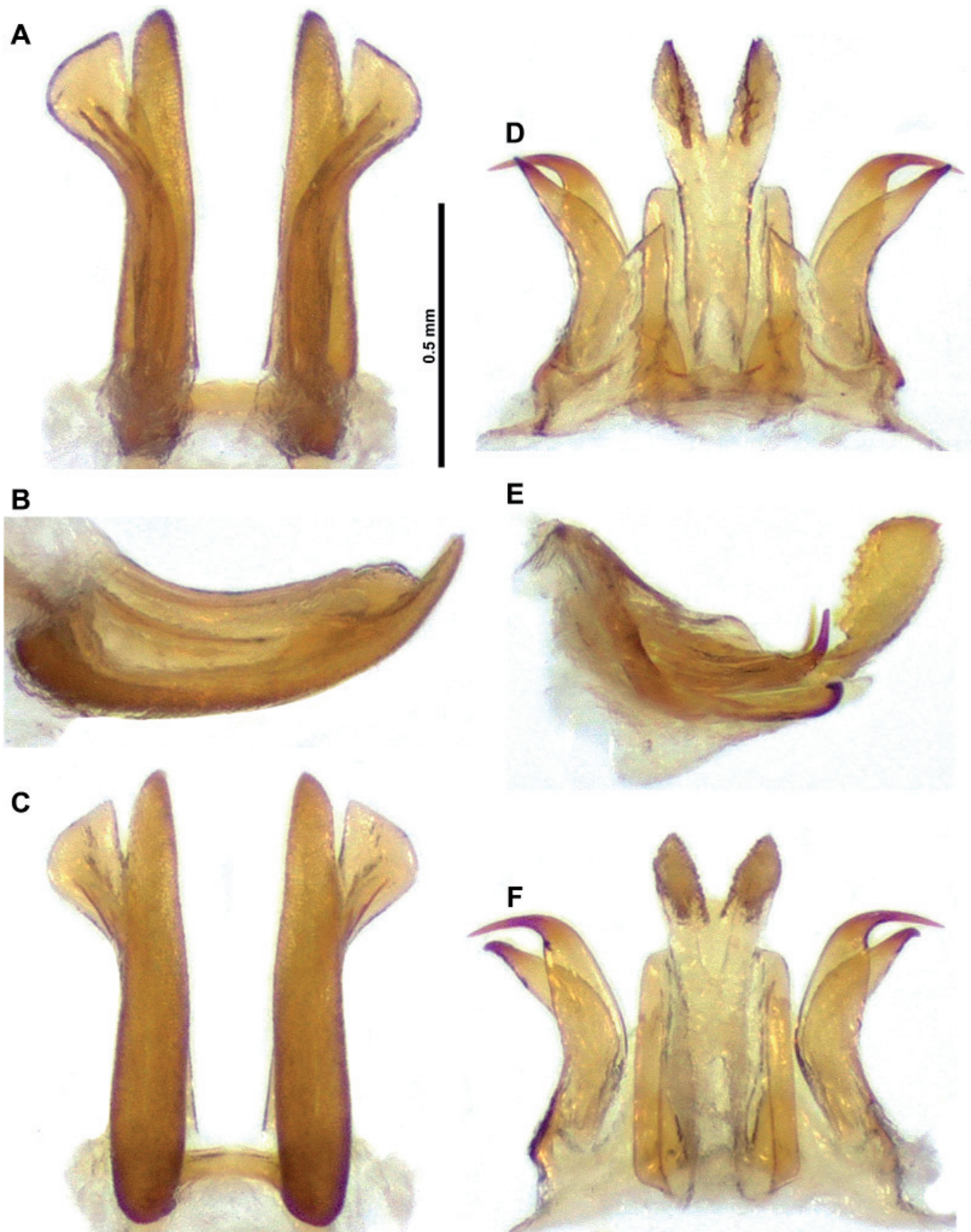


Fig. 14. *Kamabrachys brennani* gen. et sp. nov., holotype, ♂ (DPIRD), genitalia. **A–C.** Aedeagus s. str. **A.** Dorsal view. **B.** Left lateral view. **C.** Ventral view. **D–F.** Dorsal perianthium. **D.** Dorsal view. **E.** Left lateral view. **F.** Ventral view.

flattened (Fig. 12A), oval with base and apex more strongly rounded than side margins; side margins tapering towards apex; apical margin slightly indented in middle (Fig. 12B); paraprocts (*pa*) at basal $\frac{1}{4}$, well developed. Gonostyli (*G*) 1.36 times as broad as long in ventral view (Fig. 12C); ventral process (*vp*) in ventral view subtriangular with lateral margin straight, then rounded apically (Fig. 12C); laterodorsal process (*ldg*) partly visible in ventral view (Fig. 12C) sinuate in caudal view with mediolateral angle (*mlla*) well-marked (Fig. 12E), mediolateral angle projecting laterally (Fig. 12A, D); dorsal hook (*dhg*) rather strongly curved anteriorly in lateral view, with anterior margin roundly excavate and posterior margin subangular basally (Fig. 12A) and apically curved anterolaterad. Connective (*cv*) strongly developed, about 1.5 times as long as aedeagus s. lat., with anterior pair of lateral apodemes forming a moderately broad lateral lamina directed posterolaterad; posterior pair of apodemes ribbon-like [damaged in examined specimen] (Fig. 13A–D). Aedeagus s. lat. moderately upcurved with periandrium reaching level of aedeagus s. str. posteriorly (Fig. 13E–I). Aedeagus s. str. (Fig. 14A–C) with apical processes about 6.45 times as long as broad at mid-length; apicoventral process (*avp*) smoothly tapering towards the posterior and narrowly rounded apically; apicodorsal process (*adp*) in dorsal view (Fig. 14A) rather strongly inflated and stocky, rather abruptly tapering towards apex, obliquely truncate apically with apex forming a well-marked angle, and shorter than apicoventral process. Dorsal periandrium (Fig. 14D–F) with laterodorsal processes (*ldp*) dorsoventrally laminate basally and curved laterad., then slightly sinuate and directed posterolaterad in dorsal view, apically pointed, in lateral view, emarginate dorsally at $\frac{3}{4}$ of length, then rather strongly tapering and curved dorsad; lateroventral processes (*lvp*) dorsoventrally flattened on basal $\frac{3}{4}$, moderately curved laterad at basal $\frac{1}{3}$ and strongly tapering and curved laterad at $\frac{3}{4}$ towards pointed apex, projecting posterolaterally slightly beyond laterodorsal processes; basomedian processes (*bmp*) apically truncate in dorsal view and with sides parallel in ventral view; median furcate

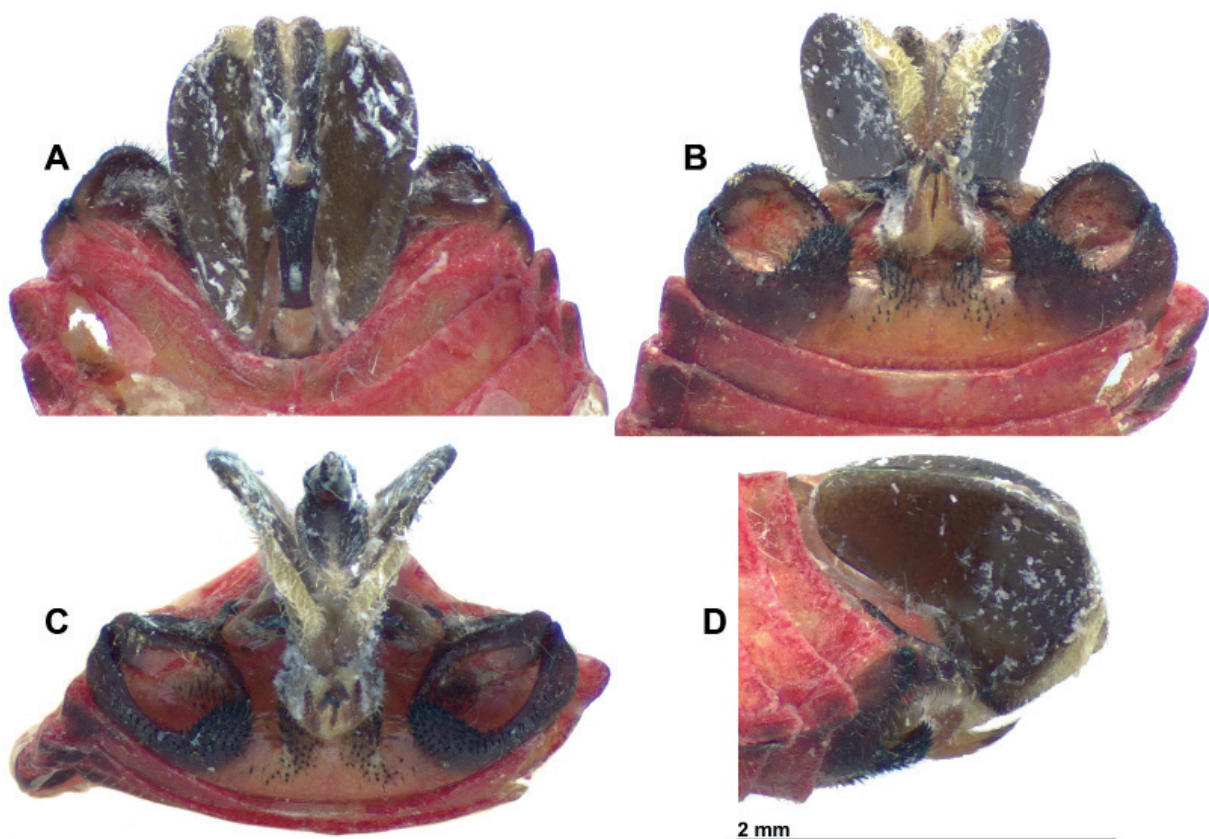


Fig. 15. *Kamabrachys brennani* gen. et sp. nov., paratype, ♀ (DPIRD), external terminalia. **A.** Dorsal view. **B.** Ventral view. **C.** Posteroventral view. **D.** Lateral view.

process (*mfp*) with furca slightly shorter than shaft (Fig. 13I) and rather strongly upcurved in lateral view (Fig. 14E), dorsal crest (*cfp*) on most length of arms of furca, not reflexed in dorsal view (Fig. 14D), crest slightly broadening from base to apex and with dorsal margin crenelated and ending in a point in lateral view (Fig. 14E), inner and outer lateral walls of furca slightly granulose (Fig. 14D).

FEMALE TERMINALIA (Fig. 15). Abdominal sternite VI (*As VI*) with sides upcurving in posteroventral view (Fig. 15C); posterior margin in ventral view (Fig. 15B) projecting posteriorly on sides with lateral margin sinuate apically; median subquadrate emargination wide; subtriangular processes apically rounded and directed posterodorsad (Fig. 15B–D); emargination between subtriangular processes and lateral projection deeply rounded (Fig. 15B–C); processes of furca of sternite VI (*FAs VI*) pointed, diverging, moderately developed and curved posterodorsad (Fig. 15B–C). Inner portion of gonocoxa VIII (*Gx VIII*) strongly curved dorsad (Fig. 15C); posterior margin of gonapophysis (*Gy VIII*) projecting rather strongly posterad and apically rounded (Fig. 15A–B). Lateroventral excavate membranous fold of gonocoxae VIII between sternite VI and gonapophysis VIII in posteroventral view widely open (Fig. 15C). Inner portion of gonapophysis VIII, subtriangular processes and adjacent part of posterior margin of sternite VI, and processes of furca of sternite VI (*FAs VI*) densely covered in short strong setae (Fig. 15B–C). Gonoplacs (*Gp*) unilobed, large and semicircular, mostly hiding the anal tube (Fig. 15D). Gonocoxal bases IX (*Gb IX*) projecting laterally (Fig. 15B–C). Gonapophysis IX (*Gy IX*) flattened laterally, reflexed posterodorsad and strongly tapering apically (Fig. 15B, D). Anal tube (*An*) elongate and narrow, curved posteroventrad, v-shaped in cross section beyond anus, lanceolate in dorsal view (Fig. 15A, C).

SEXUAL DIMORPHISM. Female about 17% larger than male.

Distribution and biology

The species is currently recorded from a single location of the Great Victoria Desert in southeastern Western Australia (Fig. 5A), in Neale Junction. Bioregion: Great Victoria Desert.

The three specimens of the type series were all collected within a few days during the month of March.

Host plant unknown.

Kamabrachys campbelli gen. et sp. nov.

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Figs 5A, 16–21

Diagnosis

The species can be recognized by the following combination of characters:

- (1) posterior margin of the lateroventral lobes of the pygofer (*lvl*) oblique and sinuate in lateral view (Fig. 18A) and tapering towards the posterior in ventral view (Fig. 18C), inner margin of lobes straight in ventral view (Fig. 18C), ventral margin rounded in caudal view (Fig. 18E);
- (2) posterior margin of laterodorsal process of gonostylus (*ldg*) moderately emarginate, leaving a rather widely open angle between laterodorsal process and ventral process of gonostylus (*vp*) in lateral view (Fig. 18A);
- (3) crest of furcate process of periandrium (*cfp*) only along distal portion and not merging basally (Fig. 20D), in lateral view, tapering in distal portion (Fig. 20E);
- (4) laterodorsal process of periandrium (*ldp*) tapering in distal portion and curved dorsad, not surpassing lateroventral process (*lvp*) laterally and reaching slightly over half length of the lateroventral process (*lvp*) (Fig. 20D–E);

- (5) lateroventral process of periandrium (*lvp*) dorsoventrally flattened on long basal portion up to strongly curved laterodorsad distal portion (Fig. 20D–F);
- (6) apicodorsal process of aedeagus (*adp*) moderately sinuate, rather wide and stocky distally and tapering apically, and shorter than apicoventral process (*avp*) (Fig. 20A–C);
- (7) posterior wing with weakly marked whitish marking along sutural margin (Fig. 16A).

Etymology

The species epithet is a patronym referring to the Australian entomologist Thomas Graham Campbell who collected the type series.

Type material

Holotype

AUSTRALIA • ♂; [Queensland], Macrossan, [Burdekin]; [19°59'50" S, 146°26'22" E]; 10 Jun. 1958; T.G. Campbell leg.; “Macrossan, Burekin Q., 10 Jun 1958, T.G. Campbell”; ANIC.

Paratypes

AUSTRALIA • 1 ♂, 1 ♀; same collection data as for holotype; ANIC • 2 ♂♂; same collection data as for holotype; RBINS.

Note

“Burekin” on the labels of the type specimens, is a typo for “Burdekin” River.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 4): 9.84 mm (9.74–10.00), ♀ (n = 1): 11.08 mm; BV/LV: ♂ (n = 1): 3.36, ♀ (n = 1): 3.52; BF/LF: ♂ (n = 1): 1.29, ♀ (n = 1): 1.33; LP+LM/BT: ♂ (n = 1): 0.82, ♀ (n = 1): 0.81; LM/LP: ♂ (n = 1): 3.07, ♀ (n = 1): 2.96; LTg/BTg: ♂ (n = 1): 2.65, ♀ (n = 1): 2.66; LW/BW: ♂ (n = 1): 1.74, ♀ (n = 1): 1.69.

HEAD (Figs 16A–D, 17A–D). Slightly narrower than thorax. Vertex brown irregularly, rather poorly variegated with black; about 3.4–3.5 times as broad as long, concave with all margins slightly carinate; anterior and posterior margins rounded, nearly parallel, with anterior margin slightly more strongly rounded in middle portion. Frons brown irregularly, rather densely variegated with black, more densely black than vertex; darker along lateral angles and dorsal margin; dorsal angles marked with a small, yellow-brown subtriangular marking; often with a slightly paler median marking in upper half of middle area of frons; about 1.3 times as broad as long, slightly convex, slightly rugulose with peridiscal carina slightly marked; upper margin of frons slightly rounded in perpendicular view of frons; lateral margin slightly incurved above lateral projection of frons, slightly rounded under the projection. Clypeus reddish brown with median line and regular oblique lines on each side of postclypeus darker, anteclypeus reddish brown with sides black along outer margin and with median pale reddish-brown line on carina; clypeus reaching mesocoxae, elongate, with median carina on anteclypeus prolonged with obsolete carina on postclypeus; base of clypeus rounded. Labium brown, reaching metacoxae, with apical segment as long as broad, acuminate, shorter and slightly more slender than penultimate. Genae yellow-brown. Ocelli absent. Antennae brown, not surpassing eye, not visible from above; scape about as long as broad, pedicel subcylindrical, elongate, narrowing towards apex.

THORAX (Figs 16A, C, 17A, C). About 1.2 times as broad as combined length of pro- and mesonotum. Pronotum brown irregularly variegated with black, similarly as vertex, with portion anterior to anterior carina yellowish and usually a transverse black marking in middle of disc; disc weakly wrinkled, carina parallel to anterior margin; 2 obsolete impressed points on disc usually included in black marking;

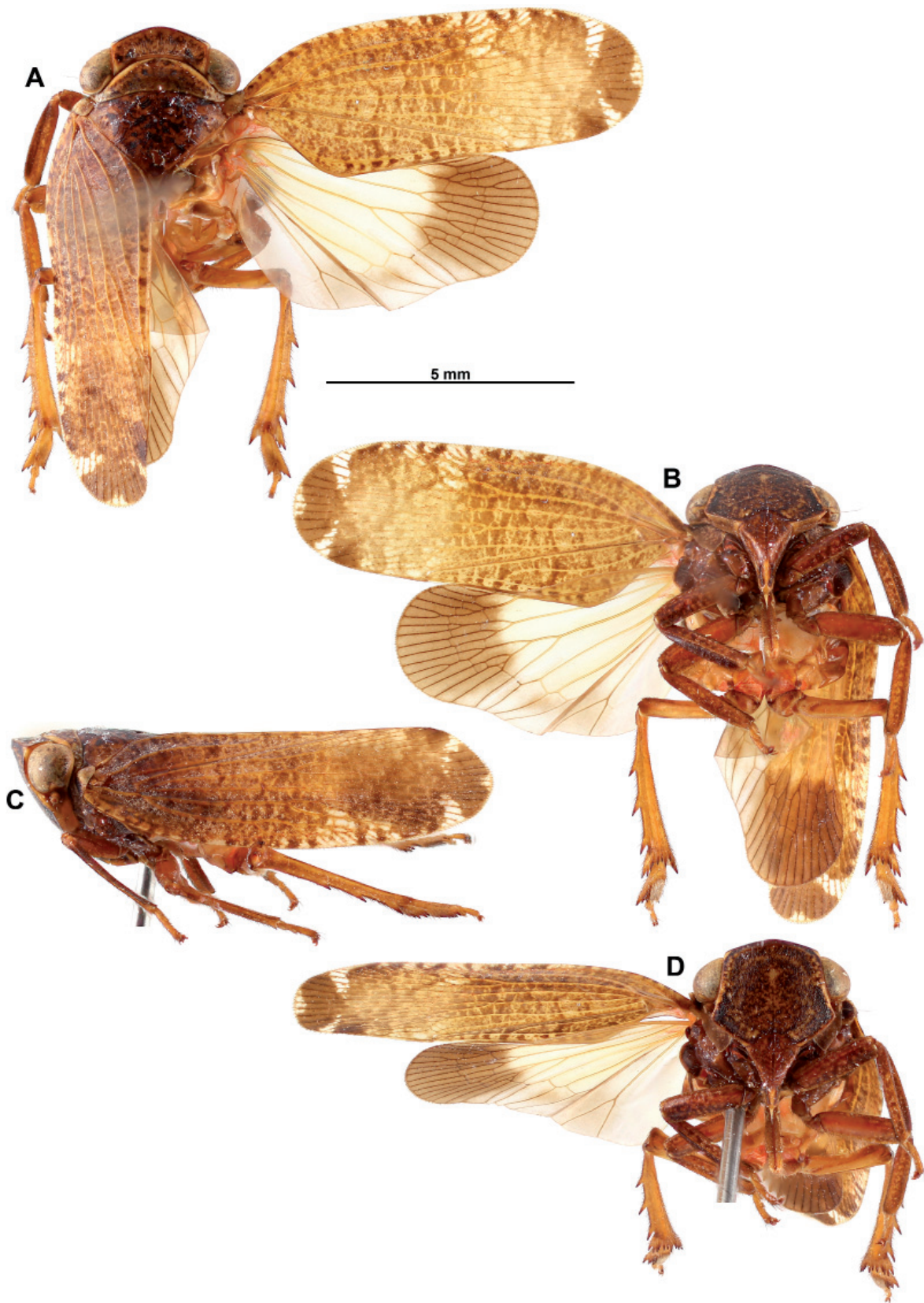


Fig. 16. *Kamabrachys campbelli* gen. et sp. nov., holotype, ♂ (ANIC). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons.

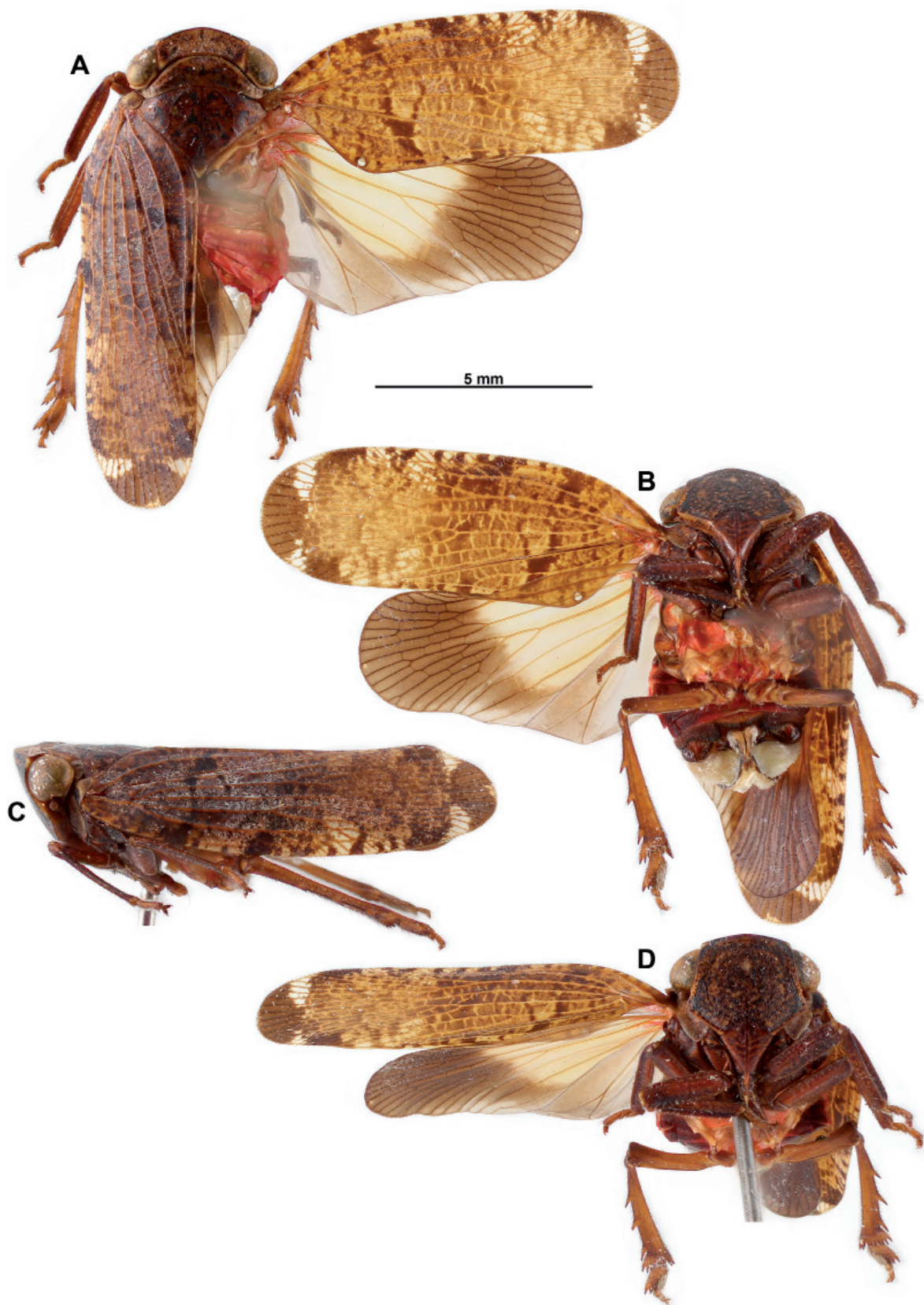


Fig. 17. *Kamabrachys campbelli* gen. et sp. nov., paratype, ♀ (ANIC). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Habitus, perpendicular view of frons.

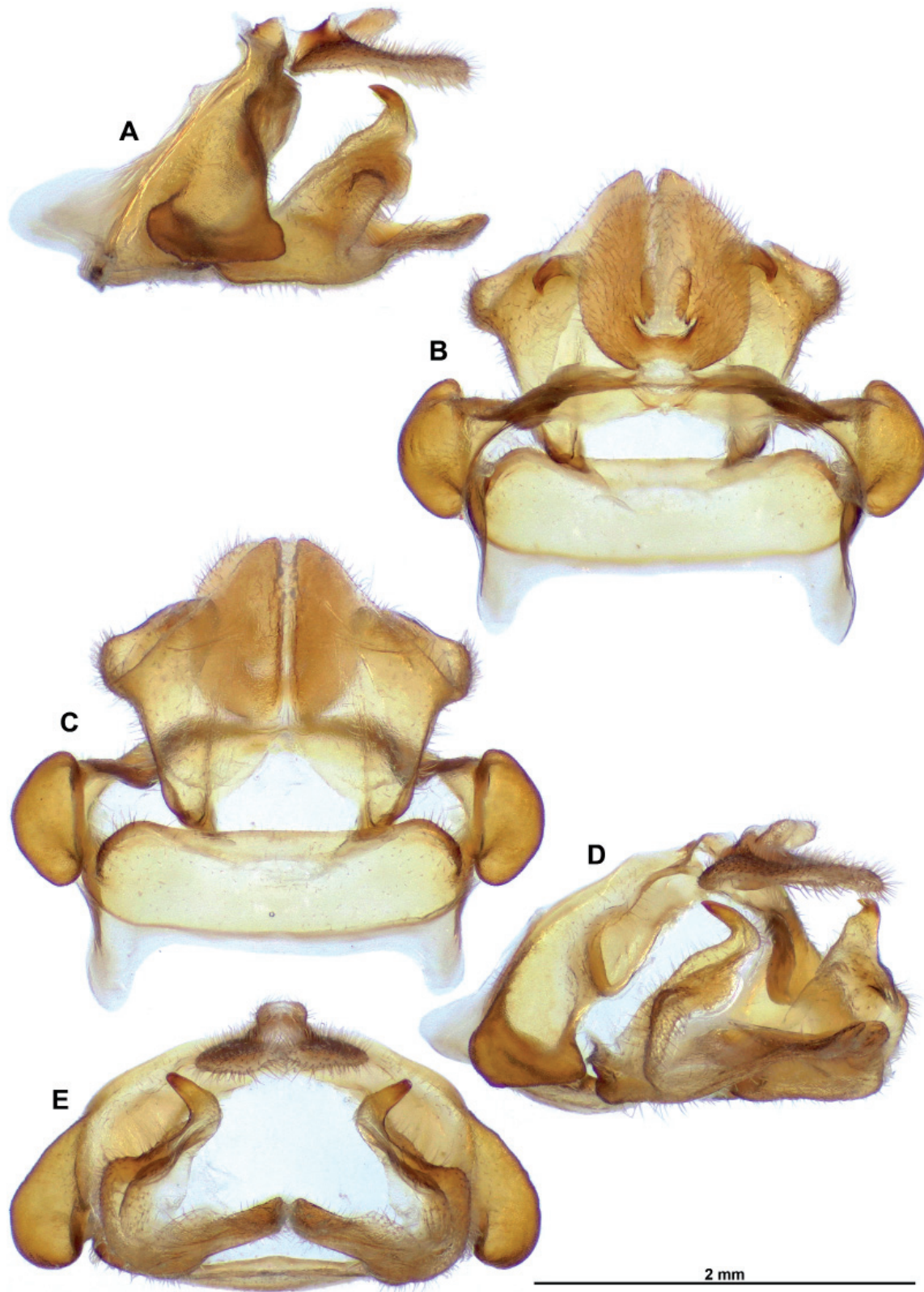


Fig. 18. *Kamabrachys campbelli* gen. et sp. nov., holotype, ♂ (ANIC), terminalia: pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Dorsal view. **C.** Ventral view. **D.** Left posterolateral view. **E.** Caudal view.

paranotal lobes brown. Mesonotum brown irregularly variegated with black, slightly more densely black and generally darker than pronotum; disc weakly wrinkled, median and peridiscal carinae weakly marked; median carina stopped before scutellum. Tegulae bicolour with ventral half black and dorsal half pale brown.

TEGMINA (Figs 16A–C, 17A–C). Brown irregularly variegated with darker and paler black markings; anteapical transverse white line strongly narrowing in middle portion, often reduced to 2 white, elongate triangles; apex often with a narrow white marking extending along up to 4 cells; sometimes 2 incomplete transverse black bands, more basal one at basal $\frac{1}{4}$, second one at mid-length of tegmen, often only basal band just marked by a dark marking in clavus. Flat, elongate, about 2.65 times as long as broad; costal margin weakly rounded along basal fifth, then straight nodal line; apex rounded.

VENATION. Veins ScP+RA and RP separated close to base; first fork of MP very basal, at the level of ScP+RA–RP separation; first fork of CuA slightly before apex of clavus; clavus closed; Pcu and A1 fused at about $\frac{3}{4}$ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimitating small elongate cells.

POSTERIOR WINGS (Figs 16A–B, 17A–B). Pale yellow with apical $\frac{1}{3}$ and moderately broad band along posterior margin blackish brown (apical portion darker), anal area largely grey, somewhat paler area along middle portion of posterior margin. Well developed, as broad as tegmina, about 1.7 times as long as broad, rounded apically; anal area well developed; sutural margin weakly trilobous; not reaching apex of tegmina at rest. All main veins visible from base, forked at or after nodal line and forming a few closed cells; few transverse veinlets delimitating elongate cells on apical $\frac{1}{4}$; veins A1 and A2 sometimes with 2 terminals.

LEGS (Figs 16A–D, 17A–D). Pro- and mesofemora and tibiae reddish brown more or less densely variegated with dark brown; pro- and mesotarsi paler than corresponding tibia but slightly darker apically; posterior legs reddish brown with apex of tibial and tarsal spines darker. Pro- and mesofemora and tibiae dorsoventrally flattened, elongate and slender; metatibiae with 3 lateral and 10 apical spines; first metatarsomere ventrally with darker pad of microsetae at internoapical angle and two rows of 5 spines. Metatibiotarsal formula: (3) 10/4/0.

MALE TERMINALIA (Figs 18–20). Pygofer (*Py*) rather short, as high as long and oblique in lateral view (Fig. 18A), about 2.0 times as wide as high in caudal view (Fig. 18E); basal apodeme (*bap*) well developed and sclerotized, sinuate in dorsal view (Fig. 18A–C); dorsal portion narrow (Fig. 18A–B); lateroventral lobe (*lvl*) projecting posterolaterally and rounded but tapering towards the anterior and posterior in dorsal view (Fig. 18B); in ventral view, tapering and narrowly rounded anteriorly and posteriorly, more broadly rounded laterally and with inner margin straight (Fig. 18C); in lateral view mostly obliquely truncate posteriorly, with posterior margin slightly sinuate along upper $\frac{4}{5}$ and ventral $\frac{1}{5}$ somewhat angularly projecting posterad, anteroventral angle more or less rounded (Fig. 18A); ventral portion separated from lateroventral lobe by a well-marked, rather narrow depression (Fig. 18C, E); ventral lamina (*vlp*) about 3.2 times as broad as long with anterior and posterior margins subparallel in ventral view, posterior margin slightly bisinuate with posterolateral angles rounded and weakly projecting posterad (Fig. 18C). Anal tube about as broad as long (*An*) dorsoventrally flattened (Fig. 18A), oval with base and apex more strongly rounded than side margins; side margins weakly tapering towards apex; apical margin slightly indented in middle (Fig. 18B); paraprocts (*pa*) at basal $\frac{1}{4}$, well developed. Gonostyli (*G*) 1.29 times as broad as long in ventral view (Fig. 18C); ventral process (*vp*) in ventral view subtriangular with lateral margin very weakly sinuate, then narrowly rounded apically (Fig. 18C); laterodorsal process (*ldg*) partly visible in ventral view (Fig. 18C), sinuate in caudal view with mediolateral angle (*mlla*) well-marked (Fig. 18E), mediolateral angle projecting laterally (Fig. 18A, D); dorsal hook (*dhg*) curved in lateral

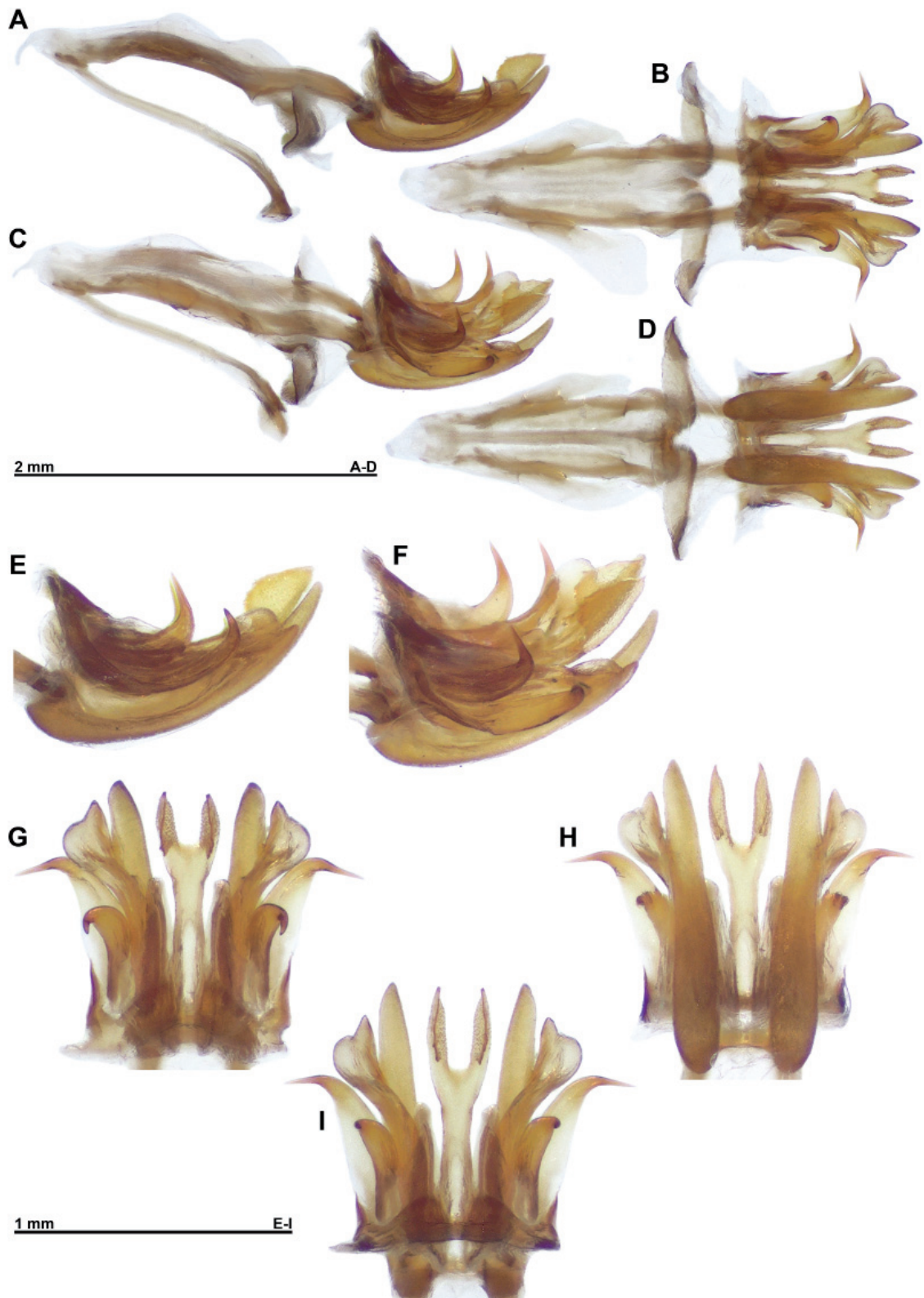


Fig. 19. *Kamabrachys campbelli* gen. et sp. nov., holotype, ♂ (ANIC), genitalia. **A–D.** Aedeagus s. lat. and connective. **A.** Left lateral view. **B.** Dorsal view. **C.** Left laterodorsal view. **D.** Ventral view. **E–I.** Aedeagus s. lat., detail. **E.** Lateral view. **F.** Left laterodorsal view. **G.** Dorsal view. **H.** Ventral view. **I.** Anterodorsal view.

view, with anterior margin angularly sinuate basally and posterior margin indentate basally (Fig. 18A), and apex of hook curved cephalad (Fig. 18B). Connective (*cv*) strongly developed, about 1.5 times as long as aedeagus s. lat., with anterior pair of lateral apodemes forming a moderately broad lateral lamina directed posterolaterad and broadened apically; posterior pair of apodemes ribbon-like, strongly



Fig. 20. *Kamabrachys campbelli* gen. et sp. nov., holotype, ♂ (ANIC), genitalia. **A–C.** Aedeagus s. str. **A.** Dorsal view. **B.** Left lateral view. **C.** Ventral view. **D–F.** Dorsal periandrium. **D.** Dorsal view. **E.** Left lateral view. **F.** Ventral view.

developed laterally and sinuate (Fig. 19A–D). Aedeagus s. lat. moderately upcurved with aedeagus s. str. slightly surpassing perianthium posterad (Fig. 19E–I). Aedeagus s. str. (Fig. 20A–C) with apical processes about 7.6 times as long as broad at mid-length; apicoventral process (*avp*) smoothly tapering towards the posterior and narrowly rounded apically; apicodorsal process (*adp*) in dorsal view (Fig. 20A) rather strongly inflated and stocky, then abruptly tapering towards apex, ending in a thick point and much shorter than apicoventral process. Dorsal perianthium (Fig. 20D–F) with laterodorsal processes (*ldp*) more or less oval in cross-section and gently curved dorsad along basal $\frac{2}{3}$, then abruptly curved with apical $\frac{1}{3}$ directed dorsad, strongly tapering and apically pointed; lateroventral processes (*lvp*) dorsoventrally flattened on basal $\frac{4}{5}$, then strongly curved laterad and strongly tapering into an apical point directed laterodorsad, slightly broadening from base to first $\frac{1}{3}$, then gently tapering up to distal $\frac{1}{5}$, projecting posterolaterally largely beyond laterodorsal processes; basomedian processes (*bmp*) apically truncate in dorsal view and with sides parallel in ventral view; median furcate process (*mfp*) with furca slightly shorter than shaft (Fig. 19I) and moderately upcurved in lateral view (Fig. 20E), dorsal crest (*cfp*) on distal $\frac{3}{4}$ of arms of furca, not reflexed in dorsal view (Fig. 20D), crest broad and rounded basally then gently tapering towards apex and with dorsal margin undulated in lateral view (Fig. 20E), inner and outer lateral walls of furca slightly granulose (Fig. 20D).

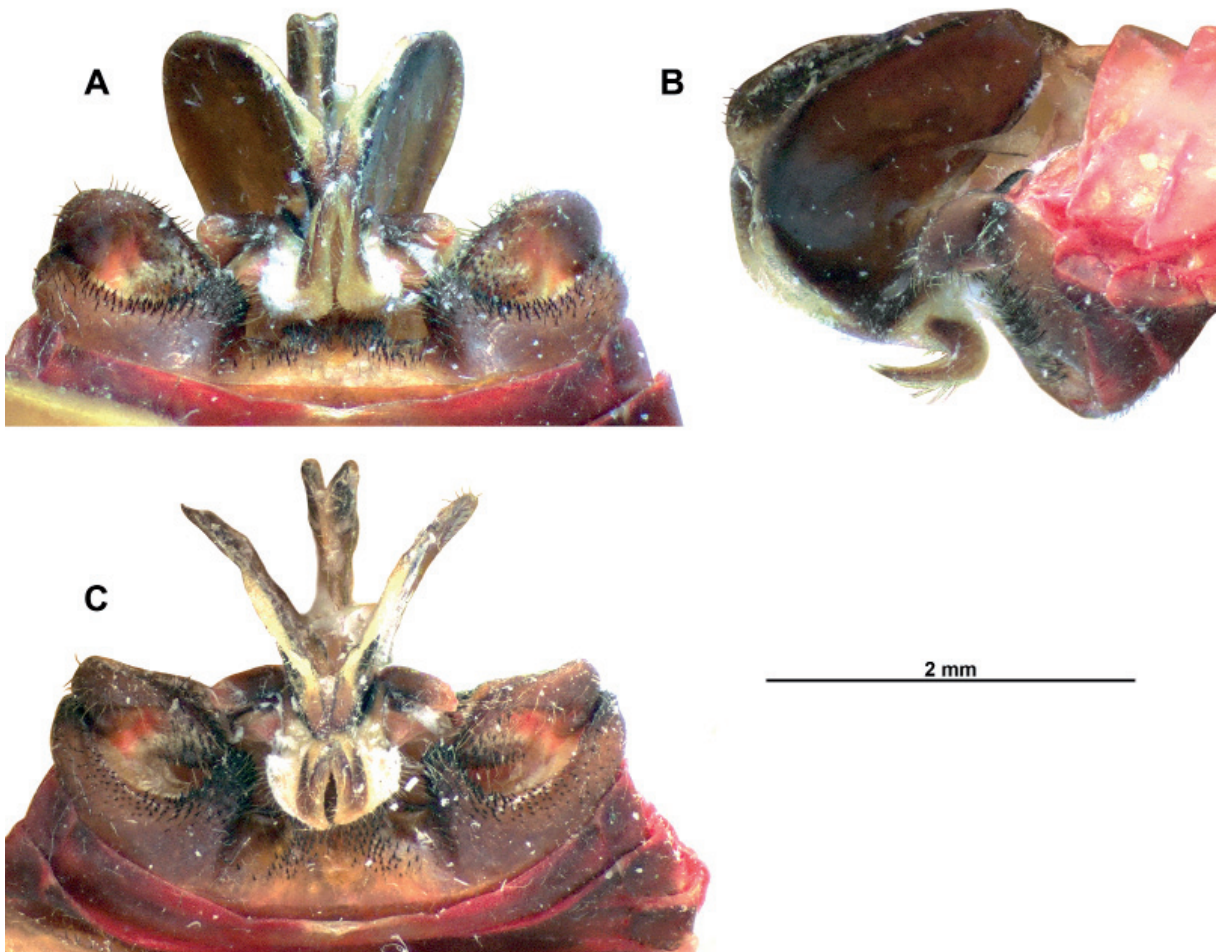


Fig. 21. *Kamabrachys campbelli* gen. et sp. nov., paratype, ♀ (ANIC), external terminalia. **A.** Ventral view. **B.** Lateral view. **C.** Posteroventral view.

FEMALE TERMINALIA (Fig. 21). Abdominal sternite VI (*As VI*) with sides upcurving in posteroventral view (Fig. 21C); posterior margin in ventral view (Fig. 21A) moderately projecting posteriorly on sides; median subquadrate emargination wide; subtriangular processes more or less digitiform, rather elongate, apically rounded and directed posterodorsad (Fig. 21A, C); emargination between subtriangular processes and lateral projection moderately deeply rounded (Fig. 21A, C); processes of furca of sternite VI (*FAs VI*) pointed, diverging, moderately developed and curved posterodorsad (Fig. 21A, C – mostly hidden under gonapophysis IX on Fig.). Inner portion of gonocoxa VIII (*Gx VIII*) rather strongly curved dorsad (Fig. 21C); posterior margin of gonapophysis (*Gy VIII*) projecting rather strongly posterad and apically rounded (Fig. 21A). Lateroventral excavate membranous fold of gonocoxae VIII between sternite VI and gonapophysis VIII in posteroventral view widely open (Fig. 21C). Inner portion of gonapophysis VIII, subtriangular processes and adjacent part of posterior margin of sternite VI, and processes of furca of sternite VI (*FAs VI*) densely covered in short strong setae (Fig. 21A, C). Gonoplares (*Gp*) unilobed, large and semicircular, mostly hiding the anal tube (Fig. 21B). Gonocoxal bases IX (*Gb IX*) projecting laterally (Fig. 21A, C). Gonapophysis IX (*Gy IX*) flattened laterally, strongly reflexed posterodorsad and strongly tapering apically (Fig. 21B). Anal tube (*An*) elongate and narrow, curved posteroventrad, v-shaped in cross section beyond anus.

SEXUAL DIMORPHISM. Female about 13% larger than male.

Distribution and biology

The species is currently recorded from a single location of the middle portion of eastern Queensland, near Charter Towers (Fig. 5A), in Macrossan. Bioregion: Einasleigh Uplands.

The five specimens of the type series were all collected on the same day during the month of June.

Host plant unknown.

Kamabrachys danielsi gen. et sp. nov.

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Figs 5A, 22–27

Diagnosis

The species can be recognized by the following combination of characters:

- (1) posterior margin of the lateroventral lobes of the pygofer (*lv*) oblique and slightly sinuate in lateral view (Fig. 24A) and strongly tapering posterad in ventral view (Fig. 24C), inner margin of lobes concave in ventral view (Fig. 24C), ventral margin rounded in caudal view (Fig. 24E);
- (2) posterior margin of laterodorsal process of gonostylus (*ldg*) roundly emarginate, leaving a widely open angle between laterodorsal process and ventral process of gonostylus (*vp*) in lateral view (Fig. 24A);
- (3) crest of furcate process of periandrium (*cfp*) only along distal portion and not merging basally (Fig. 26D), in lateral view, tapering in distal portion (Fig. 26E);
- (4) laterodorsal process of periandrium (*ldp*) tapering in distal portion, sinuate, twisted and curved laterodorsad, slightly shorter than lateroventral process (*lvp*) (Fig. 26D–E);
- (5) lateroventral process of periandrium (*lvp*) dorsoventrally flattened only in basal portion and strongly curved laterad and tapering distally (Fig. 26D–F);
- (6) apicodorsal process of aedeagus (*adp*) weakly sinuate, weakly dilated then tapering distally and shorter than apicoventral process (*avp*) (Fig. 26A–C);
- (7) posterior wing with weakly marked whitish marking along sutural margin (Fig. 22E).

Etymology

The species is dedicated to Greg Daniels who participated in the collecting of a large part of the type material.

Type material

Holotype

AUSTRALIA • ♂; [Queensland], 3 km NW of Archer River Crossing; 13°24' S, 142°55' E; 9 Apr. 1989; G. and A. Daniels leg.; “3 km NW Archer River x-ing, Qld, 13°24' S 142°55' E, 9 Apr 1989, G. and A. Daniels”, “UQIC Reg. #43799”; QM.

Paratypes

AUSTRALIA • 1 ♀, photographed; [Queensland], 6 km NE of road junction, Claudie River district; [12°43' S, 143°18' E]; 27 Jun. 1982; G. Daniels and M.A. Schneider leg.; “6km NE road junction Claudie Riv. district, Qld, 27 Jun 1982, G. Daniels M.A. Schneider”, “UQIC Reg. #43968”; QM • 1 ♀; [Queensland], 6 km NE of road junction Claudie River district; 12°43' S, 143°18' E; 6 Jul. 1982; G. Daniels and M.A. Schneider leg.; “6km NE road junction Claudie Riv. district, Qld, 6 July 1982, G. Daniels M.A. Schneider”, “UQIC Reg. #43949”; RBINS • 1 ♀; [Queensland], 30 km W of Fairview, Cape York Peninsula; 15°29'58" S, 143°59'50" E; 10–11 Jul. 1982; M.A. Schneider and G. Daniels leg.; “30km W of ‘Fairview’, Cape York Pen., Qld, 10-11 July 1982, M.A. Schneider, G. Daniels”, “UQIC Reg. #43950”; QM • 1 ♀; [Queensland], Windmill, Killarney-Dixie Road, 12 km NNW of Killarney [Homestead]; 15°19'34" S, 143°26'56" E; 18 Jul. 2015; [altitude] 135 m; *Melaleuca* / *Eucalyptus* woodland; Daniels, Carr and Greene leg.; “Qld, 15.326°Sx143.449°E, Windmill, Killarney-Dixie Rd, 12km NNW Killarney HS, 18 Jul. 2015. 135m. 38380, Daniels, Carr & Greene; *Melaleuca/euc* woodland.”; QM • 1 ♂, 1 ♀; [Queensland], Claudie River; [12°49'22" S, 143°20'47" E]; [Nov. 1912–Feb. 1913]; J.A. Kershaw leg.; “Claudie R., N. Q., Coll. J. A. Kershaw, 11/12-2/13.”; MVMA • 1 ♀; [Queensland], Torres Strait, Prince of Wales Island; [10°40'32" S, 142°11'18" E]; 28 Jun. 1969; Neboiss leg.; “Prince of Wales Isl., Torres Strait, 28-6-1969, Neboiss”; MVMA • 1 ♂; same locality as for preceding; 29 May 1969; Neboiss leg.; “Prince of Wales Isl., Torres Strait, 29 May 1969, Neboiss”; RBINS • 1 ♀; [Queensland], Claudie River; [12°49'22" S, 143°20'47" E]; [no date]; A. and F.R. Zietz leg.; “Claudie R., A. & F.R. Zietz”; SAM • 1 ♂, 1 ♀; [Queensland], Split Rock, 13 km SE of Laura; [15°38'42" S, 144°30'27" E]; 24 May 1993; escarpment with open woodland; B. and M. Baehr leg.; “Australien-NQlnd, Split Rock, 13 km se Laura, Felsen mit offenem Woodland, 24.5.1993, leg. B. & M. Baehr”; ZSM • 1 ♂, 1 ♀; same collection data as for preceding; RBINS • 1 ♂, 1 ♀; [Queensland], 1–5 km S of Cape York; [10°42'40" S, 142°31'46" E]; 19–20 May 1993; open woodland; B. and M. Baehr leg.; “Australien-NQlnd, 1-5 km s. Cape York, offenes Woodland, 19-20.5.1993, leg. B. & M. Baehr”; ZSM • 1 ♀; Queensland, 13 km W of Musgrave; 14°48' S, 143°23' E; 26 Apr. 1989; G. and A. Daniels leg.; “13 km W Musgrave, Qld, 14°48' S 143°23' E, 26 Apr 1989, G. and A. Daniels”, “UQIC Reg. #43779”; QM • 1 ♀; Queensland, Lockerbie Scrub, Cape York; [10°48'07" S; 142°28'31" E]; 14–18 Apr. 1973; G.B. Monteith leg.; “Lockerbie Scrub, Cape York, N. Qld., 14-18.iv.1973, G. B. Monteith”; QM.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 6): 10.69 mm (10.22–11.01), ♀ (n = 10): 11.40 mm (10.75–11.93); BV/LV: ♂ (n = 1): 3.54, ♀ (n = 1): 3.16; BF/LF: ♂ (n = 1): 1.49, ♀ (n = 1): 1.35; LP+LM/BT: ♂ (n = 1): 0.80, ♀ (n = 1): 0.79; LM/LP: ♂ (n = 1): 3.03, ♀ (n = 1): 3.21; LTg/BTg: ♂ (n = 1): 2.71, ♀ (n = 1): 2.69; LW/BW: ♂ (n = 1): 1.57, ♀ (n = 1): 1.68.

HEAD (Figs 22A–D, 23A–D). Slightly narrower than thorax. Vertex brown irregularly, rather poorly variegated with black to moderately variegated with black in dark specimens; about 3.2–3.5 times as broad as long, concave with all margins slightly carinate; anterior and posterior margins rounded, nearly

parallel. Frons brown irregularly, rather densely variegated with black, more densely black than vertex and mostly black in dark specimens; darker along lateral angles and dorsal margin; dorsal angles marked with a small, yellow-brown subtriangular marking; paler median band at level of base of eyes, three paler spots in a transverse row at level of middle of eye and a narrow paler curved band parallel to dorsal margin; about 1.3–1.5 times as broad as long, slightly convex, slightly rugulose with peridiscal carina slightly marked; upper margin of frons slightly rounded in perpendicular view of frons; lateral margin incurved above lateral projection of frons, slightly rounded to slightly sinuate under the projection. Clypeus brown to reddish brown with median line and regular oblique lines on each side of postclypeus dark brown to black, anteclypeus brown with sides black along outer margin and with median pale reddish-brown line on carina; clypeus reaching mesocoxae, elongate, with median carina on anteclypeus prolonged with obsolete carina on postclypeus; base of clypeus rounded. Labium dark brown, reaching metacoxae, with apical segment as long as broad, acuminate, shorter and slightly more slender than penultimate. Genae pale yellow-brown. Ocelli absent. Antennae brown, not surpassing eye, not visible from above; scape about as long as broad, pedicel subcylindrical, elongate, narrowing towards apex.

THORAX (Figs 22A, C, 23A, C). About 1.25 times as broad as combined length of pro- and mesonotum. Pronotum brown irregularly variegated with black, mostly like vertex; disc weakly wrinkled, carina parallel to anterior margin and 2 obsolete impressed points on disc usually included in a dark marking; slightly excavate behind middle portion of anterior margin; paranotal lobes pale to dark brown. Mesonotum brown irregularly variegated with black, more densely black and generally darker than pronotum, usually with poorly defined black marking in lateral fields; disc weakly wrinkled, median and peridiscal carinae weakly marked; median carina stopped before scutellum. Tegulae bicolour with ventral half black and dorsal half pale brown.

TEGMINA (Figs 22A, C, 23A, C). Pale brown irregularly variegated with black markings; distal portion darker with very small white apical spot; antepical transverse white line, sometimes reduced to 2 white triangles along margins; usually a squarish black marking in middle of clavus reaching sutural margin or limited to A1 vein, rarely or nearly absent, or expanded into a complete transverse band in dark specimens; dark specimens often with second irregular transverse black band at about half-length, more developed along costal margin and often not reaching sutural margin. Flat, elongate, about 2.7 times as long as broad; costal margin weakly rounded along basal fifth, then straight or very weakly rounded to nodal line; apex rounded.

VENATION. Veins ScP+RA and RP separated close to base; first fork of MP very basal, at the level of ScP+RA–RP separation; first fork of CuA slightly before apex of clavus; clavus closed; Pcu and A1 fused at about $\frac{3}{4}$ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimitating small elongate cells.

POSTERIOR WINGS (Figs 22E, 23E). Basal half yellow-orange narrowly marked with red basally, distal portion and band along posterior margin blackish brown; sometimes a brownish marking extending towards base along vein MP; anal lobe grey-brown; whitish marking along sutural margin between A1 and cubital fold. Well developed, as broad as tegmina, about 1.7–1.8 times as long as broad, rounded apically; anal area well developed; sutural margin weakly trilobous; not reaching apex of tegmina at rest. All main veins visible from base, forked at or after nodal line and forming a few closed cells; few transverse veinlets delimiting elongate cells on apical $\frac{1}{4}$; veins A1 and A2 sometimes with 2 terminals.

LEGS (Figs 22A–D, F, 23A–D, F). Pro- and mesofemora reddish turning to brown on distal $\frac{1}{3}$, mostly brown in dark specimens; pro- and mesotibiae brown with margins darker, mostly dark brown in dark specimens; pro- and mesotarsi slightly paler than corresponding tibia but darker apically; posterior legs brown with apex of tibial and tarsal spines darker. Pro- and mesofemora and tibiae dorsoventrally

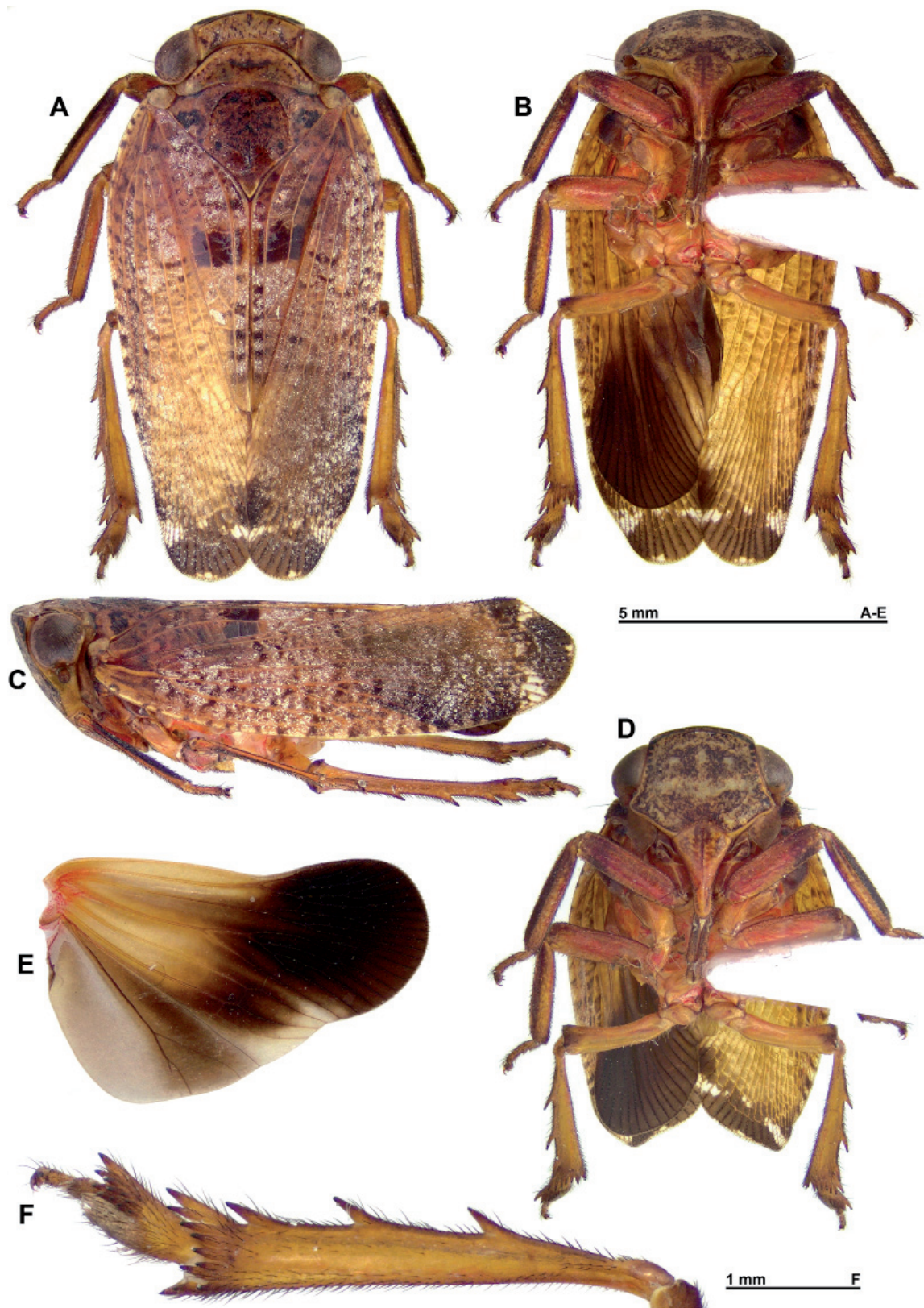


Fig. 22. *Kamabrachys danielsi* gen. et sp. nov., holotype, ♂ (QM). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons. **E.** Posterior wing. **F.** Metatibia and metatarsus, ventral view.

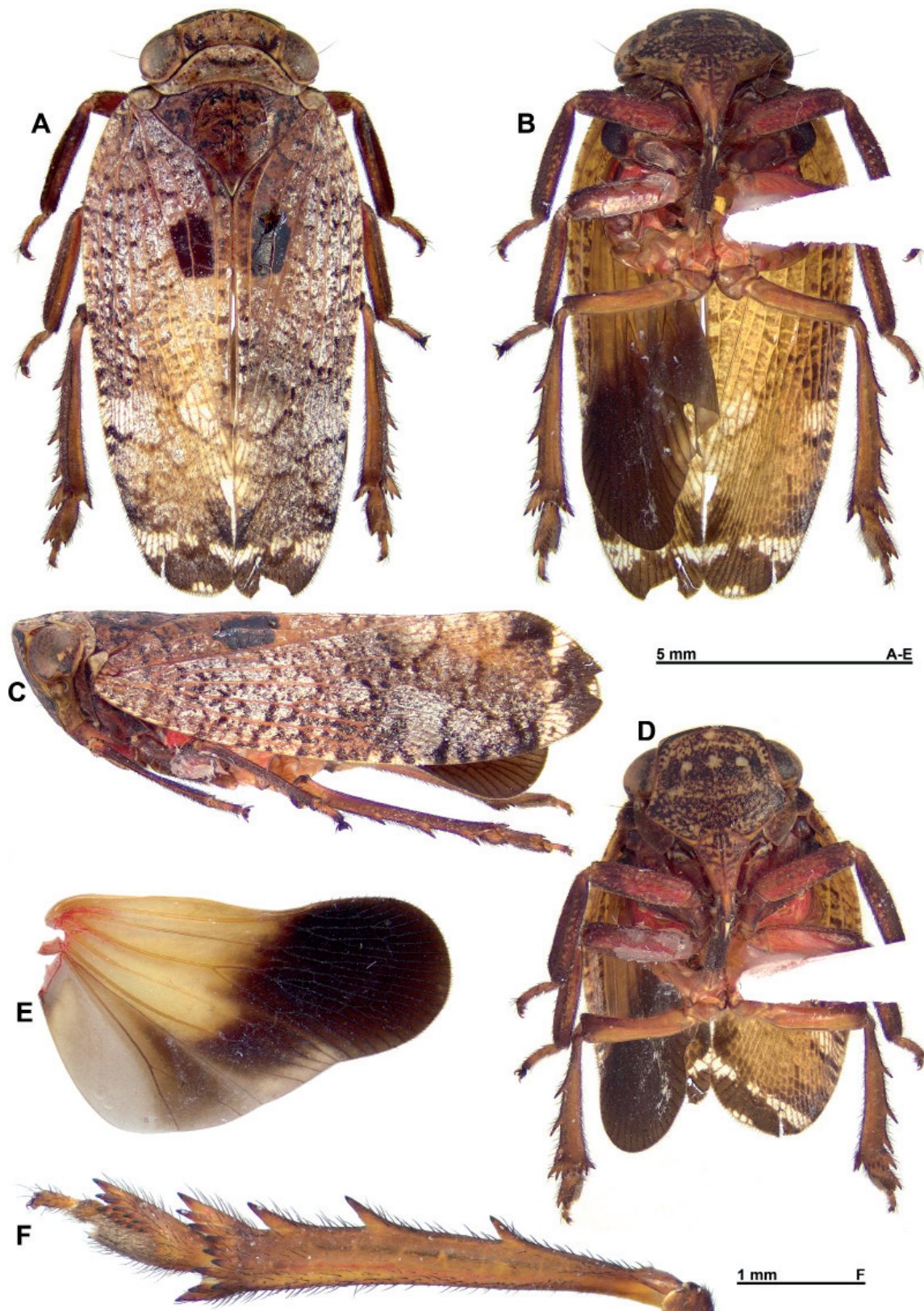


Fig. 23. *Kamabrachys danielsi* gen. et sp. nov., paratype, ♀ (QM). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons. **E.** Posterior wing. **F.** Metatibia and metatarsus, ventral view.

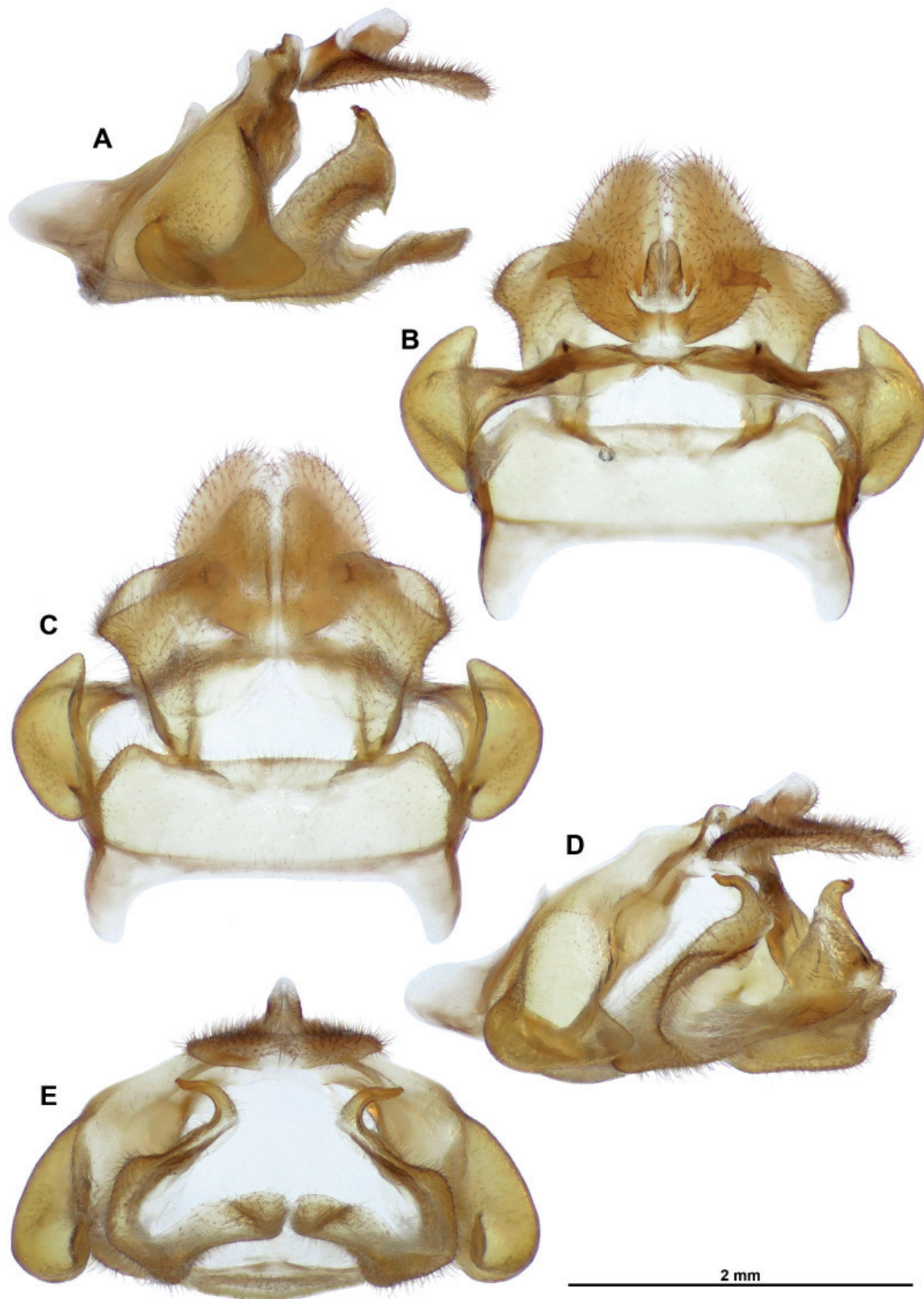


Fig. 24. *Kamabrachys danielsi* gen. et sp. nov., holotype, ♂ (QM), terminalia: pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Dorsal view. **C.** Ventral view. **D.** Left posterolateral view. **E.** Caudal view.

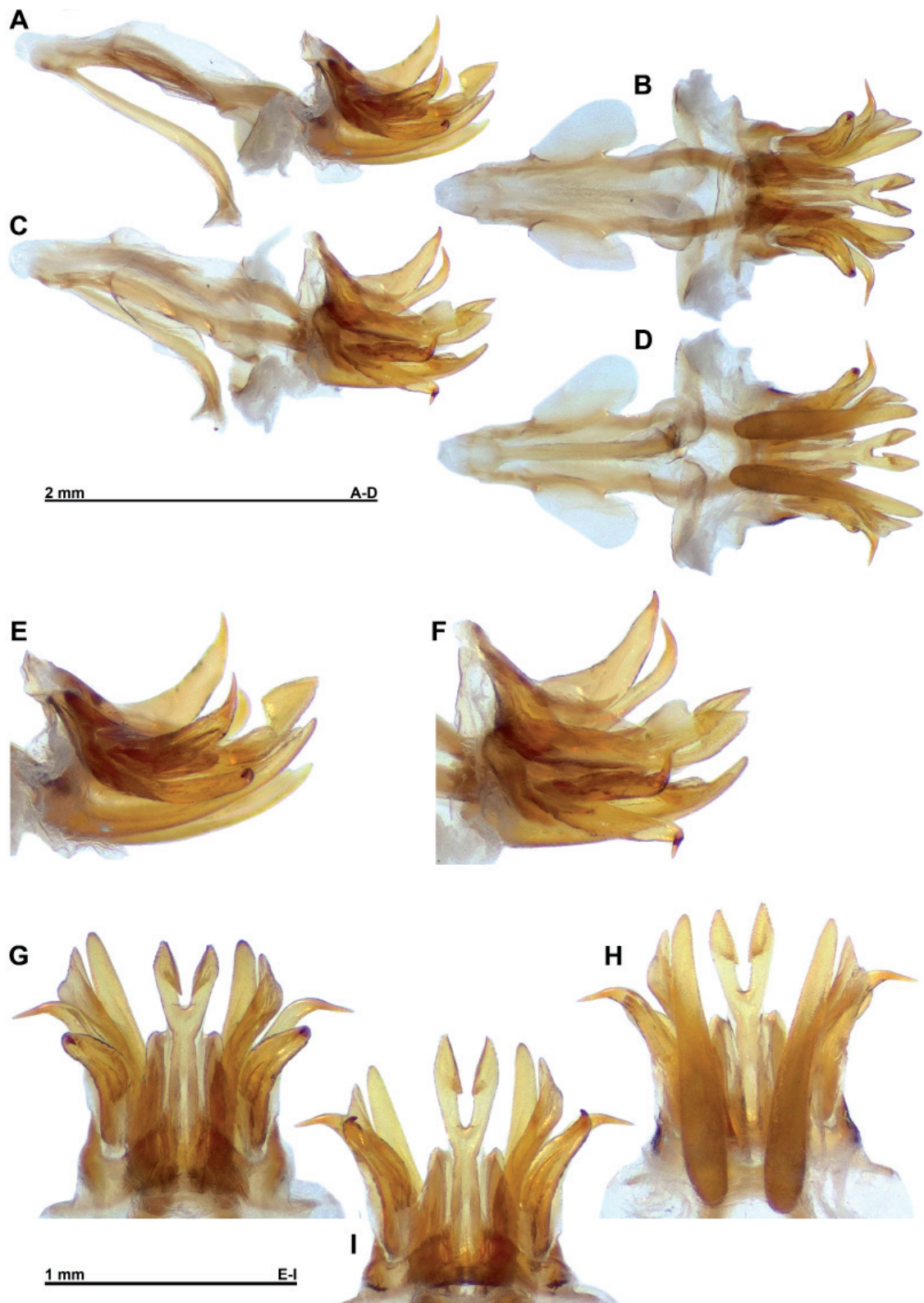


Fig. 25. *Kamabrachys danielsi* gen. et sp. nov., holotype, ♂ (QM), genitalia. **A–D.** Aedeagus s. lat. and connective. **A.** Left lateral view. **B.** Dorsal view. **C.** Left laterodorsal view. **D.** Ventral view. **E–I.** Aedeagus s. lat., detail. **E.** Lateral view. **F.** Left laterodorsal view. **G.** Dorsal view. **H.** Ventral view. **I.** Anterodorsal view.

flattened, elongate and slender; metatibiae with 3 lateral and 10 apical spines; first metatarsomere ventrally with grey pad of microsetae at internoapical angle and two rows of 5 spines. Metatibiotarsal formula: (3) 10/4/0.

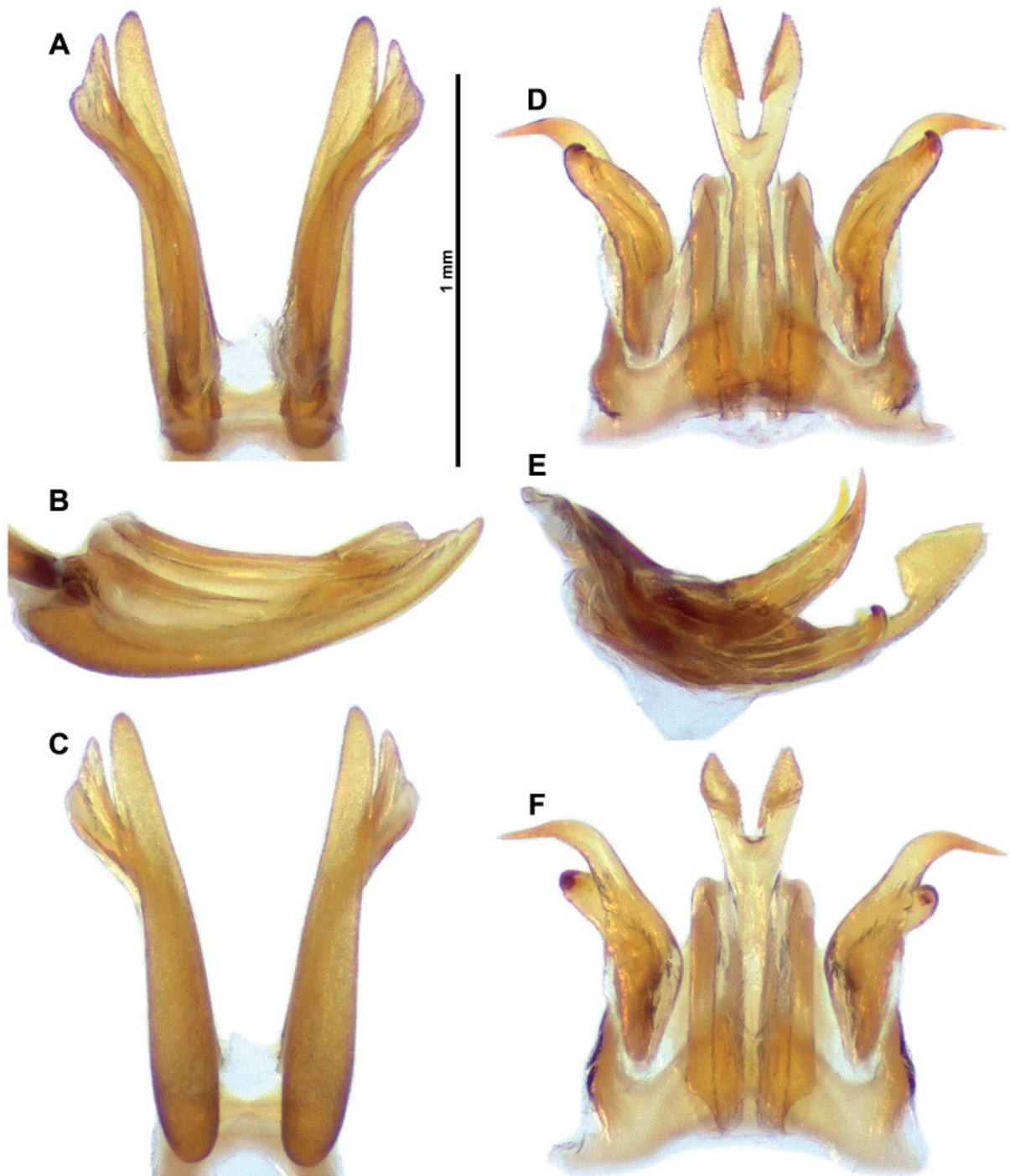


Fig. 26. *Kamabrachys danielsi* gen. et sp. nov., holotype, ♂ (QM), genitalia. A–C. Aedeagus s. str. A. Dorsal view. B. Left lateral view. C. Ventral view. D–F. Dorsal periandrium. D. Dorsal view. E. Left lateral view. F. Ventral view.

MALE TERMINALIA (Figs 24–26). Pygofer (*Py*) rather short, as high as long and oblique in lateral view (Fig. 24A), about 2.0 times as wide as high in caudal view (Fig. 24E); basal apodeme (*bap*) slightly elongate, well developed and sclerotized, sinuate in dorsal view (Fig. 24A–C); dorsal portion narrow (Fig. 24A–B); lateroventral lobe (*lvl*) projecting posterolaterally and rounded but tapering towards the anterior and posterior in dorsal view, more strongly posteriorly (Fig. 24B); in ventral view, tapering and moderately narrowly rounded anteriorly and narrowly rounded posteriorly, rather broadly rounded laterally and with inner margin concave (Fig. 24C); in lateral view mostly obliquely truncate posteriorly, with posterior margin slightly sinuate along upper $\frac{2}{3}$ and ventral $\frac{1}{3}$ strongly projecting posterad and narrowly rounded, anteroventral angle more or less rounded (Fig. 24A); ventral portion separated from lateroventral lobe by a well-marked, rather narrow depression (Fig. 24C, E); ventral lamina (*vlp*) about 2.9 times as broad as long with anterior and posterior margins subparallel in ventral view, posterior margin slightly bisinuate with posterolateral angles rounded and moderately projecting posterad (Fig. 24C). Anal tube (*An*) nearly as long as broad, dorsoventrally flattened (Fig. 24A), oval with base and apex more strongly rounded than side margins; side margins tapering towards apex; apical margin indented in middle (Fig. 24B); paraprocts (*pa*) at basal $\frac{1}{4}$, well developed. Gonostyli (*G*) 1.3 times as broad as long in ventral view (Fig. 24C); ventral process (*vp*) in ventral view subtriangular, rather short with lateral margin weakly excavate, then rounded apically (Fig. 24C); laterodorsal process (*ldg*) partly visible in ventral view (Fig. 24C), sinuate in caudal view with mediolateral angle (*mlla*) well-marked (Fig. 24E), mediolateral angle moderately projecting laterally (Fig. 24A, D), posterior margin deeply, roundly emarginate on ventral half in lateral view (Fig. 24A); dorsal hook (*dhg*) subtriangular in lateral view, with anterior margin weakly concave and posterior margin oblique (Fig. 24A), apically curved laterad (Fig. 24B), sinuate in caudal view (Fig. 24E). Connective (*cv*) strongly developed, about 1.5 times as long as aedeagus s. lat., with anterior pair of lateral apodemes forming a broad lateral lamina

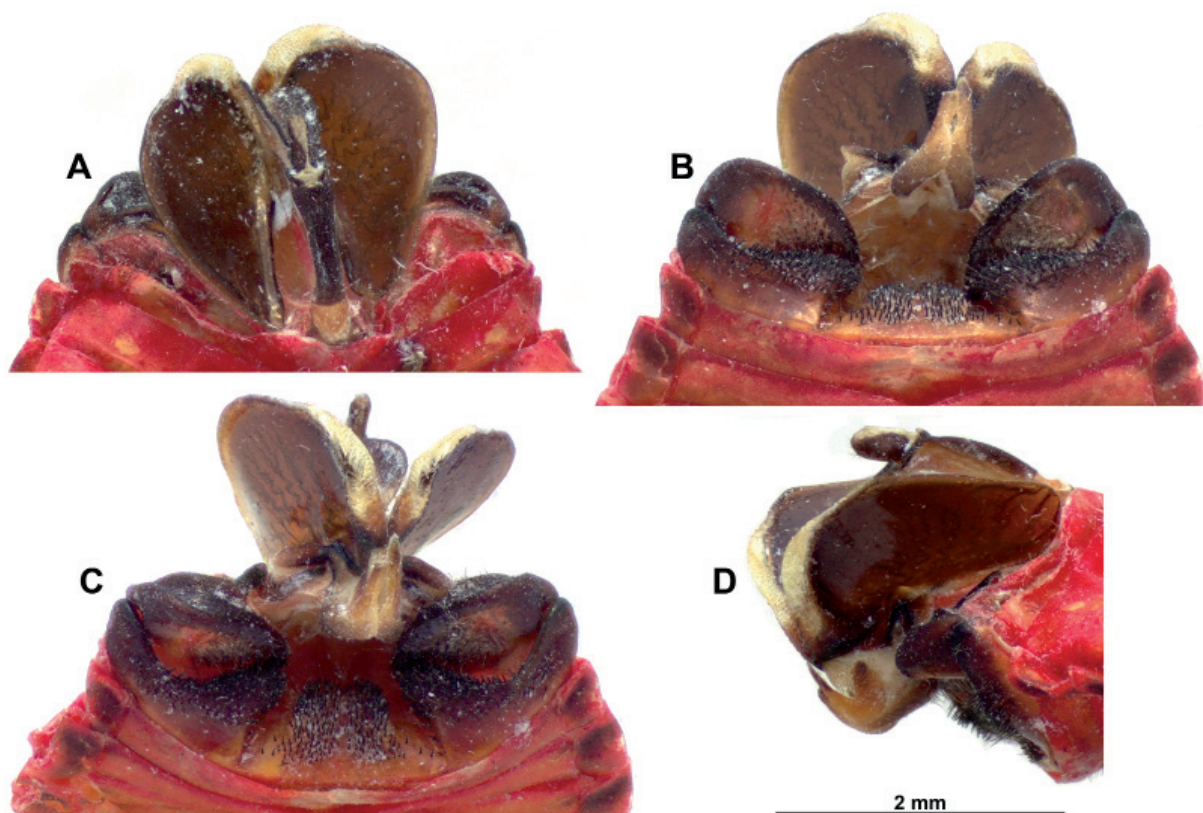


Fig. 27. *Kamabrachys danielsi* gen. et sp. nov., paratype, ♀ (QM), external terminalia. A. Dorsal view. B. Ventral view. C. Posteroventral view. D. Lateral view.

directed posterolaterad and rather broadly rounded apically; posterior pair of apodemes ribbon-like, well developed laterally and sinuate (Fig. 25A–D). Aedeagus s. lat. moderately upcurved with periandrium reaching more or less level of apex of aedeagus s. str. posteriorly (Fig. 25E–I). Aedeagus s. str. (Fig. 26A–C) with apical processes about 8.4 times as long as broad at mid-length; apicoventral process (*avp*) smoothly tapering towards the posterior and narrowly rounded apically, weakly curved laterad at mid-length in ventral view; apicodorsal process (*adp*) in dorsal view (Fig. 26A) weakly sinuate, rather weakly inflated, elongate, not very abruptly tapering towards apex in an elongate blunt point, and shorter than apicoventral process. Dorsal periandrium (Fig. 26D–F) with laterodorsal processes (*ldp*) rather regularly tapering from base to acutely pointed apex, sinuate in dorsal view with apex upcurved, pointing dorsad in lateral view; lateroventral processes (*lvp*) dorsoventrally flattened on basal $\frac{2}{3}$, broadening from base to first $\frac{1}{3}$, then gently tapering, curved laterad at distal $\frac{3}{4}$ towards acutely pointed apex, projecting posterolaterally slightly beyond laterodorsal processes; basomedian processes (*bmp*) apically roundly blunt in dorsal view and with sides parallel in ventral view; median furcate process (*mfp*) with furca nearly as long as shaft (Fig. 25I) and moderately upcurved in lateral view (Fig. 26E), dorsal crest (*cfp*) on apical half of arms of furca, slightly reflexed in dorsal view (Fig. 26D), crest abruptly broadening basally then regularly tapering towards blunt apex and with dorsal margin slightly irregular in lateral view (Fig. 26E), inner and outer lateral walls of furca granulose (Fig. 26D).

FEMALE TERMINALIA (Fig. 27). Abdominal sternite VI (*As VI*) with sides upcurving in posteroventral view (Fig. 27C); posterior margin in ventral view (Fig. 27B) projecting posteriorly on sides; median subquadrate emargination wide, wider basally (Fig. 27C); subtriangular processes rather elongate, apically rounded and directed mesad and posterodorsad (Fig. 27B–C); emargination between subtriangular processes and lateral projection rather deeply rounded (Fig. 27B–C); processes of furca of sternite VI (*FAs VI*) pointed, diverging, rather weakly developed and strongly curved posterodorsad (Fig. 27B–C). Inner portion of gonocoxa VIII (*Gx VIII*) rather strongly curved dorsad (Fig. 27C); posterior margin of gonapophysis (*Gy VIII*) projecting rather strongly posterad and apically rounded (Fig. 27A–B). Lateroventral excavate membranous fold of gonocoxae VIII between sternite VI and gonapophysis VIII in posteroventral view rather widely open (Fig. 27C). Inner portion of gonapophysis VIII, subtriangular processes and adjacent part of posterior margin of sternite VI, and processes of furca of sternite VI (*FAs VI*) densely covered in short strong setae (Fig. 27B–C). Gonoplacs (*Gp*) unilobed, large and semicircular, mostly hiding the anal tube (Fig. 27D). Gonocoxal bases IX (*Gb IX*) projecting laterally (Fig. 27B–C). Gonapophysis IX (*Gy IX*) flattened laterally, strongly reflexed posterodorsad and strongly tapering apically (Fig. 27B, D). Anal tube (*An*) elongate and narrow, curved posteroventrad, v-shaped in cross section beyond anus, lanceolate in dorsal view (Fig. 27A, C).

SEXUAL DIMORPHISM. Female 6–7% larger than male.

Distribution and biology

The species is currently recorded from the northern portion of Cape York Peninsula, in the area north of the latitude of Cape Tribulation, and on Prince of Wales Island in the Torres Strait (Fig. 5A). Bioregion: Cape York Peninsula.

The examined specimens were collected in all months between April and July, and in November. The habitats indicated on the labels are “open woodland” and “*Eucalyptus* / *Melaleuca* woodland” but no specific host plant was recorded.

Kamabrachys falcata gen. et sp. nov.

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Figs 5A, 28–33

Diagnosis

The species can be recognized by the following combination of characters:

- (1) posterior margin of the lateroventral lobes of the pygofer (*lvl*) oblique and sinuate in lateral view (Fig. 30A) and tapering towards the posterior in ventral view (Fig. 30C), inner margin of lobes concave in ventral view (Fig. 30C), ventral margin roundly tapering in caudal view (Fig. 30E);
- (2) posterior margin of laterodorsal process of gonostylus (*ldg*) strongly emarginate, leaving a widely open angle between laterodorsal process and ventral process of gonostylus (*vp*) in lateral view (Fig. 30A);
- (3) crest of furcate process of periandrium (*cfp*) only along distal portion and not merging basally (Fig. 32D), in lateral view, tapering in distal portion (Fig. 32E);
- (4) laterodorsal process of periandrium (*ldp*) tapering in distal portion and curved laterad then dorsad, not surpassing outer lateral margin of lateroventral process (*lvp*) in dorsal view, and slightly shorter than lateroventral process (*lvp*) (Fig. 32D–E);
- (5) lateroventral process of periandrium (*lvp*) dorsoventrally flattened, falcate and curved, pointing dorsolaterad apically (Fig. 32D–F);
- (6) apicodorsal process of aedeagus (*adp*) strongly sinuate, rather wide and stocky distally and tapering apically, and shorter than apicoventral process (*avp*) (Fig. 32A–C);
- (7) posterior wing with weakly marked whitish marking along sutural margin (Fig. 28A).

Etymology

The species epithet '*falcatus*' is a Latin adjective meaning 'falcate'. It refers to the typical shape of the lateroventral processes of the periandrium of the males of this species.

Type material

Holotype

AUSTRALIA • ♂; [Northern Territory], Wollgorang Station near Settlement Creek; [17°12'40" S, 137°56'53" E]; 10 Sep. 1930; T.G. Campbell leg.; "Wollgorang Stn, nr Settlement Ck, North Australia, 10.IX.1930, T.G. Campbell"; ANIC.

Paratypes

AUSTRALIA • 2 ♂♂, 2 ♀♀; same collection data as for holotype; ANIC • 2 ♂♂, 1 ♀; same collection data as for holotype; RBINS • 1 ♀; same collection data as for holotype; BMNH • 1 ♂; same collection data as for holotype; FSAG • 1 ♀; same collection data as for holotype; "ex J.W. Evans Collection Donated 1986", "MJF Collection, MJF003339"; ASCU.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 5): 8.22 mm (7.92–8.44), ♀ (n = 5): 9.12 (8.67–9.53); BV/LV: ♂ (n = 1): 3.41, ♀ (n = 1): 4.02; BF/LF: ♂ (n = 1): 1.46, ♀ (n = 1): 1.49; LP+LM/BT: ♂ (n = 1): 0.82, ♀ (n = 1): 0.85; LM/LP: ♂ (n = 1): 3.07, ♀ (n = 1): 3.05; LTg/BTg: ♂ (n = 1): 2.65, ♀ (n = 1): 2.75; LW/BW: ♂ (n = 1): 1.63, ♀ (n = 1): 1.78.

HEAD (Figs 28A–D, 29A–D). Slightly narrower than thorax. Vertex brown irregularly variegated with black; 3.4–4 times as broad as long, concave with all margins slightly carinate; anterior and posterior margins rounded, subparallel. Frons brown irregularly variegated with black, more densely black than vertex; slightly paler transverse band above lateral angles; disc darker under this paler band; sometimes paler also along side margin under lateral angle between margin and peridiscal carina; sometimes a curved narrow paler line at about level of mid-height of eye; well-marked narrow median yellowish line from dorsal margin to broad paler transverse band; about 1.5 times as broad as long, slightly convex, slightly rugulose with peridiscal carina slightly marked; upper margin of frons straight to very slightly rounded in perpendicular view of frons; lateral margin slightly incurved above lateral projection of frons, more or less straight under the projection. Clypeus brown with median black line and regular

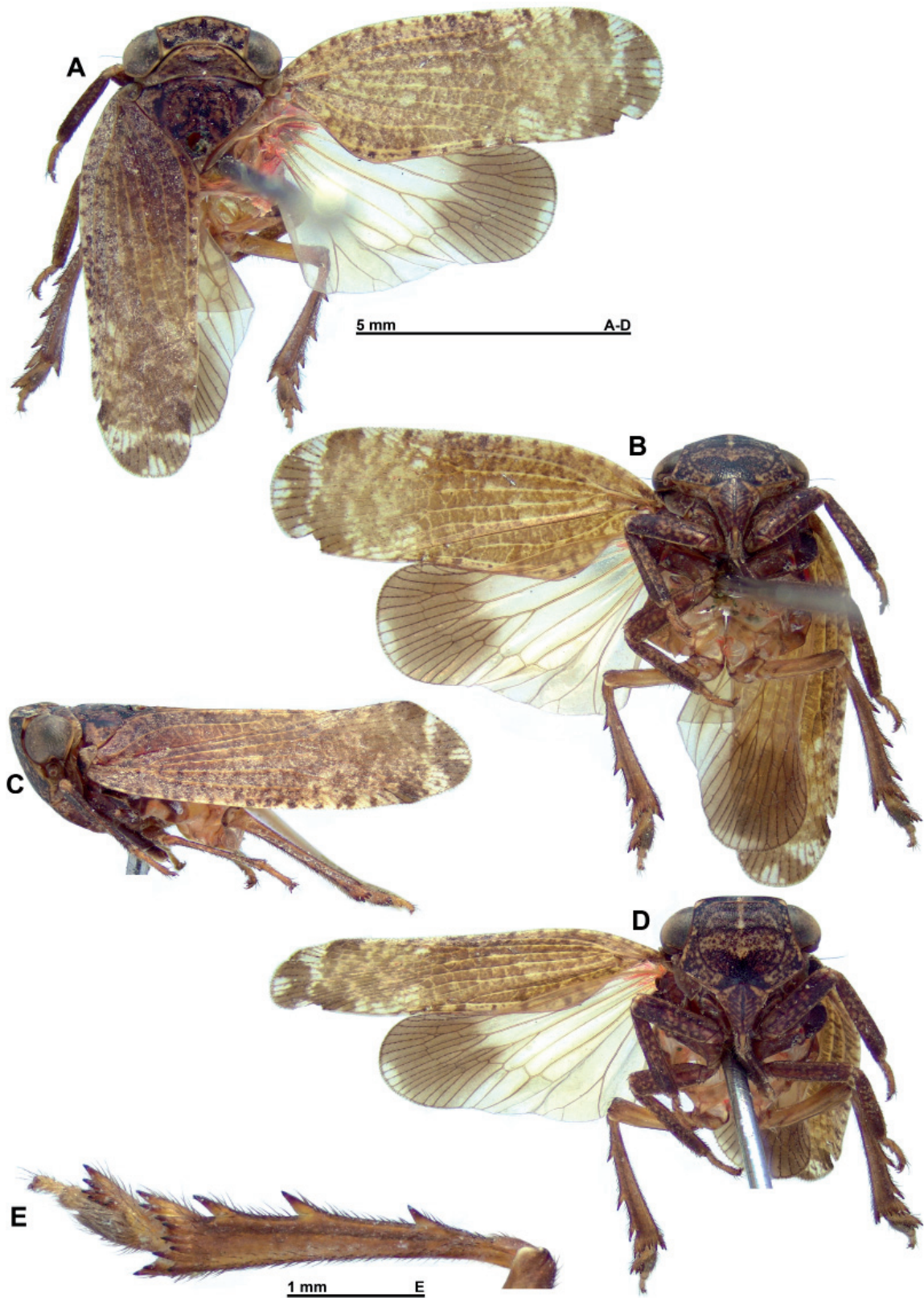


Fig. 28. *Kamabrachys falcata* gen. et sp. nov., holotype, ♂ (ANIC). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons. **E.** Metatibia and metatarsus, ventral view.



Fig. 29. *Kamabrachys falcata* gen. et sp. nov., paratype, ♀ (ANIC). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons. **E.** Metatibia and metatarsus, ventral view.

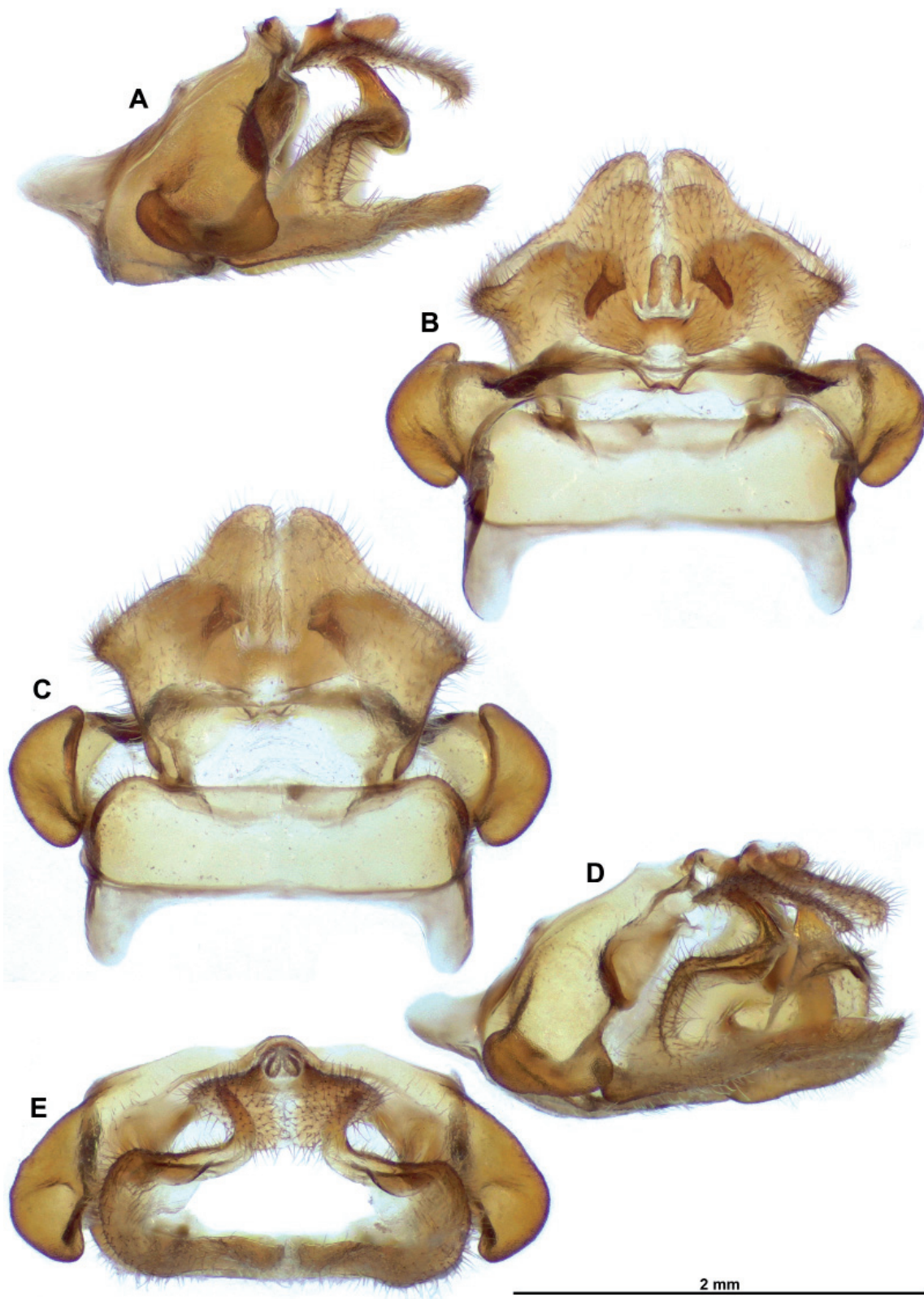


Fig. 30. *Kamabrachys falcata* gen. et sp. nov., holotype, ♂ (ANIC), terminalia: pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Dorsal view. **C.** Ventral view. **D.** Left posterolateral view. **E.** Caudal view.

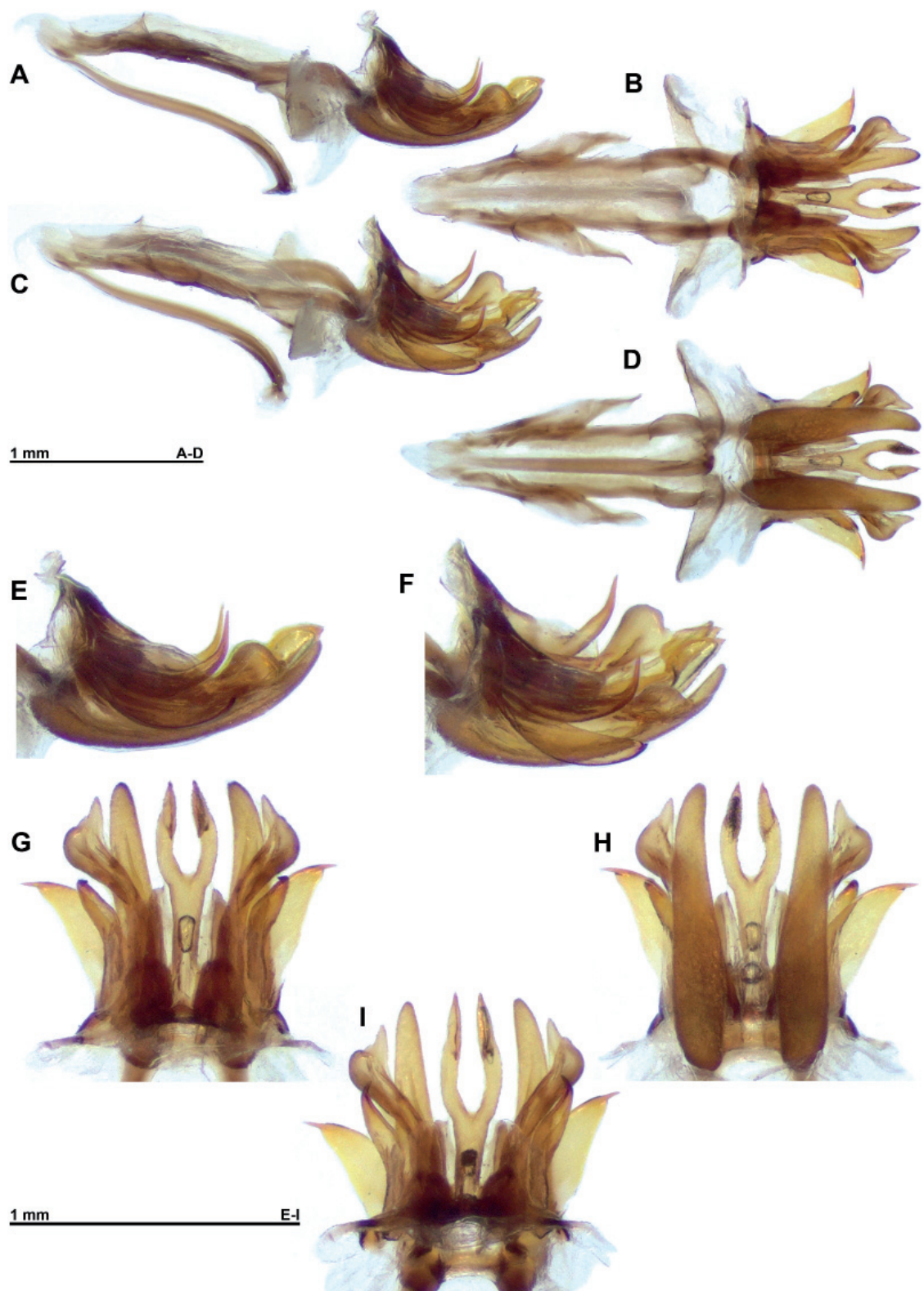


Fig. 31. *Kamabrachys falcata* gen. et sp. nov., holotype, ♂ (ANIC), genitalia. **A–D.** Aedeagus s. lat. and connective. **A.** Left lateral view. **B.** Dorsal view. **C.** Left laterodorsal view. **D.** Ventral view. **E–I.** Aedeagus s. lat., detail. **E.** Lateral view. **F.** Left laterodorsal view. **G.** Dorsal view. **H.** Ventral view. **I.** Anterodorsal view.

oblique lines on each side of postclypeus, anteclypeus black with median pale reddish-brown line on carina; clypeus reaching mesocoxae, elongate, with median carina on anteclypeus prolonged with obsolete carina on postclypeus; base of clypeus rounded. Labium dark brown, reaching metacoxae, with apical segment as long as broad, acuminate, shorter and slightly more slender than penultimate. Genae



Fig. 32. *Kamabrachys falcata* gen. et sp. nov., holotype, ♂ (ANIC), genitalia. **A–C.** Aedeagus s. str. **A.** Dorsal view. **B.** Left lateral view. **C.** Ventral view. **D–F.** Dorsal periandrium. **D.** Dorsal view. **E.** Left lateral view. **F.** Ventral view.

pale yellowish. Ocelli absent. Antennae brown, not surpassing eye, not visible from above; scape about as long as broad, pedicel subcylindrical, elongate, narrowing towards apex.

THORAX (Figs 28A, C, 29A, C). About 1.20 times as broad as combined length of pro- and mesonotum. Pronotum brown irregularly variegated with black, often with a short transverse black line in middle portion between the 2 obsolete impressed points; paranotal lobes yellowish variegated with brown. Mesonotum brown irregularly variegated with black, more densely black and generally darker than pronotum; disc weakly wrinkled, median and peridiscal carinae weakly marked; median carina stopped before scutellum. Tegulae bicolour with dorsal half and outer margin of ventral half pale brown; rest of ventral half black.

TEGMINA (Figs 28A–C, 29A–C). Pale brown irregularly variegated with blackish markings, distal $\frac{1}{3}$ slightly paler, then apical $\frac{1}{6}$ darker; antepical transverse, curved, white line, sometimes reduced to 2 white triangles along margins; small apical white spot extending on 1–3 cells in middle of apical margin, sometimes absent; rarely with a subrectangular blackish brown marking in middle portion of clavus. Flat, elongate, about 2.7 times as long as broad; costal margin weakly rounded along basal fifth, then straight; apex rounded.

VENATION. Veins ScP+RA and RP separated close to base; first fork of MP very basal, at the level of ScP+RA–RP separation; first fork of CuA slightly before apex of clavus; clavus closed; Pcu and A1 fused at about $\frac{3}{4}$ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimitating small elongate cells.

POSTERIOR WINGS (Figs 28A–B, 29A–B). Pale yellow with apical $\frac{1}{3}$ blackish brown; apical margin with white marking extending on up to 9 cells, sometimes absent; base narrowly marked with red; anal lobe slightly infuscate; poorly defined paler area along middle of sutural margin. Well developed, as broad as tegmina, about 1.6–1.8 times as long as broad, rounded apically; anal area well developed; sutural margin weakly trilobous; not reaching apex of tegmina at rest. All main veins visible from base, forked at or after nodal line and forming a few closed cells; few transverse veinlets delimitating elongate cells on apical $\frac{1}{4}$; veins A1 and A2 sometimes with 2 terminals.

LEGS (Figs 28A–E, 29A–E). Pro- and mesofemora and tibiae brown rather densely variegated with black, less on dorsum of tibiae; pro- and mesotarsi paler than corresponding tibia but dark brown apically; posterior legs brown with tibiae darker than femora and with apex of tibial and tarsal spines darker. Pro- and mesofemora and tibiae dorsoventrally flattened, elongate and slender; metatibiae with 3 lateral and 10 apical spines; first metatarsomere ventrally with grey pad of microsetae at internoapical angle and two rows of 5 spines. Metatibiotarsal formula: (3) 10/4/0.

MALE TERMINALIA (Figs 30–32). Pygofer (*Py*) rather short, as high as long and oblique, abruptly and strongly narrowing in uppermost portion in lateral view (Fig. 30A), about 2.2 times as wide as high in caudal view (Fig. 30E); basal apodeme (*bap*) slightly elongate, well developed and sclerotized, sinuate in dorsal view (Fig. 30A–C); dorsal portion narrow (Fig. 30A–B); lateroventral lobe (*lvl*) projecting posterolaterally and rounded towards the anterior but tapering towards the posterior in dorsal view (Fig. 30B); in ventral view, moderately narrowly rounded anteriorly, tapering and narrowly rounded posteriorly, rather broadly rounded laterally and with inner margin concave (Fig. 30C); in lateral view, posterior margin sinuate with posteroventral angle more or less rounded, anteroventral angle rounded and ventral margin broadly rounded (Fig. 30A); ventral portion separated from lateroventral lobe by a well-marked, rather narrow and deep depression (Fig. 30C, E); ventral lamina (*vlp*) about 3.3 times as broad as long with anterior and posterior margins subparallel in ventral view, posterior margin very slightly bisinuate with posterolateral angles rounded and weakly projecting posterad (Fig. 30C). Anal tube (*An*) 1.1 times as broad as long, dorsoventrally flattened (Fig. 30A), oval with base and apex

more strongly rounded than side margins; side margins tapering towards apex; apical margin indented in middle (Fig. 30B); paraprocts (*pa*) at basal ¼, well developed. Gonostyli (*G*) 1.4 times as broad as long in ventral view (Fig. 30C); ventral process (*vp*) in ventral view subtriangular, rather short with lateral margin weakly excavate, then rounded apically (Fig. 30C); laterodorsal process (*ldg*) not visible in ventral view (Fig. 30C), strongly sinuate in caudal view with mediolateral angle (*mlla*) well-marked (Fig. 30E), mediolateral angle projecting laterally (Fig. 30A, D), posterior margin deeply, emarginate on ventral half in lateral view (Fig. 30A), posterior margin in emargination slightly roundly projecting posterad, upper and lower margins rounded; dorsal hook (*dhg*) subtriangular in lateral view, with anterior margin concave and posterior margin oblique (Fig. 30A), apically curved anterolaterad (Fig. 30B), directed dorsolaterad in caudal view (Fig. 30E). Connective (*cv*) strongly developed, about 1.5 times as long as aedeagus s. lat., with anterior pair of lateral apodemes forming a moderately broad lateral lamina directed posterolaterad and tapering apically; posterior pair of apodemes ribbon-like, well developed laterally and sinuate (Fig. 31A–D). Aedeagus s. lat. moderately upcurved with perianthium reaching more or less level of apex of aedeagus s. str. posteriorly (Fig. 31E–I). Aedeagus s. str. (Fig. 32A–C) with apical processes about 6.3 times as long as broad at mid-length; apicoventral process (*avp*) smoothly tapering towards the posterior and narrowly rounded apically, weakly sinuate in ventral view; apicodorsal process (*adp*) in dorsal view (Fig. 32A) rather strongly sinuate, strongly inflated, rather regularly tapering towards apex forming a subtriangular blunt point, and shorter than apicoventral process. Dorsal perianthium (Fig. 32D–F) with laterodorsal processes (*ldp*) abruptly narrowing at mid-length in lateral view, then regularly tapering and curved dorsad towards acutely pointed apex, abruptly curved laterad at about mid-length in dorsal view; lateroventral processes (*lvp*) dorsoventrally flattened, falcate with short apical acute point directed laterodorsad slightly beyond laterodorsal processes; basomedian processes

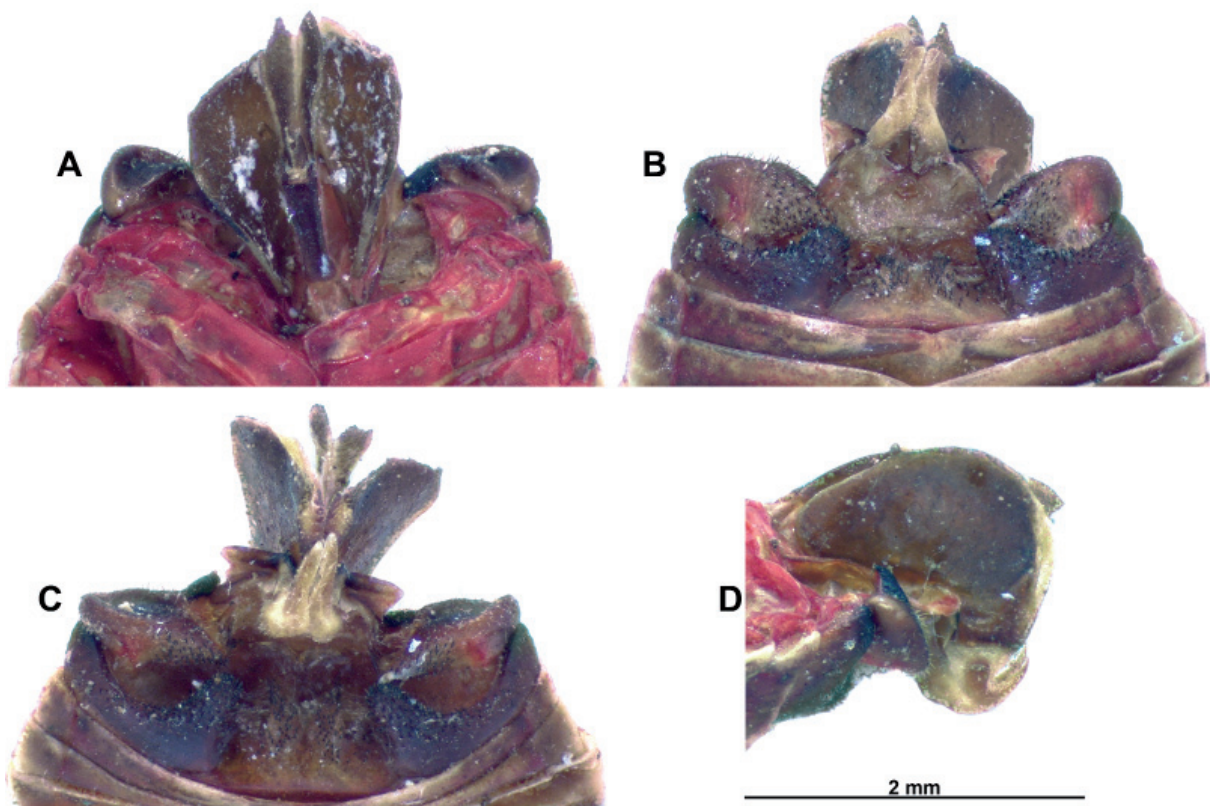


Fig. 33. *Kamabrachys falcata* gen. et sp. nov., paratype, ♀ (ANIC), external terminalia. **A.** Dorsal view. **B.** Ventral view. **C.** Posteroventral view. **D.** Lateral view.

(*bmp*) apically oblique in dorsal view and with sides parallel in ventral view; median furcate process (*mfp*) with furca as long as shaft (Fig. 31I) and strongly upcurved in lateral view slightly before base of crests (Fig. 32E), dorsal crest (*cfp*) on apical half of arms of furca, vertical in dorsal view (Fig. 32D), crest abruptly starting basally then broadening to half-length, then regularly tapering towards pointed apex and with dorsal margin slightly irregular in lateral view (Fig. 32E), inner and outer lateral walls of furca weakly granulose (Fig. 32D).

FEMALE TERMINALIA (Fig. 33). Abdominal sternite VI (*As VI*) with sides upcurving in posteroventral view (Fig. 33C); posterior margin in ventral view (Fig. 33B) projecting posteriorly on sides; median subquadrate emargination wide, slightly wider basally (Fig. 33C); subtriangular processes moderately developed, apically rounded and directed mesad and posterodorsad (Fig. 33B–C); emargination between subtriangular processes and lateral projection rather deeply rounded (Fig. 33B–C); processes of furca of sternite VI (*FAs VI*) pointed, diverging, moderately developed and rather strongly curved posterodorsad (Fig. 33B–C). Inner portion of gonocoxa VIII (*Gx VIII*) moderately curved dorsad (Fig. 33C); posterior margin of gonapophysis VIII (*Gy VIII*) moderately projecting posterad and lateroapically rounded (Fig. 33A–B). Lateroventral excavate membranous fold of gonocoxae VIII between sternite VI and gonapophysis VIII in posteroventral view rather widely open (Fig. 33C). Inner portion of gonapophysis VIII, subtriangular processes and adjacent part of posterior margin of sternite VI, and processes of furca of sternite VI (*FAs VI*) densely covered in short strong setae (Fig. 33B–C). Gonoplacs (*Gp*) unilobed, large and semicircular, mostly hiding the anal tube (Fig. 33D). Gonocoxal bases IX (*Gb IX*) projecting laterally (Fig. 33C). Gonapophysis IX (*Gy IX*) flattened laterally, reflexed posterodorsad and strongly tapering apically (Fig. 33B–D). Anal tube (*An*) elongate and narrow, curved posteroventrad, v-shaped in cross section beyond anus, lanceolate in dorsal view (Fig. 33A, C–D).

SEXUAL DIMORPHISM. Female about 11% larger than male.

Distribution and biology

The species is currently recorded from a single location of northeastern Northern Territory near the interstate border with Queensland, Wollogorang Station (Fig. 5A). Bioregion: Gulf Coastal.

The eleven specimens of the type series were all collected on the same day during the month of September.

Host plant unknown.

Kamabrachys fasciata gen. et sp. nov.

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Figs 5B, 34–39

Diagnosis

The species can be recognized by the following combination of characters:

- (1) posterior margin of the lateroventral lobes of the pygofer (*lvl*) rounded in lateral view (Fig. 36A) and rounded in ventral view (Fig. 36C), inner margin of lobes concave in ventral view (Fig. 7C), ventral margin rounded in caudal view (Fig. 36E);
- (2) posterior margin of laterodorsal process of gonostylus (*ldg*) strongly emarginate, leaving a wide opening but forming an acute angle between laterodorsal process and ventral process of gonostylus (*vp*) in lateral view (Fig. 36A);
- (3) crest of furcate process of periandrium (*cfp*) only along distal portion and not merging basally (Fig. 38D), in lateral view, evenly wide in most of its length and rounded apically (Fig. 38E);

- (4) laterodorsal process of perianthrium (*ldp*) tapering in distal portion and curved laterad then strongly dorsad, slightly shorter than lateroventral process (*lvp*) (Fig. 38D–E);
- (5) lateroventral process of perianthrium (*lvp*) dorsoventrally flattened only in basal portion, twisted and curved dorsolaterad distally with apex pointing laterocephalad (Fig. 38D–F);
- (6) apicodorsal process of aedeagus (*adp*) strongly sinuate, wide and stocky distally and tapering apically, and slightly shorter than apicoventral process (*avp*) (Fig. 38A–C);
- (7) posterior wing with faint whitish marking along sutural margin, sometimes absent (Fig. 34A).

Etymology

The species epithet '*fasciatus*' is a Latin adjective meaning 'banded, striped'. It refers to the colouration of the tegmina in this species.

Type material

Holotype

AUSTRALIA • ♂; [Northern Territory], Newcastle Waters; [17°21'58" S, 133°24'05" E]; 3 Jun. 1929; T.G. Campbell leg.; "Newcastle Waters, N. Australia, 3 June 1929, T.G. Campbell"; ANIC.

Paratypes

AUSTRALIA • 1 ♂; same collection data as for holotype; RBINS • 1 spec., abdomen missing; same collection data as for holotype; AMS • 4 ♂♂, 1 ♀; same locality as for holotype; 6 Jun. 1929; T.G. Campbell; "Newcastle Waters, N. Australia, 6 June 1929, T.G. Campbell"; ANIC • 2 ♂♂; same collection data as for preceding; RBINS • 1 ♀; same collection data as for preceding; AMS • 2 ♂♂, 2 ♀♀; same locality as for preceding; 8 Jun. 1929; T.G. Campbell; "Newcastle Waters, N. Australia, 8 June 1929, T.G. Campbell"; ANIC • 1 ♂, 1 ♀; same collection data as for preceding; AMS • 2 ♀♀; same collection data as for preceding; RBINS.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 9): 8.09 mm (7.77–8.33), ♀ (n = 7): 8.71 mm (8.13–9.05); BV/LV: ♂ (n = 1): 3.93, ♀ (n = 1): 3.81; BF/LF: ♂ (n = 1): 1.41, ♀ (n = 1): 1.45; LP+LM/BT: ♂ (n = 1): 0.80, ♀ (n = 1): 0.80; LM/LP: ♂ (n = 1): 3.24, ♀ (n = 1): 3.03; LTg/BTg: ♂ (n = 1): 2.66, ♀ (n = 1): 2.62; LW/BW: ♂ (n = 1): 1.61, ♀ (n = 1): 1.62.

HEAD (Figs 34A–D, 35A–D). Slightly narrower than thorax. Vertex brown irregularly variegated with black; 3.8–3.9 times as broad as long, concave with all margins slightly carinate; anterior and posterior margins rather weakly rounded, parallel. Frons brown irregularly variegated with black, more densely black than vertex; slightly paler transverse band above lateral angles; 3 pale spots transversely aligned at level of middle of eyes, sometimes merged into a narrow line, sometimes the middle spot extended longitudinally into a narrow pale line reaching the pale band ventrally and stopped before peridiscal carina dorsally; sometimes a paler narrow curved band under dorsal portion of peridiscal carina; small triangular yellowish marking at dorsolateral angles; about 1.4 times as broad as long, slightly convex, slightly rugulose with peridiscal carina slightly marked; upper margin of frons straight to very weakly curved in perpendicular view of frons; lateral margin slightly incurved above lateral projection of frons, more or less straight under the projection. Clypeus brown with median black line and regular oblique lines on each side of postclypeus, anteclypeus black with median pale reddish-brown line on carina; clypeus reaching mesocoxae, elongate, with median carina on anteclypeus prolonged with obsolete carina on postclypeus; base of clypeus rounded. Labium dark brown, reaching metacoxae, with apical segment as long as broad, acuminate, shorter and slightly more slender than penultimate. Genae pale yellowish variegated with brown. Ocelli absent. Antennae brown, not surpassing eye, not visible from above; scape about as long as broad, pedicel subcylindrical, elongate, narrowing towards apex.

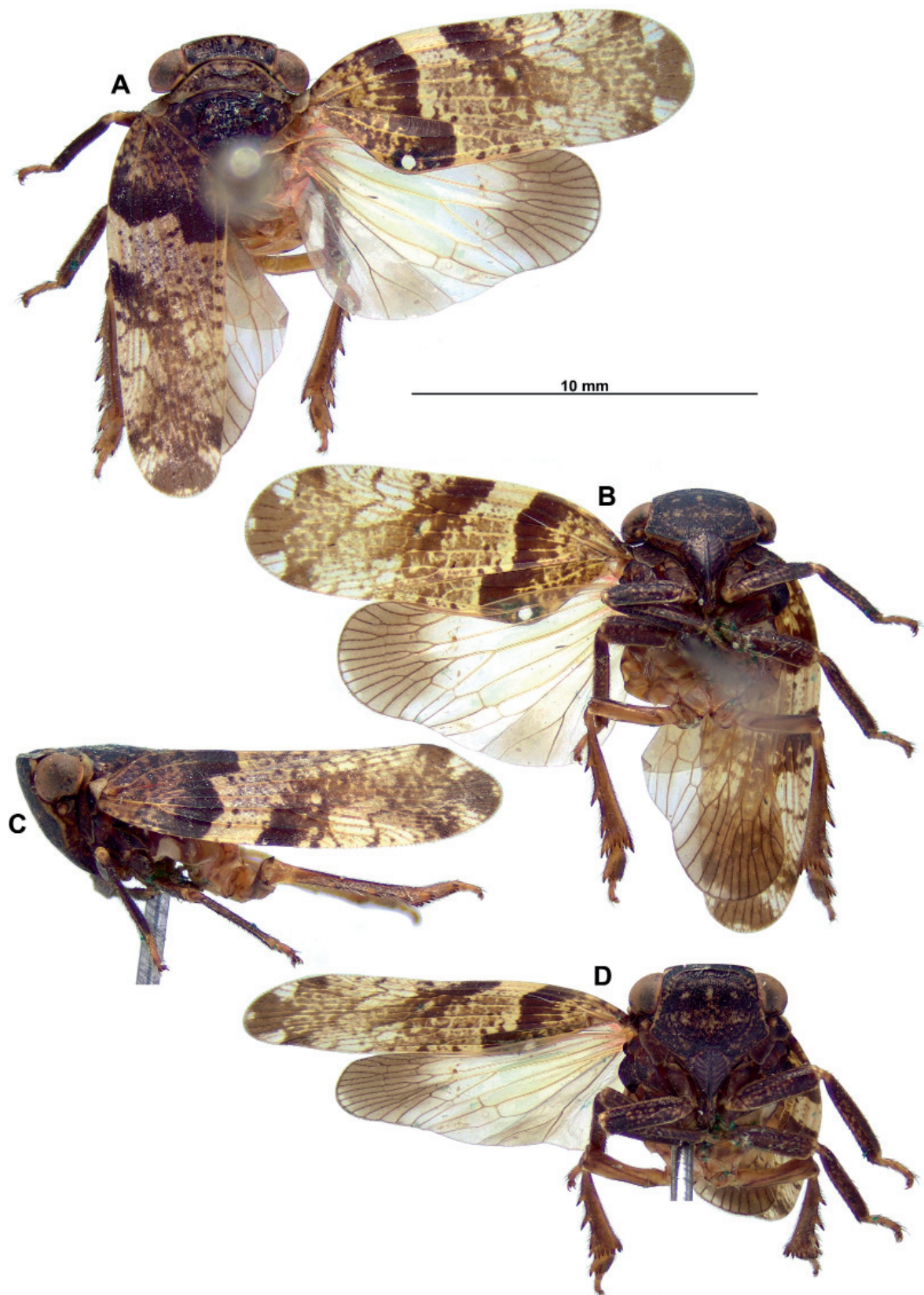


Fig. 34. *Kamabrachys fasciata* gen. et sp. nov., holotype, ♂ (ANIC). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons.

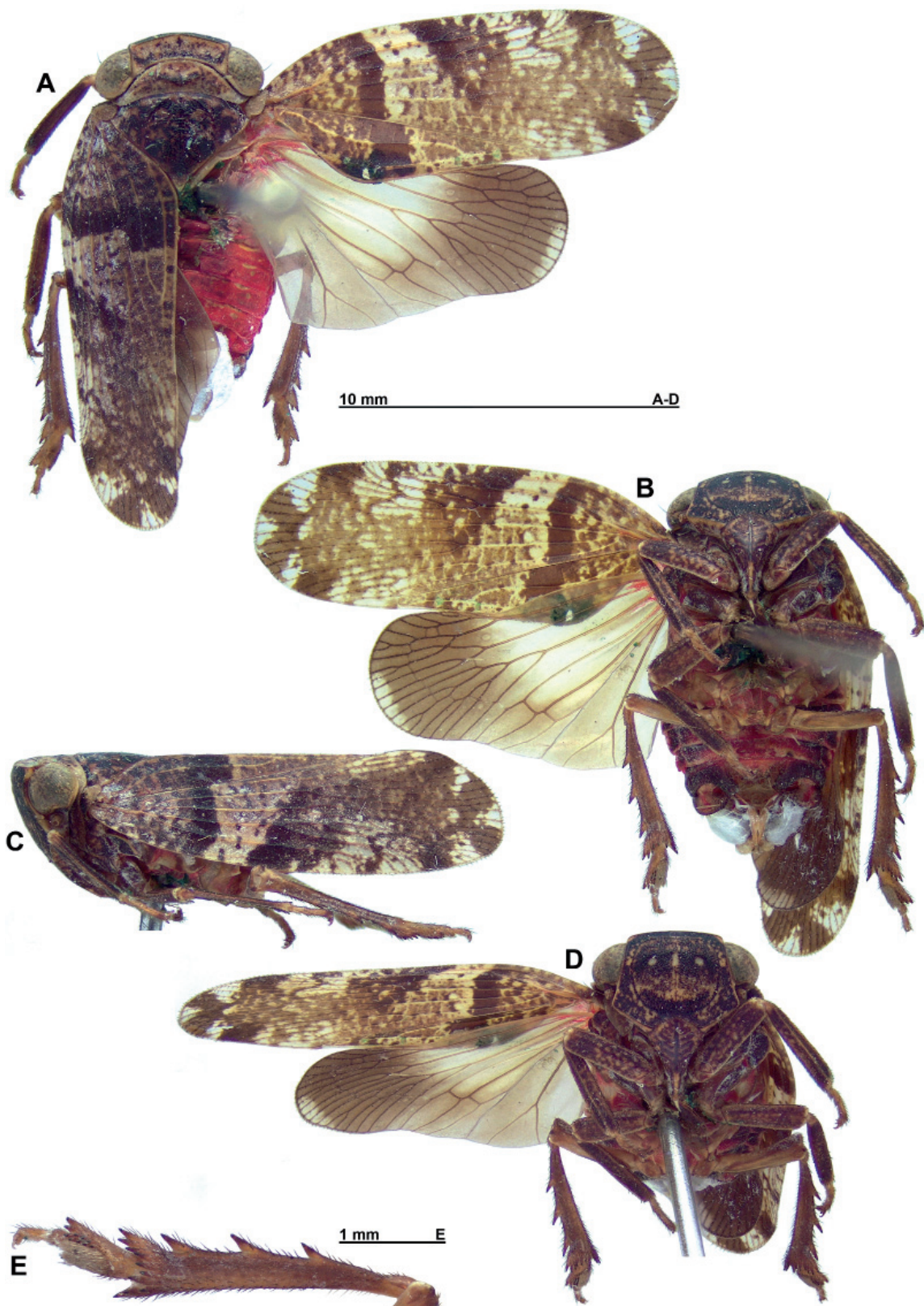


Fig. 35. *Kamabrachys fasciata* gen. et sp. nov., paratype, ♀ (ANIC). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons. **E.** Metatibia and metatarsus, ventral view.

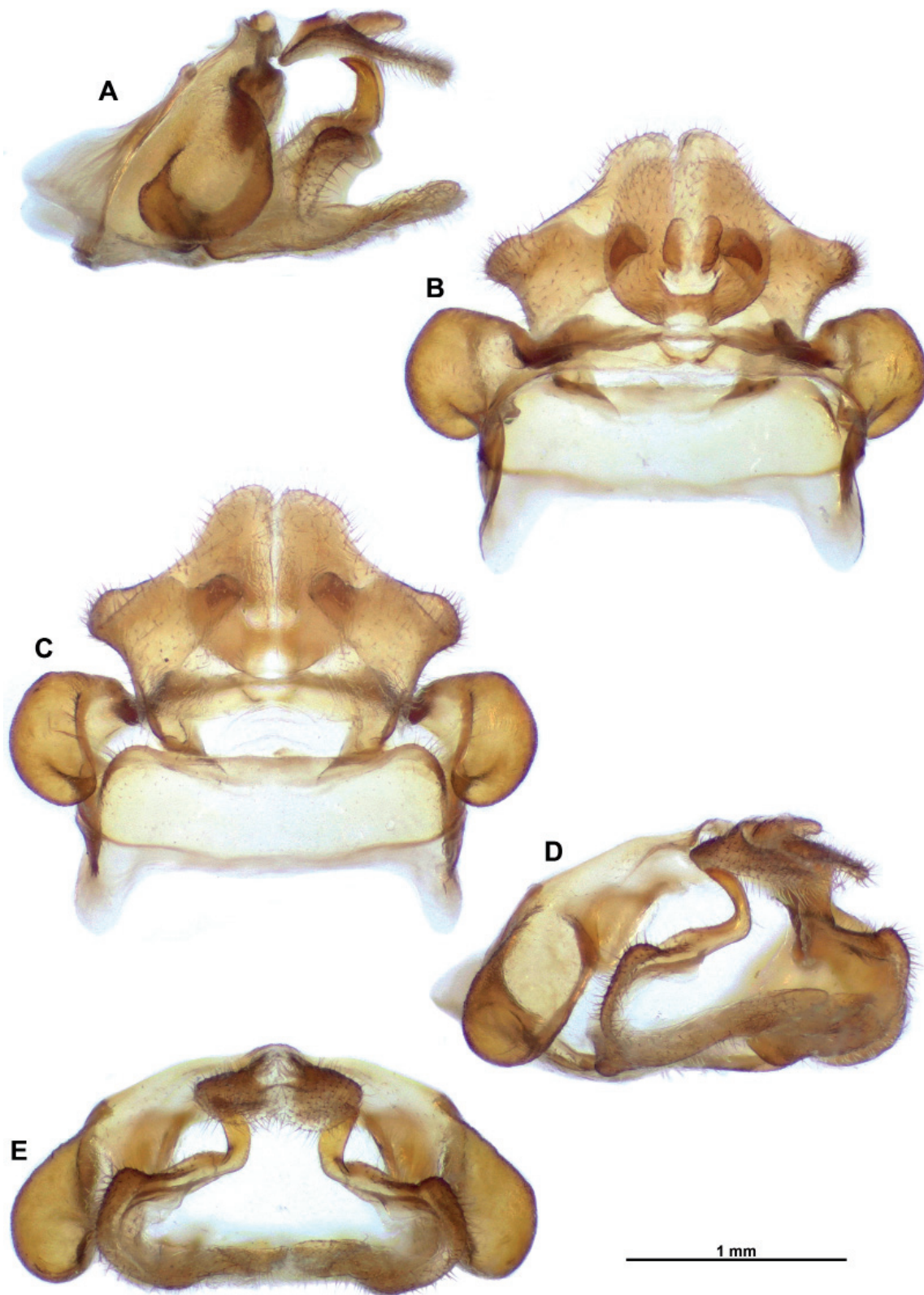


Fig. 36. *Kamabrachys fasciata* gen. et sp. nov., holotype, ♂ (ANIC), terminalia: pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Dorsal view. **C.** Ventral view. **D.** Left posterolateral view. **E.** Caudal view.

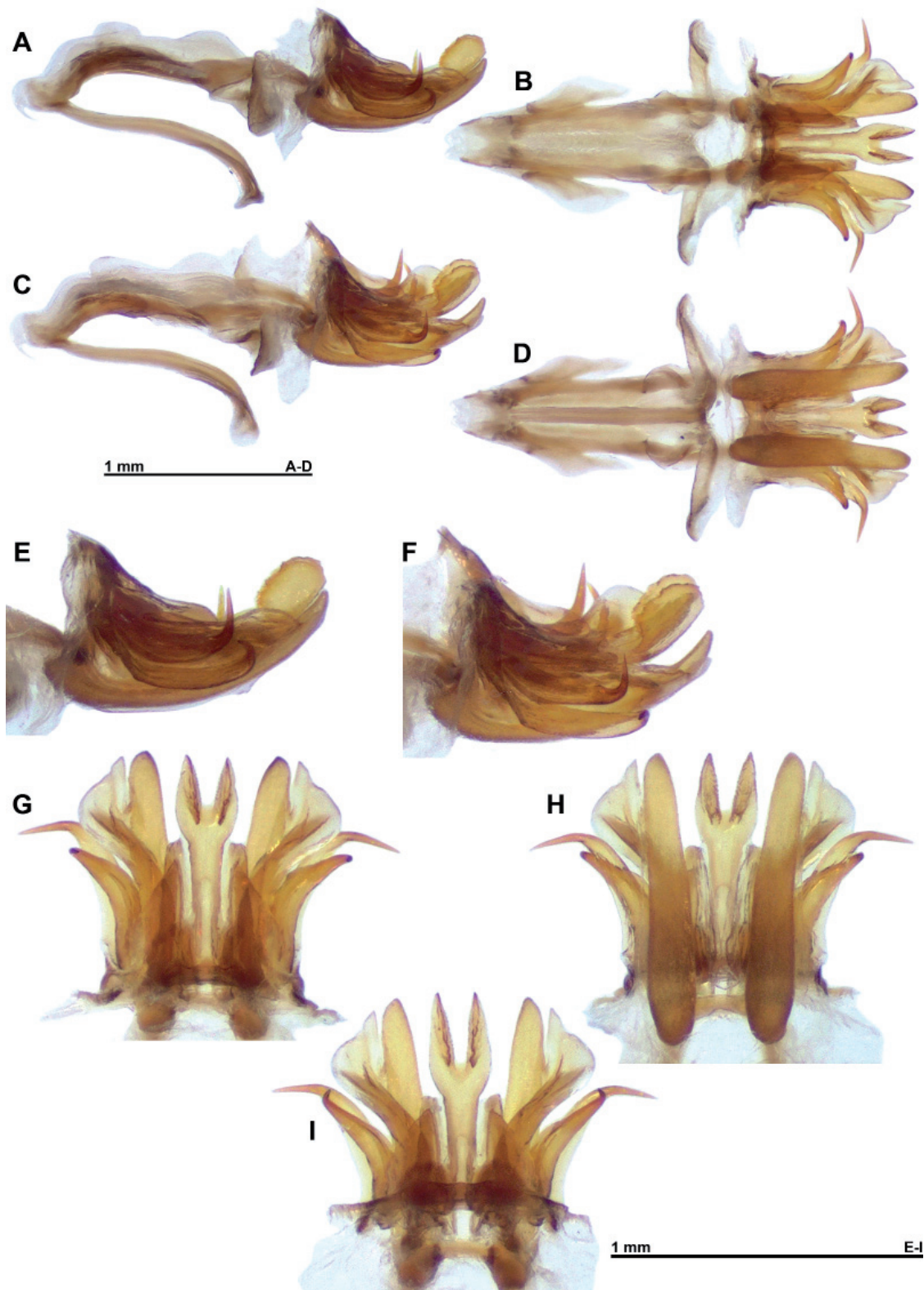


Fig. 37. *Kamabrachys fasciata* gen. et sp. nov., holotype, ♂ (ANIC), genitalia. **A–D.** Aedeagus s. lat. and connective. **A.** Left lateral view. **B.** Dorsal view. **C.** Left laterodorsal view. **D.** Ventral view. **E–I.** Aedeagus s. lat., detail. **E.** Lateral view. **F.** Left laterodorsal view. **G.** Dorsal view. **H.** Ventral view. **I.** Anterodorsal view.

THORAX (Figs 34A, C, 35A, C). About 1.25 times as broad as combined length of pro- and mesonotum. Pronotum brown irregularly variegated with black, generally paler than vertex; disc weakly wrinkled, carina parallel to anterior margin and 2 obsolete impressed points on disc marked by black spot, often included in a short transverse black marking; paranotal lobes pale to rather dark brown. Mesonotum brown irregularly variegated with black, more densely black and generally darker than pronotum; mostly black in dark specimens, mostly pale brown in pale specimens; disc weakly wrinkled, median and peridiscal carinae weakly marked; median carina stopped before scutellum. Tegulae bicolour with ventral half black and dorsal half pale brown.

TEGMINA (Figs 34A–C, 35A–C). Pale brown irregularly variegated with black markings, slightly paler after nodal line and with background colour of apical portion darker; small apical white marking extending along 1–3 cells; antepical transverse white line, usually reduced to 2 white triangles along margins, sometimes with an additional elongate marking in middle, sometimes line complete but irregular; in dark specimens, 2 more or less complete transverse black bands, more basal one at basal $\frac{1}{4}$ starting from squarish black marking in middle of clavus, extending into a narrower band to costal margin, second one at mid-length of tegmen, oblique, tapering from costal margin to vein MP; in pale specimens, bands not or weakly distinct, squarish black marking in clavus sometimes present. Flat, elongate, about 2.6–2.7 times as long as broad; costal margin weakly rounded along basal fifth, then more or less straight to nodal line; apex rounded.

VENATION. Veins ScP+RA and RP separated close to base; first fork of MP very basal, at the level of ScP+RA–RP separation; first fork of CuA slightly before apex of clavus; clavus closed; Pcu and A1 fused at about $\frac{3}{4}$ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimitating small elongate cells.

POSTERIOR WINGS (Figs 34A–B, 35A–B). Pale yellow, narrowly marked with red basally, with apical $\frac{1}{3}$ dark brown to blackish brown, apical white marking extending on 3–7 cells; in dark specimens, moderately broad brown band along posterior margin and claval area infuscate; in pale specimens, slightly darker band along posterior margin and claval area weakly infuscate; usually a paler area along posterior margin in middle lobe, often poorly distinct. Well developed, as broad as tegmina, about 1.6 times as long as broad, rounded apically; anal area well developed; sutural margin weakly trilobous; not reaching apex of tegmina at rest. All main veins visible from base, forked at or after nodal line and forming a few closed cells; few transverse veinlets delimiting elongate cells on apical $\frac{1}{4}$; veins A1 and A2 sometimes with 2 terminals.

LEGS (Figs 34A–D, 35A–E). Pro- and mesofemora and tibiae brown densely variegated with black, dorsum of tibiae more uniformly brown; pro- and mesotarsi paler than corresponding tibia but blackish brown apically; posterior legs brown with tibiae darker than corresponding femora, with apex of tibial and tarsal spines darker. Pro- and mesofemora and tibiae dorsoventrally flattened, elongate and slender; metatibiae with 3 lateral and 10 apical spines; first metatarsomere ventrally with grey pad of microsetae at internoapical angle and two rows of 5 spines. Metatibiotarsal formula: (3) 10/4/0.

MALE TERMINALIA (Figs 36–38). Pygofer (*Py*) rather short, as high as long and oblique, abruptly and strongly narrowing in uppermost portion in lateral view (Fig. 36A), about 2.3 times as wide as high in caudal view (Fig. 36E); basal apodeme (*bap*) slightly elongate, subtriangular, well developed and sclerotized, sinuate in dorsal view (Fig. 36A–C); dorsal portion narrow (Fig. 36A–B); lateroventral lobe (*lv*) projecting posterolaterally and rounded towards the anterior but roundly truncate towards the posterior in dorsal view (Fig. 36B); in ventral view, rounded anteriorly, roundly truncate posteriorly, rather broadly rounded laterally and with inner margin concave (Fig. 36C); in lateral view, posterior margin broadly rounded with middle portion more weakly curved, anteroventral angle rounded and

ventral margin broadly rounded (Fig. 36A); ventral portion of pygofer separated from lateroventral lobe by a well-marked, rather narrow and deep depression (Fig. 36C, E); ventral lamina (*vlp*) about 3.0 times as broad as long with anterior and posterior margins subparallel in ventral view, posterior margin very slightly bisinuate with posterolateral angles rounded and projecting posterad (Fig. 36C). Anal tube (*An*) as broad as long, dorsoventrally flattened (Fig. 36A), oval with base and apex more strongly rounded than side margins; side margins weakly tapering towards apex; apical margin indented in middle (Fig. 36B);

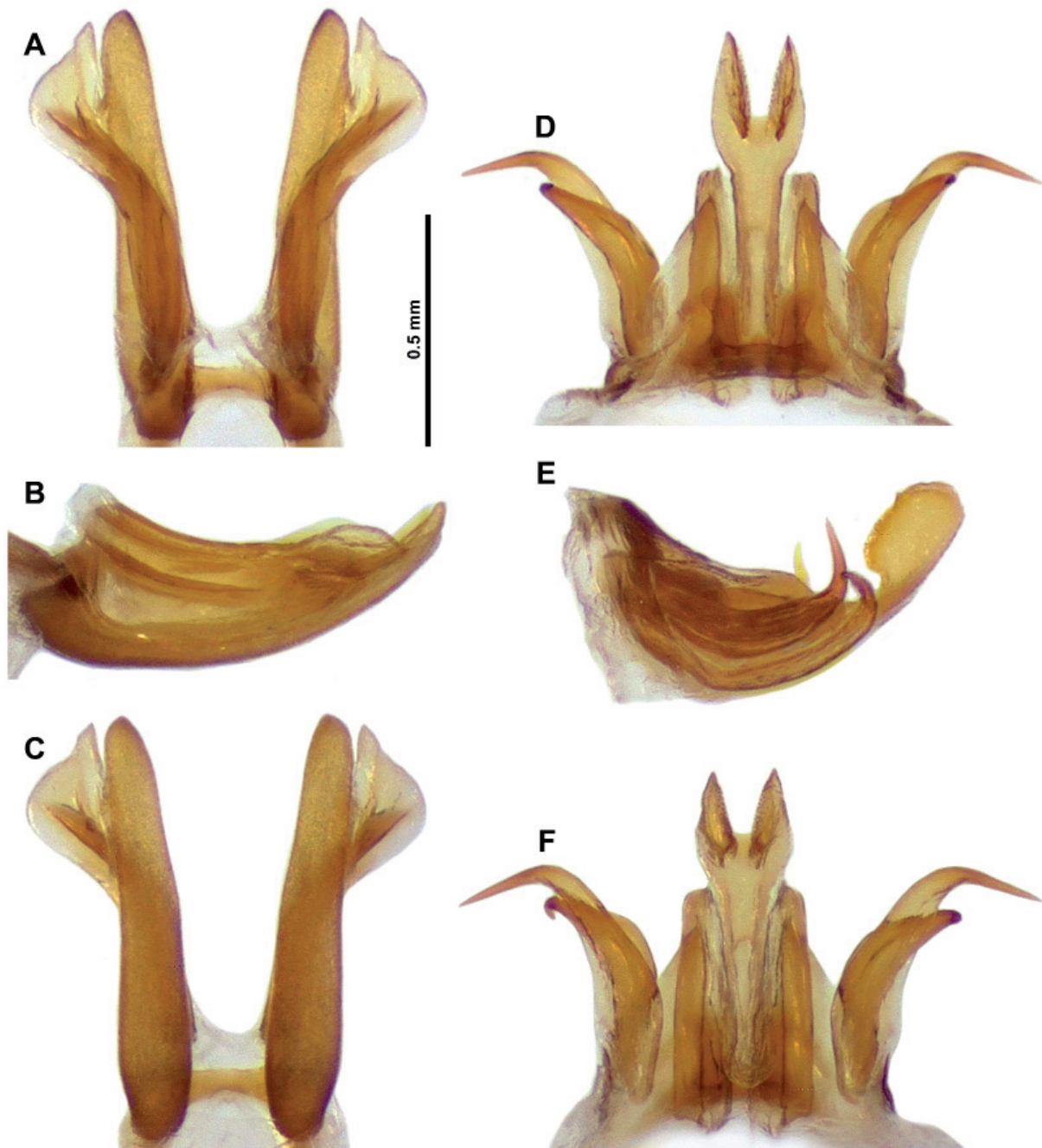


Fig. 38. *Kamabrachys fasciata* gen. et sp. nov., holotype, ♂ (ANIC), genitalia. **A–C.** Aedeagus s. str. **A.** Dorsal view. **B.** Left lateral view. **C.** Ventral view. **D–F.** Dorsal periandrium. **D.** Dorsal view. **E.** Left lateral view. **F.** Ventral view.

paraprocts (*pa*) at basal $\frac{1}{4}$, well developed. Gonostyli (*G*) 1.4 times as broad as long in ventral view (Fig. 36C); ventral process (*vp*) in ventral view subtriangular, rather short with lateral margin weakly excavate, then rounded apically (Fig. 36C); laterodorsal process (*ldg*) shortly visible in ventral view (Fig. 36C), strongly, angularly sinuate in caudal view with mediolateral angle (*mlla*) strongly marked (Fig. 36E), mediolateral angle projecting dorsally (Fig. 36A, D), posterior margin deeply emarginate on ventral half in lateral view (Fig. 36A), posterior margin in emargination more or less straight, oblique down to narrow indentation, upper margin forming a more or less right angle with posterior margin; dorsal hook (*dhg*) angularly curved near apex in lateral view, with anterior margin straight, vertical, along basal $\frac{2}{3}$ and posterior margin more or less straight along basal $\frac{2}{3}$ then curved anterodorsad, base of hook marked with a strong indentation on posterior margin (Fig. 36A), apically curved anterolaterad (Fig. 36B), directed dorsolaterad in caudal view (Fig. 36E). Connective (*cv*) strongly developed, about 1.3 times as long as aedeagus s. lat., with anterior pair of lateral apodemes forming a moderately broad lateral lamina directed posterolaterad and tapering apically; posterior pair of apodemes ribbon-like, well developed laterally and sinuate (Fig. 37A–D). Aedeagus s. lat. moderately upcurved with periandrium reaching more or less level of apex of aedeagus s. str. posteriorly (Fig. 37E–I). Aedeagus s. str. (Fig. 38A–C) with apical processes about 6.9 times as long as broad at mid-length; apicoventral process (*avp*) smoothly tapering towards the posterior and narrowly rounded apically, weakly curved in ventral view; apicodorsal process (*adp*) in dorsal view (Fig. 38A) rather strongly sinuate, strongly inflated, rather regularly tapering towards apex forming a subtriangular blunt point, and slightly shorter than apicoventral process. Dorsal periandrium (Fig. 38D–F) with laterodorsal processes (*ldp*) abruptly narrowing at about $\frac{2}{3}$ of length in lateral view, then strongly curved dorsad and regularly tapering

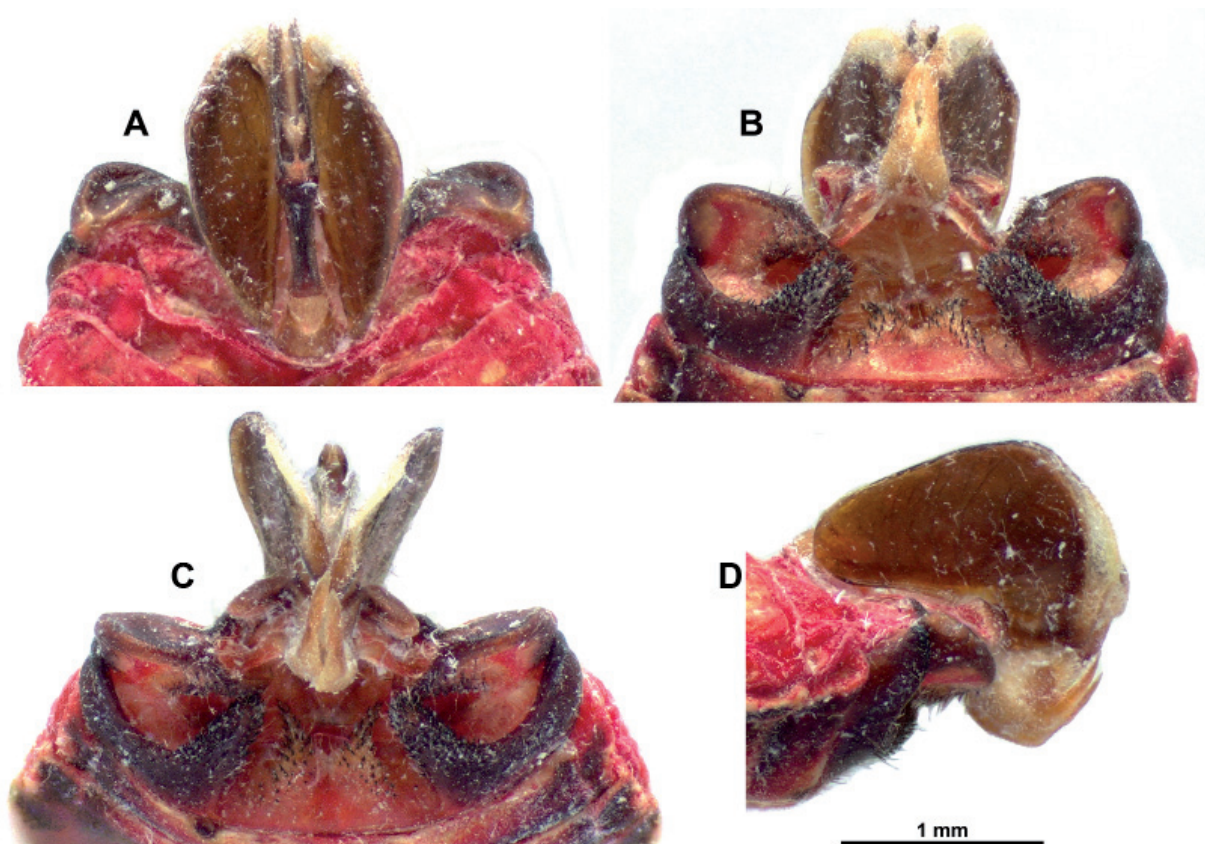


Fig. 39. *Kamabrachys fasciata* gen. et sp. nov., paratype, ♀ (ANIC), external terminalia. **A.** Dorsal view. **B.** Ventral view. **C.** Posteroventral view. **D.** Lateral view.

towards acutely pointed apex, in dorsal view, rather broad then rather abruptly curved laterad at about mid-length and tapering towards apex; lateroventral processes (*lvp*) slightly dorsoventrally flattened basally, slightly broadening to basal $\frac{1}{5}$ then regularly tapering towards pointed apex, moderately curved laterad at $\frac{1}{5}$ of length, then strongly curved laterad at $\frac{3}{4}$ of length, with distal $\frac{1}{4}$ slightly spirulate, projecting slightly beyond laterodorsal processes; basomedian processes (*bmp*) apically more or less obliquely blunt in dorsal view and with sides parallel in ventral view; median furcate process (*mfp*) with furca shorter than shaft (Fig. 37I) and moderately upcurved in lateral view (Fig. 38E), dorsal crest (*cfp*) on most length of arms of furca, vertical in dorsal view (Fig. 38D), crest abruptly starting basally with base sinuate in lateral view, then more or less oval in lateral view, with dorsal and ventral margins subparallel along a large middle portion and apical margin more or less rounded, dorsal margin slightly irregular in lateral view (Fig. 38E), inner lateral walls of furca weakly granulose, outer walls nearly smooth (Fig. 38D).

FEMALE TERMINALIA (Fig. 39). Abdominal sternite VI (*As VI*) with sides upcurving in posteroventral view (Fig. 39C); posterior margin in ventral view (Fig. 39B) projecting posteriorly on sides; median subquadrate emargination wide, wider basally (Fig. 39B); subtriangular processes elongate, more or less digitiform, apically rounded and directed mesad and posterodorsad (Fig. 39B–D); emargination between subtriangular processes and lateral projection deeply rounded (Fig. 39B–C); processes of furca of sternite VI (*FAs VI*) pointed, diverging, rather elongate and curved posterodorsad (Fig. 39B–C). Inner portion of gonocoxa VIII (*Gx VIII*) strongly but shortly curved dorsad (Fig. 39C); posterior margin of gonapophysis (*Gy VIII*) projecting posterad and lateroapically rounded (Fig. 39A–B). Lateroventral excavate membranous fold of gonocoxae VIII between sternite VI and gonapophysis VIII in posteroventral view very widely open (Fig. 39C). Inner portion of gonapophysis VIII, subtriangular processes and adjacent part of posterior margin of sternite VI, and processes of furca of sternite VI (*FAs VI*) densely covered in short strong setae (Fig. 39B–C). Gonoplas (*Gp*) unlobed, large and semicircular, mostly hiding the anal tube (Fig. 39D). Gonocoxal bases IX (*Gb IX*) projecting laterally (Fig. 39C). Gonapophysis IX (*Gy IX*) flattened laterally, reflexed posterodorsad, rather elongate and strongly tapering apically (Fig. 39B–D). Anal tube (*An*) elongate and narrow, curved posteroventrad, v-shaped in cross section beyond anus, lanceolate in dorsal view (Fig. 39A, C).

SEXUAL DIMORPHISM. Female nearly 8% larger than male.

Distribution and biology

The species is currently recorded from a single location of northern central Northern Territory, Newcastle Waters (Fig. 5B). Bioregion: Mitchell Grass Downs.

The 18 specimens of the type series were all collected during an expedition in the month of June.

Host plant unknown.

Kamabrachys pedemontana gen. et sp. nov.

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Figs 5A, 40–45

Diagnosis

The species can be recognized by the following combination of characters:

- (1) posterior margin of the lateroventral lobes of the pygofer (*lv*) oblique and slightly sinuate in lateral view (Fig. 42A) and tapering towards the posterior in ventral view (Fig. 42C), inner margin of lobes straight in ventral view (Fig. 42C), ventral margin rounded in caudal view (Fig. 42E);

- (2) posterior margin of laterodorsal process of gonostylus (*ldg*) moderately emarginate, leaving an open angle between laterodorsal process and ventral process of gonostylus (*vp*) in lateral view (Fig. 42A);
- (3) crest of furcate process of perianthium (*cfp*) only along distal portion and not merging basally (Fig. 44D), in lateral view, tapering towards the posterior in distal portion and apically pointed (Fig. 44E);
- (4) laterodorsal process of perianthium (*ldp*) tapering in distal portion and curved laterodorsad, apically pointing dorsally and slightly shorter than lateroventral process (*lvp*) (Fig. 44D–E);
- (5) lateroventral process of perianthium (*lvp*) dorsoventrally flattened in a rather long basal portion and curved dorsolaterad distally (Fig. 44D–F);
- (6) apicodorsal process of aedeagus (*adp*) strongly sinuate, rather wide and stocky then tapering distally and shorter than apicoventral process (*avp*) (Fig. 44A–C);
- (7) posterior wing with rather weakly marked whitish marking along sutural margin (Fig. 40A).

Etymology

The species epithet is formed from the Latin ‘*pes, pedis*’ meaning ‘foot’, and ‘*montanus*’ meaning ‘mountain’. It refers to the foot of a mountain; in this case, the foot of Blackdown Tableland plateau where the type series was collected.

Type material

Holotype

AUSTRALIA • ♂; Queensland, Blackdown Tableland National Park; 23°42′48″ S, 149°07′06″ E; 11 Dec. 2019; light trap; J. Constant, F. Martoni, M. Moir and L. Semeraro leg.; “Australia, Qld, Blackdown Tableland N.P., 23°42′48″S 149°07′06″E, 11.xii.2019, light trap, leg. J. Constant, F. Martoni, M. Moir & L. Semeraro”; QM.

Paratypes

AUSTRALIA • 1 ♀; same collection data as for holotype; QM • 1 ♀; same locality as for holotype; 11 Dec. 2019; on *Eucalyptus* sp.; J. Constant, F. Martoni, M. Moir and L. Semeraro leg.; “Australia, Qld, Blackdown Tableland N.P., 23°42′48″S 149°07′06″E, 11.xii.2019, *Eucalyptus* sp., leg. J. Constant, F. Martoni, M. Moir & L. Semeraro”; QM • 1 ♂, 1 ♀; same locality as for holotype; 11–12 Mar. 2020; [sweeping lower vegetation in open *Eucalyptus* forest at night]; J. Constant and L. Semeraro leg.; “Australia, Qld, Blackdown Tableland N.P., 11-12 Mar 2020, 23°42′48″S 149°07′06″E, leg. J. Constant & L. Semeraro, Leopold III Funds Expedition”; RBINS.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 2): 10.39 mm (10.24–10.54), ♀ (n = 3): 11.09 (10.71–11.53); BV/LV: ♂ (n = 1): 3.89, ♀ (n = 1): 3.38; BF/LF: ♂ (n = 1): 1.39, ♀ (n = 1): 1.35; LP+LM/BT: ♂ (n = 1): 0.79, ♀ (n = 1): 0.80; LM/LP: ♂ (n = 1): 2.93, ♀ (n = 1): 3.21; LTg/BTg: ♂ (n = 1): 2.86, ♀ (n = 1): 2.81; LW/BW: ♂ (n = 1): 1.79, ♀ (n = 1): 1.73.

HEAD (Figs 40A–D, 41A–D). Slightly narrower than thorax. Vertex brown irregularly, rather densely, variegated with black; about 3.4–3.9 times as broad as long, concave with all margins slightly carinate; anterior and posterior margins rounded, nearly parallel. Frons brown very densely variegated with black, more densely black than vertex and mostly black in dark specimens; paler along lateroventral margins and with a pale spot in middle, at level of half height of eyes; dorsal angles marked with a small, yellow-brown subtriangular marking; about 1.3–1.4 times as broad as long, slightly convex, slightly rugulose with peridiscal carina slightly marked; upper margin of frons slightly rounded in perpendicular view of frons; lateral margin incurved above lateral projection of frons, straight under the projection. Clypeus brown with median line and regular oblique lines on each side of postclypeus dark brown to black,



Fig. 40. *Kamabrachys pedemontana* gen. et sp. nov., holotype, ♂ (QM). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Habitus, perpendicular view of frons. E. Posterior wing. F. Metatibia and metatarsus, ventral view.

anteclypeus brown with sides black along outer margin and with median pale reddish-brown line on carina; clypeus reaching mesocoxae, elongate, with median carina on anteclypeus prolonged with obsolete carina on postclypeus; base of clypeus rounded. Labium dark brown, reaching metacoxae, with apical segment as long as broad, acuminate, shorter and slightly more slender than penultimate. Genae brown with pale yellow-brown band along anterior margin. Ocelli absent. Antennae brown, not surpassing eye, not visible from above; scape about as long as broad, pedicel subcylindrical, elongate, narrowing towards apex.

THORAX (Figs 40A, C, 41A, C). About 1.25 times as broad as combined length of pro- and mesonotum. Pronotum brown rather densely and irregularly variegated with black, mostly like vertex; disc weakly wrinkled, carina parallel to anterior margin and 2 obsolete impressed points on disc usually included in a dark marking; slightly excavate behind middle portion of anterior margin; paranotal lobes brown more densely variegated with black than disc of pronotum. Mesonotum brown rather densely, irregularly variegated with black, generally slightly darker than pronotum; disc weakly wrinkled, median and peridiscal carinae weakly marked; median carina stopped before scutellum. Tegulae bicolour with ventral half black and dorsal half pale brown.

TEGMINA (Figs 40A, C, 41A, C). Pale brown irregularly variegated with black markings, slightly paler after nodal line; distal portion darker often with very small white apical spot extending on 2–3 cells; antepical transverse white line, usually incomplete, reduced to 2 white triangles along margins; sometimes a black marking in middle of clavus; sometimes more or less aligned black markings forming a hardly distinct transverse band at basal $\frac{1}{3}$. Flat, elongate, about 2.8–2.9 times as long as broad; costal margin weakly rounded along basal fifth, then straight or very weakly rounded to nodal line; apex rounded.

VENATION. Veins ScP+RA and RP separated close to base; first fork of MP very basal, at the level of ScP+RA–RP separation; first fork of CuA slightly before apex of clavus; clavus closed; Pcu and A1 fused at about $\frac{3}{4}$ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimitating small elongate cells.

POSTERIOR WINGS (Figs 40E, 41E). Basal half yellow-orange narrowly marked with red basally, distal portion and band along posterior margin blackish brown; sometimes a brownish marking extending towards base along vein MP; anal lobe grey-brown; whitish marking along sutural margin between A1 and cubital fold. Well developed, as broad as tegmina, about 1.7–1.8 times as long as broad, rounded apically; anal area well developed; sutural margin weakly trilobous; not reaching apex of tegmina at rest. All main veins visible from base, forked at or after nodal line and forming a few closed cells; few transverse veinlets delimiting elongate cells on apical $\frac{1}{4}$; veins A1 and A2 sometimes with 2 terminals.

LEGS (Figs 40A–D, F, 41A–D, F). Pro- and mesofemora reddish brown densely variegated with black, turning to nearly completely black towards apex; pro- and mesotibiae ventrally brown variegated with black, dorsum of protibiae blackish brown, dorsum of mesotibiae slightly paler; pro- and mesotarsi paler than corresponding tibia but darker, brownish black, apically; metafemora brown to reddish brown basally, turning darker towards apex, metatibiae and tarsi coloured as apex of femora, with apex of tibial and tarsal spines darker. Pro- and mesofemora and tibiae dorsoventrally flattened, elongate and slender; metatibiae with 3 lateral and 10 apical spines; first metatarsomere ventrally with grey pad of microsetae at internoapical angle and two rows of 5 spines. Metatibiotarsal formula: (3) 10/4/0.

MALE TERMINALIA (Figs 42–44). Pygofer (*Py*) rather short, as high as long and oblique in lateral view, abruptly and rather strongly narrowing in uppermost portion in lateral view (Fig. 42A), about 2.1 times as wide as high in caudal view (Fig. 42E); basal apodeme (*bas*) slightly elongate, well developed and sclerotized, sinuate in dorsal view (Fig. 42A–C); dorsal portion narrow (Fig. 42A–B); lateroventral lobe (*lvl*) projecting posterolaterally and rounded but tapering towards the anterior and posterior in dorsal

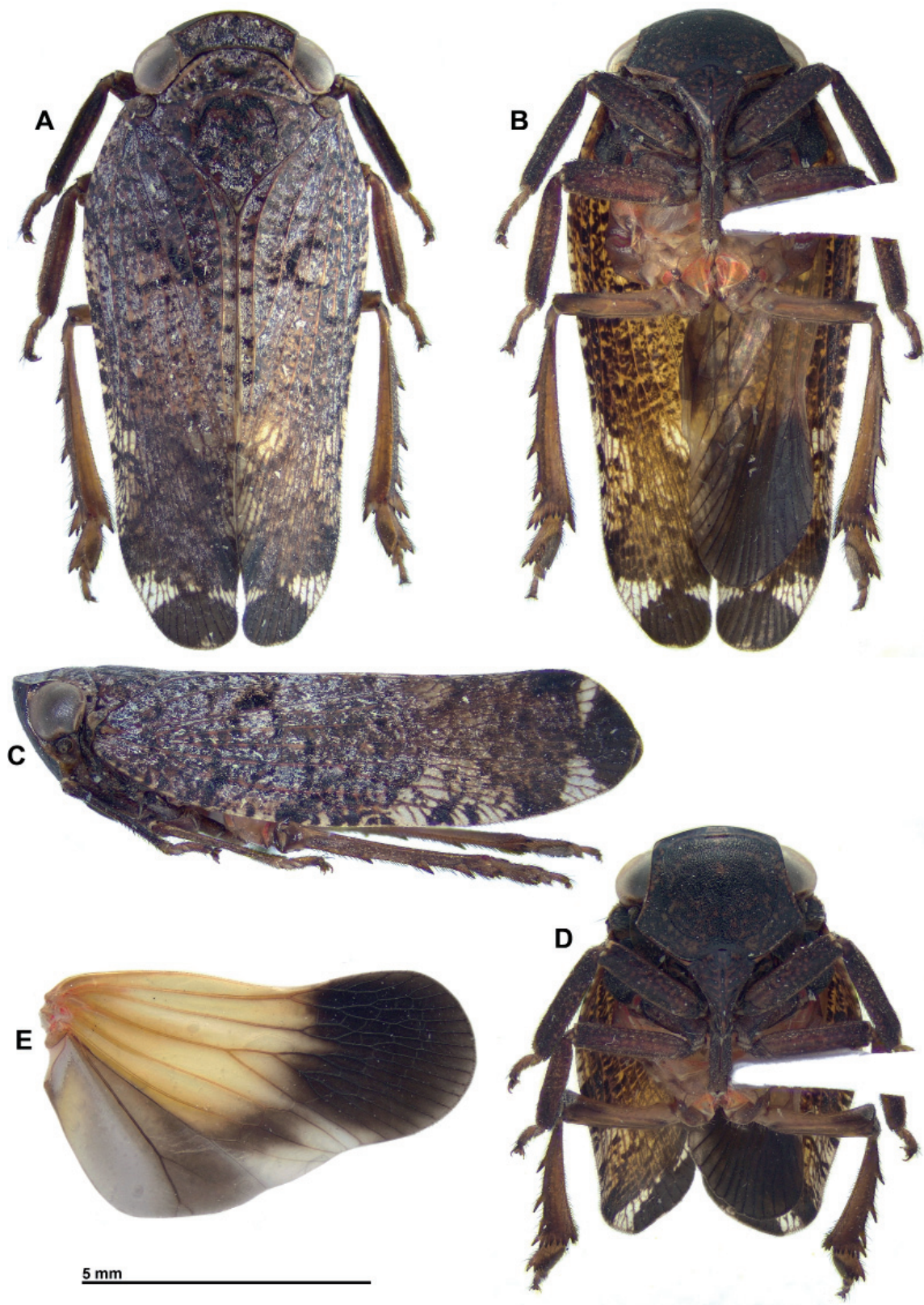


Fig. 41. *Kamabrachys pedemontana* gen. et sp. nov., paratype, ♀ (QM). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Habitus, perpendicular view of frons. E. Posterior wing.

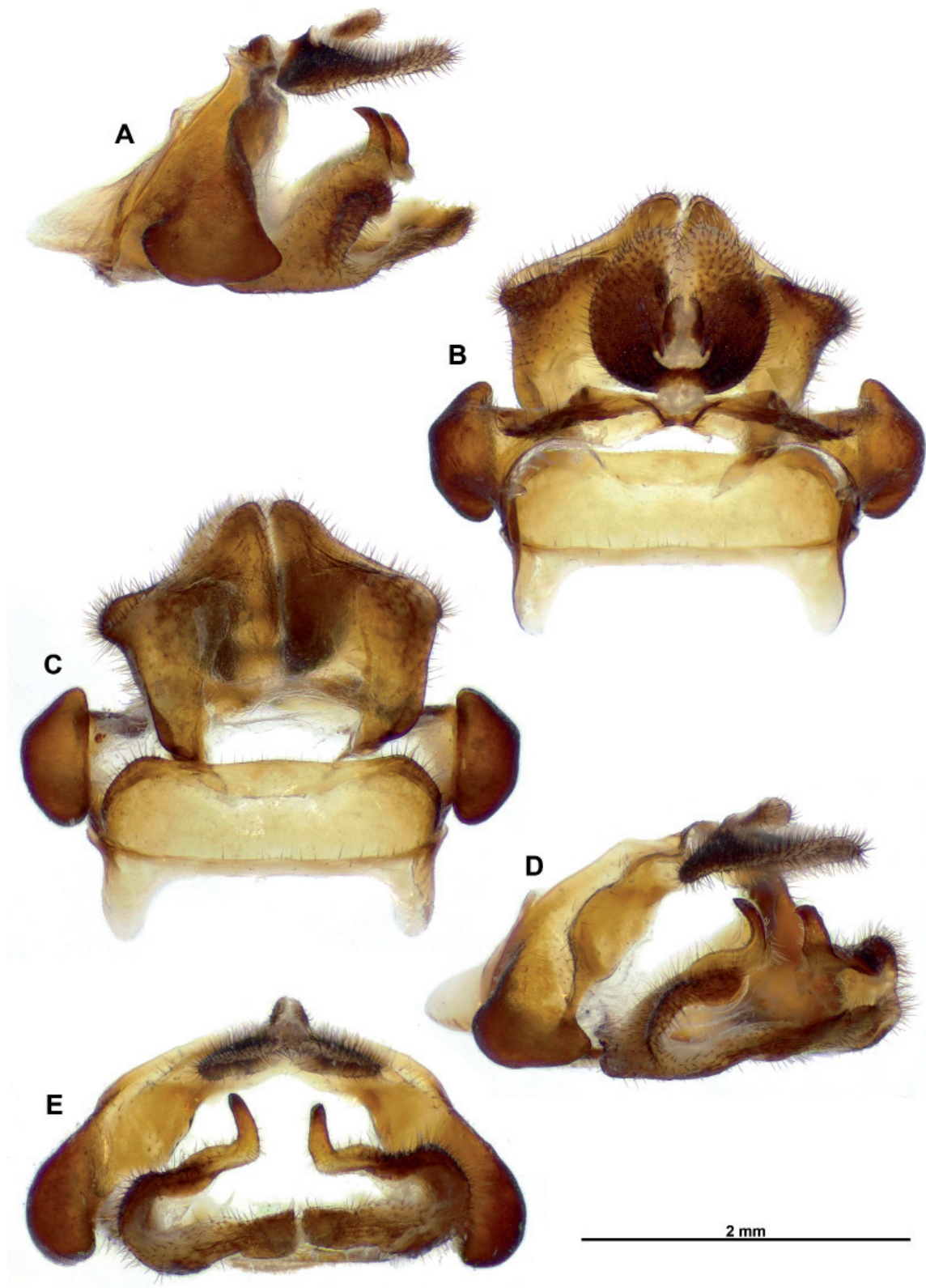


Fig. 42. *Kamabrachys pedemontana* gen. et sp. nov., holotype, ♂ (QM), terminalia: pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Dorsal view. **C.** Ventral view. **D.** Left posterolateral view. **E.** Caudal view.

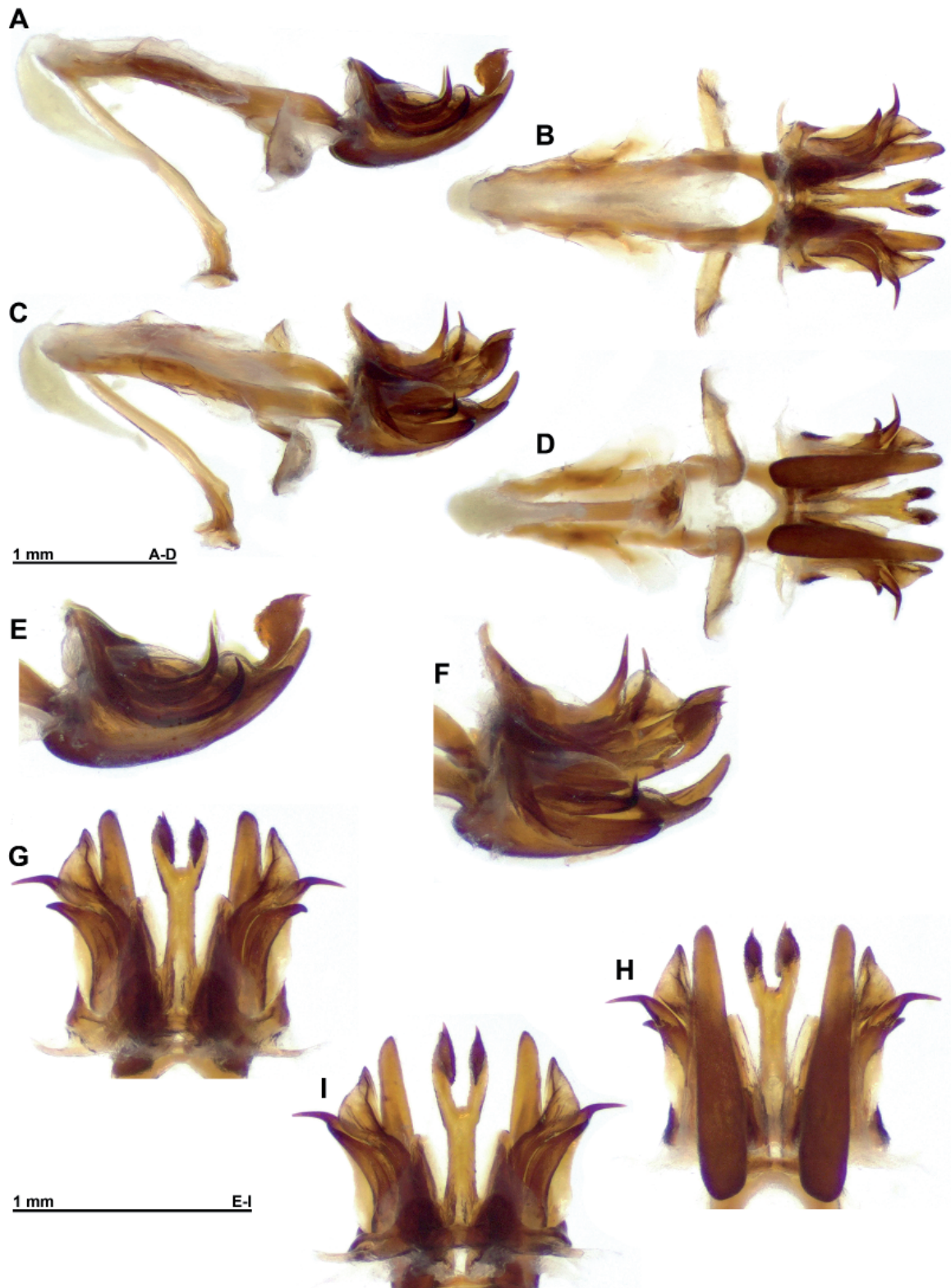


Fig. 43. *Kamabrachys pedemontana* gen. et sp. nov., holotype, ♂ (QM), genitalia. **A–D.** Aedeagus s. lat. and connective. **A.** Left lateral view. **B.** Dorsal view. **C.** Left laterodorsal view. **D.** Ventral view. **E–I.** Aedeagus s. lat., detail. **E.** Lateral view. **F.** Left laterodorsal view. **G.** Dorsal view. **H.** Ventral view. **I.** Anterodorsal view.

view, more strongly posteriorly (Fig. 42B); in ventral view, tapering and moderately narrowly rounded anteriorly, narrowly rounded posteriorly, rather broadly rounded laterally with posterior portion oblique, inner margin straight (Fig. 42C); in lateral view mostly obliquely truncate posteriorly, with posterior margin sinuate and ventral $\frac{1}{4}$ strongly projecting posterad and forming a slightly acute angle narrowly



Fig. 44. *Kamabrachys pedemontana* gen. et sp. nov., holotype, ♂ (QM), genitalia. A–C. Aedeagus s. str. A. Dorsal view. B. Left lateral view. C. Ventral view. D–F. Dorsal periandrium. D. Dorsal view. E. Left lateral view. F. Ventral view.

rounded apically, anteroventral angle more or less angularly rounded, ventral margin broadly rounded on anterior half, weakly sinuate on posterior half (Fig. 42A); ventral portion of pygofer separated from lateroventral lobe by a well-marked, rather deep depression (Fig. 42C, E); ventral lamina (*vlp*) about 3.1 times as broad as long with anterior and posterior margins subparallel in ventral view, posterior margin slightly bisinuate with posterolateral angles rounded and weakly projecting posterad (Fig. 42C). Anal tube (*An*) about 1.1 times as broad as long, dorsoventrally flattened (Fig. 42A), subcircular with apical margin indented in middle (Fig. 42B); paraprocts (*pa*) at basal $\frac{1}{4}$, well developed. Gonostyli (*G*) 1.35 times as broad as long in ventral view (Fig. 42C); ventral process (*vp*) in ventral view subtriangular, rather short with lateral margin weakly excavate, then rounded apically (Fig. 42C); laterodorsal process (*ldg*) narrowly visible in ventral view (Fig. 42C), sinuate in caudal view with mediolateral angle (*mlla*) well-marked (Fig. 42E), mediolateral angle weakly projecting laterally (Fig. 42A, D), posterior margin emarginate on ventral half in lateral view (Fig. 42A); dorsal hook (*dhg*) curved in lateral view, with anterior margin concave and posterior margin rounded then angularly curved and tapering near apex (Fig. 42A), apically curved dorsocephalad (Fig. 42B), projecting more or less dorsad in caudal view (Fig. 42E). Connective (*cv*) strongly developed, about 1.5 times as long as aedeagus s. lat., with anterior pair of lateral apodemes forming a broad lateral lamina directed posterolaterad and rounded apically; posterior pair of apodemes ribbon-like, well developed laterally and sinuate (Fig. 43A–D). Aedeagus s. lat. rather strongly upcurved with periandrium reaching more or less level of apex of aedeagus s. str. posteriorly (Fig. 43E–I). Aedeagus s. str. (Fig. 44A–C) with apical processes about 6.8 times as long as broad at mid-length; apicoventral process (*avp*) smoothly tapering towards the posterior and narrowly rounded apically; apicodorsal process (*adp*) in dorsal view (Fig. 44A) rather strongly sinuate, rather strongly inflated, elongate, rather regularly tapering towards apex in a blunt point, and shorter than

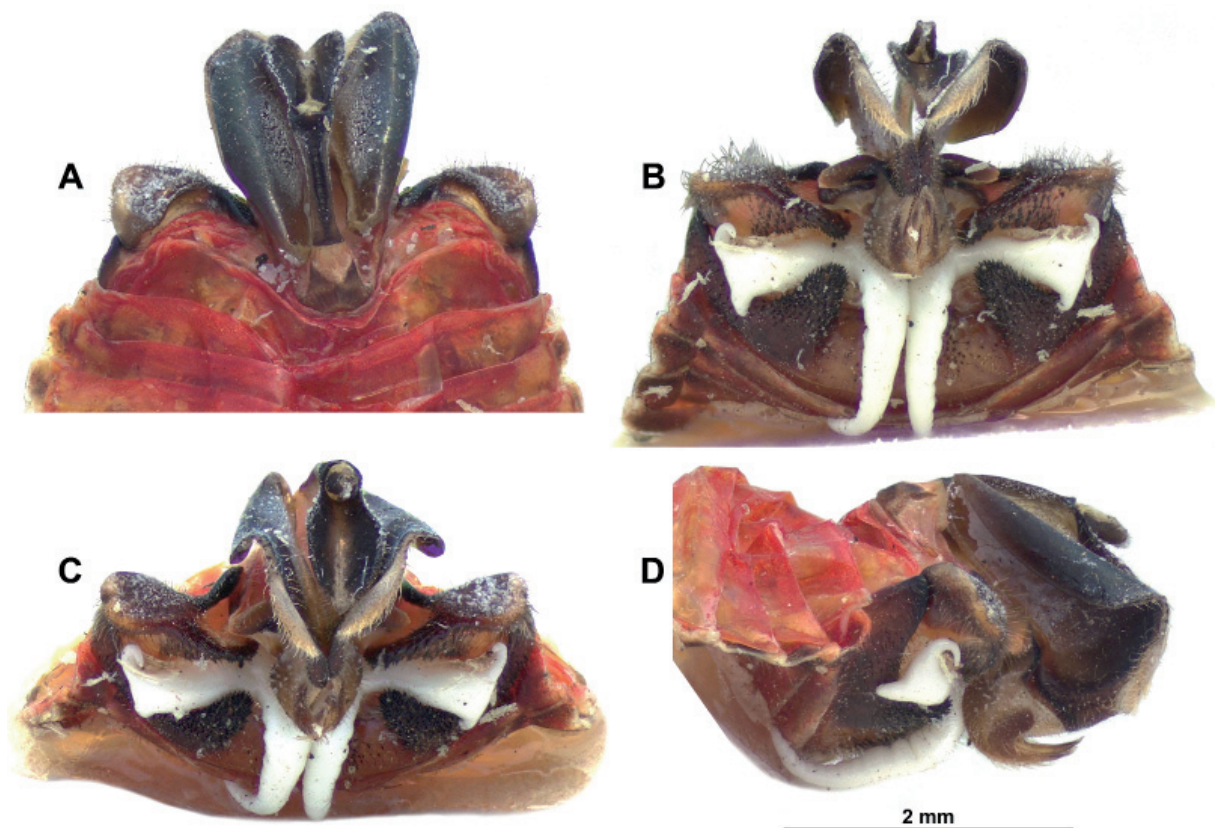


Fig. 45. *Kamabrachys pedemontana* gen. et sp. nov., paratype, ♀ (QM), external terminalia. **A.** Dorsal view. **B.** Ventral view. **C.** Posteroventral view. **D.** Lateral view.

apicoventral process. Dorsal periandrium (Fig. 44D–F) with laterodorsal processes (*ldp*) rather flattened dorsoventrally and with lateral margins subparallel on basal half, then curved laterad and tapering before curving dorsad and tapering into an acute point directed dorsad; lateroventral processes (*lvp*) dorsoventrally flattened on basal $\frac{2}{3}$, broadening from base to first $\frac{1}{4}$, gently tapering to $\frac{4}{5}$ of length, then curved laterodorsad and tapering on distal $\frac{1}{5}$ towards acutely pointed apex, projecting laterodorsally well beyond laterodorsal processes; basomedian processes (*bmp*) apically roundly blunt in dorsal view and with sides parallel in ventral view; median furcate process (*mfp*) with furca slightly shorter than shaft (Fig. 43I) and strongly upcurved in lateral view (Fig. 44E), dorsal crest (*cfp*) on distal half of arms of furca, slightly reflexed, nearly vertical in dorsal view (Fig. 44D), crest abruptly broadening basally then tapering with dorsal margin more or less rounded towards pointed apex and with dorsal margin slightly irregular in lateral view (Fig. 44E), inner and outer lateral walls of furca slightly granulose (Fig. 44D).

FEMALE TERMINALIA (Fig. 45). Abdominal sternite VI (*As VI*) with sides upcurving in posteroventral view (Fig. 45C); posterior margin in ventral view (Fig. 45B) projecting posteriorly on sides; median subquadrate emargination wide (Fig. 45B); subtriangular processes rather elongate, apically rounded and directed mesad and posterodorsad (Fig. 45B–C); emargination between subtriangular processes and lateral projection deeply rounded (Fig. 45B–C); processes of furca of sternite VI (*FAs VI*) pointed, diverging, moderately developed and curved posterodorsad (not visible on Fig.). Inner portion of gonocoxa VIII (*Gx VIII*) curved dorsad (Fig. 45C); posterior margin of gonapophysis VIII (*Gy VIII*) moderately projecting posterad and lateroapically rounded (Fig. 45A). Lateroventral excavate membranous fold of gonocoxae VIII between sternite VI and gonapophysis VIII in posteroventral view rather widely open (Fig. 45C). Inner portion of gonapophysis VIII, subtriangular processes and adjacent part of posterior margin of sternite VI, and processes of furca of sternite VI (*FAs VI*) densely covered in short strong setae (Fig. 45B–C). Gonoplacs (*Gp*) unilobed, large and semicircular, mostly hiding the anal tube (Fig. 45D – deformed during drying process in illustrated specimen). Gonocoxal bases IX (*Gb IX*) projecting laterally (Fig. 45B–C). Gonapophysis IX (*Gy IX*) flattened laterally, roundly reflexed posterodorsad and strongly tapering apically (Fig. 45B–D). Anal tube (*An*) elongate and narrow, curved posteroventrad, v-shaped in cross section beyond anus, lanceolate in dorsal view (Fig. 45A–D).

SEXUAL DIMORPHISM. Female 6–7% larger than male.

Distribution and biology

The species is currently recorded from a single location in southeastern Queensland, Blackdown Tableland National Park (Fig. 5A). Bioregion: Brigalow Belt South.

All the examined specimens were collected in the same area down the hill near the park entrance, in open *Eucalyptus* woodland by light trapping and by sweeping lower vegetation at night; one specimen was sitting on a trunk of *Eucalyptus* sp. near the light trap, making it unclear whether it was on its actual host tree or whether it was attracted to light and randomly landed on this tree. Collecting at daytime on the plateau did not provide any specimen of this species despite an intensive visual scanning of the *Eucalyptus* tree trunks (J. Constant & L. Semeraro pers. obs., Mar. 2020). The specimens were collected during the months of December and March.

Kamabrachys plana (Kirkaldy, 1906) gen. et comb. nov.
Figs 5B, 46–50

Euronotobrachys plana Kirkaldy, 1906: 446 [in key to species of *Euronotobrachys* Kirkaldy, 1906], 447 [described, compared to *Euronotobrachys arcuata* Kirkaldy, 1906], 315 [listed as new species of Issidae from Australia – Kirkaldy treated the Eurybrachidae as a subfamily of the Issidae].

Euronotobrachys plana – Metcalf 1956: 58 [catalogued].

non *Euronotobrachys plana* – Jacobi 1928: 6 [recorded from Derby, Western Australia; misidentification!].

Diagnosis

The species can be recognized by the following combination of characters:

- (1) posterior margin of the lateroventral lobes of the pygofer (*lvl*) oblique and rather strongly sinuate in lateral view (Fig. 48A) and tapering towards the posterior in ventral view (Fig. 48C), inner margin of lobes straight, slightly oblique in ventral view (Fig. 48C), ventral margin narrowly rounded in caudal view (Fig. 48E);
- (2) posterior margin of laterodorsal process of gonostylus (*ldg*) strongly emarginate, leaving a widely open angle between laterodorsal process and ventral process of gonostylus (*vp*) in lateral view (Fig. 48A);
- (3) crest of furcate process of periandrium (*cfp*) only along distal portion and not merging basally (Fig. 50D), in lateral view, roundly tapering in distal portion (Fig. 50E);
- (4) laterodorsal process of periandrium (*ldp*) high in basal portion then strongly, angularly curved and ended in a hook-like acute point directed dorsad, short and not reaching half length of the lateroventral process (*lvp*) (Fig. 50D–E);
- (5) lateroventral process of periandrium (*lvp*) dorsoventrally flattened, falcate and weakly curved laterad with apical portion pointed and directed laterodorsad (Fig. 50D–F);
- (6) apicodorsal process of aedeagus (*adp*) strongly sinuate, rather wide and stocky distally with apical portion tapering, and shorter than apicoventral process (*avp*) (Fig. 50A–C);
- (7) posterior wing without whitish marking along sutural margin (Fig. 46A).

Material examined

Syntype

AUSTRALIA • ♀ (examined from photographs); Cairns; [Aug. 1904]; [16°55'12" S, 145°46'48" E]; "Cairns, Q., Austr. 8.1904.", "*Euronoto - brachys plana* ♀ 311. Holotype"; BPBM.

Additional material

AUSTRALIA • 1 ♂; [Queensland], Cairns; [16°55'12" S, 145°46'48" E]; MAMU • 2 ♂♂; [Queensland], Cairns District; A.M. Lea leg.; SAM • 1 ♂; [Queensland], Mareeba; [16°59' S, 145°25' E]; 11 Jan. 1959; Meisters leg.; MVMA.

Note

Kirkaldy designated no holotypes and the specimens in BPBM with "Holotype" or "Paratype" labels are all syntypes: these labels were added when the Hawaiian Sugar Planters' Association collections were moved to BPBM (as explained by Medler 1987). As Kirkaldy didn't state that he only had one specimen of *E. plana*, the female specimen above is recognised as a syntype in case a male specimen is uncovered in the BPBM collections later.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 4): 9.91 mm (9.53–10.70); ♀ (n = 1): 10.50 mm; BV/LV: ♂ (n = 1): 3.74, ♀ (n = 1): 3.50; BF/LF: ♂ (n = 1): 1.45; LP+LM/BT: ♂ (n = 1): 0.80, ♀ (n = 1): 0.78; LM/LP: ♂ (n = 1): 3.34, ♀ (n = 1): 3.49; LTg/BTg: ♂ (n = 1): 2.61; LW/BW: ♂ (n = 1): 1.62.

HEAD (Figs 46A–D, 47A, C–D). Slightly narrower than thorax. Vertex brown irregularly variegated with black; about 3.5–3.7 times as broad as long, concave with all margins slightly carinate; anterior and posterior margins rounded, nearly parallel. Frons brown very densely variegated with black, more

densely black than vertex; paler along lateroventral margins, usually with a pale spot in middle, at level of half height of eyes and often with paler transverse band slightly above level of lateral projections of frons; dorsal angles marked with a small, yellow-brown subtriangular marking; about 1.45 times as broad as long, slightly convex, slightly rugulose with peridiscal carina slightly marked; upper margin of frons weakly rounded in perpendicular view of frons; lateral margin incurved above lateral projection of frons, straight or weakly rounded under the projection. Clypeus brown to reddish brown with median line and regular oblique lines on each side of postclypeus dark brown to black, anteclypeus brown with sides black along outer margin and with median pale reddish-brown line on carina; clypeus reaching mesocoxae, elongate, with median carina on anteclypeus prolonged with obsolete carina on postclypeus; base of clypeus rounded. Labium dark brown, reaching metacoxae, with apical segment as long as broad, acuminate, shorter and slightly more slender than penultimate. Genae yellow-brown with some irregular brown markings. Ocelli absent. Antennae brown, not surpassing eye, not visible from above; scape about as long as broad, pedicel subcylindrical, elongate, narrowing towards apex.

THORAX (Figs 46A, C, 47A, D). About 1.25–1.28 times as broad as combined length of pro- and mesonotum. Pronotum brown irregularly variegated with black, mostly like vertex; disc weakly wrinkled, carina parallel to anterior margin and 2 obsolete impressed points on disc usually included in a dark spot; slightly excavate behind middle portion of anterior margin; paranotal lobes brown. Mesonotum brown rather densely, irregularly variegated with black, generally darker than pronotum; disc weakly wrinkled, median and peridiscal carinae weakly marked; median carina stopped before scutellum. Tegulae bicolour with ventral half black and dorsal half pale brown.

TEGMINA (Figs 46A, C, 47A, D). Pale brown irregularly variegated with dark brown to black markings, slightly paler after nodal line; distal portion darker sometimes with very small white apical spot extending on 2–3 cells; antepical transverse white line, sometimes interrupted, broader along costal margin; black squarish marking in middle of clavus; darker area along costal margin before nodal line, followed by smaller pale area. Flat, elongate, about 2.6 times as long as broad; costal margin weakly rounded along basal fifth, then straight or very weakly rounded to nodal line; apex rounded.

VENATION. Veins ScP+RA and RP separated close to base; first fork of MP very basal, at the level of ScP+RA–RP separation; first fork of CuA slightly before apex of clavus; clavus closed; Pcu and A1 fused at about $\frac{3}{4}$ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimitating small elongate cells.

POSTERIOR WINGS (Fig. 46A). Basal half yellowish narrowly marked with red basally, distal portion dark brown extending in a rather broad brown band along posterior margin; anal lobe grey-brown. Well developed, as broad as tegmina, about 1.6 times as long as broad, rounded apically; anal area well developed; sutural margin weakly trilobous; not reaching apex of tegmina at rest. All main veins visible from base, forked at or after nodal line and forming a few closed cells; few transverse veinlets delimiting elongate cells on apical $\frac{1}{4}$; veins A1 and A2 sometimes with 2 terminals.

LEGS (Figs 46A–D, 47C–D). Pro- and mesofemora brown to reddish brown variegated with dark brown to black, more strongly so towards apex; pro- and mesotibiae ventrally brown to reddish brown variegated with dark brown to black, dorsum of protibiae uniformly dark reddish brown to blackish brown, dorsum of mesotibiae slightly paler; pro- and mesotarsi paler than corresponding tibia but darker, brownish black, apically; metafemora pale reddish brown to pale brown basally, turning darker towards apex, metatibiae and tarsi coloured as apex of femora, with apex of tibial and tarsal spines darker. Pro- and mesofemora and tibiae dorsoventrally flattened, elongate and slender; metatibiae with 3 lateral and 10 apical spines; first metatarsomere ventrally with grey pad of microsetae at internoapical angle and two rows of 5 spines. Metatibiotarsal formula: (3) 10/4/0.



Fig. 46. *Kamabrachys plana* (Kirkaldy, 1906) gen. et comb. nov., ♂ from Cairns (MAMU). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons.



Fig. 47. *Kamabrachys plana* (Kirkaldy, 1906) gen. et comb. nov., syntype, ♀ (BPBM). **A.** Habitus, dorsal view. **B.** Labels. **C.** Habitus, frontal view. **D.** Habitus, lateral view. Photographs by J. Boone.

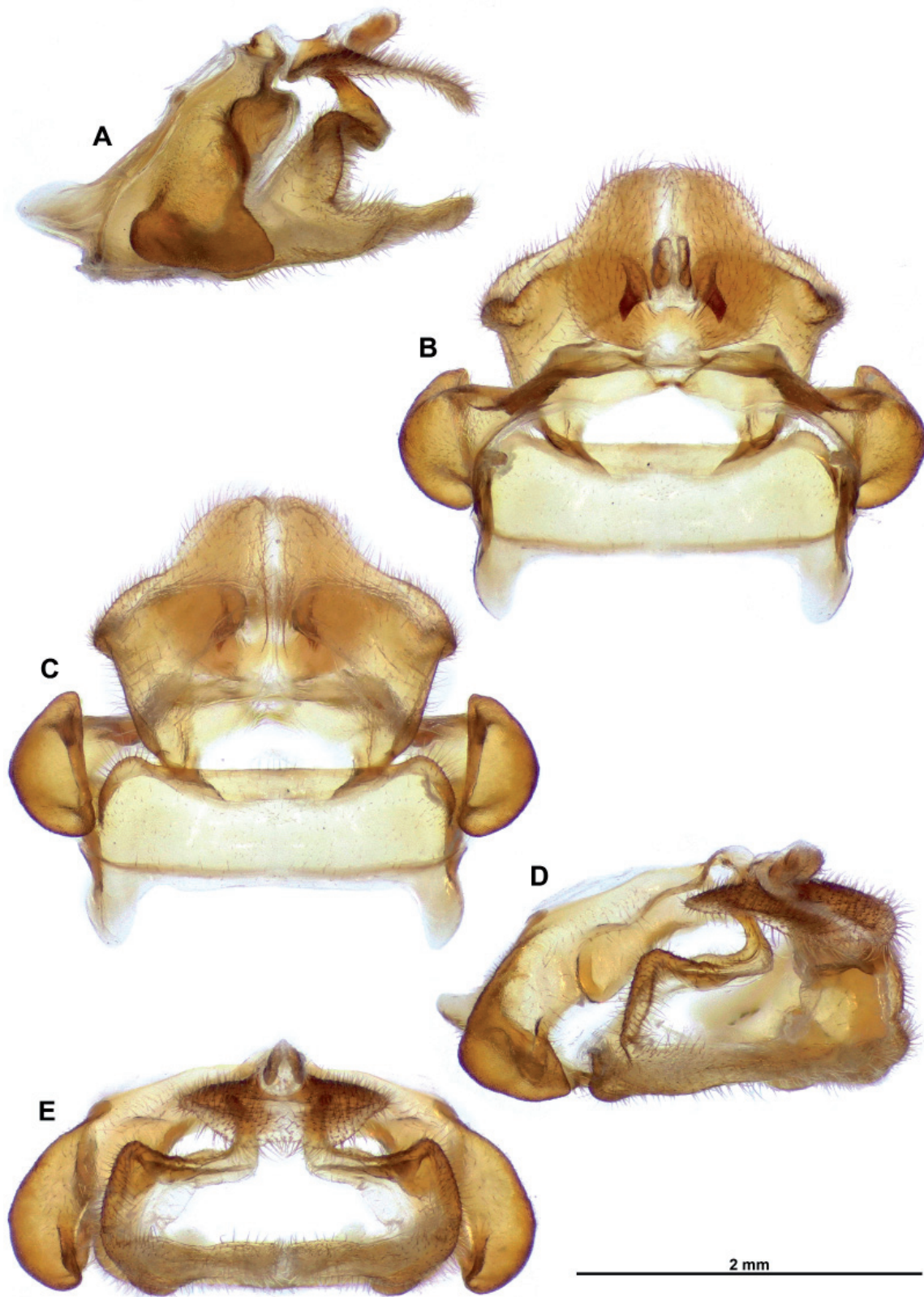


Fig. 48. *Kamabrachys plana* (Kirkaldy, 1906) gen. et comb. nov., ♂ from Mareeba (MVMA), terminalia: pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Dorsal view. **C.** Ventral view. **D.** Left posterolateral view. **E.** Caudal view.

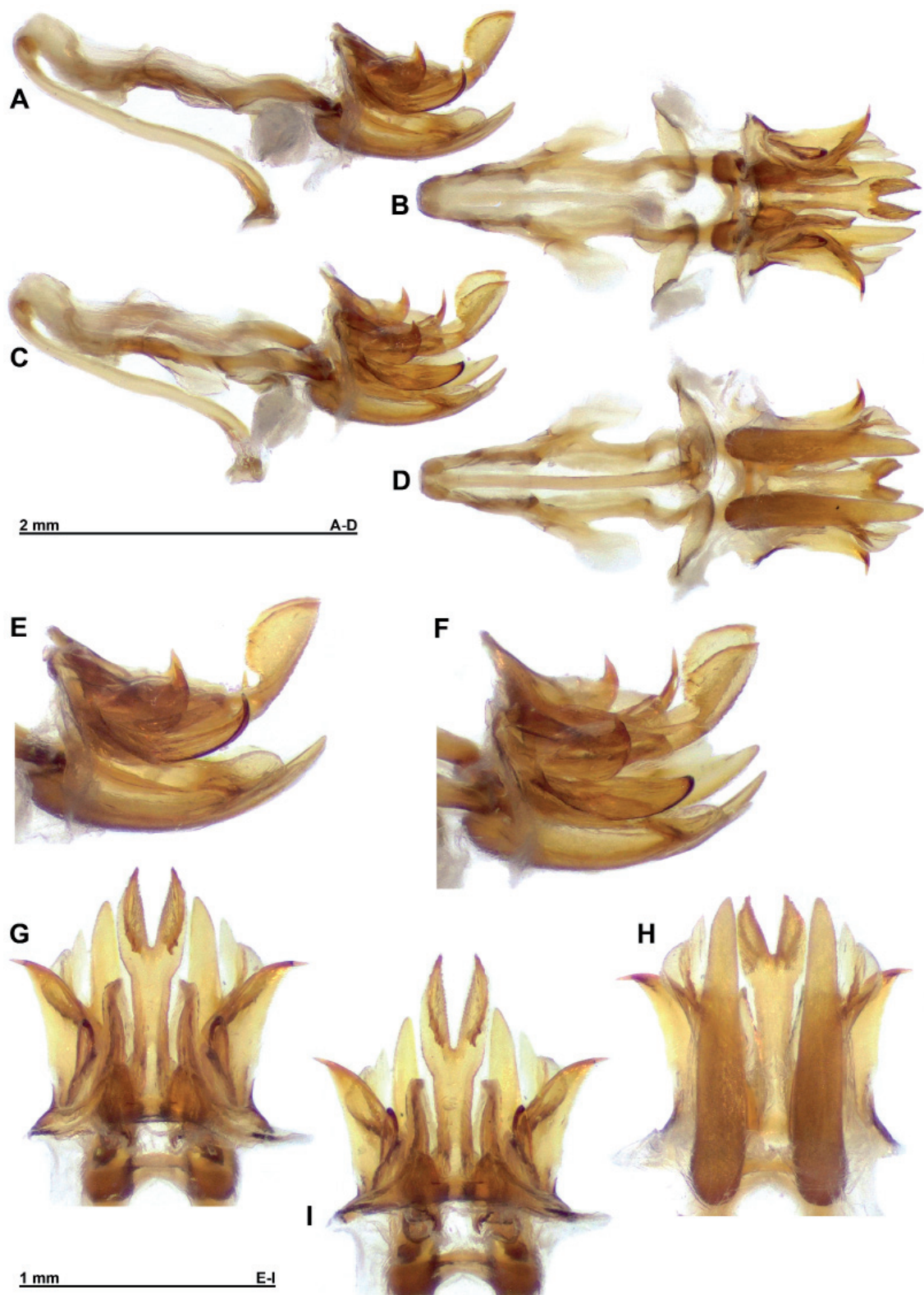


Fig. 49. *Kamabrachys plana* (Kirkaldy, 1906) gen. et comb. nov., ♂ from Mareeba (MVMA), genitalia. **A–D.** Aedeagus s. lat. and connective. **A.** Left lateral view. **B.** Dorsal view. **C.** Left laterodorsal view. **D.** Ventral view. **E–I.** Aedeagus s. lat., detail. **E.** Lateral view. **F.** Left laterodorsal view. **G.** Dorsal view. **H.** Ventral view. **I.** Anterodorsal view.

MALE TERMINALIA (Figs 48–50). Pygofer (*Py*) rather short, as high as long and oblique in lateral view, abruptly and strongly narrowing in uppermost portion in lateral view (Fig. 48A), about 2.3 times as wide as high in caudal view (Fig. 48E); basal apodeme (*bap*) rather elongate, well developed and

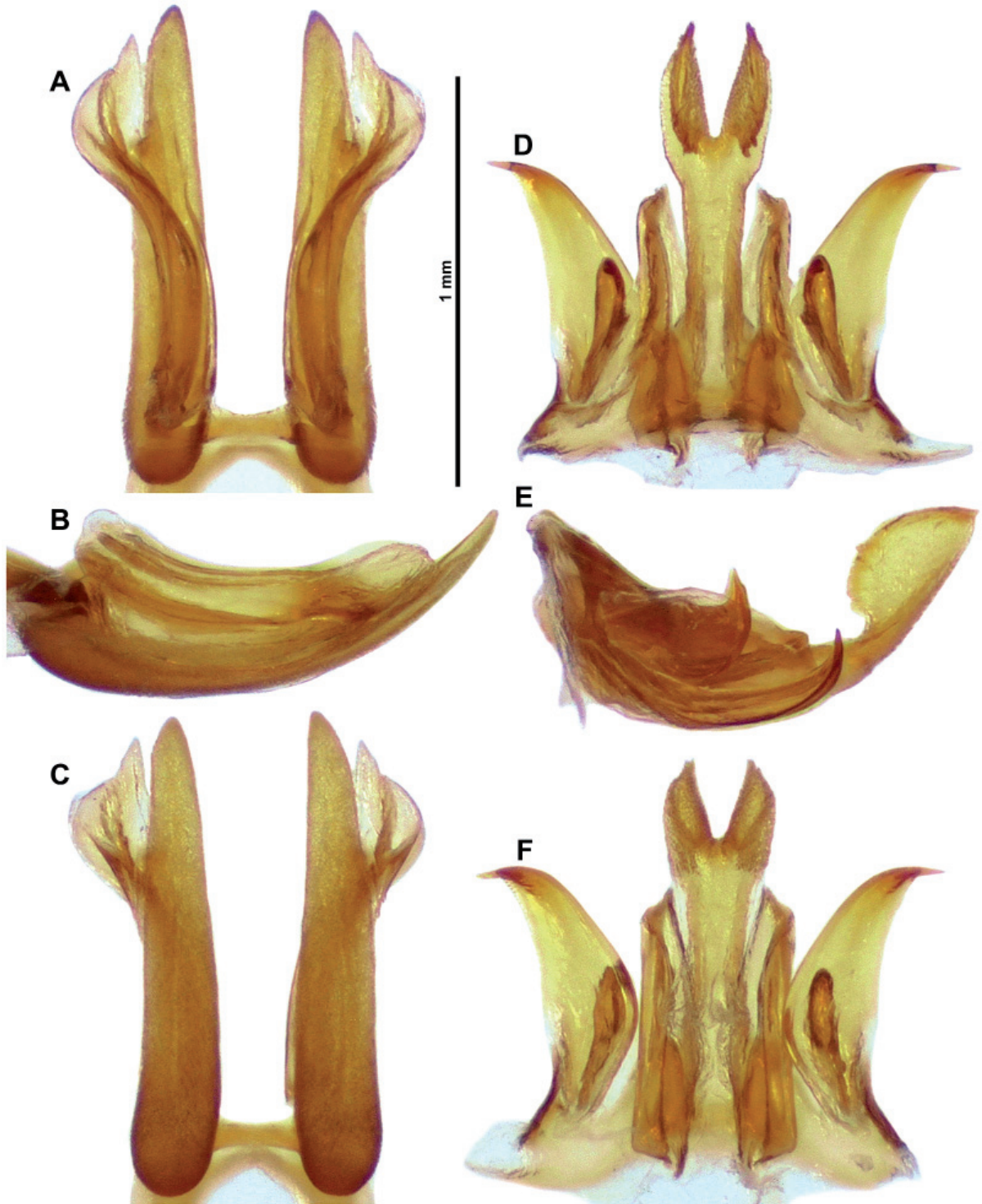


Fig. 50. *Kamabrachys plana* (Kirkaldy, 1906) gen. et comb. nov., ♂ from Mareeba (MVMA), genitalia. A–C. Aedeagus s. str. A. Dorsal view. B. Left lateral view. C. Ventral view. D–F. Dorsal perianthium. D. Dorsal view. E. Left lateral view. F. Ventral view.

sclerotized, sinuate in dorsal view (Fig. 48A–C); dorsal portion narrow (Fig. 48A–B); lateroventral lobe (*lvl*) projecting posterolaterally and rounded but tapering towards the anterior and posterior in dorsal view, more strongly posteriorly (Fig. 48B); in ventral view, tapering and moderately narrowly rounded anteriorly, more strongly tapering and narrowly rounded posteriorly, rather broadly, rather regularly rounded laterally, inner margin straight, somewhat oblique (Fig. 48C); in lateral view mostly obliquely truncate posteriorly, with posterior margin rather strongly, angularly sinuate and ventral $\frac{1}{3}$ strongly projecting posterad and forming a slightly acute angle narrowly rounded apically, anteroventral angle more or less angularly rounded, rather weakly projecting cephalad, ventral margin more or less straight in middle portion (Fig. 48A); ventral portion of pygofer separated from lateroventral lobe by a well-marked, rather deep depression (Fig. 48C, E); ventral lamina (*vlp*) about 3.0 times as broad as long with anterior and posterior margins subparallel in ventral view, posterior margin nearly straight with posterolateral angles rounded and moderately projecting posterad (Fig. 48C). Anal tube (*An*) about 1.1 times as broad as long, dorsoventrally flattened (Fig. 48A), margins more strongly rounded in basal and distal portions, less strongly so in middle portion of lateral margins, apex truncate, not or very weakly indentate (Fig. 48B); paraprocts (*pa*) at basal $\frac{1}{4}$, well developed. Gonostyli (*G*) 1.35 times as broad as long in ventral view (Fig. 48C); ventral process (*vp*) in ventral view subtriangular, rather short with lateral margin sinuate, then rounded apically (Fig. 48C); laterodorsal process (*ldg*) not visible in ventral view (Fig. 48C), strongly, angularly sinuate in caudal view with mediolateral angle (*mlla*) very strongly marked as a fold (Fig. 48E), mediolateral angle weakly projecting laterally (Fig. 48A, D), posterior margin emarginate, nearly N-shaped in lateral view (Fig. 48A); dorsal hook (*dhg*) mostly oblique in lateral view, with anterior margin concave distally and posterior margin somewhat angularly truncate near apex (Fig. 48A), apically curved anterolaterad in dorsal view (Fig. 48B), projecting more or less dorsolaterad in caudal view (Fig. 48E). Connective (*cv*) strongly developed, about 1.5 times as long as aedeagus s. lat., with anterior pair of lateral apodemes forming a broad lateral lamina directed posterolaterad and rounded apically; posterior pair of apodemes ribbon-like, well developed laterally and sinuate (Fig. 49A–D). Aedeagus s. lat. rather strongly upcurved with periandrium reaching more or less level of apex of aedeagus s. str. posteriorly (Fig. 49E–I). Aedeagus s. str. (Fig. 50A–C) with apical processes about 6.7 times as long as broad at mid-length; apicoventral process (*avp*) smoothly tapering towards the posterior and narrowly rounded apically; apicodorsal process (*adp*) in dorsal view (Fig. 50A) rather strongly sinuate, strongly inflated, with lateral margin emarginate before apex and apical portion triangular, rather acutely pointed; shorter than apicoventral process. Dorsal periandrium (Fig. 50D–F) with laterodorsal processes (*ldp*) short, laterally flattened, directed posterad in dorsal view, high in basal portion then strongly, angularly curved and ended in a hook-like acute point directed dorsad; lateroventral processes (*lvp*) dorsoventrally flattened, falcate, broadening from base to first $\frac{2}{5}$, gently tapering in distal portion, then shortly before acutely pointed apex, rather strongly curved laterodorsad, projecting well beyond laterodorsal processes; basomedian processes (*bmp*) apically obliquely blunt in dorsal view and with sides parallel in ventral view; median furcate process (*mfp*) with furca slightly shorter than shaft (Fig. 49I) and strongly upcurved in lateral view (Fig. 50E), dorsal crest (*cfp*) on most length of arms of furca, slightly reflexed laterad in dorsal view (Fig. 50D, I), crest abruptly broadening basally with basal emargination then rounded and tapering in distal half towards slightly pointed apex and with dorsal margin slightly irregular in lateral view (Fig. 50E), inner and outer lateral walls of furca slightly granulose (Fig. 50D).

SEXUAL DIMORPHISM. Female about 6% larger than male.

Distribution and biology

The species is currently recorded from two nearby locations in northeastern Queensland, Cairns and Mareeba (Fig. 5B). Bioregions: Wet Tropics and Einasleigh Uplands.

The species lives in a densely populated area, the last record dates back to 1959 and host plants remain undocumented.

Host plant unknown.

Kamabrachys rieki gen. et sp. nov.

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Figs 5B, 51–56

Diagnosis

The species can be recognized by the following combination of characters:

- (1) posterior margin of the lateroventral lobes of the pygofer (*lvl*) rounded in lateral view (Fig. 53A) and rounded in ventral view (Fig. 53C), inner margin of lobes concave in ventral view (Fig. 53C), ventral margin rounded in caudal view (Fig. 53E);
- (2) posterior margin of laterodorsal process of gonostylus (*ldg*) weakly roundly emarginate, leaving a deep acute open angle between laterodorsal process and ventral process of gonostylus (*vp*) in lateral view (Fig. 53A);
- (3) crest of furcate process of perianthium (*cfp*) only along distal portion and not merging basally (Fig. 55D), in lateral view, tapering towards the posterior in distal portion (Fig. 55E);
- (4) laterodorsal process of perianthium (*ldp*) tapering in distal portion and curved laterad then dorsad, slightly shorter than lateroventral process (*lvp*) (Fig. 55D–E);
- (5) lateroventral process of perianthium (*lvp*) dorsoventrally flattened in long basal portion and strongly curved laterad distally (Fig. 55D–F);
- (6) apicodorsal process of aedeagus (*adp*) moderately sinuate, dilated distally and tapering apically, and shorter than apicoventral process (*avp*) (Fig. 55A–C);
- (7) posterior wing without whitish marking along sutural margin (Fig. 51A).

Etymology

The species name is a patronym referring to the Australian entomologist Edgar Frederick Riek (1920–2016) who collected the type series of this species.

Type material

Holotype

AUSTRALIA • ♂; [Queensland], 17 km W of Kihee; 27°23'17" S, 142°26'51" E; 12 Oct. 1949; E.F. Riek leg.; "17 W Kihee, 12 Oct 49, E F Riek"; ANIC.

Paratypes

AUSTRALIA • 1 ♂; same collection data as for holotype; ANIC • 1 ♀; same collection data as for holotype; RBINS • 1 ♀; [Queensland], 33 km W of Kihee; 27°23'17" S, 142°17'15" E; 12 Oct. 1949; E.F. Riek leg.; "33 W Kihee, 12 Oct 49, E F Riek"; ANIC • 1 ♂; same collection data as for preceding; RBINS.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 3): 8.25 mm (7.90–8.45), ♀ (n = 2): 9.44 mm (9.37–9.52); BV/LV: ♂ (n = 1): 3.90, ♀ (n = 1): 3.78; BF/LF: ♂ (n = 1): 1.43, ♀ (n = 1): 1.39; LP+LM/BT: ♂ (n = 1): 0.78, ♀ (n = 1): 0.79; LM/LP: ♂ (n = 1): 3.17, ♀ (n = 1): 2.98; LTg/BTg: ♂ (n = 1): 2.62, ♀ (n = 1): 2.53; LW/BW: ♂ (n = 1): 1.78, ♀ (n = 1): 1.74.

HEAD (Figs 51A–D, 52A–D). Slightly narrower than thorax. Vertex brown irregularly variegated with black; 3.8–3.9 times as broad as long, concave with all margins slightly carinate; anterior and posterior margins rather weakly rounded, subparallel. Frons brown irregularly variegated with black, more densely black than vertex; slightly paler transverse band above lateral angles, often interrupted and reduced to 2 aligned markings; often, in middle above pale band, a narrow pale line reaching the pale band ventrally and stopped before peridiscal carina dorsally or shortened, sometimes reduced to a short elongate marking; small triangular yellowish marking at dorsolateral angles; about 1.4 times as broad as long, slightly convex, slightly rugulose with peridiscal carina slightly marked; upper margin of frons weakly curved in perpendicular view of frons; lateral margin incurved above lateral projection of frons, more or less straight to broadly rounded under the projection. Clypeus brown with median black line and regular oblique lines on each side of postclypeus, anteclypeus black with median pale reddish-brown line on carina; clypeus reaching mesocoxae, elongate, with median carina on anteclypeus prolonged with obsolete carina on postclypeus; base of clypeus rounded. Labium dark brown, reaching metacoxae, with apical segment as long as broad, acuminate, shorter and slightly more slender than penultimate. Genae pale yellowish variegated with brown. Ocelli absent. Antennae brown, not surpassing eye, not visible from above; scape about as long as broad, pedicel subcylindrical, elongate, narrowing towards apex.

THORAX (Figs 51A, C, 52A, C). About 1.27 times as broad as combined length of pro- and mesonotum. Pronotum brown irregularly variegated with black, generally slightly paler than vertex; disc weakly wrinkled, carina parallel to anterior margin and 2 obsolete impressed points on disc marked by black spot, often included in a short transverse black marking; paranotal lobes brown sometimes variegated with paler spots. Mesonotum brown irregularly variegated with black, more densely black and generally darker than pronotum; disc weakly wrinkled, median and peridiscal carinae weakly marked; median carina stopped before scutellum. Tegulae bicolour with ventral half black and dorsal half brown.

TEGMINA (Figs 51A–C, 52A–C). Pale brown irregularly variegated with black markings, slightly paler after nodal line and with background colour of apical portion darker; small apical white marking small extending along 1–3 cells; antepical transverse white line, usually complete but narrower in middle portion, sometimes shortly interrupted; in dark specimens, 2 more or less complete transverse black bands, more basal one at basal $\frac{1}{4}$ starting from squarish or transverse black marking in middle of clavus, extending into a band to costal margin, second one at mid-length of tegmen, oblique, tapering from costal margin to vein MP, getting less distinct towards sutural margin, area between black bands much paler, with very few black markings; in pale specimens, bands not or weakly distinct, squarish black marking in clavus sometimes present. Flat, elongate, about 2.5–2.6 times as long as broad; costal margin weakly rounded along basal fifth, then more or less straight to nodal line; apex rounded.

VENATION. Veins ScP+RA and RP separated close to base; first fork of MP very basal, at the level of ScP+RA–RP separation; first fork of CuA slightly before apex of clavus; clavus closed; Pcu and A1 fused at about $\frac{3}{4}$ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimitating small elongate cells.

POSTERIOR WINGS (Figs 51A–B, 52A–B). Pale yellow, narrowly marked with red basally, with apical $\frac{1}{3}$ dark brown to blackish brown, apical white marking forming a band extending on 6–10 cells; moderately broad brown band along posterior margin and claval area infuscate. Well developed, as broad as tegmina, about 1.7–1.8 times as long as broad, rounded apically; anal area well developed; sutural margin weakly trilobous; not reaching apex of tegmina at rest. All main veins visible from base, forked at or after nodal line and forming a few closed cells; few transverse veinlets delimitating elongate cells on apical $\frac{1}{4}$; veins A1 and A2 sometimes with 2 terminals.

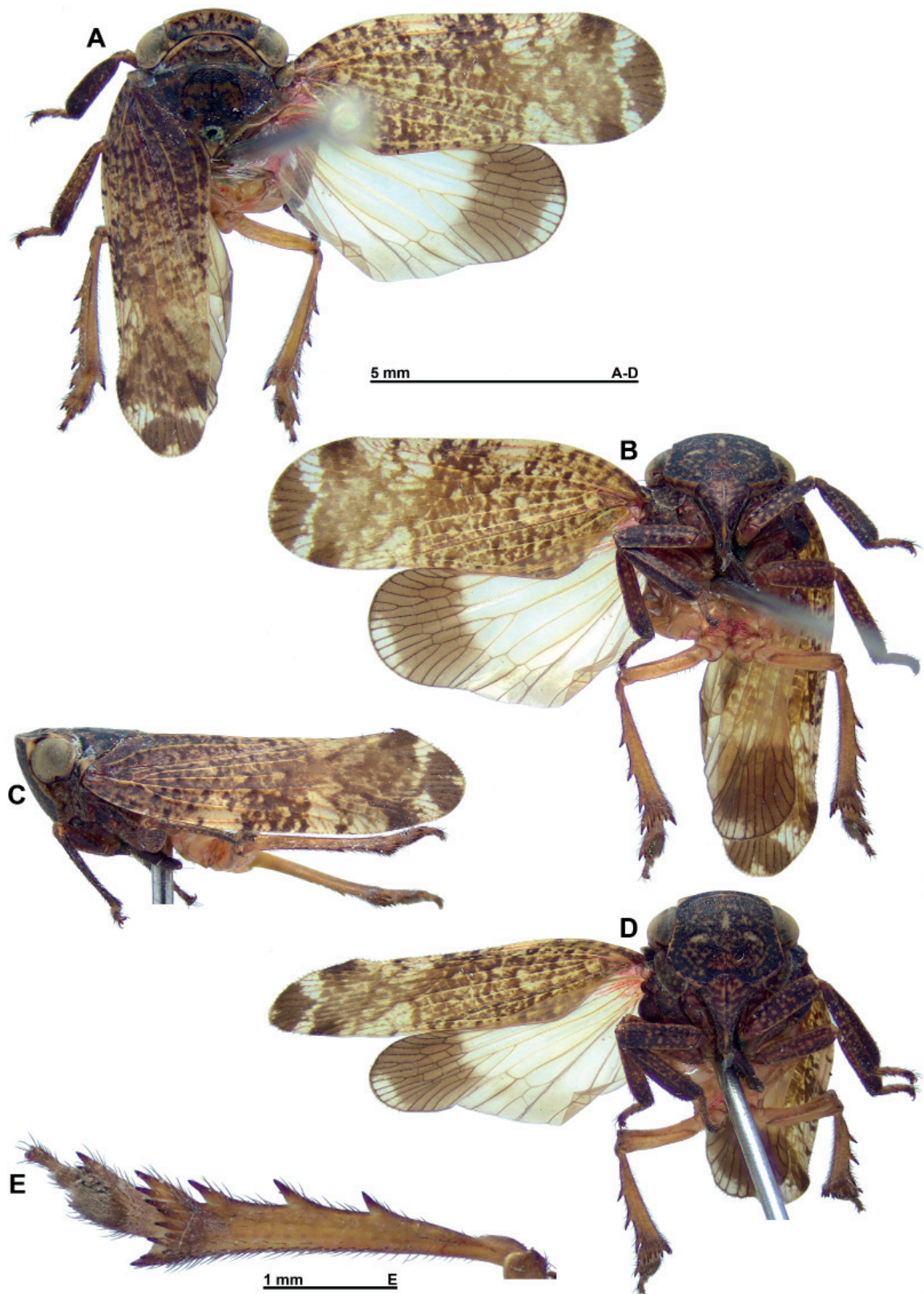


Fig. 51. *Kamabrachys rieki* gen. et sp. nov., holotype, ♂ (ANIC). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons. **E.** Metatibia and metatarsus, ventral view.

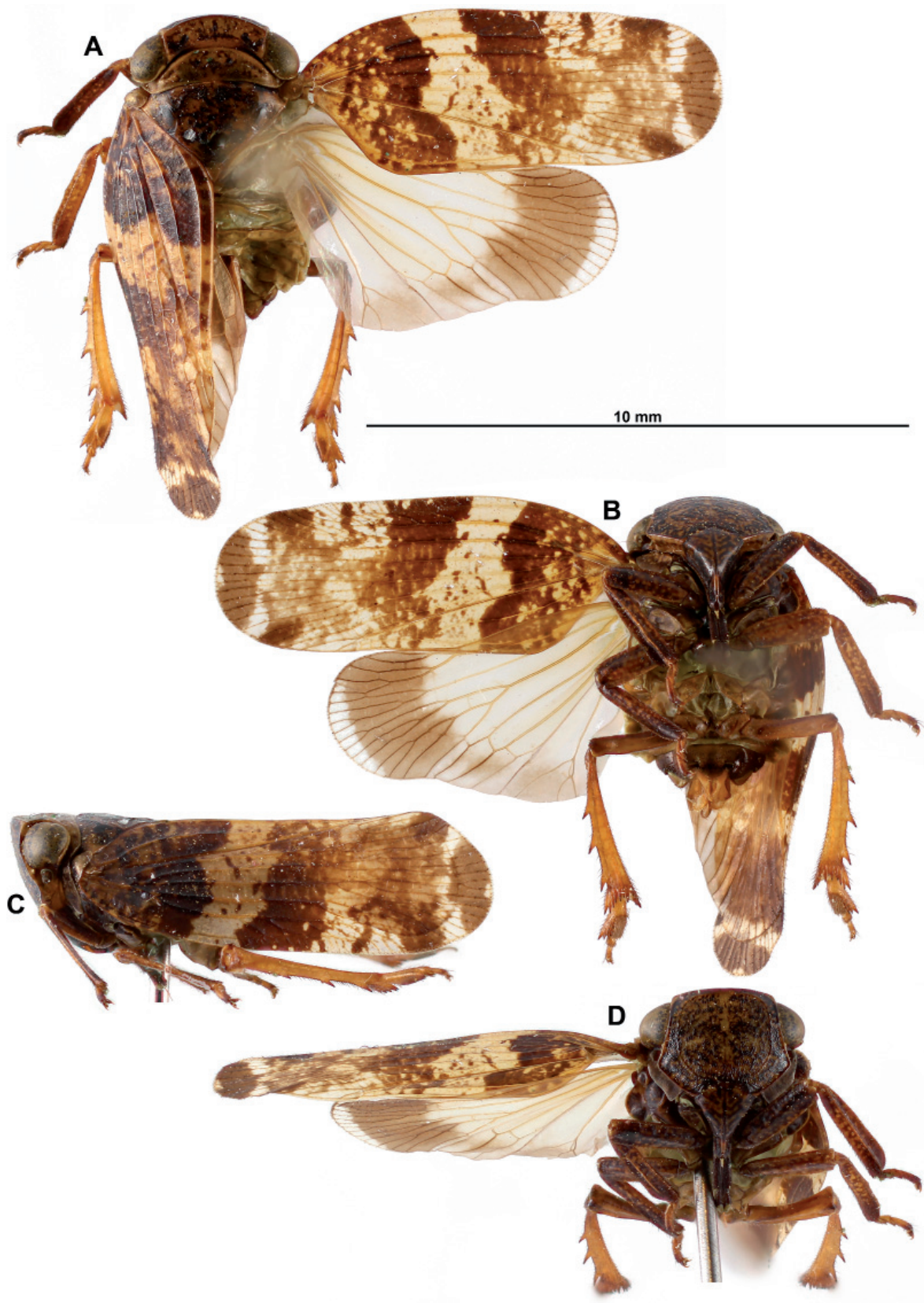


Fig. 52. *Kamabrachys rieki* gen. et sp. nov., paratype, ♀ (ANIC). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons.

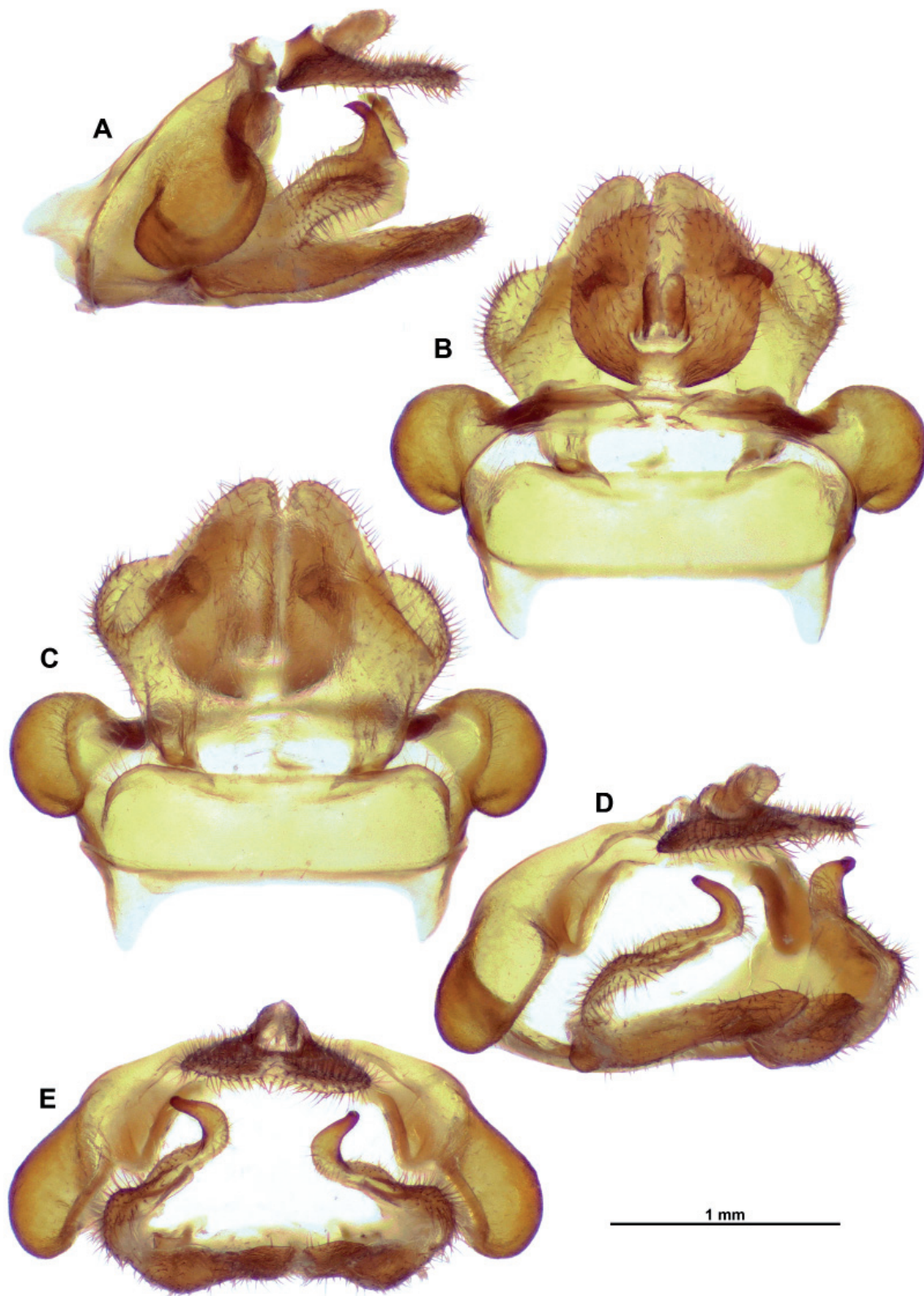


Fig. 53. *Kamabrachys rieki* gen. et sp. nov., holotype, ♂ (ANIC), terminalia: pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Dorsal view. **C.** Ventral view. **D.** Left posterolateral view. **E.** Caudal view.

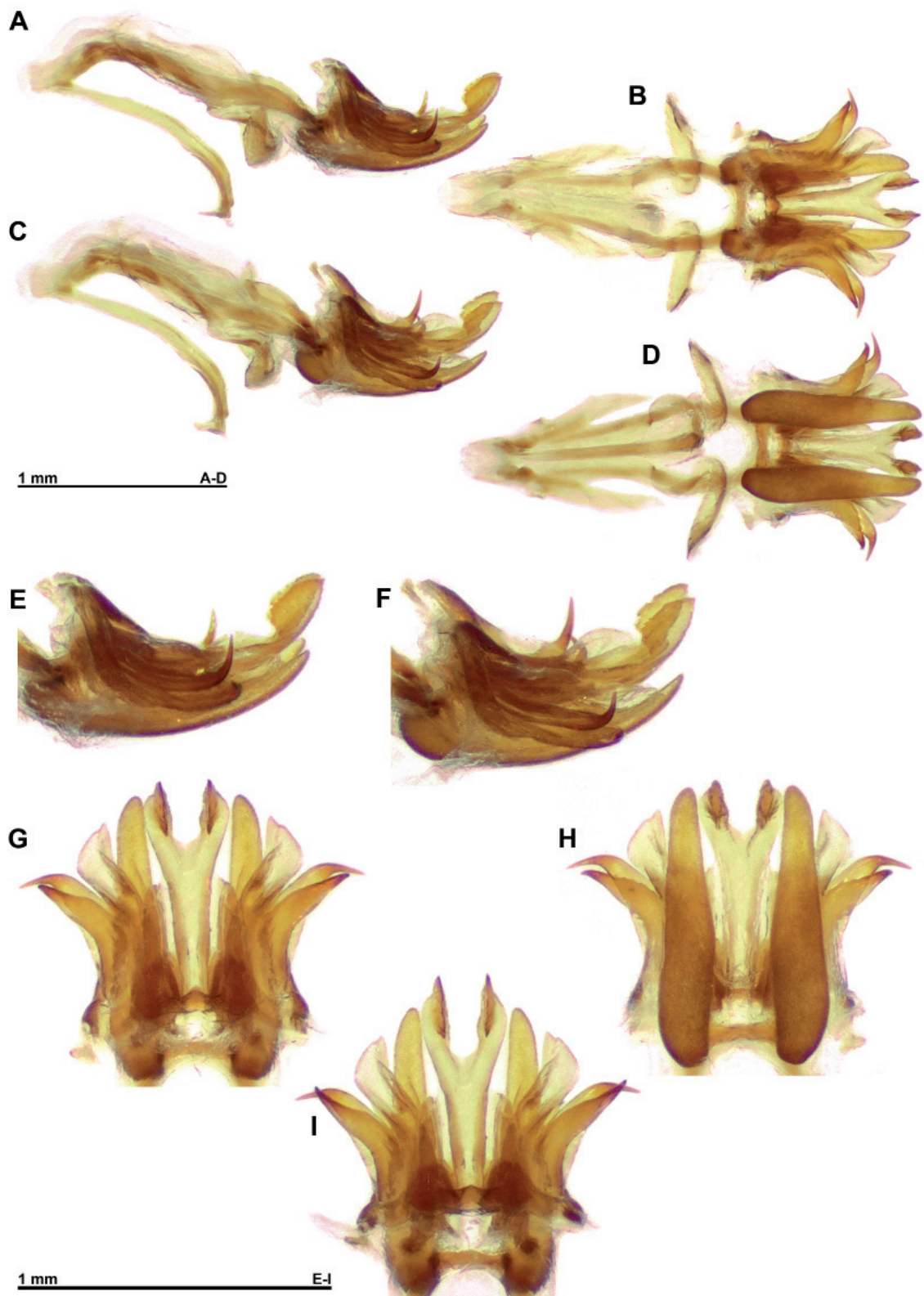


Fig. 54. *Kamabrachys rieki* gen. et sp. nov., holotype, ♂ (ANIC), genitalia. **A–D.** Aedeagus s. lat. and connective. **A.** Left lateral view. **B.** Dorsal view. **C.** Left laterodorsal view. **D.** Ventral view. **E–I.** Aedeagus s. lat., detail. **E.** Lateral view. **F.** Left laterodorsal view. **G.** Dorsal view. **H.** Ventral view. **I.** Anterodorsal view.

LEGS (Figs 51A–E, 52A–D). Pro- and mesofemora and tibiae brown, sometimes slightly reddish, densely variegated with dark brown to black, dorsum of tibiae more uniformly brown, protibiae usually slightly darker than mesotibiae; pro- and mesotarsi paler than corresponding tibia but blackish brown apically; posterior legs brown with apex of tibial and tarsal spines darker. Pro- and mesofemora and



Fig. 55. *Kamabrachys rieki* gen. et sp. nov., holotype, ♂ (ANIC), genitalia. **A–C.** Aedeagus s. str. **A.** Dorsal view. **B.** Left lateral view. **C.** Ventral view. **D–F.** Dorsal periandrium. **D.** Dorsal view. **E.** Left lateral view. **F.** Ventral view.

tibiae dorsoventrally flattened, elongate and slender; metatibiae with 3 lateral and 10 apical spines; first metatarsomere ventrally with grey pad of microsetae at internoapical angle and two rows of 5 spines. Metatibiotarsal formula: (3) 10/4/0.

MALE TERMINALIA (Figs 53–55). Pygofer (*Py*) rather short, as high as long and oblique, rather abruptly narrowing in uppermost portion in lateral view (Fig. 53A), about 2.3 times as wide as high in caudal view (Fig. 53E); basal apodeme (*bap*) weakly elongate, subtriangular, well developed and sclerotized, sinuate in dorsal view (Fig. 53A–C); dorsal portion narrow (Fig. 53A–B); lateroventral lobe (*lvl*) projecting posterolaterally and rounded towards the anterior and towards the posterior in dorsal view (Fig. 53B); in ventral view, rounded anteriorly, more broadly rounded posteriorly and laterally and with inner margin concave (Fig. 53C); in lateral view, posterior margin broadly rounded with middle portion more weakly curved, anteroventral angle rounded and ventral margin broadly rounded (Fig. 53A); ventral portion of pygofer separated from lateroventral lobe by a well-marked, rather narrow and deep depression (Fig. 53C, E); ventral lamina (*vlp*) about 3.2 times as broad as long with anterior and posterior margins subparallel in ventral view, posterior margin very slightly incurved and bisinuate with posterolateral angles rounded and weakly projecting posterad (Fig. 53C). Anal tube (*An*) about as broad as long, dorsoventrally flattened (Fig. 53A), oval with base and apex more strongly rounded than side margins; side margins weakly subparallel in middle portion; apical margin weakly indented in middle (Fig. 53B); paraprocts (*pa*) at basal $\frac{1}{4}$, well developed. Gonostyli (*G*) 1.25 times as broad as long in ventral view (Fig. 53C); ventral process (*vp*) in ventral view subtriangular, moderately elongate with lateral margin weakly sinuate, then rounded apically (Fig. 53C); laterodorsal process (*ldg*) partly visible in ventral view (Fig. 53C), rather strongly, sinuate in caudal view with mediolateral angle (*mlla*) moderately marked (Fig. 53E), mediolateral angle slightly projecting dorsally (Fig. 53A, D), posteroventral margin strongly oblique in ventral half in lateral view, forming an acute angle with ventral process (Fig. 53A), dorsal margin angularly rounded before dorsal hook; dorsal hook (*dhg*) subvertical and subtriangular, then angularly curved cephalad at distal $\frac{2}{3}$ in lateral view, (Fig. 53A), apically curved anterolaterad (Fig. 53B), strongly curved laterad then sinuate and directed laterodorsad apically in caudal view (Fig. 53E). Connective (*cv*) strongly developed, about 1.4 times as long as aedeagus s. lat., with anterior pair of lateral apodemes forming a moderately broad lateral lamina directed posterolaterad and tapering apically; posterior pair of apodemes ribbon-like, well developed laterally and sinuate (Fig. 54A–D). Aedeagus s. lat. moderately upcurved with periandrium reaching more or less level of apex of aedeagus s. str. posteriorly (Fig. 54E–I). Aedeagus s. str. (Fig. 55A–C) with apical processes about 5.7 times as long as broad at mid-length; apicoventral process (*avp*) smoothly tapering towards the posterior and narrowly rounded apically, weakly curved on inner margin in ventral view; apicodorsal process (*adp*) in dorsal view (Fig. 55A) rather moderately sinuate, moderately inflated, rather regularly tapering towards apex but forming a subtriangular apical acute point, and shorter than apicoventral process. Dorsal periandrium (Fig. 55D–F) with laterodorsal processes (*ldp*) abruptly narrowing at about $\frac{2}{3}$ of length in lateral view, then strongly curved dorsad and regularly tapering towards acutely pointed apex, in dorsal view, sides more or less parallel on $\frac{2}{3}$ of length, then tapering towards apex, rather strongly but regularly curved laterad in middle portion; lateroventral processes (*lvp*) dorsoventrally flattened on basal $\frac{4}{5}$, slightly broadening to basal $\frac{1}{4}$ then regularly smoothly tapering, strongly curved laterad at $\frac{1}{5}$ of length, then strongly curved laterad at $\frac{4}{5}$ of length, with distal $\frac{1}{5}$ acutely pointed, projecting slightly beyond laterodorsal processes; basomedian processes (*bmp*) apically obliquely truncate in dorsal view and with sides parallel in ventral view; median furcate process (*mfp*) with furca shorter than shaft (Fig. 54I) and upcurved in lateral view (Fig. 55E), dorsal crest (*cfp*) on about half of length of arms of furca, vertical in dorsal view (Fig. 55D), crest rather abruptly starting basally in lateral view, more or less elongate-oval in lateral view, with dorsal and ventral margins subparallel along middle portion then tapering in distal $\frac{1}{4}$, and apical margin more or less pointed, dorsal margin irregular in lateral view (Fig. 55E), inner lateral walls of furca weakly granulose, outer walls nearly smooth (Fig. 55D).

FEMALE TERMINALIA (Fig. 56). Abdominal sternite VI (*As VI*) with sides upcurving in posteroventral view (Fig. 56C); posterior margin in ventral view (Fig. 56B) projecting posteriorly on sides; median subquadrate emargination wide, wider basally (Fig. 56B); subtriangular processes moderately elongate, apically rounded and directed mesad and posterodorsad (Fig. 56B–C); emargination between subtriangular processes and lateral projection rather deeply rounded (Fig. 56B–C); processes of furca of sternite VI (*FAs VI*) pointed, diverging, moderately developed and strongly curved posterodorsad (Fig. 56B–C). Inner portion of gonocoxa VIII (*Gx VIII*) moderately curved dorsad (Fig. 56C); posterior margin of gonapophysis (*Gy VIII*) projecting rather strongly posterad and apically rounded (Fig. 56A–B). Lateroventral excavate membranous fold of gonocoxae VIII between sternite VI and gonapophysis VIII in posteroventral view widely open (Fig. 56C). Inner portion of gonapophysis VIII, subtriangular processes and adjacent part of posterior margin of sternite VI, and processes of furca of sternite VI (*FAs VI*) densely covered in short strong setae (Fig. 56B–C). Gonoplacs (*Gp*) unilobed, large and semicircular, mostly hiding the anal tube (Fig. 56D). Gonocoxal bases IX (*Gb IX*) projecting laterally (Fig. 56B–C). Gonapophysis IX (*Gy IX*) flattened laterally, reflexed posterodorsad and strongly tapering apically (Fig. 56B, D). Anal tube (*An*) elongate and narrow, curved posteroventrad, v-shaped in cross section beyond anus, lanceolate in dorsal view (Fig. 56A, C).

SEXUAL DIMORPHISM. Female about 14% larger than male.

Distribution and biology

The species is currently recorded from two very close locations in southwestern Queensland near Kihee (Fig. 5B). Bioregion: Channel Country.

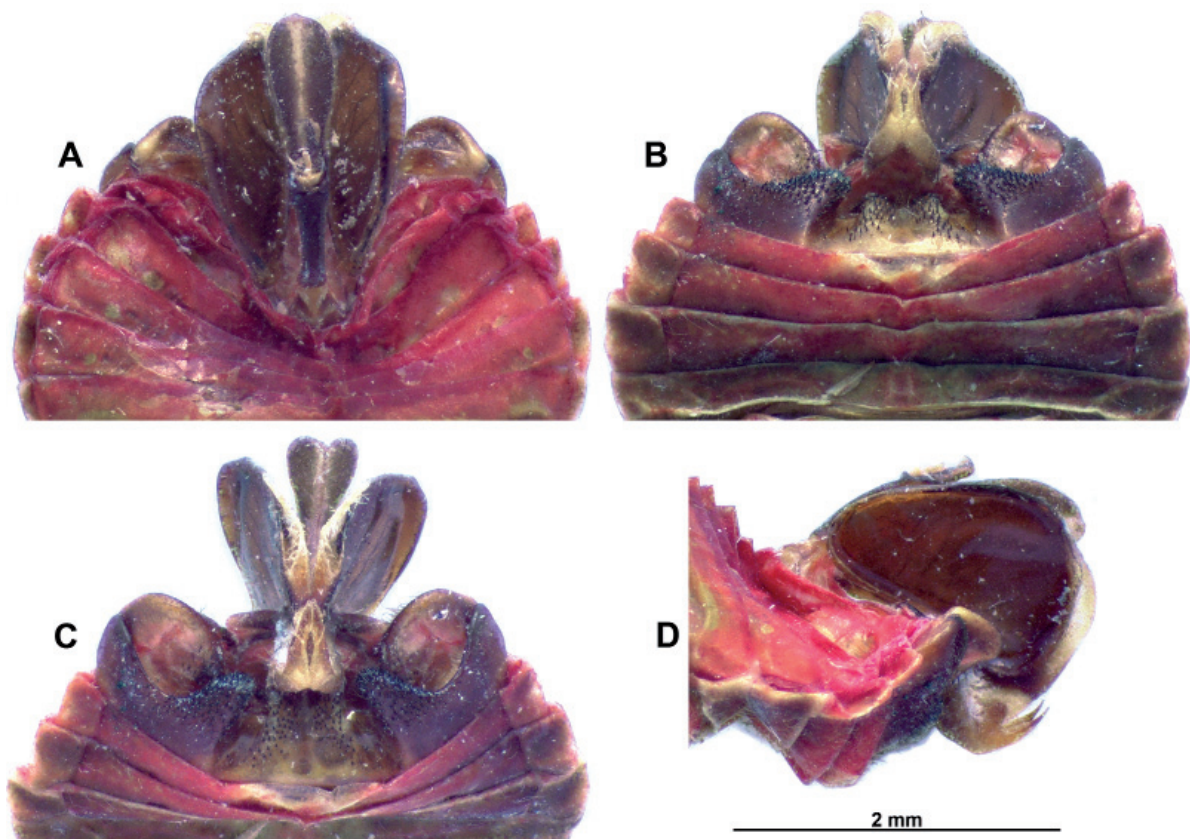


Fig. 56. *Kamabrachys rieki* gen. et sp. nov., paratype, ♀ (ANIC), external terminalia. **A.** Dorsal view. **B.** Ventral view. **C.** Posteroventral view. **D.** Lateral view.

The 5 specimens of the type series were all collected on a single day during the month of October.

Host plant unknown.

Kamabrachys signata (Distant, 1892) gen. et comb. nov.

Figs 1–4, 5B, 57–68

Platybrachys signata Distant, 1892: 281 [described, compared to *Platybrachys transversa* (Walker, 1858)].

Platybrachys signata – Kirkaldy 1906: 444 [listed]. — Hacker 1924: 39 [recorded from Brisbane]. — Metcalf 1956: 58 [catalogued].

non *Platybrachys signata* – Lallemand 1935: 675 [recorded from Burnside, Northern Territory; misidentification!]

Note

In the original description, Distant (1892) mentioned a “var. *a*” which shows tegmina with a transverse fuscous fascia near base, and a “var. *b*” which lacks the apical grey spot on the posterior wings.

Diagnosis

The species can be recognized by the following combination of characters:

- (1) posterior margin of the lateroventral lobes of the pygofer (*lvl*) broadly rounded in lateral view (Fig. 62A) and rounded in ventral view (Fig. 62C), inner margin of lobes straight in ventral view (Fig. 62C), ventral margin rounded in caudal view (Fig. 62E);
- (2) posterior margin of laterodorsal process of gonostylus (*ldg*) oblique, leaving deep, acute, open angle between laterodorsal process and ventral process of gonostylus (*vp*) in lateral view (Fig. 62A);
- (3) crest of furcate process of periandrium (*cfp*) only along distal portion and not merging basally (Fig. 64D), in lateral view, smoothly tapering towards apex (Fig. 64E);
- (4) laterodorsal process of periandrium (*ldp*) evenly tapering from base towards apex and abruptly curved dorsad at mid-length, shorter than lateroventral process (*lvp*) (Fig. 64D–E);
- (5) lateroventral process of periandrium (*lvp*) weakly flattened dorsoventrally only in basal portion and curved dorsolaterad distally (Fig. 64D–F);
- (6) apicodorsal process of aedeagus (*adp*) weakly sinuate, rather weakly dilated then elongately tapering distally and longer than apicoventral process (*avp*) (Fig. 64A–C);
- (7) posterior wing with well contrasted, large whitish marking along sutural margin (Figs 57A, 60E).

Material examined

Lectotype (here designated to provide a reference standard for this species)

AUSTRALIA • ♂ (Fig. 57); Peak Downs; [22°19'30" S, 148°0'0" E]; “*signata* Dist.”, “Type”, “Distant Coll. 1911–383”; BMNH.

Paralectotypes

AUSTRALIA • 1 ♂, 2 ♀♀ (Figs 58–59); Peak Downs; [22°19'30" S, 148°0'0" E]; “Distant Coll. 1911–383”; BMNH.

Additional material

AUSTRALIA – Queensland • 2 ♂♂, 1 ♀; Brisbane, One Tree Hill; [27°29'05" S, 152°57'33" E]; Jul. 1919; F. Muir leg.; BPBM • 2 ♂♂; same locality as for preceding; Feb. 1920; F. Muir leg.; BPBM • 2 ♂♂; Brisbane; [27°28'04" S, 153°01'41" E]; [no date]; A.M. Lea leg.; SAM • 2 ♂♂, 2 ♀♀; same locality as

for preceding; 18 Jan. 1921; ? leg.; SAM • 1 ♂; same locality as for preceding; 2 Nov. 1945; W. Arndt leg.; UQIC Reg.#43548; QM • 1 spec. (abdomen missing); same locality as for preceding; 4 Mar. 1952; DJT leg.; UQIC Reg.#43554; QM • 1 ♂; same locality as for preceding; Jan. 1923; ? leg.; UQIC Reg.#42753; QM • 1 ♀; same collection data as for preceding; UQIC Reg.#42754; QM • 1 ♀; same locality as for preceding; 27 Mar. 1923; H. Hacker leg.; QM • 6 ♂♂; same locality as for preceding; 8 Feb. 1922; H. Hacker leg.; QM • 1 ♂; same locality as for preceding; 5 Mar. 1922; H. Hacker leg.; QM • 1 ♀; Brisbane; same locality as for preceding; 5 Feb. 1922; H. Hacker leg.; QM • 1 ♂; same locality as for preceding; 26 Sep. 1916; H. Hacker leg.; QM • 1 ♂; same locality as for preceding; 26 Nov. 1922; H. Hacker leg.; QM • 1 ♂; same locality as for preceding; 6 Nov. 1922; H. Hacker leg.; QM • 1 ♂; Brisbane, Oxley; [27°33'42" S, 152°58'32" E]; 25 Sep. 1923; H. Hacker leg.; QM • 1 ♀; Brisbane; [27°28'04" S, 153°01'41" E]; 18 Mar. 1948; R. Simms leg.; UQIC Reg.#43547; QM • 3 ♂♂, 1 ♀; same locality as for preceding; 5 Feb. 1922; H. Hacker leg.; USNM • 2 ♂♂; same locality as for preceding; 26 Mar. 1922; H. Hacker leg.; USNM • 1 ♂; same locality as for preceding; 8 Feb. 1922; H. Hacker leg.; USNM • 1 ♀; same locality as for preceding; 5 Mar. 1922; H. Hacker leg.; USNM • 1 ♀; same locality as for preceding; 4 Mar. 1922; H. Hacker leg.; USNM • 1 ♀; same locality as for preceding; 26 Nov. 1922; H. Hacker leg.; USNM • 1 ♂; same locality as for preceding; 3 Oct. 1912; H. Hacker leg.; USNM • 2 ♂♂, 1 ♀; Brisbane, Mount Coot-tha; 27°28'50" S, 152°57'15" E; 23 Apr. 1924; H. Hacker leg.; USNM • 1 spec. (abdomen missing); same locality as for preceding; 22 Apr. 1924; H. Hacker leg.; USNM • 2 ♂♂; Brisbane; [27°28'04" S, 153°01'41" E]; Illidge leg.; Code K43747; AMS • 1 ♂; same locality as for preceding; 15 Apr. 1922; G.H. Hardy leg.; QM • 1 ♀; same locality as for preceding; Jan. 1930; C. Borch leg.; MVMA • 1 ♂; Maryborough; [25°32'15" S, 152°42'07" E]; Apr. 1962; R. O'Brien leg.; Ex Evans Coll.; MJF collection, code MJF003236; ASCU • 1 ♂; same locality as for preceding; Mar. 1958; R. O'Brien leg.; Ex Evans Coll.; MJF collection, code MJF003239; ASCU • 1 ♂; Bundaberg; [24°52' S, 152°21' E]; May 1971; H. Frauca leg.; in *Eucalyptus* woodland; ANIC • 1 ♂, 1 ♀; Watalgan Range, ca 34 miles NE of Bundaberg; [24°45'00" S, 152°03'01" E]; Apr. 1971; H. Frauca leg.; ANIC • 1 ♂; 15 km W of Paluma; [19°00'21" S, 146°05'17" E]; 22 Jan. 1996; J. Bugeja leg.; ANIC • 1 ♂; Biggenden, Mt Walsh Nat. Park, Bluff Range; [25°33'59" S, 152°03'02" E]; 17 Aug. 1971; H. Frauca leg.; ANIC • 1 ♂; same locality as for preceding; 5 Jan. 1972; H. Frauca leg.; ANIC • 1 ♂, 1 ♀; Biggenden, Degilbo Creek; [25°35'49" S, 152°00'40" E]; 7 May 1972; H. Frauca leg.; ANIC • 1 ♂; 50 km S of Ayr; [20°01'56" S, 147°24'24" E]; 11 Sep. 1950; E.F. Riek leg.; ANIC • 1 ♂; 40 km S of Ayr; [19°55'37" S, 147°24'24" E]; 10 Sep. 1950; E.F. Riek leg.; ANIC • 1 ♂, 1 ♀; same collection data as for preceding; RBINS • 1 ♂; 25 km S of Ayr; [19°48'04" S, 147°24'24" E]; 9 Sep. 1950; E.F. Riek leg.; ANIC • 1 ♀; 35 km SW of Ayr; [19°48'44" S, 147°09'31" E]; 6 Oct. 1950; E.F. Riek leg.; ANIC • 1 ♂; Woodgate; [25°05'00" S, 152°31'00" E]; 25 Aug. 1970; K.J. Lambkin leg.; QM • 1 ♂; Lawes; [27°33'40" S, 152°19'51" E]; 3 Jan. 1957; W.F. Wildin leg.; UQIC Reg.#43693; QM • 1 ♂; Tibrogargan Creek; [26°56'08" S, 152°56'57" E]; 11 Sep. 1956; S. Sekon leg.; UQIC Reg.#43551; QM • 1 ♀; same locality as for preceding; 11 Sep. 1956; H.J. Lavery leg.; UQIC Reg.#43698; QM • 1 ♂, 1 ♀; 10 miles SSE of Collinsville; [20°40'53" S, 147°51'27" E]; 14 Sep. 1950; E.F. Riek leg.; ANIC • 1 ♂; 5 km S of Collinsville; [20°37'00" S, 147°51'47" E]; 16 Jan. 1967; M.S. and B. Moulds leg.; ASCT HE019104; ASCT • 1 ♂; Pentland; [20°31'59" S, 145°23'11" E]; Aug.–Oct. 1942; J.G. Brooks leg.; AMS • 1 ♂; 10 miles SW of Townsville; [19°23'34" S, 146°41'54" E]; 12 Nov. 1962; E. Ross and D. Cavagnaro leg.; CAS • 1 ♀; Queensland; identified as *Olonia rubicunda* by E. Schmidt; ZMPA • 1 ♂, 1 ♀; Bowen; [20°00'31" S, 148°11'54" E]; 27 Sep. 1950; E.F. Riek leg.; ANIC • 1 ♂, 1 ♀; Brisbane, Toowong; [27°29'13" S, 152°59'02" E]; 18 Jan. 1922; L. Franzen leg.; SAM • 1 ♀; Taroom; [25°38'29" S, 149°48'01" E]; 30 Aug. 1919; no collector data; code 6813; QDPI • 1 ♂; Toowoomba; 27°34'00" S, 151°57'00" E; 28 Mar. 1920; J.A. Beck leg.; UQIC Reg.#42749; QM • 1 ♂; same collection data as for preceding; UQIC Reg.#42750; QM • 1 ♀; same collection data as for preceding; UQIC Reg.#42751; QM • 1 ♀; same collection data as for preceding; UQIC Reg.#42752; QM • 1 ♂, 1 ♀; Toowoomba; [27°34'00" S, 151°57'00" E]; 26 Apr. 1920; J.A. Beck leg.; W.W. Froggatt coll.; ANIC • 1 ♂; Maroochydore; [26°39'15" S, 153°05'00" E]; 20 Sep. 1920; J.A. Beck leg.; UQIC Reg.#42745; QM • 1 ♀; same collection data as for preceding; UQIC Reg.#42746; QM • 1 ♂; same collection data as for preceding; UQIC Reg.#42748; QM • 1 ♀; same collection data as

for preceding; UQIC Reg.#42747; QM • 1 ♂; Carnarvon Range; [25°23'48" S, 148°36'48" E]; Mar. 1944; N. Geary leg.; AMS • 1 ♀; same locality as for preceding; 20 Dec. 1938; N. Geary leg.; AMS • 1 ♀; Calavos; [24°56'07" S, 152°25'47" E]; 2 Sep. 2001; L.J. Cookson leg.; code 11934; MVMA • 1 ♀; same collection data as for preceding; code 11935; MVMA • 1 ♂, 1 ♀; Rockhampton; [23°22'30" S, 150°30'42" E]; 26–27 Dec. 1967; J. and M. Sedlacek leg.; BPBM • 1 ♂; Macrossan; [19°59'50" S, 146°26'22" E]; 10 Jun. 1958; K.L. Harley leg.; ANIC • 3 ♂♂; Dalby; [27°10'53" S, 151°15'58" E]; 1935; N. Geary leg.; USNM • 1 ♂; same locality as for preceding; 1934; N. Geary leg.; USNM • 1 ♂; Duaringa; [23°42'52" S, 149°40'15" E]; 18 Sep. 1923; QM • 2 ♂♂; Clermont; [22°49'23" S, 147°38'18" E]; Jan. 1929; K.K. Spence leg.; AMS • 1 ♂; Cania Gorge National Park; 24°42'47" S, 150°59'13" E; 12 Dec. 2019; light trap; J. Constant, F. Martoni, M. Moir and L. Semeraro leg.; QM • 1 ♀; same collection data as for preceding; RBINS • 6 ♂♂, 1 ♀; same locality as for preceding; 9–10 Mar. 2020; on *Gossia bidwillii* / *Corymbia* sp.; J. Constant and L. Semeraro leg.; RBINS • 1 ♀; same collection data as for preceding; QM • 1 ♂; Lords Table Plateau, site 2; 22°39'30" S, 148°01'00" E; 10 Jan.–7 Mar. 2006; J.C. Burwell leg.; 6401 ♂; Malaise trap; *Eucalyptus* woodland; code 13362; QM • 1 ♂; 11 km S of Roche Creek; 25°57' S, 149°54' E; 9 Oct. 1984; I. Naumann and J. Cardale leg.; ANIC • 1 ♂; Carnarvon National Park, Mt Moffatt Section; 24°58'08" S, 147°57'13" E; 21 Nov. 1995; M.E. Irwin and D. Gaimari leg.; code 179,958; INHS • 1 ♂; 5 km N of Leyburn; 27°58' S, 151°38' E; 25 Dec. 1987; G. and A. Daniels leg.; UQIC Reg.#43869; QM • 1 ♂; Glendale; 23°14'45" S, 150°29'15" E; 9 Apr. 2020; A. McDougall and C. Foelz leg.; on *Eucalyptus crebra*; RBINS • 1 ♀; same locality as for preceding; 7 Apr. 2020; A. McDougall and C. Foelz leg.; on *Eucalyptus crebra*; RBINS • 1 ♂; same collection data as for preceding; QM • 1 ♂; same locality as for preceding; 2 Apr. 2020; A. McDougall and C. Foelz leg.; on *Eucalyptus crebra*; QM • 1 ♀; Condamine; [26°55'33" S, 150°08'11" E]; 30 Mar. 1957; N. Geary leg.; AMS • 1 ♀; Lake Broadwater near Dalby; 27°21' S, 151°06' E; 27 Sep.; G. and A. Daniels leg.; UQIC Reg. #43982, Site B; QM • 1 ♀; 6 km S of Moranbah; 22°03' S, 148°04' E; 20 Dec. 1997–26 Apr. 1998; G. Monteith leg.; alt. 220 m; code 5803; flight interception trap, box flat; QM • 1 ♀; Imbil; [26°27'36" S, 152°40'39" E]; 7 Feb. 1937; UQIC Reg. #43691; QM • 1 ♀; Townsville, James Cook University; 19°20' S, 146°46' E; 17 Nov. 1994; J.R. Makinson leg.; on *Melaleuca quinquenervia*; code NQExc4-20.P006; ASCT HE003451; ASCU • 1 ♀; Foothills Mt Walsh N.P., 10 km SE of Biggenden; [25°34'00" S, 152°02'59" E]; 1–2 Jan. 1972; H. Frauca leg.; ANIC • 1 ♀; Toowoomba; [27°34'00" S, 151°57'00" E]; 2 Dec. 1923; QM • 1 ♀; same locality as for preceding; 26 Apr. 1920; J.A. Beck leg.; UQIC Reg.#43632; QM • 1 ♀; Brisbane; [27°28'04" S, 153°01'41" E]; 17 Nov. 1951; Urquhart leg.; UQIC Reg. #43552; QM • 1 ♀; Bundaberg; [24°52' S, 152°21' E]; 25 May 1960; E.A. Bernays leg.; UQIC Reg. #43674; QM • 1 ♀; Expedition Range N.P., Amphitheatre Camp; 25°12' S, 148°59' E; 25 Sep.–18 Dec. 1997; Cook and Monteith leg.; alt. 560 m; open forest; flight interception trap; QM • 1 ♀; Moggill; [27°34'38" S, 152°52'39" E]; 10 May 1951; T. Denmead leg.; UQIC Reg. #43550; QM • 1 ♀; Deception Bay; [27°10'55" S, 153°00'47" E]; 23 Mar. 1954; O.R. Byrne leg.; UQIC Reg. #43546; QM • 1 ♂; 32 km S of Maryborough; [25°50'43" S, 152°41'54" E]; 10 Feb. 1964; J. Sedlacek leg.; BPBM • 1 ♂; Townsville; [19°15' S, 146°49' E]; 13 Aug. 1944; F. Bishopp leg.; on *Eucalyptus* tree; code 44-21324; USNM • 1 ♂, 2 ♀♀; Undara Volcanic N.P., Kalkani Crater; 18°13'11" S, 144°40'02" E; 3 May 2022; alt. 900–950 m; J. Constant and L. Semeraro leg.; QM • 2 ♂♂, 1 ♀; same collecting data as for preceding; RBINS • 1 ♀; Macrossan Park Camping Area; 20°0'06" S, 146°26'20" E; 19–20 Apr. 2022; alt. 250 m; J. Constant and L. Semeraro leg.; QM. – **New South Wales** • 1 ♂; Clarence River; [29°28'16" S, 153°08'17" E]; A. and F.R. Zietz leg.; SAM.

Examined from photographs

AUSTRALIA • 2 specs (Fig. 66A–C); Queensland, Brisbane, Karawatha Forest; 27°37'53" S, 153°04'49" E; Jun. 2007; on smooth trunk *Eucalyptus* sp.; P. Chew photogr. • 1 pair, mating (Fig. 67A–B); Queensland, Glendale; 23°14'45" S, 150°29'15" E; 8 Mar. 2020; on *Eucalyptus crebra*; C. Foelz photogr. • 1 pair, mating (Fig. 67C); same locality as for preceding; 15 Mar. 2020; on *Eucalyptus crebra*; 15 Mar. 2020; A. McDougall photogr.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 50): 10.18 mm (9.15–11.07); ♀ (n = 20): 11.16 mm (10.27–12.65); BV/LV: ♂ (n = 1): 3.80, ♀ (n = 1): 3.82; BF/LF: ♂ (n = 1): 1.38, ♀ (n = 1): 1.35; LP+LM/BT: ♂ (n = 1): 0.77, ♀ (n = 1): 0.74; LM/LP: ♂ (n = 1): 3.03, ♀ (n = 1): 2.93; LTg/BTg: ♂ (n = 1): 2.59, ♀ (n = 1): 2.53; LW/BW: ♂ (n = 1): 1.62, ♀ (n = 1): 1.61.

HEAD (Figs 60A–D, 61A–D). Slightly narrower than thorax. Vertex brown irregularly, moderately to rather densely variegated with black; about 3.8 times as broad as long, concave with all margins slightly carinate; anterior and posterior margins rounded, nearly parallel. Frons mostly black, irregularly, rather moderately variegated with pale brown to reddish on ventral half; 3 paler or reddish spots in a row at level of mid-height of eyes, often a paler or reddish weak transverse band above row of spots, dorsal portion of peridiscal carina sometimes marked with pale brown or reddish; dorsal angles marked with a small, yellow-brown to reddish subtriangular marking; about 1.3–1.4 times as broad as long, slightly convex, slightly rugulose with peridiscal carina slightly marked; upper margin of frons slightly rounded in perpendicular view of frons; lateral margin incurved above lateral projection of frons, slightly rounded to slightly sinuate under the projection. Clypeus brown to reddish brown with median line and regular oblique lines on each side of postclypeus dark brown to black, sometimes strongly developed; anteclypeus dark brown to reddish brown with sides black along outer margin and with median pale yellow-brown to reddish brown line on carina; clypeus reaching mesocoxae, elongate, with median carina on anteclypeus prolonged with obsolete carina on postclypeus; base of clypeus rounded. Labium dark brown, reaching metacoxae, with apical segment as long as broad, acuminate, shorter and slightly more slender than penultimate. Genae pale yellow-brown to reddish brown. Ocelli absent. Antennae brown, not surpassing eye, not visible from above; scape about as long as broad, pedicel subcylindrical, elongate, narrowing towards apex.

THORAX (Figs 60A, C, 61A, C). About 1.30–1.35 times as broad as combined length of pro- and mesonotum. Pronotum brown irregularly variegated with black, mostly like vertex; disc weakly wrinkled, carina parallel to anterior margin and 2 obsolete impressed points on disc usually included in a dark marking; slightly excavate behind middle portion of anterior margin; paranotal lobes pale to dark brown, sometimes suffused with reddish. Mesonotum brown irregularly variegated with black, usually more densely black and generally darker than pronotum, usually with poorly defined black marking in lateral fields; disc weakly wrinkled, median and peridiscal carinae moderately marked; median carina stopped before scutellum. Tegulae bicolour with ventral half black and dorsal half pale brown.

TEGMINA (Figs 60A, C, 61A, C). Pale brown irregularly variegated with black markings, sometimes veins suffused with red up to nodal line; distal portion darker, rarely with very small white apical spot; antepical transverse white line, often interrupted in middle; usually a broad transverse paler band just before half-length of tegmen, delimited by a transverse narrow black band at basal $\frac{1}{4}$, and posteriorly by a second, broader but usually incomplete, black band; black and pale bands more or less developed and contrasted depending on individuals; some specimens without bands, some specimens with only a squarish black marking in middle of clavus reaching sutural margin or limited to A1 vein. Flat, elongate, about 2.5–2.6 times as long as broad; costal margin weakly rounded along basal fifth, then straight or very weakly rounded to nodal line; apex rounded.

VENATION. Veins ScP+RA and RP separated close to base; first fork of MP very basal, at the level of ScP+RA–RP separation; first fork of CuA slightly before apex of clavus; clavus closed; Pcu and A1 fused at about $\frac{3}{4}$ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimitating small elongate cells.

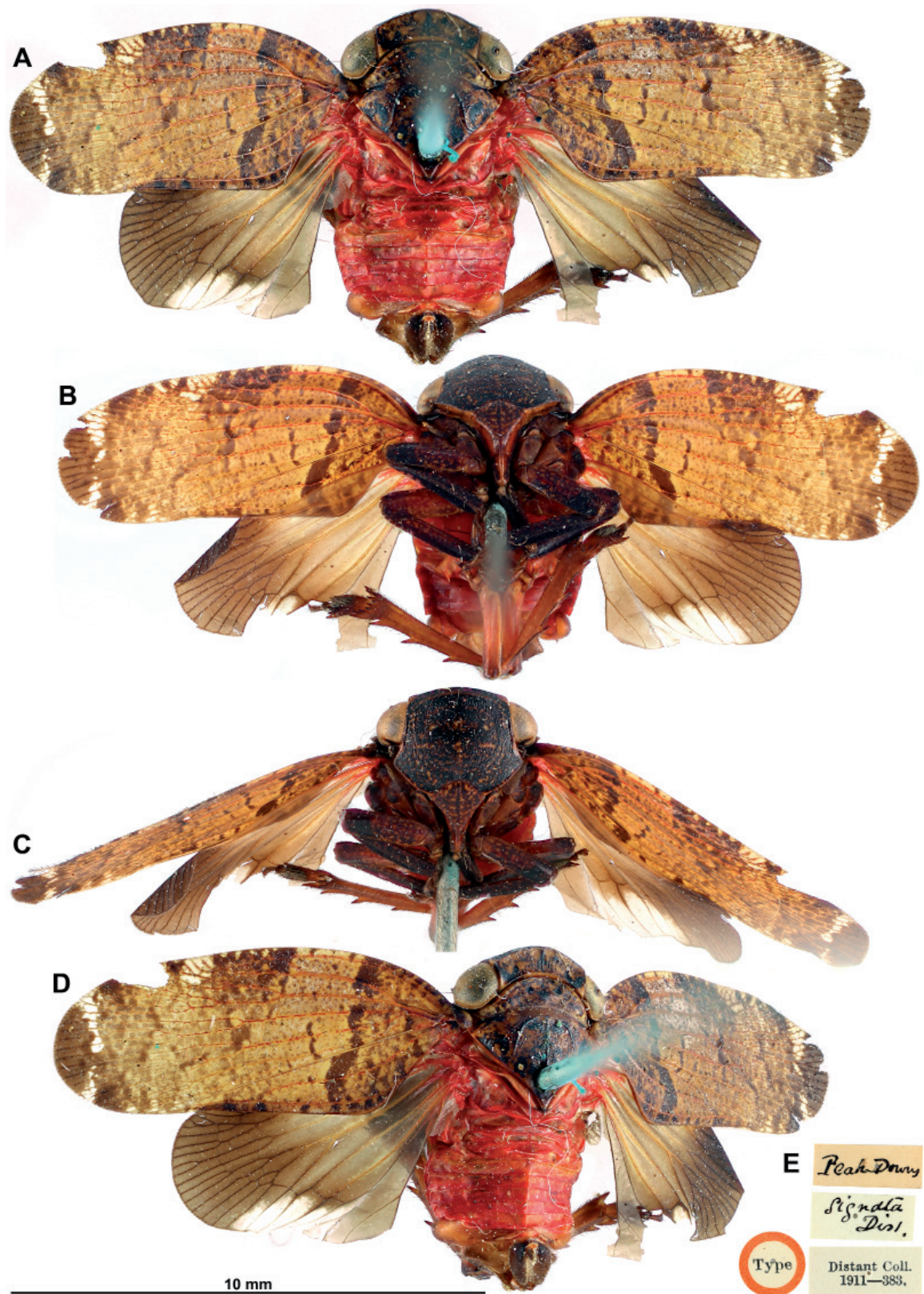


Fig. 57. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov., lectotype, ♂ (BMNH). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, perpendicular view of frons. D. Habitus, perpendicular view of left wings. E. Labels.

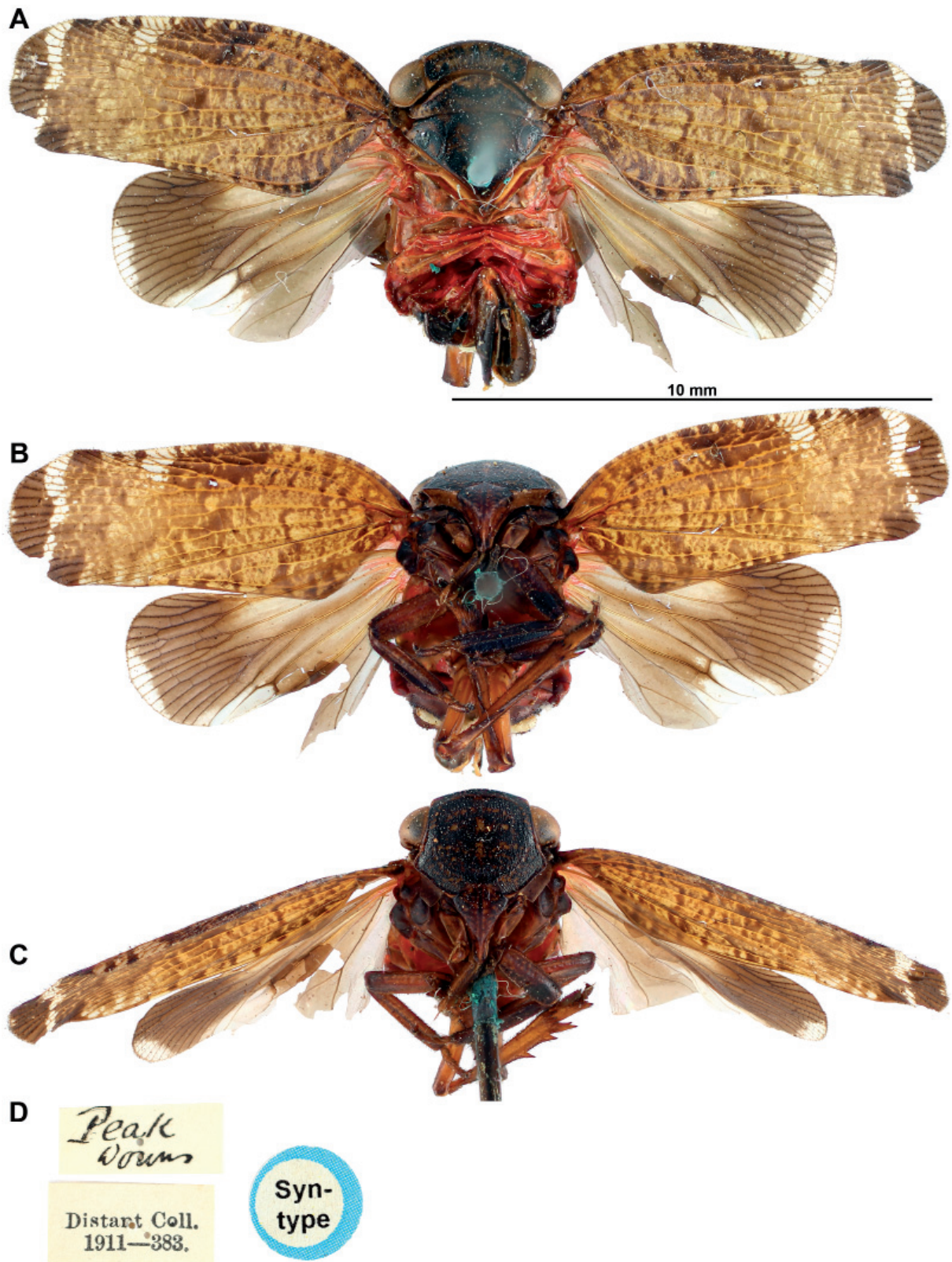


Fig. 58. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov., paralectotype, ♀ (BMNH). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, perpendicular view of frons. **D.** Labels.

POSTERIOR WINGS (Figs 60E, 61E). Mostly black-brown, narrowly marked with red basally, more or less developed orange basal area extending into a band along costal margin to nodal, and along veins CuP and PCu up to half-length of wing; strongly contrasting, rather large, subrectangular white marking along sutural margin between A1 and last apical veinlets of CuA slightly beyond cubital fold; anal area slightly paler, more greyish, often suffused with orange basally; sometimes with an apical white spot or narrow band along apical margin extending on up to 9 cells. Well developed, as broad as tegmina, about 1.6 times as long as broad, rounded apically; anal area well developed; sutural margin weakly trilobous; not reaching apex of tegmina at rest. All main veins visible from base, forked at or after nodal line and forming a few closed cells; few transverse veinlets delimiting elongate cells on apical $\frac{1}{4}$; veins A1 and A2 sometimes with 2 terminals.

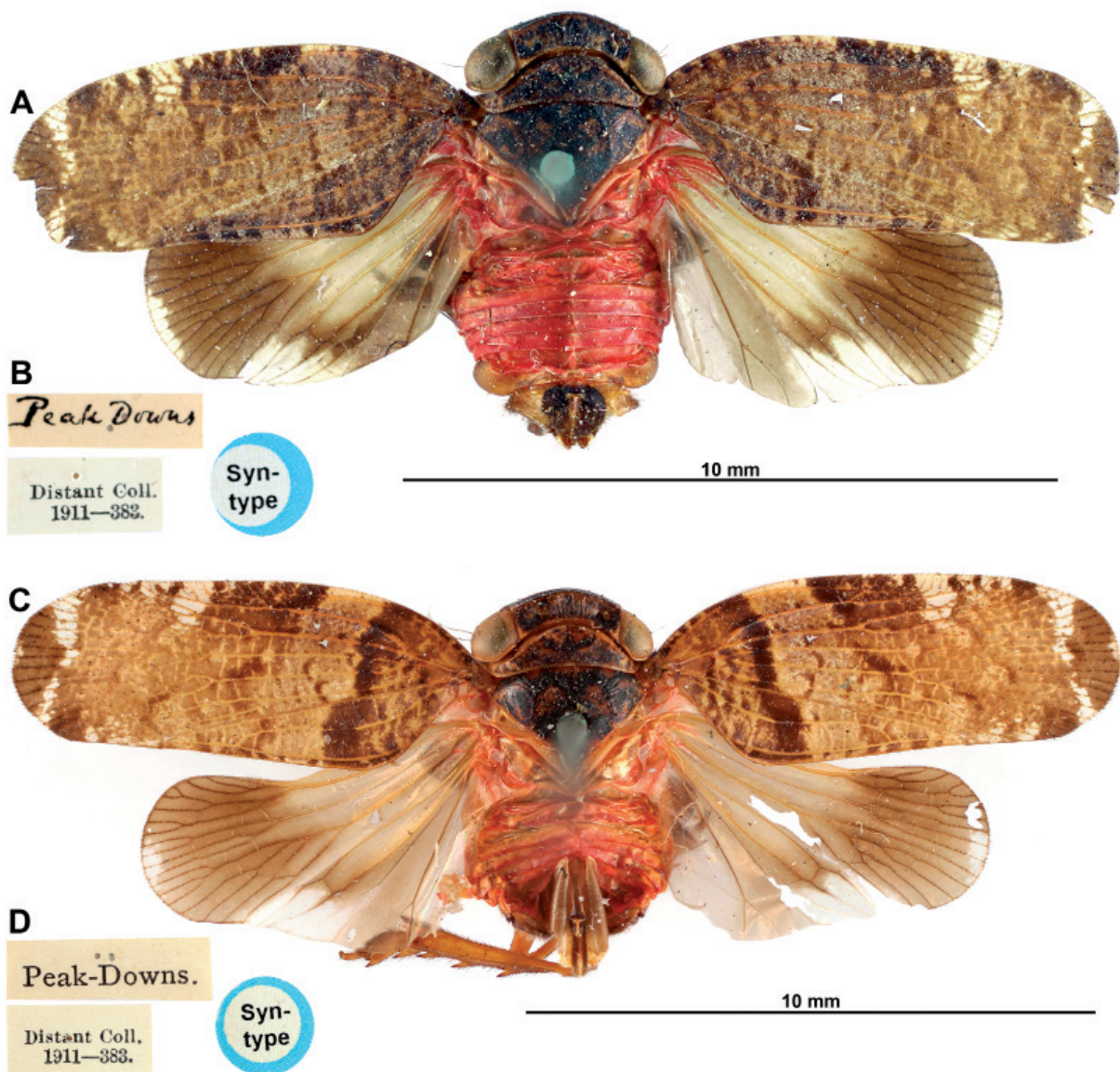


Fig. 59. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov., paralectotypes (BMNH). A–B. ♂. A. Habitus, dorsal view. B. Labels. C–D. ♀. C. Habitus, dorsal view. D. Labels.

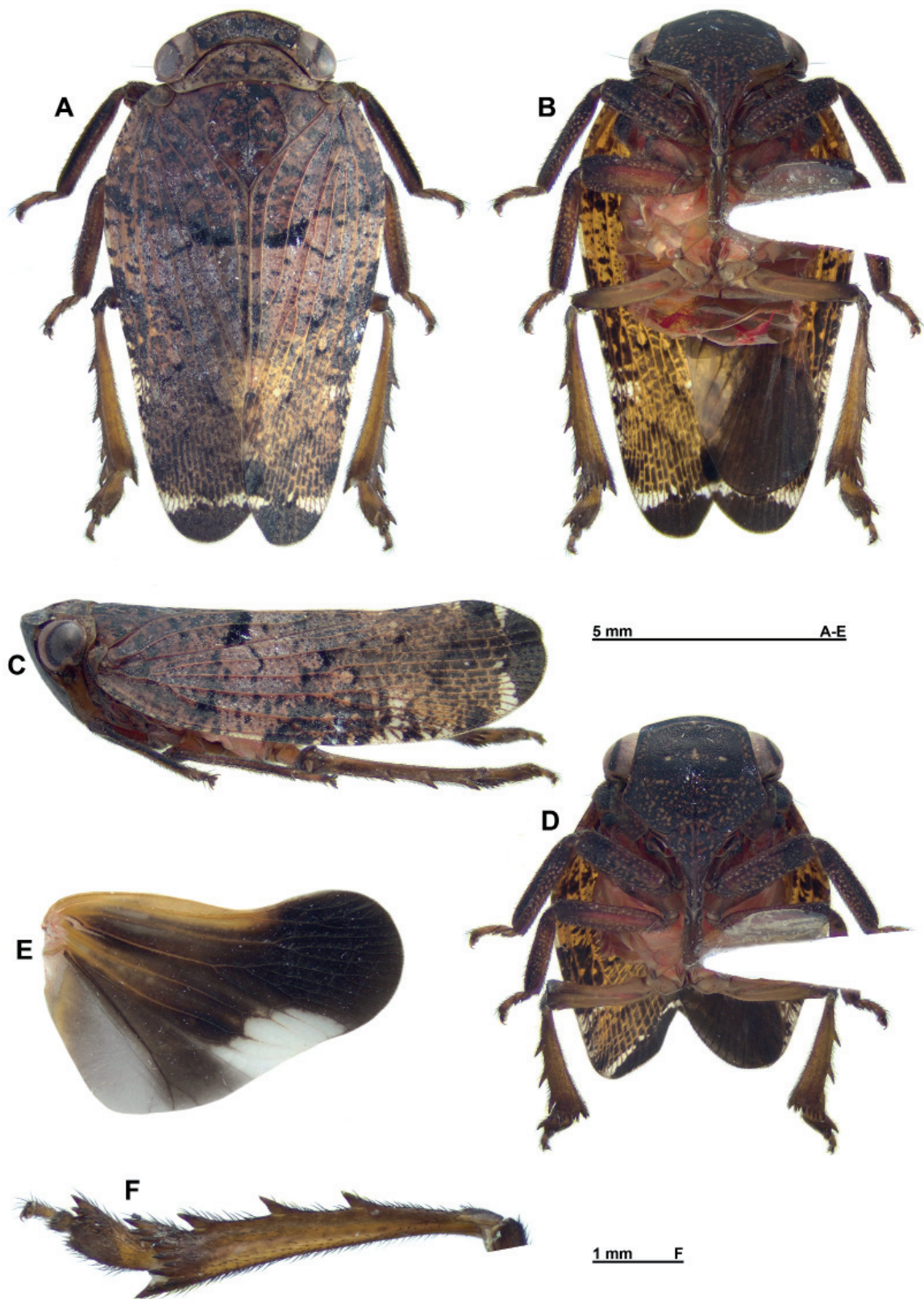


Fig. 60. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov., ♂ from Cania Gorge National Park (RBINS). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Habitus, perpendicular view of frons. E. Posterior wing. F. Metatibia and metatarsus, ventral view.

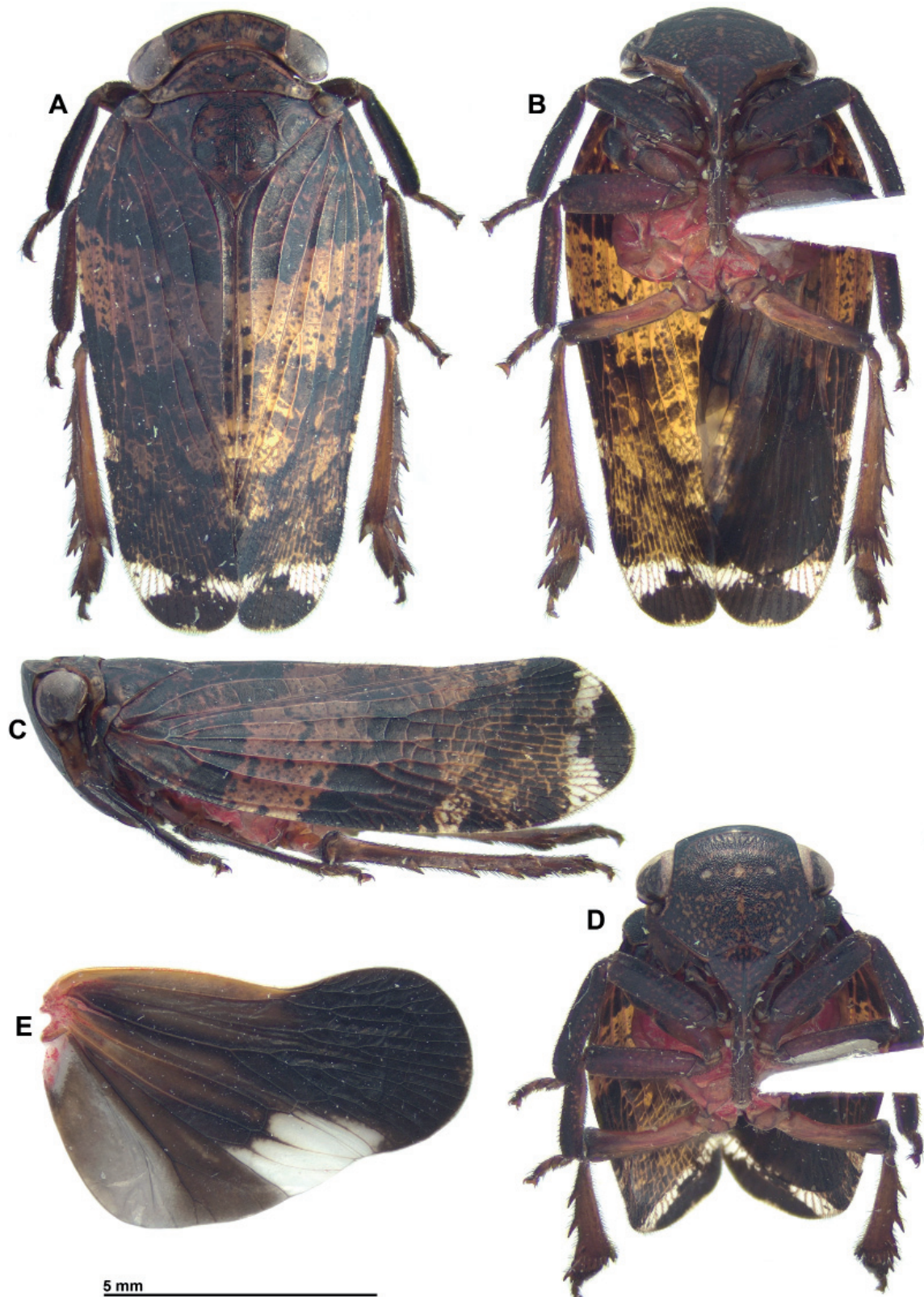


Fig. 61. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov., ♀ from Cania Gorge National Park (RBINS). A. Habitus, dorsal view. B. Habitus, ventral view. C. Habitus, lateral view. D. Habitus, perpendicular view of frons. E. Posterior wing.

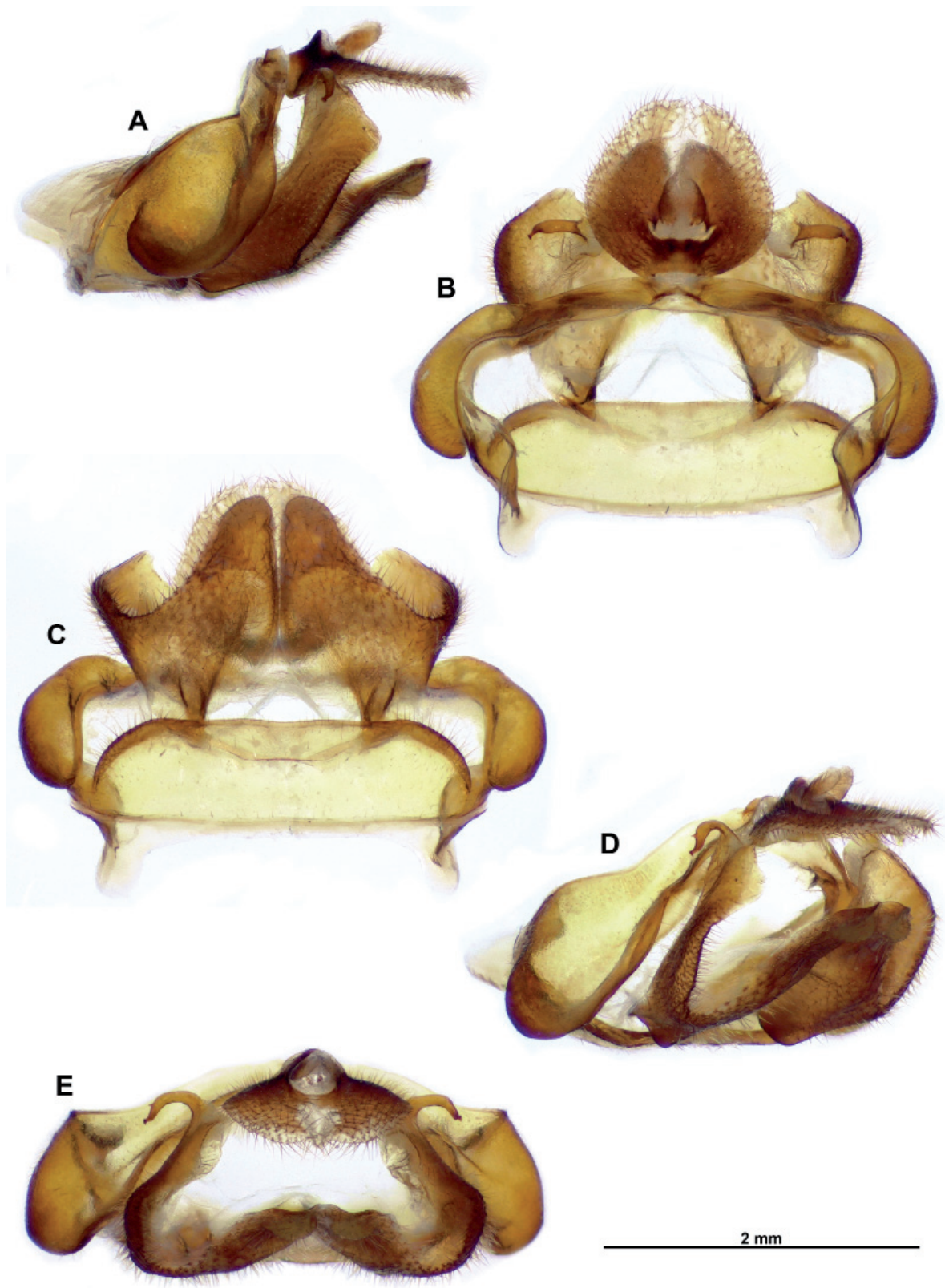


Fig. 62. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov., ♂ from Glendale, Queensland (RBINS), terminalia: pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Dorsal view. **C.** Ventral view. **D.** Left posterolateral view. **E.** Caudal view.

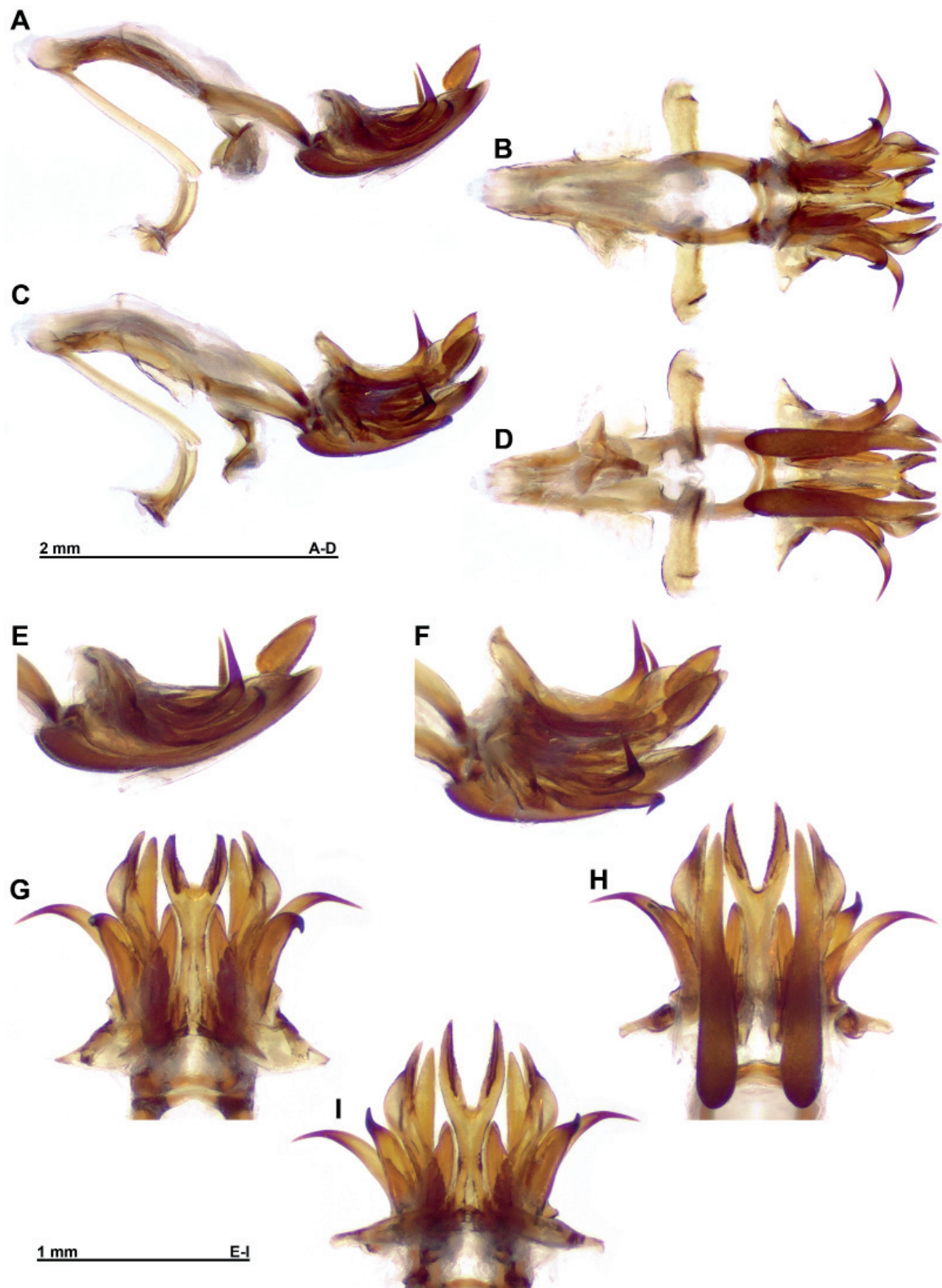


Fig. 63. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov., ♂ from Glendale, Queensland (RBINS), genitalia. **A–D.** Aedeagus s. lat. and connective. **A.** Left lateral view. **B.** Dorsal view. **C.** Left laterodorsal view. **D.** Ventral view. **E–I.** Aedeagus s. lat., detail. **E.** Lateral view. **F.** Left laterodorsal view. **G.** Dorsal view. **H.** Ventral view. **I.** Anterodorsal view.

LEGS (Figs 60A–D, F, 61A–D). Pro- and mesofemora red to reddish brown, more or less variegated with dark brown, turning to dark brown towards apex, reddish part more developed on mesofemora; pro- and mesotibiae brown dark brown, slightly variegated with paler brown ventrally; pro- and mesotarsi



Fig. 64. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov., ♂ from Glendale, Queensland (RBINS), genitalia. **A–C.** Aedeagus s. str. **A.** Dorsal view. **B.** Left lateral view. **C.** Ventral view. **D–F.** Dorsal periandrium. **D.** Dorsal view. **E.** Left lateral view. **F.** Ventral view.

slightly paler than corresponding tibia but darker apically; metafemora and tibiae red to brown, with basal $\frac{3}{4}$ of femora paler than tibiae, and distal portion of femora darker than tibiae; metatarsi and apex of metatibiae darker; apex of tibial and tarsal spines darker. Pro- and mesofemora and tibiae dorsoventrally flattened, elongate and slender; metatibiae with 3 lateral and 10 apical spines; first metatarsomere ventrally with dark pad of microsetae at internoapical angle and two rows of 5 spines. Metatibiotarsal formula: (3) 10/4/0.

MALE TERMINALIA (Figs 62–64). Pygofer (*Py*) rather short, about as high as long and oblique in lateral view (Fig. 62A), about 2.1 times as wide as high in caudal view (Fig. 62E); basal apodeme (*bap*) slightly elongate, well developed and sclerotized, sinuate in dorsal view (Fig. 62A–C); dorsal portion narrow (Fig. 62A–B); lateroventral lobe (*lvl*) projecting posterolaterally and rounded towards the anterior and posterior in dorsal view, more broadly so posteriorly (Fig. 62B); in ventral view, moderately narrowly rounded anteriorly and broadly roundly extending along posterior margin, and with inner margin more or less straight in the ventral portion and getting largely concave dorsad (Fig. 62C); in lateral view mostly obliquely broadly rounded posteriorly, with posterior margin nearly straight in middle portion, and smoothly sinuate dorsad, ventral portion, together with anteroventral angle, more or less regularly rounded (Fig. 62A); ventral portion separated from lateroventral lobe by a well-marked depression (Fig. 62C, E); ventral lamina (*vlp*) about 3.6 times as broad as long with anterior and posterior margins subparallel in ventral view, posterior margin very weakly bisinuate with posterolateral angles obliquely rounded and very weakly projecting posterad (Fig. 62C). Anal tube (*An*) nearly as long as broad, dorsoventrally

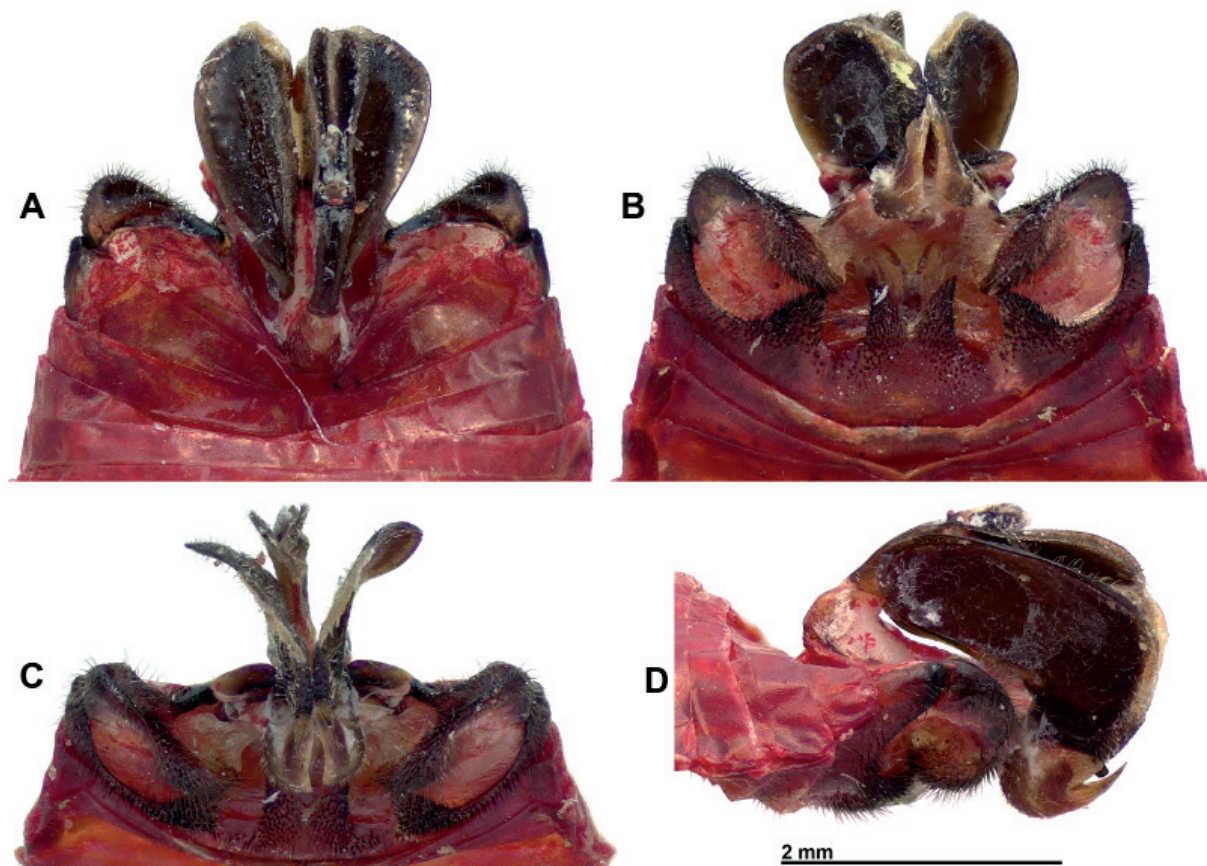


Fig. 65. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov., ♀ from Cania Gorge N.P., Queensland (RBINS), external terminalia. **A.** Dorsal view. **B.** Ventral view. **C.** Posteroventral view. **D.** Lateral view.

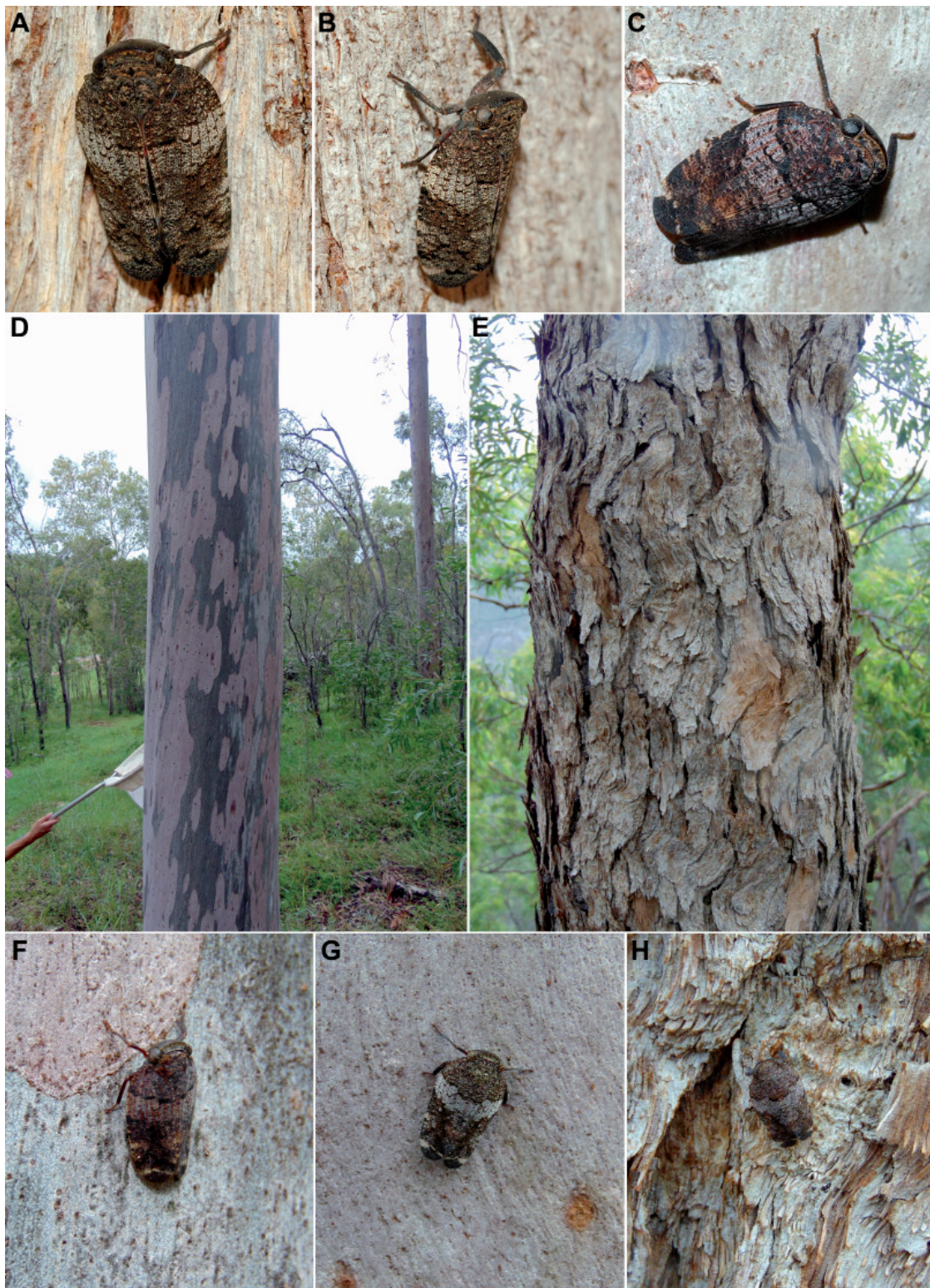


Fig. 66. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov. **A–C.** Queensland, Brisbane, Karawatha Forest, Jun. 2007, on smooth trunk *Eucalyptus* sp. (photographs by P. Chew). **D–H.** Queensland, Cania Gorge National Park, 10 Mar. 2020 (photographs by the author). **D.** Host tree, *Gossia bidwillii* (Myrtaceae). **E.** Host tree, *Corymbia* sp. (Myrtaceae). **F–G.** Specimens on *G. bidwillii*. **H.** Specimen on *Corymbia* sp.



Fig. 67. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov. **A.** Queensland, Macrossan, 19 Apr. 2022, on smooth trunk *Eucalyptus* sp. **B–E.** Queensland, Undara Volcanic Park, Kalkani Crater, 3 May 2022. **B–C.** Specimens on ironbark *Eucalyptus* sp. (Myrtaceae). **D.** Host tree, ironbark *Eucalyptus* sp. **E.** Habitat.



Fig. 68. *Kamabrachys signata* (Distant, 1892) gen. et comb. nov., mating, Queensland, Glendale. A–B. 8 Mar. 2020 (photographs by C. Foelz). C. 15 Mar. 2020 (photograph by A. McDougall).

flattened (Fig. 62A), oval with base and apex more strongly rounded than side margins; side margins nearly straight, oblique along posterior $\frac{3}{5}$, tapering towards apex; apical margin not or weakly indented in middle (Fig. 62B); paraprocts (*pa*) at basal $\frac{1}{4}$, well developed. Gonostyli (*G*) 1.4 times as broad as long in ventral view (Fig. 62C); ventral process (*vp*) in ventral view subtriangular, with lateral margin slightly excavate, then rounded apically (Fig. 62C); laterodorsal process (*ldg*) rather widely visible in ventral view (Fig. 62C), sinuate in caudal view with mediolateral angle (*mlla*) rather weakly marked (Fig. 62E), mediolateral angle slightly projecting laterally (Fig. 62A, D), posterior margin oblique along basal $\frac{2}{3}$, then abruptly, roundly curved cephalad in lateral view, distal $\frac{1}{3}$ of laterodorsal process tapering in lateral view (Fig. 62A); dorsal hook (*dhg*) narrow with anteapical emargination (Fig. 62A), apically curved laterad (Fig. 62B), then strongly ventrad with apex slightly projecting laterally in caudal view (Fig. 62E), sometimes a small tooth in distal portion. Connective (*cv*) strongly developed, about 1.5 times as long as aedeagus s. lat., with anterior pair of lateral apodemes forming a broad lateral lamina directed posterolaterad and rather broadly rounded apically; posterior pair of apodemes ribbon-like, well developed laterally and sinuate (Fig. 63A–D). Aedeagus s. lat. moderately upcurved with periandrium reaching more or less level of apex of aedeagus s. str. posteriorly (Fig. 63E–I). Aedeagus s. str. (Fig. 64A–C) with apical processes about 7.9 times as long as broad at mid-length; apicoventral process (*avp*) smoothly tapering towards the posterior and narrowly rounded apically, weakly incurved in ventral view; apicodorsal process (*adp*) in dorsal view (Fig. 64A) weakly sinuate, rather weakly inflated, elongate, rather smoothly tapering towards apex in an elongate blunt point, and surpassing apicoventral process. Dorsal periandrium (Fig. 64D–F) with laterodorsal processes (*ldp*) rather regularly tapering from base to acutely pointed apex, directed posterad and slightly laterad in dorsal view with basal $\frac{3}{5}$ more or less flattened dorsoventrally, then abruptly upcurved with distal $\frac{2}{5}$ pointing dorsad in lateral view; lateroventral processes (*lvp*) dorsoventrally flattened on basal $\frac{3}{4}$, broadening from base to first $\frac{1}{4}$, then gently tapering, curved laterad and slightly dorsad along distal $\frac{1}{4}$ towards acutely pointed apex, projecting posterolaterally slightly beyond laterodorsal processes; basomedian processes (*bmp*) apically tapering, more or less obliquely blunt in dorsal view and with sides slightly converging towards apex in ventral view; median furcate process (*mfp*) with furca about as long as shaft (Fig. 63I) and moderately upcurved in lateral view (Fig. 64E), dorsal crest (*cfp*) on most of the length of arms of furca, vertical in dorsal view (Fig. 64D), crest rather abruptly broadening basally then smoothly, regularly tapering towards pointed apex and with dorsal margin slightly irregular in lateral view (Fig. 64E), inner and outer lateral walls of furca weakly granulose (Fig. 64D).

FEMALE TERMINALIA (Fig. 65). Abdominal sternite VI (*As VI*) with sides upcurving in posteroventral view (Fig. 65C); posterior margin in ventral view (Fig. 65B) projecting posteriorly on sides; median subquadrate emargination wide (Fig. 65B–C); subtriangular processes moderately developed, tapering, apically rounded and directed posterodorsad (Fig. 65B–D); emargination between subtriangular processes and lateral projection deeply rounded (Fig. 65B–C); processes of furca of sternite VI (*FAs VI*) pointed, diverging, well developed and curved posterodorsad (Fig. 65B–C). Inner portion of gonocoxa VIII (*Gx VIII*) strongly curved dorsad (Fig. 65C); posterior margin of gonapophysis (*Gy VIII*) projecting rather strongly posterad and apically rounded (Fig. 65A–B). Lateroventral excavate membranous fold of gonocoxae VIII between sternite VI and gonapophysis VIII in posteroventral view widely open (Fig. 65C). Inner portion of gonapophysis VIII, subtriangular processes and adjacent part of posterior margin of sternite VI, and processes of furca of sternite VI (*FAs VI*) densely covered in short strong setae (Fig. 65B–C). Gonoplacs (*Gp*) unilobed, large and semicircular, mostly hiding the anal tube (Fig. 65D). Gonocoxal bases IX (*Gb IX*) projecting laterally (Fig. 65B–C). Gonapophysis IX (*Gy IX*) flattened laterally, reflexed posterodorsad and strongly tapering apically (Fig. 65B, D). Anal tube (*An*) elongate and narrow, curved posteroventrad, v-shaped in cross section beyond anus, lanceolate in dorsal view (Fig. 65A, C–D).

SEXUAL DIMORPHISM. Female nearly 10% larger than male.

Distribution and biology

The species is recorded from a large area extending from the eastern coast to the Great Dividing Range and, including the latter, from the northernmost portion of New South Wales to the south, to the level of Halifax Bay in Queensland to the north (Fig. 5B). Bioregions: Einasleigh Uplands, Wet Tropics, Desert Uplands, Brigalow Belt North, Brigalow Belt South and South Eastern Queensland.

The examined specimens were collected in all months, although in lower numbers during the months of May to August and October.

The habitat of the species is open *Eucalyptus* woodland (J. Constant & L. Semeraro pers. obs., Mar. 2020 and Apr.–May 2022; labels data).

The species seems polyphagous on several species of tree, but all recorded host trees belong to the family Myrtaceae: *Eucalyptus crebra* F.Muell. and *Eucalyptus tereticornis* Sm. (C. Foelz and A. McDougall pers. com., Apr. 2020 – Fig. 68), “smooth bark” *Eucalyptus* sp. (P. Chew pers. com., Jun. 2007 – Fig. 66A–C), *Gossia bidwillii* (Benth.) N.Snow & Guyer (J. Constant and L. Semeraro pers. obs., Mar. 2020 – Fig. 66D, F–G), *Corymbia* sp. (J. Constant and L. Semeraro pers. obs., Mar. 2020 – Fig. 66E, H), “ironbark” *Eucalyptus* sp. (probably *E. cullenii* Cabbage and/or *E. crebra*, J. Constant and L. Semeraro pers. obs., May. 2022 – Fig. 67B–E), and *Melaleuca quinquenervia* (Cav.) S.T.Blake.

The mating behaviour was observed and documented in March 2020 on trunks of *E. crebra* and *E. tereticornis* in Glendale (C. Foelz and A. McDougall pers. com., Apr. 2020 – Fig. 68): during the copulation, the male stays attached, upside down, to the female; the male holds on to the tegmina of the female with its anterior and median legs and the body of the male is largely hidden under that of the female; they seem able to quickly separate when disturbed.

Kamabrachys v-carinatum gen. et sp. nov.

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Figs 5B, 69–72

Platybrachys signata – Lallemand 1935: 675 [recorded from Burnside, Northern Territory; misidentification!].

Diagnosis

The species can be recognized by the following combination of characters:

- (1) posterior margin of the lateroventral lobes of the pygofer (*lvl*) rounded in lateral view (Fig. 70A) and rounded in ventral view (Fig. 70C), inner margin of lobes concave in ventral view (Fig. 70C), ventral margin rounded in caudal view (Fig. 70E);
- (2) posterior margin of laterodorsal process of gonostylus (*ldg*) roundly emarginate, leaving a rather widely open angle between laterodorsal process and ventral process of gonostylus (*vp*) in lateral view (Fig. 70A);
- (3) crest of furcate process of periandrium (*cfp*) along distal portion, merging basally and continued on basal portion (Fig. 72D), in lateral view, shortly tapering in distal portion (Fig. 72E);
- (4) laterodorsal process of periandrium (*ldp*) abruptly tapering after basal half and gently tapering in distal portion, distal half sinuate and curved laterodorsad, shorter than lateroventral process (*lvp*) (Fig. 72D–E);
- (5) lateroventral process of periandrium (*lvp*) dorsoventrally flattened, falcate in a long basal portion then twisted dorsolaterad distally with apex pointing dorsolaterocephalad (Fig. 72D–F);

- (6) apicodorsal process of aedeagus (*adp*) rather weakly sinuate, moderately wide distally and tapering towards the posterior, shorter than apicoventral process (*avp*) and quite strongly diverging from it (Fig. 72A–C);
- (7) posterior wing with weakly marked whitish marking along sutural margin (Fig. 69A).

Etymology

The species epithet is formed from the letter ‘v’ and the Latin adjective ‘*carinatus*’, meaning ‘crested, carinate’. It refers to the crests of the arms of the median furcate process of the periandrium which merge together on the shaft of the process in the shape of a ‘v’. The name is a noun phrase in which the adjectival portion of the name must be neuter, as all letters are grammatically neuter.

Type material

Holotype

AUSTRALIA • ♂; [Northern Territory], Brock’s Creek; [13°28’00” S, 131°25’07” E]; 8 May 1932; T. Campbell leg.; “Brock’s Ck, N.T., 8.5.32, T. Campbell”; ANIC.

Paratypes

AUSTRALIA • 1 ♂; [Northern Territory], 128 km S of Darwin; [13°30’19” S, 131°22’50” E]; 11 Jan. 1964; J. Sedlacek leg.; “Australia: N.T., 128 km S Darwin, 11.I.1964” “J. Sedlacek Collector, Bishop Museum”; BPBM • 1 ♂; [Northern Territory], Burnside; [13°28’45” S, 131°25’00” E]; Apr. 1931; Handschin leg.; “Burnside, N.T., April 1931. Handschin” “*Platybrachys signata* Dist. variety, det. W.E. China. 1934.”; FSAG • 1 ♂; [Northern Territory], Adelaide River Station; [13°14’37” S, 131°06’46” E]; Apr. 1931; Handschin leg.; “Adelaide R. Stn, N.T., April 1931. Handschin”; NHMB • 1 ♂; [Northern Territory], Darwin; [12°26’17” S, 130°50’28” E]; Jun. 1931; Handschin leg.; “Darwin, N.T., Juni 1931, Handschin”; NHMB • 1 ♂; [Northern Territory], Burnside; [13°28’45” S, 131°25’00” E]; May 1932; Handschin leg.; “Burnside, N.T., April 1931. Handschin” “*Platybrachys signata* Dist. var.”; NHMB.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 6): 9.0 mm (8.64–9.24); BV/LV (n = 1): 3.35; BF/LF (n = 1): 1.25; LP+LM/BT (n = 1): 0.90; LM/LP (n = 1): 3.10; LTg/BTg (n = 1): 2.52; LW/BW (n = 1): 1.68.

HEAD (Fig. 69A–D). Slightly narrower than thorax. Vertex brown irregularly, usually rather poorly variegated with black; about 3.4 times as broad as long, concave with all margins slightly carinate; anterior and posterior margins rounded, parallel. Frons brown, sometimes with weak reddish hue, densely variegated with black, strongly more black than vertex; usually slightly paler on ventral portion, sometimes with a short paler median line on middle of disc; about 1.25 times as broad as long, slightly convex, slightly rugulose with peridiscal carina slightly marked; upper margin of frons weakly rounded, nearly straight in perpendicular view of frons; lateral margin slightly incurved above lateral projection of frons, more or less straight, oblique, under the projection. Clypeus brown, sometimes with weak reddish hue, with dark brown to black median line and regular oblique lines on each side of postclypeus, anteclypeus dark brown, black on sides, with median pale brown, sometimes slightly reddish line on carina; clypeus reaching mesocoxae, elongate, with median carina on anteclypeus prolonged with obsolete carina on postclypeus; base of clypeus rounded. Labium dark brown, sometimes slightly reddish, reaching metacoxae, with apical segment as long as broad, acuminate, shorter and slightly more slender than penultimate. Genae pale yellowish brown. Ocelli absent. Antennae brown, not surpassing eye, not visible from above; scape about as long as broad, pedicel subcylindrical, elongate, narrowing towards apex.

THORAX (Fig. 69A, C). About 1.10 times as broad as combined length of pro- and mesonotum. Pronotum brown irregularly variegated with black, generally as pale as vertex; disc weakly wrinkled, carina parallel

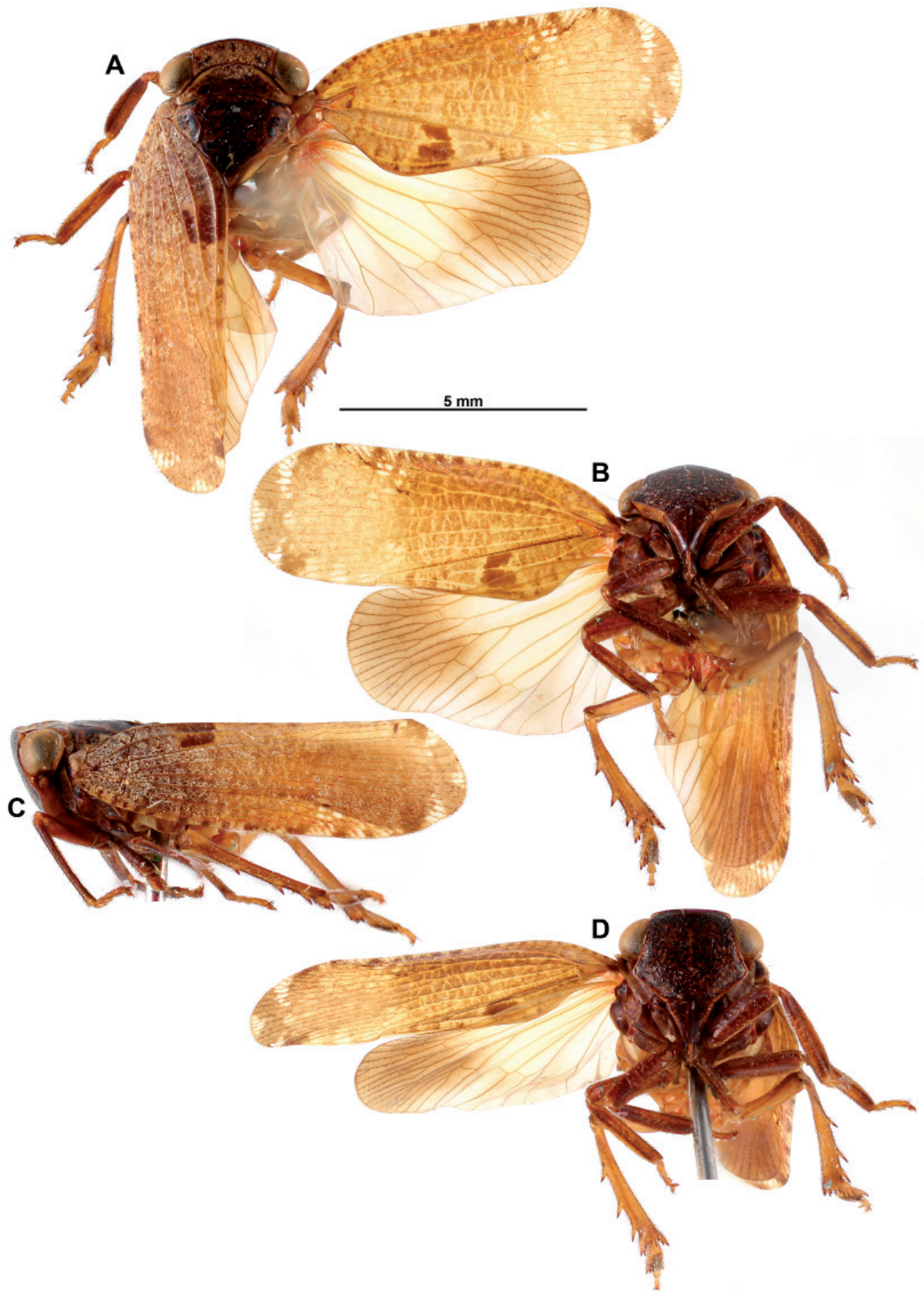


Fig. 69. *Kamabrachys v-carinatum* gen. et sp. nov., holotype, ♂ (ANIC). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons.

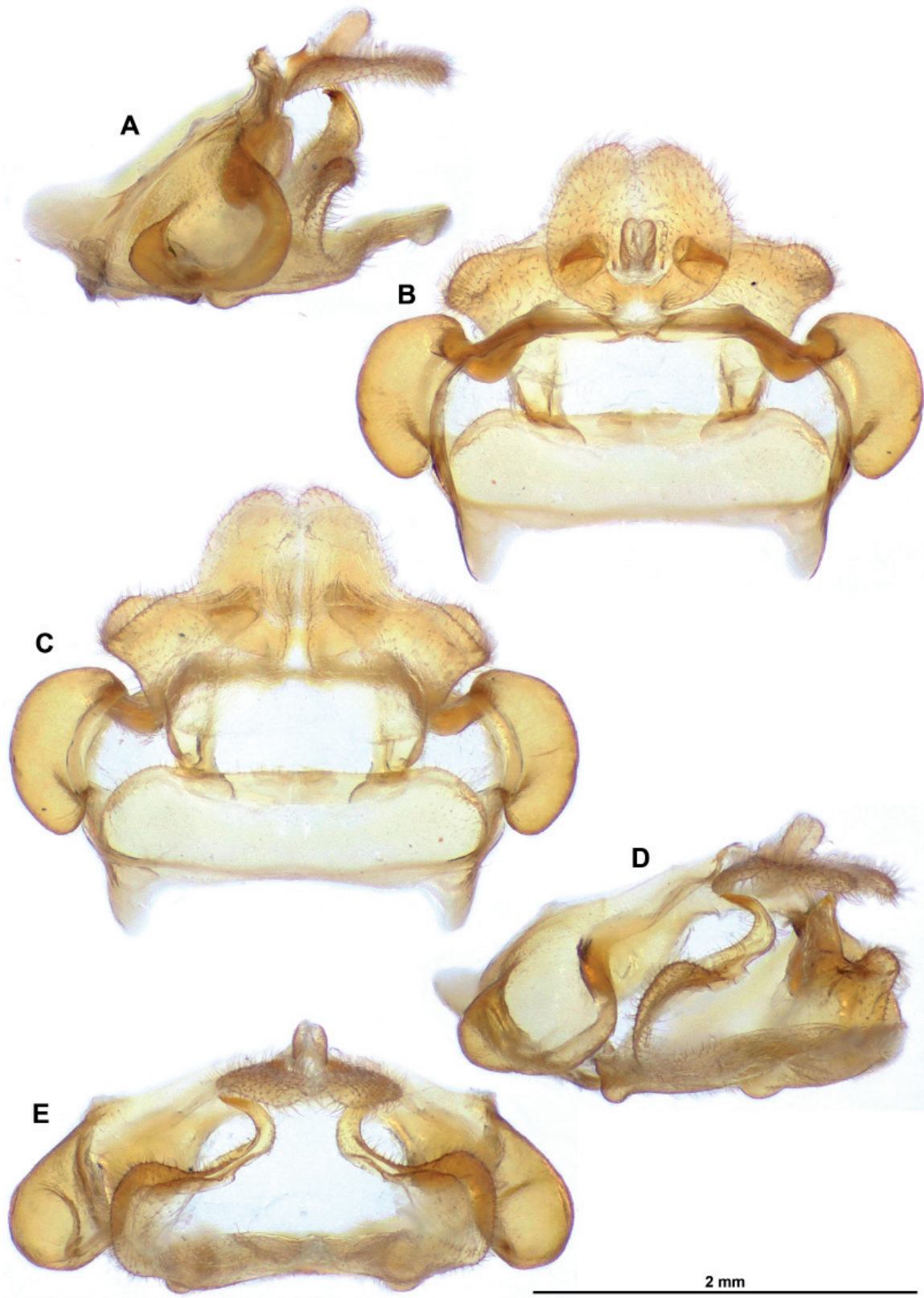


Fig. 70. *Kamabrachys v-carinatum* gen. et sp. nov., holotype, ♂ (ANIC), terminalia: pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Dorsal view. **C.** Ventral view. **D.** Left posterolateral view. **E.** Caudal view.

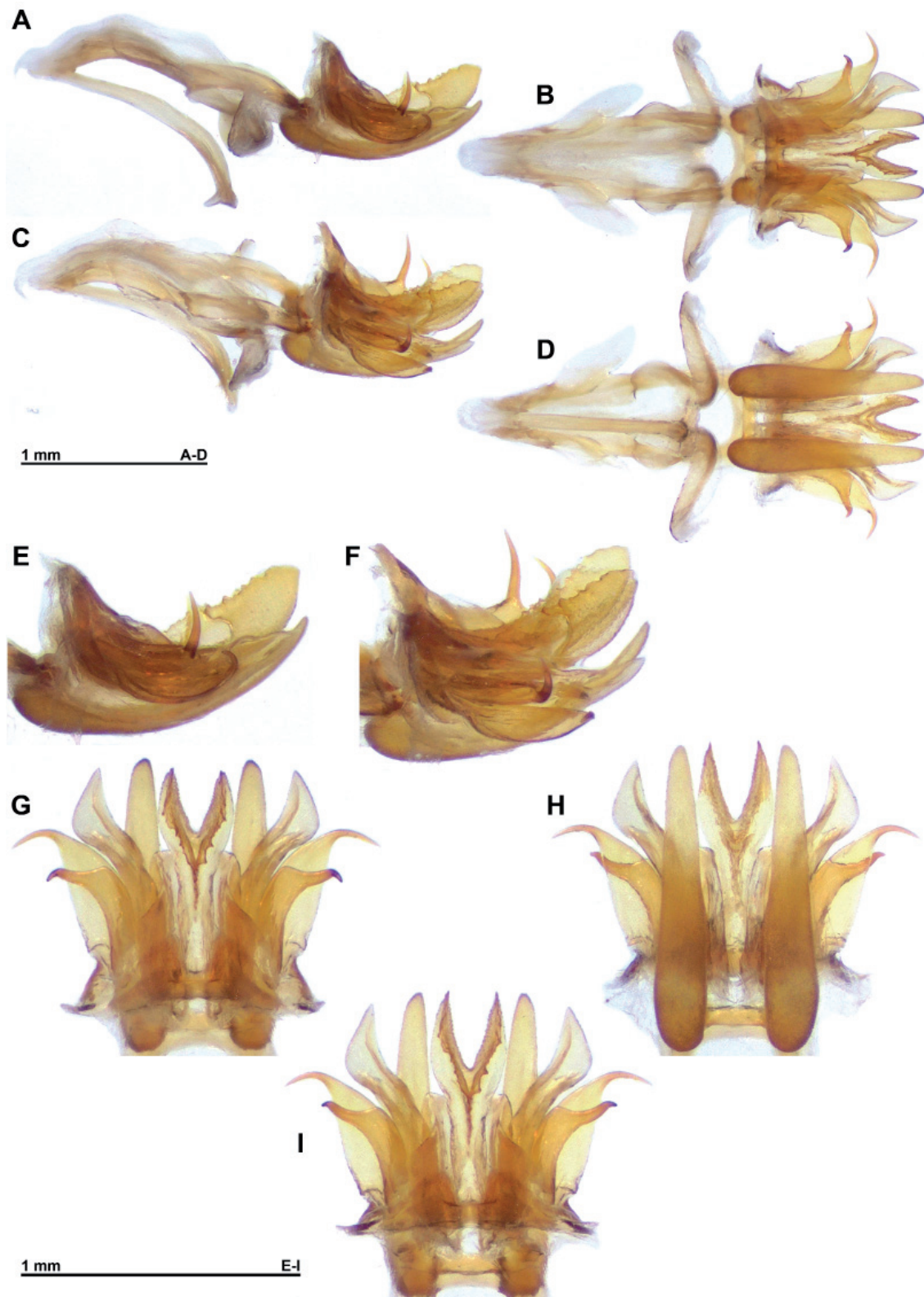


Fig. 71. *Kamabrachys v-carinatum* gen. et sp. nov., holotype, ♂ (ANIC), genitalia. **A–D.** Aedeagus s. lat. and connective. **A.** Left lateral view. **B.** Dorsal view. **C.** Left laterodorsal view. **D.** Ventral view. **E–I.** Aedeagus s. lat., detail. **E.** Lateral view. **F.** Left laterodorsal view. **G.** Dorsal view. **H.** Ventral view. **I.** Anterodorsal view.

to anterior margin and 2 obsolete impressed points on disc marked by black spot; paranotal lobes brown. Mesonotum brown irregularly variegated with black, more densely black and generally darker than pronotum; disc weakly wrinkled, median and peridiscal carinae weakly marked; median carina stopped before scutellum. Tegulae bicolour with ventral half mostly black and dorsal half pale brown.

TEGMINA (Fig. 69A–C). Pale brown irregularly variegated with darker brown and with black-brown markings along costal margin, slightly paler after nodal line than dark brown in distal portion; antepical transverse white line usually interrupted in middle portion, when complete, very narrow in middle; small apical white marking along apical margin, extending on 2–4 cells; subrectangular black-brown transverse marking in middle portion of clavus extending from sutural margin to claval fold. Flat, elongate, about 2.5 times as long as broad; costal margin weakly rounded along basal fifth, then straight to nodal line; apex rounded.

VENATION. Veins ScP+RA and RP separated close to base; first fork of MP very basal, at the level of ScP+RA–RP separation; first fork of CuA slightly before apex of clavus; clavus closed; Pcu and A1 fused at about $\frac{3}{4}$ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimitating small elongate cells.

POSTERIOR WINGS (Fig. 69A–B). Yellow with apical $\frac{1}{3}$ blackish brown, moderately broad band along posterior margin and anal area brown, paler than apical area; apical white marking sometimes present, weakly marked and extending on 2–3 cells; whitish marking along sutural margin between A1 and cubital fold, sometimes rather weakly marked. Colour more or less contrasted depending on individuals. Wings well developed, as broad as tegmina, about 1.7 times as long as broad, somewhat roundly truncate apically; anal area well developed; sutural margin hardly trilobous; not reaching apex of tegmina at rest. All main veins visible from base, forked at or after nodal line and forming a few closed cells; few transverse veinlets delimiting elongate cells on apical $\frac{1}{4}$; veins A1 and A2 sometimes with 2 terminals.

LEGS (Fig. 69A–D). Pro- and mesofemora and tibiae brown densely variegated with dark brown to black, dorsum of pro- and mesotibiae uniformly brown; pro- and mesotarsi paler than corresponding tibia but blackish apically; posterior legs brown with apex of tibial and tarsal spines darker. Pro- and mesofemora and tibiae dorsoventrally flattened, elongate and slender; metatibiae with 3 lateral and 10 apical spines; first metatarsomere ventrally with darker pad of microsetae at internoapical angle and two rows of 5 spines. Metatibiotarsal formula: (3) 10/4/0.

MALE TERMINALIA (Figs 70–72). Pygofer (*Py*) rather short, as high as long and oblique in lateral view (Fig. 70A), about 2.6 times as wide as high in caudal view (Fig. 70E); basal apodeme (*bap*) well developed and sclerotized, sinuate in dorsal view (Fig. 70A–C); posterior margin abruptly emarginate on dorsal $\frac{1}{5}$ (Fig. 70A), dorsal portion narrow (Fig. 70A–B); lateroventral lobe (*lvl*) rather strongly developed, projecting posterolaterally and broadly rounded in dorsal view (Fig. 70B); in ventral view, rounded anteriorly and posteriorly, more broadly rounded laterally and with inner margin excavate (Fig. 70C); in lateral strongly, roundly inflated posterad with uppermost portion sinuate, ventral margin more or less straight, horizontal, and anterior margin rounded (Fig. 70A); ventral portion separated from lateroventral lobe by a well-marked depression (Fig. 70C, E); ventral lamina (*vlp*) about 3.4 times as broad as long with anterior and posterior margins subparallel in ventral view, posterior margin weakly bisinuate, and posterolateral angles obliquely rounded laterally and weakly projecting posterad (Fig. 70C). Anal tube 1.1 times as broad as long (*An*), dorsoventrally flattened (Fig. 70A), subcircular with lateral margins more or less regularly rounded; apical margin rather strongly indented in middle (Fig. 70B); paraprocts (*pa*) at basal $\frac{1}{4}$, well developed. Gonostyli (*G*) rather short, 1.47 times as broad as long in ventral view (Fig. 70C); ventral process (*vp*) in ventral view rather short, subtriangular with lateral margin rather strongly sinuate, then rounded apically (Fig. 70C); laterodorsal process (*ldg*)

narrowly visible on sides in ventral view (Fig. 70C), strongly sinuate in caudal view with mediolateral angle (*m**la*) strongly marked (Fig. 70E), mediolateral angle projecting laterally (Fig. 70A, D), in lateral view, posterior margin roundly concave under mediolateral angle (Fig. 70A); dorsal hook (*d**hg*) more or

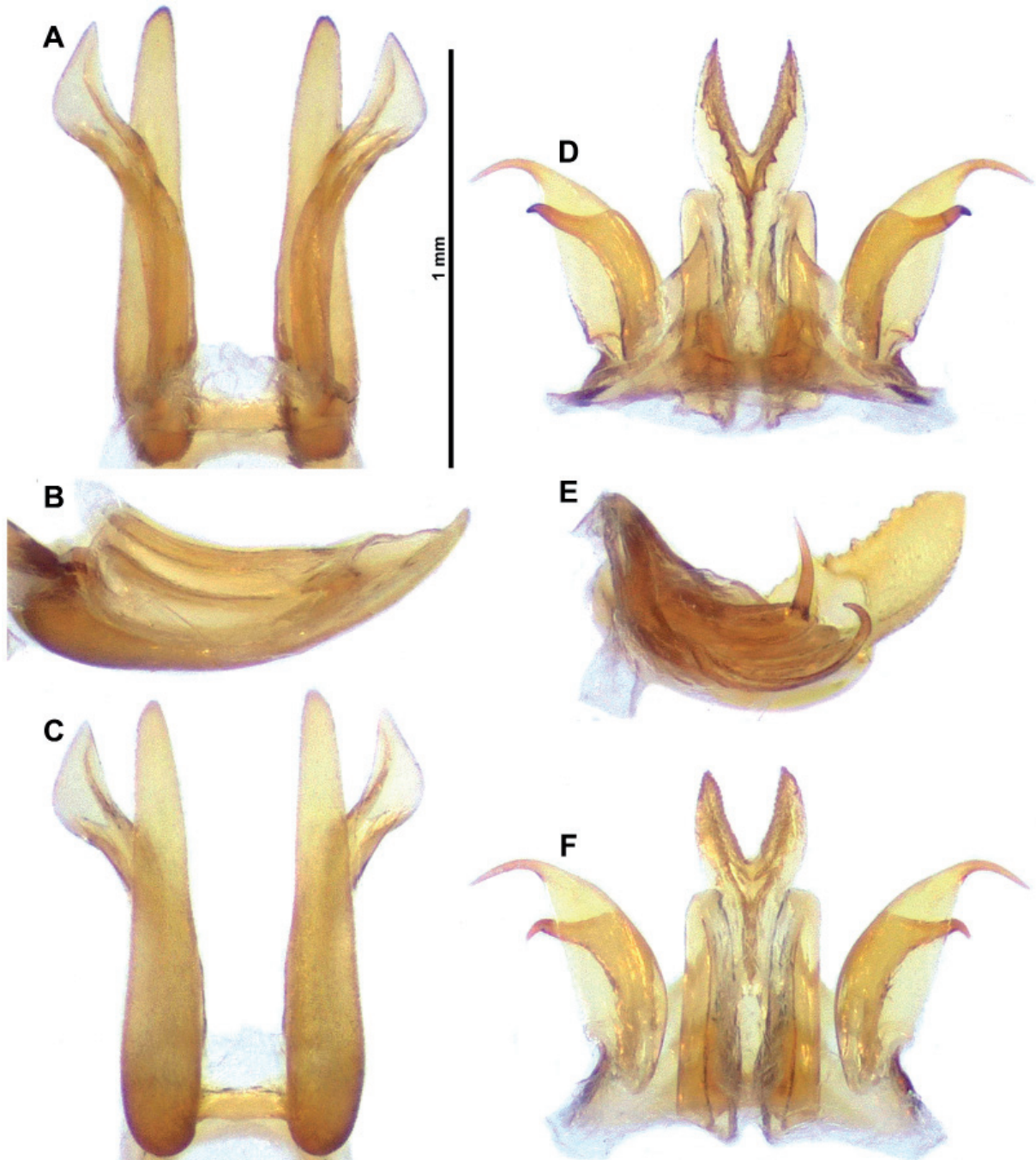


Fig. 72. *Kamabrachys v-carinatum* gen. et sp. nov., holotype, ♂ (ANIC), genitalia. A–C. Aedeagus s. str. A. Dorsal view. B. Left lateral view. C. Ventral view. D–F. Dorsal perianthium. D. Dorsal view. E. Left lateral view. F. Ventral view.

less subtriangular in lateral view, with anterior margin roundly excavate and posterior margin rounded above basal indentation (Fig. 70A), and apically curved laterodorsad and slightly cephalad (Fig. 70B, E). Connective (*cv*) strongly developed, about 1.3 times as long as aedeagus s. lat., with anterior pair of lateral apodemes forming a moderately broad lateral lamina directed posterolaterad and rounded apically; posterior pair of apodemes ribbon-like, strongly developed laterally and sinuate (Fig. 71A–D). Aedeagus s. lat. moderately upcurved with periandrium reaching about same level as aedeagus s. str. posterad (Fig. 71E–I). Aedeagus s. str. (Fig. 72A–C) with apical processes about 7.0 times as long as broad at mid-length; apicoventral process (*avp*) smoothly tapering towards the posterior and narrowly rounded apically (Fig. 72C); apicodorsal process (*adp*) in dorsal view (Fig. 72A) moderately sinuate and moderately inflated, rather regularly tapering towards apex, distally slightly diverging from apicoventral process and slightly shorter than the latter. Dorsal periandrium (Fig. 72D–F) with laterodorsal processes (*ldp*) dorsoventrally laminate basally and weakly curved laterad, then abruptly tapering, reflexed and curved laterodorsad along distal half, sinuate in dorsal view and apically pointed; lateroventral processes (*lvp*) dorsoventrally flattened, directed laterad, oboval on basal $\frac{4}{5}$, broadening from base to first $\frac{1}{3}$, then gently tapering up to abruptly narrowing distal $\frac{1}{5}$, distal $\frac{1}{5}$ directed laterocephalad and first slightly curved dorsad, then ventrad towards pointed apex, projecting posterolaterally beyond laterodorsal processes; basomedian processes (*bmp*) apically roundly blunt in dorsal view and with sides parallel in ventral view; median furcate process (*mfp*) with furca slightly shorter than shaft (Fig. 71I) and rather strongly upcurved in lateral view (Fig. 72E), dorsal crest (*cfp*) of arms of furca strongly developed, merging into a single crest extending to half-length of shaft, crests on arms slightly reflexed laterad in dorsal view (Fig. 72D), crest rather high along most of its length and with dorsal margin irregularly crenelated, tapering distally in lateral view (Fig. 72E), inner lateral walls of furca granulose (Fig. 72D).

SEXUAL DIMORPHISM. Unknown (no female specimen available).

Distribution and biology

The species is currently recorded from five nearby locations in northeastern Northern Territory (Fig. 5B). Bioregions: Darwin Coastal and Pine Creek.

The specimens of the type series were collected during the months of January, and April to June.

Host plant unknown.

Kamabrachys waineri gen. et sp. nov.

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Figs 5B, 73–80

Diagnosis

The species can be recognized by the following combination of characters:

- (1) posterior margin of the lateroventral lobes of the pygofer (*lvl*) oblique and sinuate in lateral view (Fig. 75A) and tapering towards the posterior in ventral view (Fig. 75C), inner margin of lobes concave in ventral view (Fig. 75C), ventral margin tapering in inner angle in caudal view (Fig. 75E);
- (2) posterior margin of laterodorsal process of gonostylus (*ldg*) deeply emarginate, leaving a widely open angle between laterodorsal process and ventral process of gonostylus (*vp*) in lateral view (Fig. 75A);
- (3) crest of furcate process of periandrium (*cfp*) only along distal portion and not merging basally (Fig. 77D), in lateral view, tapering in distal portion (Fig. 77E);

- (4) laterodorsal process of periandrium (*ldp*) high in basal portion then abruptly tapering with dorsal margin strongly sinuate in lateral view, ended in a narrow, slightly curved, acute point directed posterodorsad in lateral view, not reaching half-length of lateroventral process (*lvp*) (Fig. 77D–E);
- (5) lateroventral process of periandrium (*lvp*) dorsoventrally flattened, falcate on most length, with apical point directed dorsolaterad (Fig. 77D–F);
- (6) apicodorsal process of aedeagus (*adp*) quite strongly sinuate, rather wide and tapering towards apex distally, and shorter than apicoventral process (*avp*) (Fig. 77A–C);
- (7) posterior wing with whitish marking more or less visible (depending on individuals) along sutural margin (Fig. 73A).

Etymology

The species name is a patronym referring to the Australian entomologist John Wainer (Agribio Victoria, Melbourne) in acknowledgement of his help with the identification of the host plants of Australian Eurybrachidae and Fulgoridae Latreille, 1807.

Type material

Holotype

AUSTRALIA • ♂; Queensland, Chillagoe; 23°42'48" S, 149°07'06" E; 7–11 May 2022; alt. 400–500 m; J. Constant and L. Semeraro leg.; “Australia Qld, Chillagoe, 17°08'55" S 144°31'43" E, 7-11 May 2022, alt. 400-500m, leg. J. Constant & L. Semeraro, Leopold III Funds Expedition”; QM.

Paratypes

AUSTRALIA • 8 ♂♂, 3 ♀♀; same collection data as for holotype; QM • 7 ♂♂, 3 ♀♀; same collection data as for holotype; RBINS.

Description

MEASUREMENTS AND RATIOS. LT: ♂ (n = 15): 10.02 mm (9.71–10.59), ♀ (n = 6): 10.85 (10.64–11.16); BV/LV: ♂ (n = 1): 3.30, ♀ (n = 1): 3.34; BF/LF: ♂ (n = 1): 1.39, ♀ (n = 1): 1.33; LP+LM/BT: ♂ (n = 1): 0.77, ♀ (n = 1): 0.75; LM/LP: ♂ (n = 1): 2.82, ♀ (n = 1): 2.67; LTg/BTg: ♂ (n = 1): 2.66, ♀ (n = 1): 2.81; LW/BW: ♂ (n = 1): 1.58, ♀ (n = 1): 1.64.

HEAD (Figs 73A–D, 74A–D). Slightly narrower than thorax. Vertex brown irregularly, more or less densely, variegated with black; about 3.3 times as broad as long, concave with all margins slightly carinate; anterior and posterior margins rounded, nearly parallel. Frons brown very densely variegated with black, more densely black than vertex and mostly black in dark specimens; paler along lateroventral margins and often with a weakly marked, irregular paler transverse fascia at level of half height of eyes; dorsal angles marked with a small, yellow-brown subtriangular marking; about 1.3–1.4 times as broad as long, slightly convex, slightly rugulose with peridiscal carina slightly marked; upper margin of frons slightly rounded in perpendicular view of frons; lateral margin incurved above lateral projection of frons, straight under the projection. Clypeus coloured as frons with median line and regular oblique lines on each side of postclypeus dark brown to black, anteclypeus with sides black along outer margin and with median pale reddish-brown line on carina; clypeus reaching mesocoxae, elongate, with median carina on anteclypeus prolonged with obsolete carina on postclypeus; base of clypeus rounded. Labium black-brown, reaching metacoxae, with apical segment as long as broad, acuminate, shorter and slightly more slender than penultimate. Genae brown more or less densely variegated with black. Ocelli absent. Antennae dark brown, not surpassing eye, not visible from above; scape about as long as broad, pedicel subcylindrical, elongate, narrowing towards apex.

THORAX (Figs 73A, C, 74A, C). About 1.3 times as broad as combined length of pro- and mesonotum. Pronotum brown more or less densely and irregularly variegated with black, mostly like vertex; disc



Fig. 73. *Kamabrachys waineri* gen. et sp. nov., holotype, ♂ (QM). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons. **E.** Posterior wing. **F.** Metatibia and metatarsus, ventral view.



Fig. 74. *Kamabrachys waineri* gen. et sp. nov., paratype, ♀ (QM). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons. **E.** Posterior wing. **F.** Metatibia and metatarsus, ventral view.

weakly wrinkled, carina parallel to anterior margin and 2 obsolete impressed points on disc usually included in a dark marking; slightly excavate behind middle portion of anterior margin; paranotal lobes brown more densely variegated with black than disc of pronotum. Mesonotum brown rather densely, irregularly variegated with black, generally slightly darker than pronotum and with apex of scutellum often paler; disc weakly wrinkled, median and peridiscal carinae weakly marked; median carina stopped before scutellum. Tegulae bicolour with ventral half black and dorsal half pale brown variegated with black.

TEGMINA (Figs 73A, C, 74A, C, 79A–F). Pale brown irregularly variegated with black markings, covered in a fine layer of white wax in live and well preserved specimens making them look greyish; distal portion darker, often with very small whitish apical spot; anteapical transverse white line, often interrupted in middle; usually a broad transverse paler band just before half-length of tegmen, delimited anteriorly by a rather broad transverse black band at basal $\frac{1}{4}$ often bearing a short secondary black line posteriorly tapering obliquely from level of claval joint, and posteriorly by a second, usually incomplete, black band; black and pale bands more or less developed and contrasted depending on individuals; some specimens without bands, some specimens with only a squarish black marking in middle of clavus reaching sutural margin or limited to A1 vein, some without bands at all; often a subtriangular whitish marking along costal margin at about $\frac{3}{4}$ of length. Flat, elongate, about 2.6–2.8 times as long as broad; costal margin weakly rounded along basal fifth, then straight or very weakly rounded to nodal line; apex rounded.

VENATION. Veins ScP+RA and RP separated close to base; first fork of MP very basal, at about the level of ScP+RA–RP separation; first fork of CuA before apex of clavus; clavus closed; Pcu and A1 fused at about $\frac{3}{4}$ of clavus length; Pcu+A1 reaching apical angle of clavus; numerous cells along posterior half of costal margin; numerous cross-veins on apical third delimitating small elongate cells.

POSTERIOR WINGS (Figs 73E, 74E). Basal half yellow-orange usually narrowly marked with red basally, distal portion and band along posterior margin blackish brown; sometimes a brownish marking extending towards base along vein MP; anal lobe grey-brown; whitish marking along sutural margin between A1 and cubital fold, more or less contrasted depending on individuals. Well developed, as broad as tegmina, about 1.6 times as long as broad, broadly rounded apically; anal area well developed; sutural margin weakly trilobous; not reaching apex of tegmina at rest. All main veins visible from base, forked at or after nodal line and forming a few closed cells; few transverse veinlets delimiting elongate cells on apical $\frac{1}{4}$; veins A1 and A2 sometimes with 2 terminals.

LEGS (Figs 73A–D, F, 74A–D, F). Pro- and mesofemora reddish brown densely variegated with black, turning to nearly completely black towards apex; pro- and mesotibiae ventrally brown densely variegated with black, sometimes nearly completely black, dorsum of protibiae blackish brown, dorsum of mesotibiae paler; pro- and mesotarsi paler than corresponding tibia but darker, brownish black, apically; metafemora brown to reddish brown, turning darker towards apex; metatibiae and tarsi coloured as apex of femora, with apex of tibial and tarsal spines darker. Pro- and mesofemora and tibiae dorsoventrally flattened, elongate and slender; metatibiae with 3 lateral and 10 apical spines; first metatarsomere ventrally with grey pad of microsetae at internoapical angle and two rows of 5 spines. Metatibiotarsal formula: (3) 10/4/0.

MALE TERMINALIA (Figs 75–77). Pygofer (*Py*) rather short, as high as long and oblique in lateral view, abruptly and rather strongly narrowing in uppermost portion at level of anal tube in lateral view (Fig. 75A), about 2.3 times as wide as high in caudal view (Fig. 75E); basal apodeme (*hap*) slightly elongate, well developed and sclerotized, sinuate in dorsal view (Fig. 75A–C); dorsal portion narrow (Fig. 75A–B); lateroventral lobe (*lvl*) projecting posterolaterally and rounded but tapering towards the anterior and posterior in dorsal view, more strongly posteriorly (Fig. 75B); in ventral view, tapering and

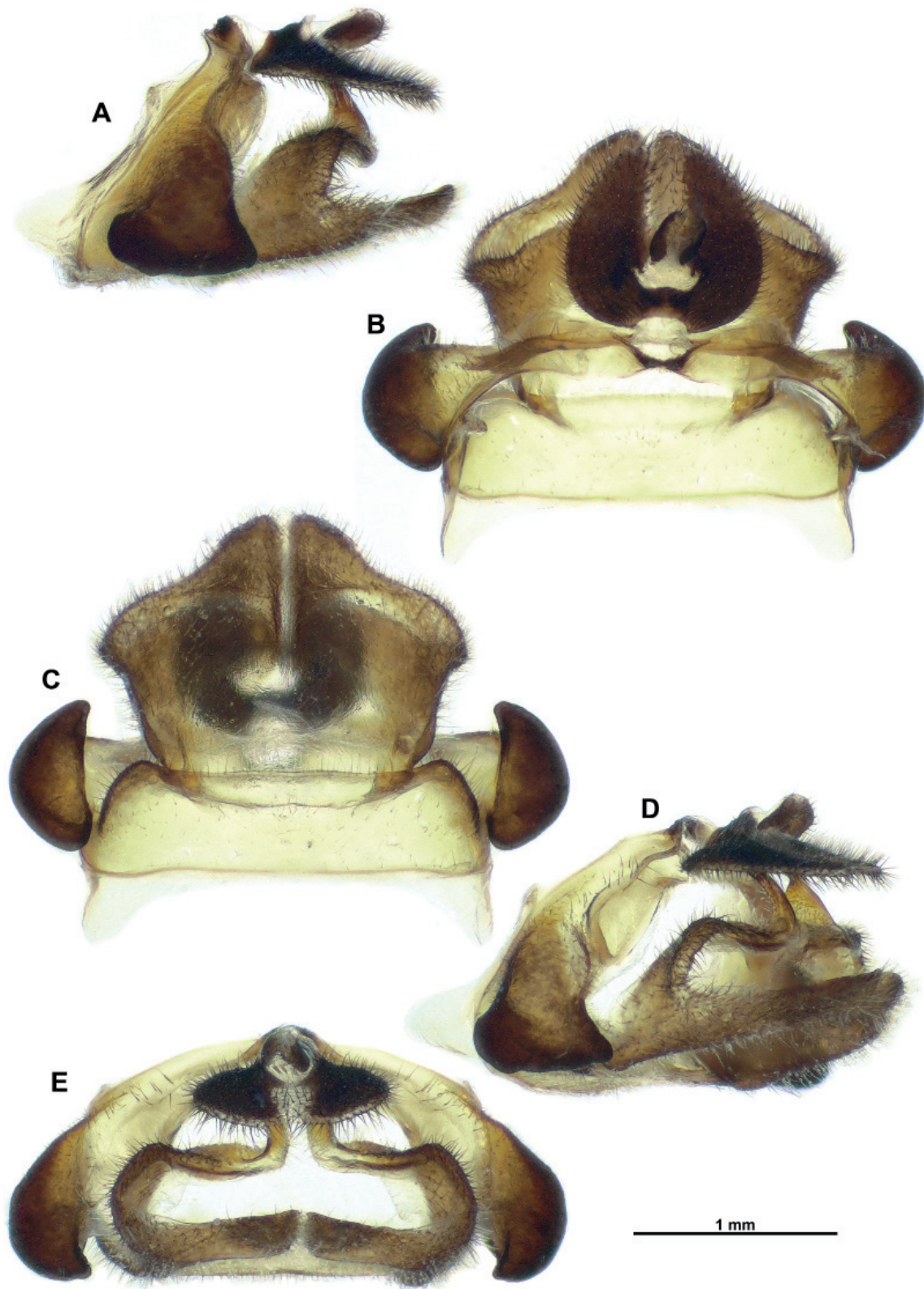


Fig. 75. *Kamabrachys waineri* gen. et sp. nov., holotype, ♂ (QM), terminalia: pygofer, anal tube and gonostyli. **A.** Left lateral view. **B.** Dorsal view. **C.** Ventral view. **D.** Left posterolateral view. **E.** Caudal view.

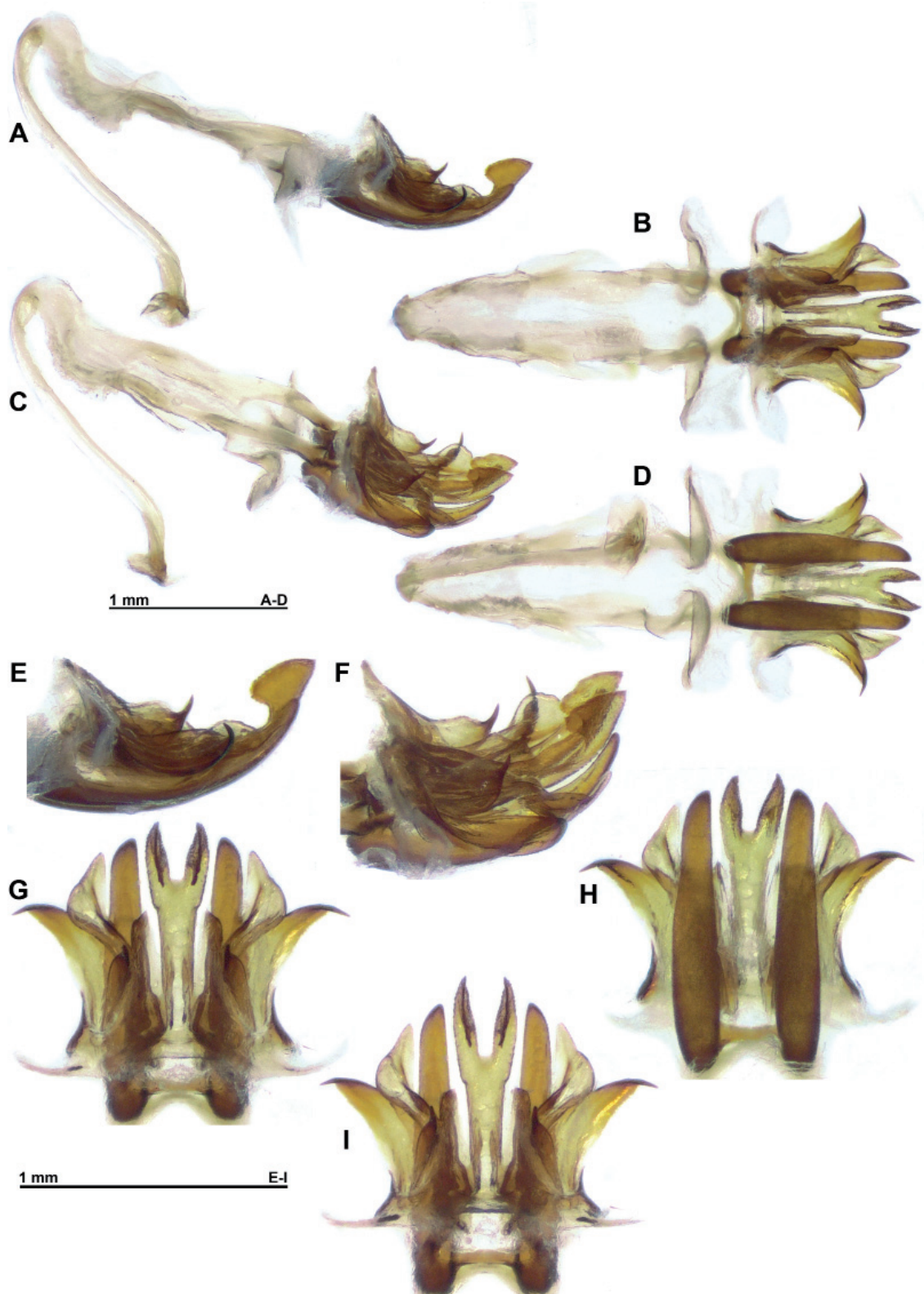


Fig. 76. *Kamabrachys waineri* gen. et sp. nov., holotype, ♂ (QM), genitalia. **A–D.** Aedeagus s. lat. and connective. **A.** Left lateral view. **B.** Dorsal view. **C.** Left laterodorsal view. **D.** Ventral view. **E–I.** Aedeagus s. lat., detail. **E.** Lateral view. **F.** Left laterodorsal view. **G.** Dorsal view. **H.** Ventral view. **I.** Anterodorsal view.



Fig. 77. *Kamabrachys waineri* gen. et sp. nov., holotype, ♂ (QM), genitalia. **A–C.** Aedeagus s. str. **A.** Dorsal view. **B.** Left lateral view. **C.** Ventral view. **D–F.** Dorsal perianthium. **D.** Dorsal view. **E.** Left lateral view. **F.** Ventral view.

moderately narrowly rounded anteriorly, narrowly rounded posteriorly, rather broadly rounded laterally with posterior portion oblique, inner margin concave (Fig. 75C); in lateral view mostly obliquely truncate posteriorly, with posterior margin sinuate and ventral $\frac{1}{4}$ strongly projecting posterad and forming a slightly acute angle narrowly rounded apically, anteroventral angle more or less angularly rounded, ventral margin broadly rounded on anterior $\frac{1}{3}$, then slightly sinuate and broadly rounded along posterior $\frac{2}{3}$ (Fig. 75A); ventral portion of pygofer separated from lateroventral lobe by a well-marked, deep depression (Fig. 75C, E); ventral lamina (*vlp*) about 3.3 times as broad as long with anterior and posterior margins subparallel in ventral view, posterior margin very weakly bisinuate with posterolateral angles rounded and slightly projecting posterad (Fig. 75C). Anal tube (*An*) about 1.03 times as broad as long, dorsoventrally flattened (Fig. 75A), subcircular, slightly tapering from basal $\frac{1}{3}$ towards the posterior, with apical margin weakly emarginate in middle (Fig. 75B); paraprocts (*pa*) at basal $\frac{1}{4}$, well developed. Gonostyli (*G*) 1.28 times as broad as long in ventral view (Fig. 75C); ventral process (*vp*) in ventral view subtriangular, rather short with lateral margin rather strongly sinuate (Fig. 75C); laterodorsal process (*ldg*) not visible in ventral view (Fig. 75C), strongly sinuate in caudal view with mediolateral angle (*mlla*) well-marked (Fig. 75E), mediolateral angle slightly projecting dorsad (Fig. 75A, D), posterior margin deeply, emarginate on ventral half in lateral view (Fig. 75A), posterior margin in emargination straight, slightly oblique, upper and lower margins rounded; dorsal hook (*dhg*) subtriangular in lateral view, with anterior margin concave and posterior margin oblique (Fig. 75A), apically curved anterolaterad, directed dorsolaterad in caudal view (Fig. 75E). Connective (*cv*) strongly developed, about 1.5 times as long as aedeagus s. lat., with anterior pair of lateral apodemes forming a moderately broad elongate lateral lamina directed laterad and tapering apically; posterior pair

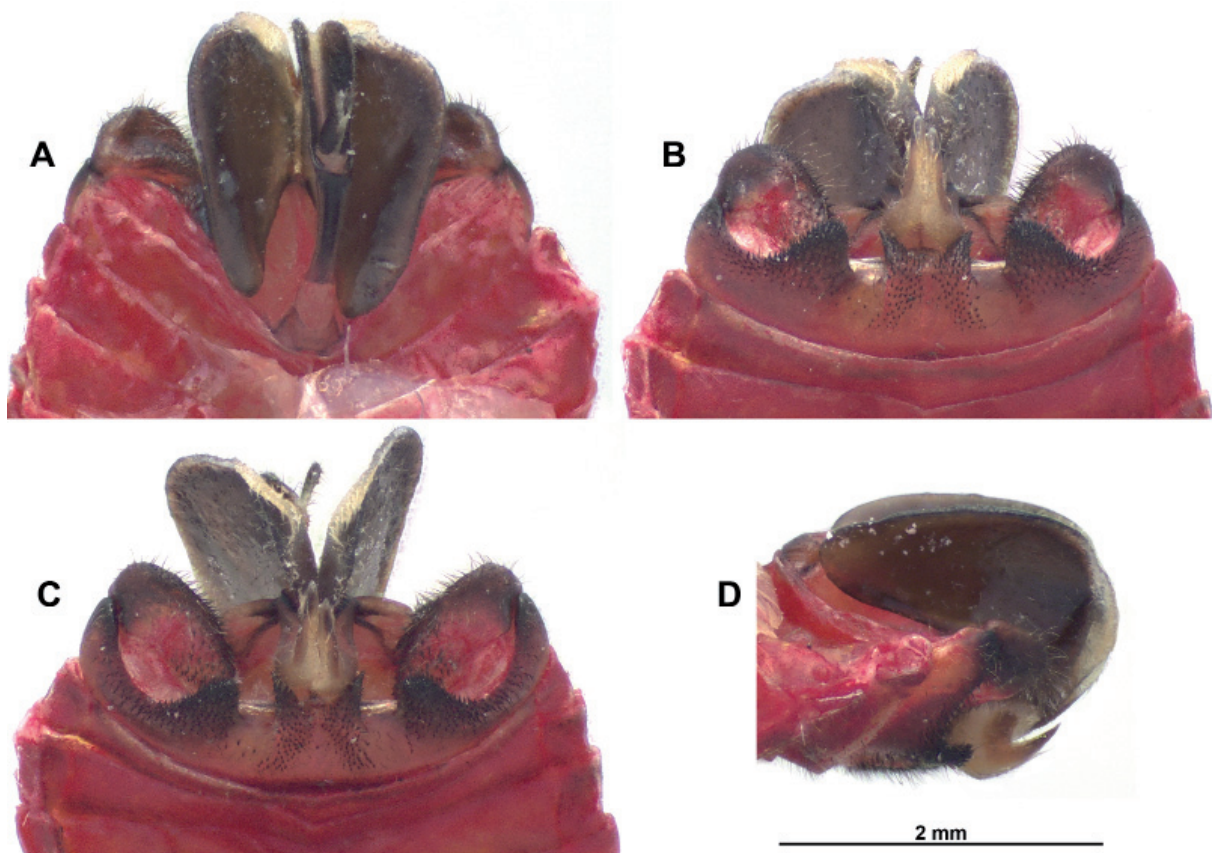


Fig. 78. *Kamabrachys waineri* gen. et sp. nov., paratype, ♀ (QM), external terminalia. **A.** Dorsal view. **B.** Ventral view. **C.** Posteroventral view. **D.** Lateral view.



Fig. 79. *Kamabrachys waineri* gen. et sp. nov. in Queensland, Chillagoe, 7–11 May 2022. **A–C.** Specimens on *Corymbia erythrophloia* (Blakely) K.D.Hill & L.A.S.Johnson (Myrtaceae). **D–E.** Specimens on *Eucalyptus staigeriana* F.Muell. ex F.M.Bailey (Myrtaceae). **F.** Specimen on *Corymbia tessellaris* (F.Muell.) (Myrtaceae). **G–I.** Detail of the trunks of the host trees. **G.** *C. erythrophloia*. **H.** *E. staigeriana*. **I.** *C. tessellaris*.

of apodemes ribbon-like, well developed laterally and slightly twisted (Fig. 76A–D). Aedeagus s. lat. moderately upcurved with periandrium slightly surpassing level of apex of aedeagus s. str. posteriorly (Fig. 76E–I). Aedeagus s. str. (Fig. 77A–C) with apical processes about 6.6 times as long as broad at mid-length; apicoventral process (*avp*) smoothly tapering towards the posterior and narrowly obliquely rounded apically; apicodorsal process (*adp*) in dorsal view (Fig. 77A) rather strongly sinuate, strongly inflated, rather regularly tapering towards apex forming a subtriangular blunt point, and shorter than apicoventral process. Dorsal periandrium (Fig. 77D–F) with laterodorsal process of periandrium (*ldp*) high in basal portion then abruptly tapering with dorsal margin strongly sinuate in lateral view, ended in a narrow, slightly curved, acute point directed posterodorsad in lateral view, not reaching half-length of lateroventral process (*lvp*) (Fig. 77D–E); lateroventral process of periandrium (*lvp*) dorsoventrally flattened, falcate on most length, with acute apical point directed dorsolaterad (Fig. 77D–F); basomedian processes (*bmp*) apically oblique in dorsal view and with sides parallel in ventral view; median furcate process (*mfp*) with furca about as long as shaft (Fig. 76I) and mostly evenly curved dorsad in lateral view (Fig. 77E), dorsal crest (*cfp*) on apical $\frac{2}{3}$ of arms of furca, mostly vertical in dorsal view (Fig. 77D), crest abruptly starting basally with strongly sinuate anterior margin, broadest near base then regularly tapering towards pointed apex and with dorsal margin slightly irregular in lateral view (Fig. 77E), inner and outer lateral walls of furca weakly granulose (Fig. 77D).

FEMALE TERMINALIA (Fig. 78). Abdominal sternite VI (*As VI*) with sides upcurving in posteroventral view (Fig. 78C); posterior margin in ventral view (Fig. 78B) projecting posteriorly on sides; median subquadrate emargination wide (Fig. 78B–C); subtriangular processes moderately developed, rather wide, apically rounded and directed posterodorsad (Fig. 78B–C); emargination between subtriangular processes and lateral projection rather deeply rounded (Fig. 78B–C); processes of furca of sternite VI (*FAs VI*) rather elongate, pointed, diverging, moderately developed and curved posterodorsad (Fig. 78B–C). Inner portion of gonocoxa VIII (*Gx VIII*) strongly curved dorsad (Fig. 78C); posterior margin of gonapophysis VIII (*Gy VIII*) projecting rather strongly posterad and apically rounded (Fig. 78A–B). Lateroventral excavate membranous fold of gonocoxae VIII between sternite VI and gonapophysis VIII in posteroventral view widely open (Fig. 78C). Inner portion of gonapophysis VIII, subtriangular processes and adjacent part of posterior margin of sternite VI, and processes of furca of sternite VI (*FAs VI*) densely covered in short strong setae (Fig. 78B–C). Gonoplags (*Gp*) unilobed, large and

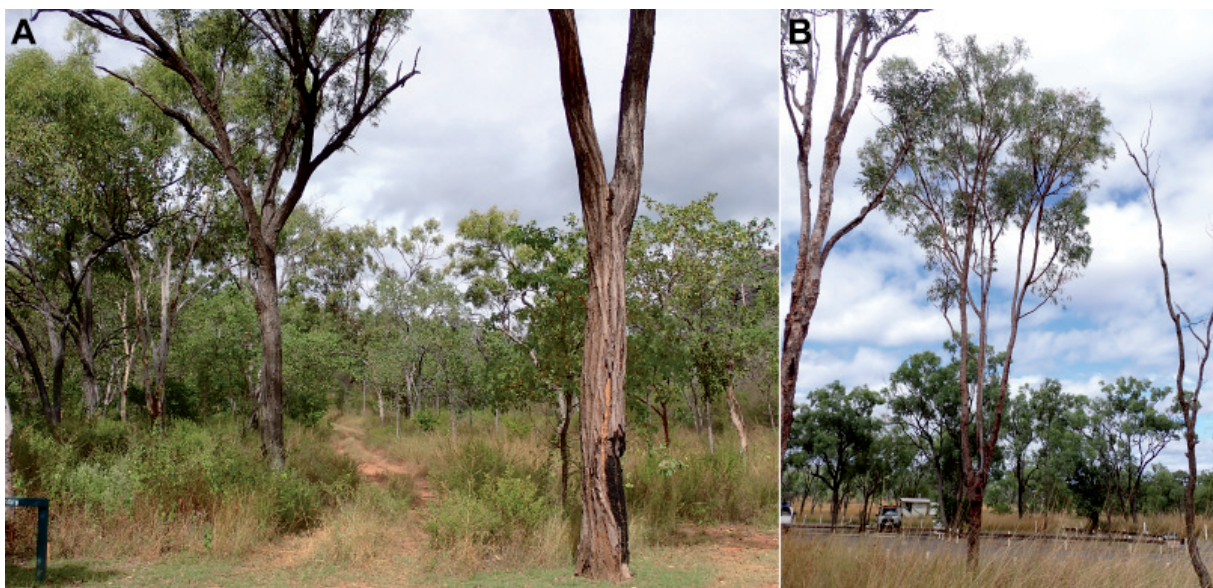


Fig. 80. *Kamabrachys waineri* gen. et sp. nov., habitat in Queensland, Chillagoe. **A.** 8 May 2022, near Balancing Rock. **B.** 9 May 2022, near Royal Arch Cave.

semicircular, mostly hiding the anal tube (Fig. 78D). Gonocoxal bases IX (*Gb IX*) projecting laterally (Fig. 78C). Gonapophysis IX (*Gy IX*) flattened laterally, reflexed posterodorsad and strongly tapering apically (Fig. 78B, D). Anal tube (*An*) elongate and narrow, curved posteroventrad, v-shaped in cross section beyond anus, lanceolate in dorsal view (Fig. 78A, C).

SEXUAL DIMORPHISM. Female about 8% larger than male.

Distribution and biology

The species is currently recorded from a single location in northeastern Queensland, Chillagoe (Fig. 5B). Bioregion: Einasleigh Uplands.

The species seems polyphagous on several foodplants that belong to the family Myrtaceae: *Corymbia erythrophloia* (Blakely) K.D.Hill & L.A.S.Johnson, *C. tessellaris* (F. Muell.) K.D.Hill & L.A.S.Johnson and *Eucalyptus staigeriana* F.Muell. ex F.M.Bailey (Fig. 79G–I). Their cryptic colouration makes the specimens very hard to detect on the trunks where they tend to hide in the cracks and crevices, making their camouflage even more efficient (Fig. 79A–F). The species did not seem very rare in its habitat, open *Eucalyptus* woodland (Fig. 80).

Kamabrachys sp. Figs 5B, 81

Euronotobrachys plana – Jacobi 1928: 6 [listed from Derby, Western Australia; erroneous identification!].

Material examined

AUSTRALIA • 1 ♀; [Western Australia], Derby; [17°18'20" S, 123°38'02" E]; Oct. [1910]; E. Mjöberg; NHRS.

Note

Considering that no male associated with the female (Fig. 81) examined by Jacobi (1928) or collected at a nearby location is available, and the enormous distance between the recorded distribution of *K. plana* in northeastern Queensland and Derby (Fig. 5B), Jacobi's identification is considered erroneous.

Identification key to the species of *Kamabrachys* gen. nov.

The following key uses the characters of the male terminalia. Females should not be identified unless a male from the same collecting event is available to confirm the identification.

1. Posterior margin of the lateroventral lobe of the pygofer (*lvl*) rounded in lateral view (Figs 7A, 12A); in ventral view, also rounded (Figs 7C, 12C) 2
- Posterior margin of the lateroventral lobe of the pygofer (*lvl*) in lateral view, oblique, straight (Fig. 24A) or more or less sinuate (Fig. 18A); in ventral view, tapering towards the posterior (Figs 18C, 24C) 7
2. Crest of furcate processes of periandrium (*cfp*) extending on all length of arms of process, then merging and extending further on shaft (Fig. 71D–E) *K. v-carinatum* gen. et sp. nov.
- Crest of furcate processes of periandrium (*cfp*) extending only along distal portion, never merging basally (Figs 9D–E, 14D–E) 3

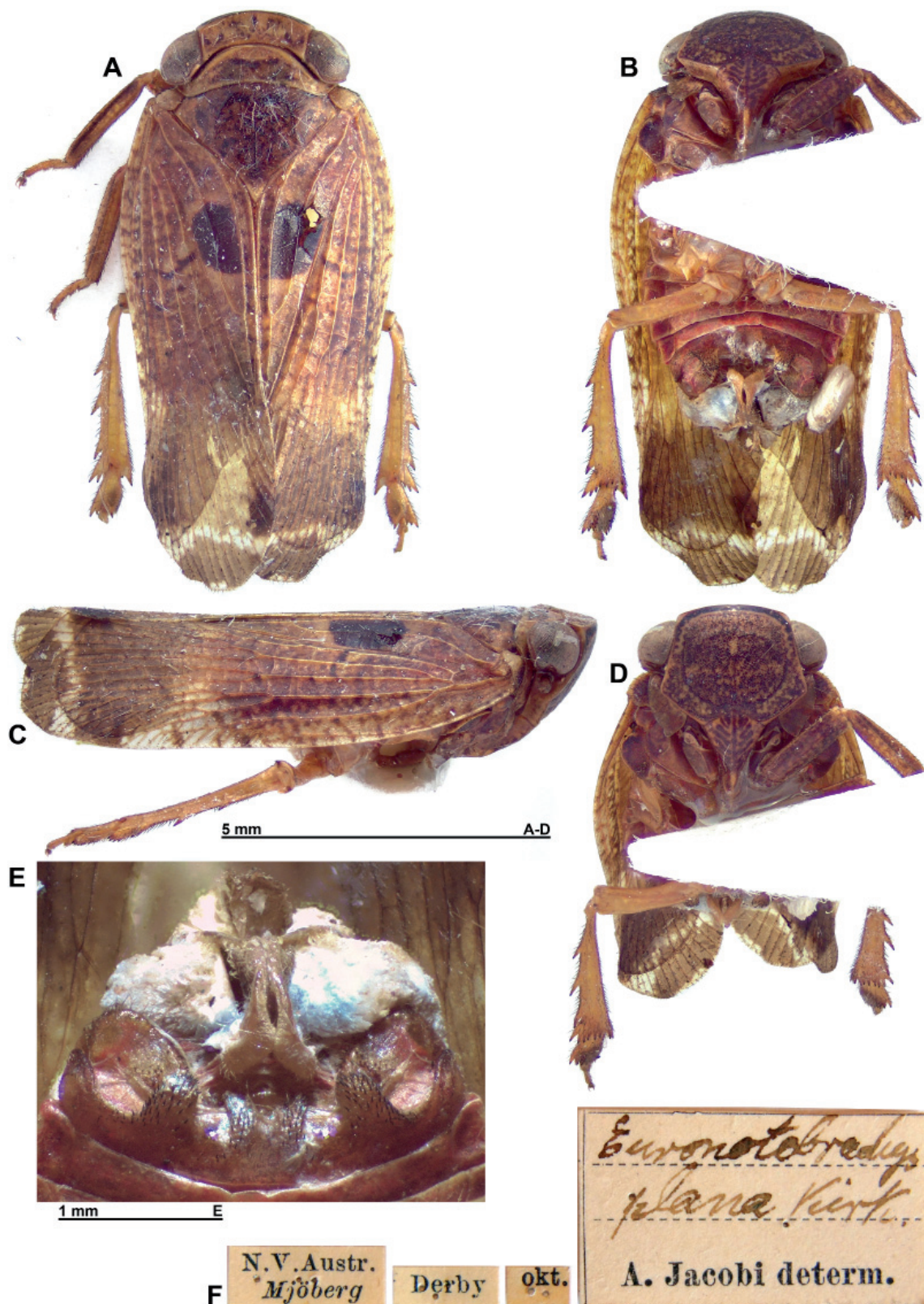


Fig. 81. *Kamabrachys* sp., ♀ from Derby, Western Australia (NHRS). **A.** Habitus, dorsal view. **B.** Habitus, ventral view. **C.** Habitus, lateral view. **D.** Habitus, perpendicular view of frons. **E.** Terminalia, ventral view. **F.** Labels.

3. Apicodorsal process (*adp*) of aedeagus rather weakly sinuate, elongate and narrow, surpassing apicoventral process (*avp*) (Fig. 64A, C) ***K. signata*** (Distant, 1892) gen. et comb. nov.
 - Apicodorsal process (*adp*) of aedeagus strongly sinuate, rather wide and stocky, shorter than apicoventral process (*avp*) (Figs 9A, C, 14A, C, 38A, C, 55A, C) 4
4. Posterior margin of the lateroventral lobe of the pygofer obliquely straight in middle portion in lateral view (Fig. 7A); ventral processes of gonostyli elongate, gonostyli 1.17 times as wide as long in ventral view (Fig. 7C) ***K. andersoni*** gen. et sp. nov.
 - Posterior margin of the lateroventral lobe of the pygofer rounded in lateral view (Figs 12A, 36A, 53A); ventral processes of gonostyli elongate, gonostyli at least 1.25 times as wide as long in ventral view (Figs 12C, 36C, 53C) 5
5. Posterior margin of laterodorsal process of gonostylus (*ldg*) in lateral view, emarginate, leaving a widely open angle between laterodorsal process and ventral process (*vp*) of gonostylus (Fig. 36A) ***K. fasciata*** gen. et sp. nov.
 - Posterior margin of laterodorsal process of gonostylus (*ldg*) in lateral view, not emarginate, forming a narrow angle between laterodorsal process and ventral process (*vp*) of gonostylus (Figs 12A, 53A) 6
6. Crest of median furcate process of periandrium (*cfp*) in lateral view, wider in distal portion (Fig. 14E); apicodorsal process of aedeagus (*adp*) in dorsal view, wider than apicoventral process of aedeagus (*avp*), stocky and obliquely truncate apically (Fig. 14A) ***K. brennani*** gen. et sp. nov.
 - Crest of median furcate process of periandrium (*cfp*) in lateral view, wider in basal portion (Fig. 55E); apicodorsal process of aedeagus (*adp*) in dorsal view, about as wide as apicoventral process of aedeagus (*avp*), tapering apically (Fig. 55A) ***K. rieki*** gen. et sp. nov.
7. Laterodorsal process of periandrium (*ldp*) more than half the length of the lateroventral process (*lvp*) (Figs 20D–E, 26D–E) 8
 - Laterodorsal process of periandrium (*ldp*) less than half the length of the lateroventral process (*lvp*) (Figs 50D–E, 77D–E) 11
8. Inner margin of the lateroventral lobe of the pygofer (*lvl*) concave in ventral view (Figs 24C, 30C) 9
 - Inner margin of the lateroventral lobe of the pygofer (*lvl*) straight in ventral view (Figs 18C, 42C) 10
9. Lateroventral process of periandrium (*lvp*) not falcate, dorsoventrally flattened only on basal half, strongly curved distally (Fig. 26D–E); apicodorsal process of aedeagus (*adp*) moderately sinuate in dorsal view (Fig. 26A); laterodorsal process of periandrium (*ldp*) evenly curved, pointing posterodorsad in lateral view (Fig. 26E) and sinuate in dorsal view (Fig. 26D); lateroventral lobe of pygofer (*lvl*) rounded ventrally in caudal view (Fig. 24E) ***K. danielsi*** gen. et sp. nov.
 - Lateroventral process of periandrium (*lvp*) falcate, dorsoventrally flattened and evenly curved (Fig. 32D–E); apicodorsal process of aedeagus (*adp*) strongly sinuate in dorsal view (Fig. 32A); laterodorsal process of periandrium (*ldp*) strongly curved, pointing dorsad in lateral view (Fig. 32E) and abruptly curved laterad in dorsal view (Fig. 32D); lateroventral lobe of pygofer (*lvl*) roundly pointed ventrally in caudal view (Fig. 30E) ***K. falcata*** gen. et sp. nov.
10. Distal portion of laterodorsal process of periandrium (*ldp*) strongly curved dorsad (Fig. 20D–E) and not surpassing outer margin of lateroventral process (*lvp*) in dorsal view (Fig. 20D) ***K. campbelli*** gen. et sp. nov.

- Distal portion of laterodorsal process of periandrium (*ldp*) strongly curved dorsolaterad (Fig. 44D–E) and surpassing outer margin of lateroventral process (*lvp*) in dorsal view (Fig. 44D)
.....*K. pedemontana* gen. et sp. nov.
- 11. Inner margin of lateroventral lobe of pygofer (*lvl*) more or less straight in ventral view (Fig. 48C); laterodorsal process of periandrium (*ldp*) high in basal portion then strongly, angularly curved and ended in a hook-like acute point directed dorsad in lateral view (Fig. 50E); posterior wings without whitish marking along sutural margin (Fig. 46A)*K. plana* (Kirkaldy, 1906) gen. et comb. nov.
- Inner margin of lateroventral lobe of pygofer (*lvl*) concave in ventral view (Fig. 75C); laterodorsal process of periandrium (*ldp*) high in basal portion then abruptly tapering with dorsal margin strongly sinuate in lateral view, ended in a narrow, slightly curved, acute point directed posterodorsad in lateral view (Fig. 77E); posterior wings with whitish marking along sutural margin between A1 and cubital fold, more or less contrasted depending on individuals (Fig. 73E)
..... *K. waineri* gen. et sp. nov.

Discussion

Including *Kamabrachys* gen. nov., the Australian eurybrachid fauna now counts 16 genera and *Kamabrachys* is the third new genus to be erected in the framework of the revision of the genus *Platybrachys*, after *Fletcherobrachys* Constant, 2006 and *Chewobrachys* Constant, 2008. Ten new species are added, resulting in a total of 63 species of Eurybrachidae known from Australia.

The genus *Kamabrachys* gen. nov. is associated with trees in the family Myrtaceae and was collected from the genera *Eucalyptus*, *Corymbia*, *Gossia* and *Melaleuca*. It is assumed that the specimens collected by light trapping were probably sitting on trees close to the light trap and the best method by far to collect specimens is by visual scanning of the tree trunks. However, due to their excellent camouflage on the trunks, it requires a very well-trained eye to locate them. Although the genus is widely spread in Australia, the known distribution of the species remains patchy (Fig. 5) and the genus is still unknown from vast areas where, extrapolating from available data, several undescribed species will surely be found.

All the species of *Kamabrachys* gen. nov. share a very consistent pattern of the male and female terminalia structures which is not found in any other genus of Eurybrachidae (Constant unpubl. data). For the males, the most characteristic features are the dorsoventrally flattened pygofer bearing strongly developed lateroventral processes, the angularly S-shaped gonostyli in caudal view, the very elongate connective of the aedeagus and the shape of the aedeagus, resembling a wide clump of curved processes, while the female bears a unique structure, an excavate membranous fold of gonocoxae VIII limited by the strongly sclerotized posterior margin of the sixth sternite and the gonapophysis VIII, the margins of the excavation being densely covered in short, strong setae. These peculiar structures are probably associated with the mating behaviour observed in this genus (Fig. 68). However, collection specimens in copula were not available for examination to confirm this hypothesis and to better understand how these structures work and adjust together. More research needs to be conducted in the field in order to confirm that the species of *Kamabrachys* always copulate as described in the present paper. The dissection of preserved copulating specimens will allow to fully describe the role of the different morphological adaptations.

Furthermore, the role and formation of a white silicone-like waxy secretion observed on some females (Fig. 45) is not understood and similar structures have not been observed in other planthopper groups (T. Bourgoïn, A. Soulier-Perkins, C. Bartlett pers. com. Dec. 2022). This secretion is very different to the white waxy filaments produced and accumulated on the gonoplacs of all eurybrachids, which are used to cover the egg clutch during oviposition as described by Hacker (1924) and as I directly observed

in another, yet undescribed genus close to *Kamabrachys* gen. nov. (Constant, unpublished). Instead, the silicone-like secretion could be produced by the sternite VII but the latter is strongly reduced and no tegumentary plate or area was observed supporting the waxy structure; another hypothesis could also be a secretion produced by the male and/or the female during the copulation process to prevent the female mating with another male... again, field observations will be key to understand these unique structures.

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